Impact of Curricular Reforms in the Vocational Education of Ethiopia

Von der Fakultät der Wirtschafts- und Sozialwissenschaften der Universität Stuttgart zur Erlangung der Würde eines Doktors der Philosophie (Dr. phil.) genehmigte Abhandlung

Vorgelegt von

Selemon Worku Hailemicheal
aus Addis Ababa/Äthiopien

Hauptberichter: Prof. Dr. phil. Reinhold Nickolaus
Mitberichter: Prof. Dr. Tobias Gschwendtner

Tag der mündlichen Prüfung: 06.10.2015

Institut für Erziehungswissenschaft
Abteilung Berufs-, Wirtschafts- und Technikpädagogik
Universität Stuttgart

2016

TABLE OF CONTENTS *Page*

LIST OF FIGURES

LIST OF TABLES

LIST OF ABBREVIATIONS

AAU	Addis Ababa University
AIZ	Akaki-kaliti Industry Zone
ANOVA	Analysis of Variance
COC	Center of Competency
CR	Curriculum Reform
CRs	Curricular Reforms
CSA	Central Statistics Agency
df	Degree of freedom
ecbp	Educational Capacity Building Program
EFA	Education for All
EPRDF	Ethiopian Peoples' Revolutionary Democratic Front
ESDP	Education Sector Development Program
ETP	Education and Training Policy
FDRE	Federal Democratic Republic of Ethiopia
GDP	Gross Domestic Product
GIZ	German international Cooperation
GTZ	German Technical Cooperation
IBCR	Input Based CR
ILO	International Labor Organization
KMO	Kaiser-Meyer-Olkin-Koefficient
M	Mean
MOE	Ministry of Education
MSE	Medium and Small Enterprises
N	Number/frequency
NGO	Non-Governmental Organization
OBCR	Outcome Based CR
EQF	Ethiopian quality framework
SD	Standard deviation
Sig	Significant
TVET	Technical and vocational education and training
UNESCO	United Nations Education Scientific Organization

ACKNOWLEDGEMENTS

It is with great sincere thanks that I acknowledge my principal supervisor, Prof. Dr. Reinhold Nickolous. He has provided me with financial support and with the most appropriate and thoughtful guidance at every step of my study, which represents great challenges for my professional and personal life. Prof. Nickolaus was my supervisor, mentor, and colleague, most importantly, my friend I also owe him further thanks for his patience with my academic explanations in German and I could not have dreamed of a better supervisor in my life. It is also my great pleasure to send my appreciation to my co-supervisor Prof. Dr. Tobias Gschwendtner for his precious recommendations.

I would like to acknowledge Prof. Dr. Josef Rützel from the University of Darmstadt, for his sincere support during my preparation for PhD student status. Further thanks go to International Generation Meeting (IGM) members in Darmstadt: Dr. Margarete Hecker and Mr. Walter Fritsch, Dr. Ilja Buchmueller, Bhumjia Agrawal and Dr. Ximeng Chen for their hospitality and administrative support during the process of my PhD.

I am also indebted to all my colleagues in the department of psychology and vocational studies (BWT) in Stuttgart, to work with and their support and collaboration during the process of my study: Dr. Stephan Abele, Dr. Martin Kenner, Dr. Anke Treutlein, Dr. Daniel Schweyer and Florina Stefanica. Special thanks go to secretary of the department, Marie-Luise Latteyer for her patience to proofread my dissertation.

I also appreciate the support of the respondents of this study to officials responsible for TVET sector, Addis Ababa TVET Agency, Federal TVET Agency, Addis Ababa center of competency, Addis Ababa TVET institutions, graduates, principals and instructors in addition to employer industries for their willingness to share their experience, thoughts and opinions in answering the questionnaires of this study. Further appreciation goes to individuals who helped me in piloting, distribution and collecting the questionnaires: Meseret Kinfe, Daniel Gebrekidan, Sisay Tesfaye, Negese Teferedegn, Solomon Chali and Samson Sileshi.

Finally yet importantly, I appreciate to all my family, for endless sacrifices and love: my older brother, Dr. Tesfaye Worku for his courage to support financially and material throughout the whole study, my youngest sister Gelaye Worku for transcription of the interview data and proofreading my paper. To my brothers Alem Worku, Zenebe Worku and Gashaw Worku and my sister Zinash Worku for thier patience to the end of my dissertation. Also my special thanks to my mother, Mrs Kidan Tafera, for her endless praying to the success of this long journey.

ABSTRACT

The impetus for this project was a pragmatic concern for the impact of Curricular Reforms (CRs) implemented in Ethiopia between 2001 and 2010. This study considers the two CRs conducted in Ethiopia. Firstly, the input-based curriculum reform (IBCR) was implemented between 2001 and 2005. Secondly, the outcome-based curriculum reform (OBCR) was implemented between 2006 and 2010. Different countries TVET benchmarks were adopted in Ethiopia since 1994. For example, mainly from Germany, Australia and the Philippines.

The main objective of this study was to investigate the impact of the CRs on the vocational education of Ethiopia. Specifically, it deals with the relevance of the reforms to the status of TVET graduates and thereby employer. Four specific objectives were designed, such as 1) to provide a comprehensive picture of the impact of TVET CRs implemented in Ethiopia from 2001 to 2010, 2) to investigate the factors that influence the effective implementation of TVET CRs conducted since 2001, 3) to evaluate the impact of the TVET CRs by comparing the current pictures with earlier pictures over the decade since 2001 and 4) to develop a decision support model of a TVET curricular reform process. To attain the objectives of the study, the following four parts were investigated.

Firstly, curriculum reform from the perspectives of TVET instructors and principals was examined empirically. Here, mainly nine relevant issues regarding CR were considered. For example, a) curricular intervention factors, b) constituency participation in designing TVET curriculum, c) nature/extent of curriculum design, d), factors causing CR, e) internal factors influencing effective implementation of CRs f) external factors influencing effective implementation of CRs, g) impact indicators of CRs, h) graduate relevance, and i) employer relevance. Reliability of these nine scales was checked empirically before analysis.

Secondly, the curriculum reform from the perspectives of TVET graduates was investigated. It considers issues, such as relevancy of skill training at colleges, relevance of apprenticeship/cooperative training in industries, relevance of competency in the workplace, competency assessment of TVET graduates, employment of TVET graduates, quality assurance, and income of TVET graduates.

Thirdly, employer perspectives on curriculum reform was explored by considering issues, such as employer participations in TVET curriculum, apprenticeship/cooperative training, employer involvement in TVET, graduate employment, quality assurance, and employer relevance of CR.

Fourthly, TVET officials' perspectives on TVET curriculum was also evaluated by considering related issues on TVET curriculum reform.

This study is an exploratory case study. The methodology requires the adoption of the two distinct stages within the study "exploration" and inspection" (Blumer, 1988). The exploration stage includes the data analysis based on the perspectives of TVET instructor and principals, TVET graduates and employers. The inspection stage considers the data analysis based on the data collected from the interview with the officials responsible for TVET curriculum. Generally, this study used mixed methods, the quantitative and the qualitative approaches.

To investigate the conceptual variation, the analysis were conducted mainly based on three different comparatives. Firstly, between the IBCR and OBCR, secondly, between type of TVET institutions (public, private and NGO) and thirdly between TVET instructors and principals. Unintended comparative analysis also conducted for some items based on the characteristics of the respondents.

Finally, the study considers two theoretical models. Firstly, the factors that influence CR, which outlines ten different factors (Gruba et al., 2004). Further, two additional factors were added that may exceptionally influence the CR in the Ethiopian context. Secondly, the factors influencing effective implementation of CR as internal and external factors (Bransch, 2005). Consequently, this study proved the two models empirically. In general, the analysis of these data led to generating the conclusion and recommendation for future study in the area of TVET CRs broadly.

ZUSAMMENFASSUNG

Der Anstoß für diese Studie war eine pragmatische Sorge um die Auswirkungen der curricularen Reformen, die von 2001 bis 2010 in Äthiopien umgesetzt wurden. Die Studie betrachtet die beiden CR, die in Äthiopien durchgeführt wurden. Zunächst wurde die inputbasierte curriculare Reform (IBCR) zwischen 2001 und 2005 umgesetzt. Zwischen 2006 und 2010 fand dann eine Outcomeorientierte curriculare Reform (OBCR) statt. Seit 1994 wurden der verschiedenen Ländern länderspezifische Berufsbildungscurricula als Benchmarks (v.a. aus Deutschland, aber auch aus Australien und den Philippinen) auf Äthiopien übertragen. Das Hauptziel dieser Studie war die Untersuchung der Auswirkungen der curricularen Reformen auf die berufliche Bildung in Äthiopien. Insbesondere geht es um die Relevanz der Reformen für den Erfolg der Berufsbildungsabsolventen und damit auch für die Arbeitgeber.

Es werden vier spezifische Ziele verfolgt: 1) Es wird ein umfassendes Bild über die Auswirkungen der in Äthiopien von 2001 bis 2010 umgesetzten curricularen Reformen auf die berufliche Bildung gegeben. 2) Es werden die Faktoren untersucht, die die Wirksamkeit der umgesetzten curricularen Reformen der beruflichen Bildung seit 2001 beeinflussten. 3) Es werden die Auswirkungen der berufsbildenden Curriculumreformen, die von 2001 bis 2010 durchgeführt wurden, bewertet. Hierfür wird ein Vergleich der aktuellen und der früheren Situation vorgenommen. 4) Es wird ein Entscheidungsmodell entwickelt, das curricularen Reformprozessen Orientierung gibt. Um diese übergeordneten Ziele zu erreichen, wurden vier Untersuchungen durchgeführt.

Erstens wurden die curricularen Reformen aus der Perspektive der Lehrer und Schulleiter der Berufsbildung empirisch untersucht. Dabei wurden hauptsächlich die folgenden Aspekte berücksichtigt: a) die curricularen Interventionsfaktoren b) die Beteiligung bei der Gestaltung berufsbildender Curricula, c) der Umfang der Curriculumgestaltung, d) die Faktoren der curricularen Reformen, e) die internen Einflussfaktoren der Wirksamkeit der umgesetzten curricularen Reformen, f) die externen Einflussfaktoren der Wirksamkeit der umgesetzten curricularen Reformen, g) die Wirkungsindikatoren der curricularen Reformen, h) die Relevanz der CR für die Absolventen und i) die Relevanz der CR für die Arbeitgeber.

Zweitens wurden die curricularen Reformen aus den Perspektiven von Absolventen der Berufsbildung untersucht. Hier wurden z.B. die folgenden Aspekte betrachtet: die Relevanz von Fertigkeitstrainings an Berufsschulen, die Relevanz der Lehr-Verbundausbildung in der Industrie, die Relevanz der erworbenen Kompetenz am Arbeitsplatz, die Kompetenzbeurteilung von

Absolventen der Berufsbildung, die Beschäftigung von Absolventen der Berufsbildung, die Qualitätssicherung und die Einkommen von Absolventen der Berufsbildung.

Drittens wurden die curricularen Reformen aus den Perspektiven von Arbeitgebern analysiert, wobei z.B. die folgenden Bereiche einbezogen wurden: die Arbeitgeber, die Teilnehmer an der Berufsbildung, die Lehr/Verbundausbildung, die Beteiligung von Arbeitgebern in der Berufsbildung, das Beschäftigungsverhältnis, die Qualitätssicherung und die Relevanz von Arbeitgebern bei curricularen Reformen.

Viertens wurden die curricularen Reformen aus der Perspektive von Beamten der Berufsbildung anhand von Interviews untersucht, wobei relevante Themen berufsbildender Curriculumreformen einbezogen wurden.

Die Untersuchung ist als explorative Fallstudie angelegt, die eine Explorations- und eine Inspektionsphase umfasst (Blumer, 1988). Die Explorationsphase enthält die Datenanalyse auf der Grundlage der Perspektiven von Lehrern und Schulleitern der Berufsbildung, der Absolventen der Berufsbildung sowie der Arbeitgeber. Die Inspektionsphase bezieht sich auf Daten aus Interviews, die mit verantwortlichen Beamten der Berufsbildung durchgeführt wurden. Im Allgemeinen werden in dieser Fallstudie quantitative und qualitative Methoden verwendet.

Um die konzeptionelle Veränderung der CR zu untersuchen, wurden im Wesentlichen drei vergleichende Analysen durchgeführt: Erstens wurden Vergleiche zwischen den inputbasierten curricularen (IBCR) und den Outcomebasierten curricularen Reformen (OBCR) angestellt, zweitens zwischen den verschiedenen Arten von Berufsschulen (öffentlichen, privaten und NGO) und drittens zwischen den Lehrern und Schulleitern der Berufsbildung. Aufgrund einiger überraschender Ergebnisse wurden im Rückgriff auf spezifische Merkmale der Befragten weitere explorierende Analysen durchgeführt. Ein zentrales Ergebnis der vorliegenden Untersuchung sind zwei theoretische Modelle: Ein Modell bezieht sich auf die Faktoren, die die curricularen Reformen beeinflussen. Es enthält die zehn von Gruba et al. (2004) vorgeschlagenen Faktoren und zwei weitere Faktoren, die für die curricularen Reformen in Äthiopien ganz besonders wichtig sind. Das zweite Modell enthält die internen und externen Einflussfaktoren einer effektiven Umsetzung curricularer Berufsbildungsreformen (Bransch, 2005). Die beiden Modelle resultieren aus den empirischen Analysen, die im Rahmen dieser Arbeit durchgeführt wurden, und stellen die Grundlage der hier gezogenen Schlussfolgerungen sowie der ausgesprochenen Empfehlungen für künftige Studien im Bereich curricularer Reformen dar.

PART ONE
BACKGROUND

1 OVERVIEW OF THE PROJECT

1.1 *Introduction*

Ethiopia is one of the developing nations in the world. The Central Statistics Agency in Ethiopia estimated that the total population of the country was *79,221,000* of which 49.9 % female with the land area 1,1mill.km². Around 50% of Ethiopians live below the poverty line[1]. It is believed that the lack of appropriate training and employment opportunities in Ethiopia considered as one of the causes of poverty. The illiteracy rate is 52.5%. Only 5% of these make it into formal training. The total number of enrollment in TVET sector is increasing at alarming rate of which 30% were private centers. 1.5 million young people find themselves out of work after finishing school, and without formal qualifications every year (CSA, 2007).

This proposed research deals with the "Impact of CRs in the Vocational Education of Ethiopia from 2001 to 2010". For its investigation, the researcher chooses an exploratory case study approach by evaluating multiple cases of CRs in the Ethiopian TVET system. A case study is defined as a well-defined aspect of a happening that the investigator selects for analysis, rather than a happening itself (Georg & Bennett, 2005). Since impact is a long-term effect, directly or indirectly produced by an intervention, this study considers the curricula reforms between the year 2001 and 2010. They may be positive or negative, intended or unintended. The unintended impact of an intervention is sometimes also referred to as 'indirect benefit' or 'goal' (OECD DAC, 2002-2008). To investigate the impact of the reformed curriculum, the study focuses on collection of data from Addis Ababa city Administration TVET-based colleges and *Akaki-kaliti* sub city where many industries and TVET graduates are available.

1.2 *Statement of the problem*

Reforming vocational education systems is a complex issue. Educational systems such as Technical and vocational education and training (TVET) are multi-layered and to be effective, system change

[1] Poverty in Ethiopia fell from 44% in 2000 to 30% in 2011, underpinned by high and consistent economic growth (Carranza and Gallegos 2011).

should be consistent at all levels. Furthermore, system change is not a one off event, but a continuous process of overlapping developments (Nieuwenhuis, & Shapiro, 2004). Such complex change policies have an impact, for example, on socio-economic developments. Therefore, identifying the impact of TVET CRs has a paramount importance for further and better effectiveness of the TVET curricular reform programs in different ways. Reform is generally defined, for example, by Merriam-Webster dictionary (2012) as to put an end to (an evil) by enforcing or introducing a better method or course of action. Hence, CR is a modification of the existing curriculum to improve or adapt to new circumstances or priorities through minor adjustment or entirely reshaping the existing curriculum (UNESCO, 2013).

According to the engineering capacity building program (ecbp, 2006) around 35 million people of the Ethiopian work force are characterized by low skill levels and very low average educational attainment. Only 10% of the urban population has post-secondary school education. Consequently, 75% of the workforce is concentrated in low skill employment sectors such as commerce, services and elementary occupations. Less than half of the urban workforce is engaged in wage employment. A significant portion of the urban workforce works for unpaid family business. More than 40% are self-employed in the informal economy, most of which live on the edge of poverty.

According to National TVET strategy (ecbp, 2006, p. 40) many of the existing TVET providers are not yet in a position to develop high quality curricula and TVET programs on their own. Substantial capacity building and support (provided by the TVET system) will be necessary to enable TVET providers to transform the occupational standards into appropriate modular and outcome-based curricula. The same applies to the development of new training, teaching and learning materials.

In Ethiopia unemployment and underemployment is a major problem due to the absence of effective TVET CRs. In rural areas, underemployment is widespread. In urban areas, about 26% of the workforce is officially unemployed (ecbp, 2006). This figure is believed to underestimate the real situation. Of particular concern is that unemployment among the youth is significantly higher than in the rest of the workforce. Recent studies have also shown substantial skill gaps throughout the economy, especially in economic sectors with a higher skill level and outside of Addis Ababa.

On the other hand, a study by GTZ in 1999 has concluded the major problems facing the Ethiopia's TVET system. For example, in the construction sector:

- the low level of workmanship skills,
- lack of organizational capabilities and technological knowledge,

- low quality in the sector due to a lack of adequately trained personnel at the higher level where they do not incorporate practical experience,
- 99% of the semi- and skilled laborers have not received any training in the sector before being employed and
- no clear reference system standards are applied (Lasonen, 2005 p. 19).

Furthermore, studies also show that the implementation of TVET is not only extremely costly, but also provides the success of their planning in question (Winter & Wolfgang, 1974, p. 151-156). Likewise, the implementation of the proclamation No. 391, 2004 vocational education reform policy for the middle level training program in Ethiopian VET based colleges is still a challenge and the practice is still not likely to be an easy task with its challenges, such as insufficient materials, finance and manpower. Even the TVET centers may not be in a good position to implement the existing CRs in the vocational education of Ethiopia more wisely and in a suitable way to provide employable skills in the labor market.

Ethiopia has made a radical change in the TVET curriculum since the 1994 education policy. After this policy reform, as some experts explain during interviews, the TVET curriculum was inherited from different countries; these include Germany, Australia, the Philippines and others whom may be far from being relevant to the needs of the masses because they were based on the countries' economic and social system rather than the conditions prevailing in Ethiopia. Moreover, if the new curriculum material used is far from the value of the indigenous society, or the need of the local environment, it will be more challenging during implementation of the new curriculum. Therefore, what is needed now in Ethiopia is the development of an effective and a more relevant TVET curriculum, or at the very least, an adaptation of the curriculum to meet the needs of the TVET graduates and employers in the country.

Furthermore, after the 1994 education policy reform in Ethiopia, some have argued that there have been too many TVET CRs, they come too fast and often appeared uncoordinated. For these reasons, teachers suffered from reform fatigue, which also created a burden and confusion to students, families and other interested parties. In other words, CR in Ethiopia has reflected many of the characteristics of challenged reform efforts elsewhere in the country. Hence, Stiehl elaborates the effectiveness of a system as "what must thing of the long-term impact on how students will live their lives in the workplace, the community, the family and the world" (Stiehl, 2000, p. 40).

Therefore, the implementation of the reform structure in Ethiopia currently is rather complicated. Some TVET colleges are still following the input-based (pre-2005) TVET curriculum structure, especially private TVET colleges, whilst other TVET colleges have adopted the latest curricular changes. However, the new reformed outcome based TVET system is expected to solve weaknesses of the previous input based TVET system and it should develop TVET graduate's knowledge, skills and attitude, self-esteem and confidence in the world of work in order to strengthen TVET trainee's identification with their culture and their community (ecbp, 2007).

The other evidence found by the Industrial Development Strategy of 2007, highlights the tremendous human resource deficits in Ethiopia for being responsible for the low state of industrial development:

> *We do not yet have TVET system that is capable of producing employability Skill that is both professionally and ethically capable of carrying and sustaining the responsibility of seeing to it that our industrial development program will have achieved its goals* (ecbp, 2007).

Additionally, the education capacity-building program in Ethiopia (ecbp, 2007) shows that the perception of TVET as a second-class education results in low recruitment to TVET and poor prospects in the labor market, for graduates from TVET-based colleges. Moreover, the focus of the program is on inputs rather than on learning outcomes. This makes it difficult for graduates to move to the occupational sector within the labor market. Due to such cases, different reforms are conducted in Ethiopia. For example, the current reform of the TVET system in the country is directed to establish a TVET system based on outcomes rather than in curricula (concept of competences).

In the present study, the concept of TVET implies the preparation of an individual for an occupation or career. This involves both the *liberal* and *technical* aspects of education. The liberal aspects include the philosophical, moral and cultural elements that an individual must possess to fit in to a given society. Technical aspects include the knowledge and skills required to perform a job successfully (UNESCO, 2009 p. 8). Generally, for the purpose of this study TVET is defined in Ethiopia as education that is designed to train and educate students in specific traditional and modern fields of vocational skills for students who have completed grade 10 and show sufficient desire and inclination to train in the field of their choice. (MOE, 2002, p. 94, GTZ, 2000, p. 5),

In fact, TVET sector has currently been given more attention from different governments, planners, policy makers, researchers, academic institutions and business organizations (MOE, 2006). CRs are conducted due to different changes made in the world, such as socio/economic changes,

Information Technology (IT), globalization, etc. Hence, it is believed that TVET also needs a consistence reform according to the changes made. Since 2005 the government of Ethiopia, in cooperation with the German International Cooperation (GIZ), has launched the Ethio-German Technical and vocational education and training (TVET) a new organizational structural reform program for developing a TVET Strategy with the objective to get people into employment, either working as employees for companies or as self-employment/entrepreneurs (MOE, 2006).

Consequently, the assessment of TVET performance from this point of view should rely on students, graduates and employers satisfaction ratings. It is often necessary for TVET providers to conduct their own surveys and liable to analyze the collected data; this may imply additional costs, but these surveys offer valuable information about whether employers or individuals are gaining something meaningful from the training programs. However, this is beyond the reach of the majority of developing countries (ILO, ETF & UNESCO (2012, p. 28).

The aim of this research is to explore the value specific to attributes of TVET CRs from the perspectives of TVET instructors, principals, graduates and employers. This will contribute to our understanding of TVET CRs generally, as well as advancing our knowledge of the impact of the TVET CRs at a theoretical level. Specifically, this study will also explore the impacts of the reformed TVET curriculum on TVET graduates and thereby on industries in the Ethiopian context. Finally, the research explores the factors that influence the effectivity of TVET CRs as well as developing a decision support model of TVET curricular reform.

1.3 *Focus and purpose*

Studies indicate that the impetus behind Technical and Vocational Education and Training (TVET hereafter) reform has varied from country to country, but often involves reforming training systems due to reasons such as: *(IHE, 2009)*

1. Rationalizing education and training systems;
2. Making education and training more responsive and flexible to the needs of students and industry; and
3. Improving access to education and training.

It is of interest in this study on four fronts. First in the wide-scale nationally prescribed TVET CRs and its implementation since 2001, secondly because of the interventions, that the completely reformed/revised learning curriculum will have an impact on TVET graduates and thereby

employers. Thirdly, the factors that influence the effective implementation of the TVET CRs and finally the development of a decision supportive model of a TVET CR process.

This project explores the reforms in the Ethiopian TVET CRs. It is considered an important tool to strengthen the TVET system, improve the employability of individuals, increase productivity in industry and in the end reduce poverty. However, the field of vocational education and the practice of reforming TVET curriculum is still young in the Ethiopian context. The practical implementation of these reforms is a major challenge due to inadequate links with industry and outdated curriculum and delivery strategies for most developing countries and especially those in the Sub Saharan African countries like Ethiopia.

This case study focuses generally on the 1994 education policy reform of the Ethiopian Education sector, which specifically introduced substantial changes in vocational education and training. It led to more extensive CRs at TVET-based college levels in Ethiopia between 2001 and 2010. Since the Ethiopian TVET system is institutionally separate from the regular educational system, forming a parallel track, training is offered at the exit points of the general education system (Grades 4, 8 and 10), (Aregash, 2005 p. 4). However, this study focuses on the impact of the reformed TVET curriculum on TVET graduates above 10th grade level.

As Freiger points out, in Germany, for example, the decision to initiate reform was taken by the Federal Government, which felt the need to reform the TVET curriculum to ease the movement of students across the different sub-systems and between secondary and tertiary education, and to make the TVET more responsive to the needs of students and industry. Since TVET trainees are not interested in overly long periods of study, their objective is the occupation (Freiger, 1973, P. 107).

Thus, by scanning the reviews on the effectivity of TVET CRs in the developed countries like Germany, the study tries to evaluate the impact of the TVET curriculum in the Ethiopian context. This study mainly focuses on the impact of the TVET CRs on TVET graduates and employers in Ethiopia. Particular attention is given hereby to the middle level work force as this is the case of TVET-based colleges in Addis Ababa and further data will be collected from *Akaki-kality* sub city where relatively more TVET graduates from TVET-based colleges and more industries are available.

Therefore, the subjects of this study will be selected from the *Akaki-Kaliti* sub city industrial zone, which is located southern parts of Addis Ababa. The sub city covers a total area of 6,143.4 hectares and consists of eight *Kebeles*[2]. According to a projection made by Central Statistical Agency (CSA, 2006) and endorsed by the local government officials the population of the sub city estimated to reach 220,740 with 114,095 female and 106,645 male. *Akaki-Kaliti* sub city is an industrial zone of Addis Ababa where by 60% of industries of Addis Ababa are found. According to officials of the sub city, there are more than 300 industries with estimated labor force of 80,000.

Ethiopia has particular attention in the development of TVET since the 1994 education policy reform. The recent growth in TVET enrolment and provision has been achieved by a considerable expansion of public spending and increased TVET provision by private institutions. Government sources estimate that private TVET providers share approximately 30% of all TVET institutions in Ethiopia. In addition, their share of the market estimated closer to 50%. NGOs (Non-Governmental Organizations) also provide a significant share of TVET in Ethiopia (ecbp, 2007). Generally, this study includes the public, private and NGO TVET colleges.

In fact, TVET providers are expected to design their curriculum in line with the needs of industry and individual students, and should reform the curriculum regularly to accommodate advances in technology, learning and teaching methods, social and cultural development, job market needs and globalization. However, curriculum change is a complex and difficult process and requires careful planning, adequate time, funding, support, and opportunities for teacher involvement. Much of the literature recognizes the variability and liquidity of individual situations, and the difficulty of determining a single model to suit all (McBeath, 1997).

Therefore, the curriculum designer should consult diverse sources that play significant roles in the development of the TVET curriculum and see the course as part of a whole (Byers, 2005, pp. 235-245). It is also critical for future economic development that the TVETCR addresses the skills needs of the industry and prepare the graduates to play effective roles in their future employment (Raiden and Dainty, 2006). This project deals more with CR. Therefore, for the purposes of this study, the definition of curriculum considers the Alderson and Martin 2007 definition in Curriculum Council in 1998 as:

---

[2] *Kebele* is the smallest administrative unit of Ethiopia similar to peasant association, a neighbourhood or a localized and delimited group of people, See Derg Proclamation No. 25, April 1981.

> *Curriculum ... is dynamic and includes all the learning experiences provided for the student. It encompasses the learning environment, teaching methods, the resources provided for learning, the systems of assessment, the school ethos and the ways in which students and staff behaves towards one another (*p.16).

It is not only an instructional materials developed for student use in the classroom, laboratory, or shop but also the methods, resources, culture, environment, staff, learner and assessment. It is much more than a "syllabus" and dynamic in its nature. Therefore, it is assumed that the TVET curriculum will be designed to address a specific set of validated skill standards that meet the criteria adopted by the TVET curriculum developer. The basic element of a standards-based TVET curriculum is a set of skill standards validated by incumbent workers in the industry or occupations addressed (Losh, 2000, p. 11).

For the success of a new reform project, Carl (2000, p. 436) indicates that the critical success factors of a reform should be thoroughly investigated, determined for a practical application. The accumulated experience of reform knowledge must be summarized to outline the resources, methods and contents of a new scientific and practical school-based reform of arts. The study also investigates the factors that influence the effectivity of the CRs.

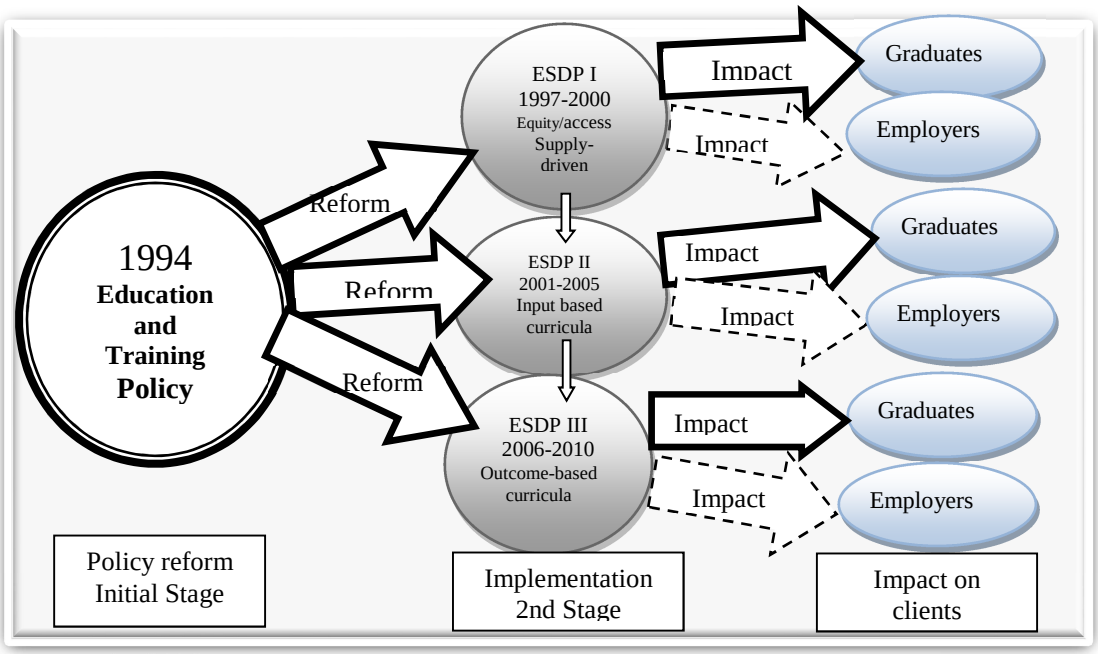
Studies indicate that evaluation is an essential element in making any decision in any kind of social setting, such as CRs in vocational education so that intelligent decisions are a must under any kind of a moral or legal theory. Evaluation involves comparisons. For example, if the new reform in TVET policy has assumed better for personal and societal value than the former reform policy in a country, comparison is advantageous for evaluation (Dasgupta 1999, p. 2).

Hence, evaluation is defined as an assessment of an ongoing or completed development intervention. It should be as systematic and objective as possible. The aim is to determine the relevance and fulfilment of objectives, development efficiency, effectiveness, impact and sustainability. It should cover the rationale, design, implementation and finally the impact/results of the intervention *(OECD DAC, 2002-2008).*

For its impact evaluation purpose, this study addresses the reforms of the two Educational Sector Development Programs (ESDP II & III see figure 1.1) to see the likely responses of TVET CRs to the needs of TVET graduates and employers. To evaluate the impact of the TVET curriculum, the status quo, and this study compares the input based curriculum reform and the outcome based curriculum reform, which typically implemented in some time interval in Ethiopia.

Basically, to evaluate the effectiveness of TVET curriculum on the labor market, it is important to answer some questions such as: a) Do the acquired skills correspond effectively with company's needs? B) To what extent TVET graduates competences are fully used in practice? and c) How is the income level and the quality of job the graduate obtained? Actually, after the reforms of the 1994 TVET system in Ethiopia, the numbers of TVET graduates from TVET colleges are increasing at alarming rate. However, due to a lack of relevance of the TVET curriculum in relation to labor market needs, there is low appreciation by employers and consequently low returns for graduates.

TVET reforms in Ethiopia have been conducted in cooperation with German Corporation for International cooperation (GIZ), which helps Ethiopia to reduce poverty through reforms of TVET system. This reform is expected to enable TVET trainees to acquire employable skills and thus generate income through wage-earning jobs or self-employment. Basically, this study considers the 1994 Education and training Policy and mainly focuses on TVET CRs project that have been implemented between 2001 and 2010 in the Ethiopian context (See Figure 1.1).



Source: MOE (2006).

Figure 1-1: The 1994 Education and training policy & TVET reform programs in Ethiopia

Figure 1.1 displays the three reform programs designed to reform the education sector in Ethiopia since 1994. The first phase (ESDP I) covers the years 1997 to 2000. The second phase (ESDP II) covers the years 2001 to 2005 and the third phase (ESDP III) covers the year 2006 to 2010 aimed at Equity/access, input based and outcome based respectively (MOE, 2006). However, this study focuses only the second and third phases considering specifically the TVET CRs at VET-based

college levels and its impact on TVET graduates and employers. (The perforated line shows the indirect impact of the curricular reforms)

Generally, this study aims at developing an understanding of the impacts of the TVET CRs on TVET graduates, and industries. It also identifies the significant factors that causes the TVET CR in Ethiopia. The study also aims at evaluating the impact of TVET CRs by comparing before and after the reforms. Finally, it also investigates the factors that influence the effective implementation of TVET CRs in the Ethiopian context and thereby tries to develop a decision support model for the factors that influence the curriculum to change and a model for the factors influencing effective implementation of TVET CRs and thereby creates a ground for further research.

1.4 *Research objectives and basic questions*

This part provides the objectives and the basic questions of the study in detail. Hence, this study explores the impact of TVET CRs in the Ethiopian context, by scanning the review of related literature on how the vocational education CRs are effective in developed countries. The study tries to investigates the impact of TVET CRs by addressing the two reform programs implemented in Ethiopia since 2001, such as the Input-Based Curriculum Reform (IBCR) implemented between the year 2001 and 2005 and the Outcome-Based Curriculum Reform (OBCR), implemented between the year 2006 and 2010 in the TVET sector in Ethiopia.

Specifically, by assessing the inputs and processes of the designated reform programs, the study explores to what extent TVET CRs are effective to the needs of TVET graduates and employers. Generally, the study deals with the external effectiveness of the TVET CRs in Ethiopia. Therefore, the general objective of the study is *to investigate the impact of the TVET CRs implemented between 2001 and 2010 in Ethiopia*. Particularly, it deals with the status of TVET graduates in terms of competency, employability, income level and the opportunities for further education in addition to the status of employer industries in Ethiopia. With this in mind, the specific objectives of the study are divided into four main objectives each with its own basic questions:

1. **To provide a comprehensive picture of the impact of TVET CRs implemented in Ethiopia since 2001.**

   Due to the difference of political institutions, legislative norms, economic development, physical, social and cultural distances, the practice of TVET CRs differ from country to country. Due to these, the implementation of the TVET CRs in developing countries like Ethiopia is challenging. By reviewing in the literature, the academic and practical experience of

developed countries on TVET CRs and their effectivity, the study provides a comprehensive picture of the impact of the CRs in the vocational education of Ethiopia. For the development of a comprehensive picture, the study investigates the curricular interventions added during the changing process of the TVET CRs implemented between 2001 and 2010 in Ethiopian. Further, the extent and participants in curriculum development in addition to causes of CR are explored. However, the implementation of TVET CRs in developing countries like Ethiopia is not a simple task where there is no sufficient material, financial and personal resources. This objective might be confirmed by answering the following four basic and sub questions:

a. *Which curricular intervention factors have been impacted by the reform process since 2001?*

   i. *Are these impact of reforms on curricular intervention factors significantly varied between two groups of respondents (TVET instructors and principals), between two reform programs (IBCR and OBCR) and between ownership status of TVET institutions (Public, private and NGO's institutions)?*

b. *Which constituencies are actively engaged in the process of TVET curriculum development?*

   i. *Are the CR impacted on constituencies' degree of involvement in the curriculum development significantly varied between two groups of respondents (TVET instructors and principals), between two reform programs (IBCR and OBCR) and between ownership status of TVET institutions (Public, private and NGO's institutions)?*

c. *To what extent have the CRs impacted on the nature of curricula reviewed in TVET course of studies?*

   i. *Are these impact of the CRs on the nature of curricula reviewed in TVET course of studies significantly varied between two groups of respondents (TVET instructors and principals), between two reform programs (IBCR and OBCR) and among ownership status of TVET institutions (Public, private and NGO's institutions)?*

d. *What are the causes of TVET curricula reforms in Ethiopia since 2001?*

   i. *Are these causes of the CRs significantly varied between two groups of respondents (TVET instructors and principals), between two reform programs (IBCR and OBCR) and among ownership status of TVET institutions (Public, private and NGO's institutions)?*

2. **To investigate the factors that influence the effective implementation of TVET CRs conducted since 2001.**

By assessing the practical experience of the implementation of curricular reforms in developed countries, the study tries to investigate the internal and external factors that influence the effective

implementation of TVET CRs in Ethiopia and thereby explore how it varies between the reform programs, the types of TVET institutions and ownership status. In addition to this, the Strengths, Weaknesses, Opportunities and Threats (SWOT) of the TVET CRs would be observed to each reform programs. To arrive at this investigation the questions raised were:

a. *Which internal factors influence the effective implementation of TVET CRs?*
   i. *Are these internal factors of the CRs significantly varied between two groups of respondents (TVET instructors and principals), between two reform programs (IBCR and OBCR) and among ownership status of TVET institutions (Public, private and NGO's institutions)?*
b. *Which external factors influence the effective implementation of TVET CRs?*
   i. *Are these external factors of the CRs significantly varied between two groups of respondents (TVET instructors and principals), between two reform programs (IBCR and OBCR) and among ownership status of TVET institutions (Public, private and NGO's institutions)?*

3. To evaluate the impact of the TVET CRs by comparing the current picture with earlier pictures over the decade since 2001.

The study explores the impact of the CRs by using extensive and comparable data set collected from 2001 to 2005 and from 2006 to 2010. Furthermore, to investigate its retrospective effects of the past on the present, the study also tries to compare the effects of the reforms of the TVET curricula implemented between 2001 and 2010 in Ethiopia. It associates the value relevance to TVET graduates and there by employers with impact indicators such as access, graduation, employment, quality of education and cost effectiveness, and added creating competent/skill workforce, competency assessment, new methods of training and time schedule. In addition to *improving the chance of finding work, leading to relevant work,* leading to added *income* for trainees, improving the *human resource provision* to employer, and increasing the quality of *productivity* of the industries. Furthermore, how TVET graduates' competences are improved in industries (Apprenticeship/cooperative training) would be explored. This objective might be answered by the following three basic questions:

a. *Which of the key impact indicators have impacted by the CRs in Ethiopia since 2001?*
   i. *Are these impact indicators of the CRs significantly varied between two groups of respondents (TVET instructors and principals), between two reform programs (IBCR and OBCR) and among ownership status of TVET institutions (Public, private and NGO's institutions)?*

b. *Which graduate relevance indicators have impacted by the TVET CRs?*
   i. *Are these graduate relevance indicators of the CRs significantly varied between two groups of respondents (TVET instructors and principals), between two reform programs (IBCR and OBCR) and among ownership status of TVET institutions (Public, private and NGO's institutions)?*

c. *Which employer relevance indicators have impacted by the TVET CRs?*

   i. *Are these employer relevance indicators of the CRs significantly varied between two groups of respondents (TVET instructors and principals), between two reform programs (IBCR and OBCR) and among ownership status of TVET institutions (Public, private and NGO's institutions)?*

4. To develop a decision support model that influences TVET CR.

This study intends to develop a decision support model that influences TVET CRs since 2001. Further, it considers a model of factors that influence the effective implementation of TVET CRs in Ethiopia. This objective might be answered by the following two basic questions:

a. *Which factors of reform have substantially influenced the decision to CRs in Ethiopia?*
b. *Which factors of reform have substantially influenced the effective implementation of CRs in Ethiopia?*

Through the review of literature and the data collected from the respondents of the study, two models would be developed, such as factors that cause TVET CRs and the factors influencing effective implementation of TVET CRs in the Ethiopian context.

1.5 *Framework of the research*

An exploratory case study approach addresses the purpose of this study. Its methodology encourages detailed description and fits with the need to document a set of circumstances surrounding reforms in TVET policies and practices, and the impact of the curriculum on the status of TVET graduates and employers. It also supports interpretive objectives such as understanding the impact of reforms in the vocational education of Ethiopia, comparing the effect of the reformed TVET curricula on the two designed programs the IBCR and the OBCR before and after the reforms implemented in Ethiopia. The study identifies the factors that influence the CRs, and the implementation process and finally the impact of the reforms on TVET graduates and employers. The government of Ethiopia intends to revise the curriculum every five years to improve the quality

of education (ESDP, 2005). The relevancy of TVET CR, in our case to the TVET graduates and employers, states as:

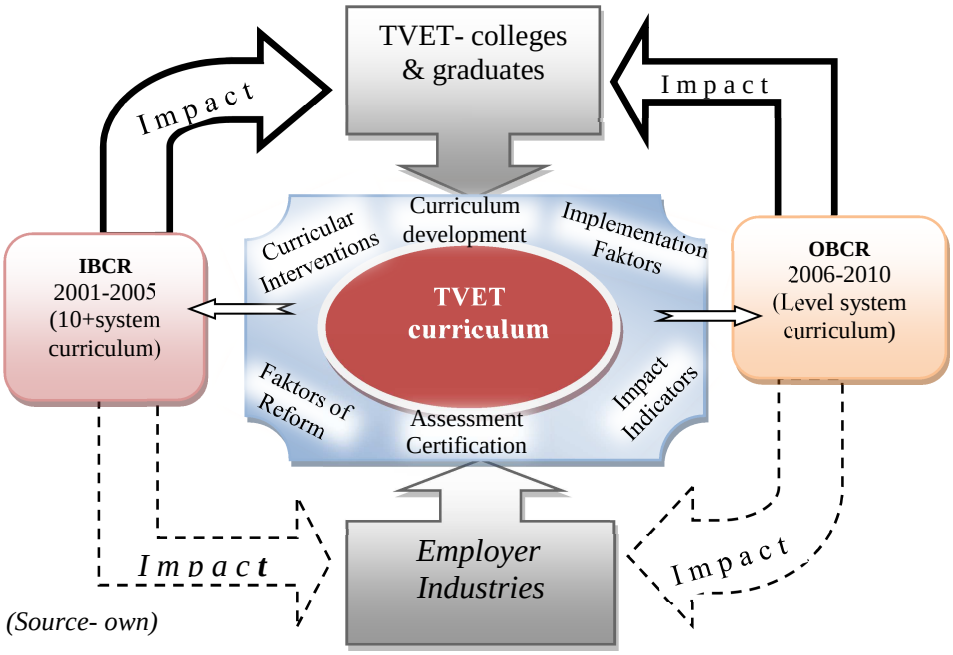
> *so that the TVET reform becomes relevant, and it connects learning to the child's experience and environment; responds to parental expectations and demands; and at the same time prepares students not for today's world but for a society that is aspiring to develop in the following decades (p. 36).*

With this in mind, the study considers generally the 1994 Education policy reform in Ethiopia and particularly the curricula reform programs implemented in Ethiopia from 2001 to 2010. The study mainly explores the impacts of the TVET curricular reform programs on the status of graduates and employers before and after reforms practiced in TVET-based colleges in Ethiopia.

Based on the review of the literature this study seeks to identify the research questions that will inform the researcher's methodological choices and the design of this research study (Hart, 1998). To this end, this review of the literature begins by situating the research problem within the theoretical debate generated by the phenomenon of the TVET CRs. Figure 1.2 summarizes this review of the literature into a conceptual framework. Further, Fullan describes the internal and external influencers, in our case factors of TVET CRs, as "firmly entrenched sponsors/disseminators of educational change, policy-makers, researchers, consultants, developers, project personnel of new programs, publishers, etc., all of whom have a vested interest in promoting educational change" (Fullan, 1982).

The literature in this study includes the theories, context, goals, planning, management, drivers, impact and factors of TVET CRs, along with governance of vocational education, philosophy of vocational education and future trends of reforms and therefore provides the items, which appear under the four main issues impact categories, such as TVET graduates, employers, IBCR and OBCR. The resulting framework guided the development of the methodology for the study.

As can be seen on Figure 1.2, the framework demonstrates the issues and concepts of the TVET-CRs that will be incorporated into this project. TVET CRs placed at the center of the framework provided that the reform believed to be implemented during 2001 and 2005 (IBCR) and the second reform implemented during 2006 and 2010. Therefore, the study tries to investigate the impact of the TVET CRs to the TVET graduates and Employer industries (the perforated line shows the indirect impact of the curricular reforms).



(Source- own)

Note: IBCR-Input-based CR, OBCR-Outcome-based CR

Figure 1-2: Framework of the research

To investigate these impacts the study tries to evaluate the items such as intervention factors of curriculum, curriculum development, factors influencing curricula reforms, factors influencing effective implementation of TVET CRs, impact indicators and TVET assessment system in addition to other related factors of CRs implemented in Ethiopia since 2001. Generally, these concepts provide the basis for the shape of the framework, which helps to assess the factors, the interventions, impacts and the value relevance indicators of the TVET CRs in Ethiopia.

1.6 *Potential significance*

This study will contribute to theory regarding TVET reforms. It also provides the current picture of the TVET CRs in Ethiopia and its value relevance to TVET graduates and employers. The study provides information to Addis Ababa city Administration Education Bureau, Federal and Addis Ababa TVET agents, the Ministry of Education, GTZ, ecbp, TVET colleges and the industries regarding the impact of TVET CRs in the country.

In general, the study informs and serves the needs of policy makers, administrators, and of the society. It also informs and helps in decision-making as it gives policy makers information. Secondly, it serves as a reference to teachers, curriculum specialists, school administrators and others who involved in CR development.

The study may have practical significance for TVET policy and practice in Ethiopia. It may broaden awareness and understanding of how curriculum planners design the alternative system of

vocational education training system before implementing the reformed curriculum, which may enable producing skilled trade persons. In this regard, it may also highlight the need for the governments to get "ahead of the curve" in terms of providing curriculum options such as developing TVET curriculum. This may be more relevant to future investment and employment opportunities, which may support in the alleviation of poverty in Ethiopia.

This study will also contribute to an understanding of how the policy makers consider the gaps in the reforms of TVET curriculum, the needs of the graduates from TVET-based colleges and the demand of employers towards the skill need in the market. Further, the findings lead to changes in TVET priorities, policies, procedures and practice. The study may also serve as a stepping-stone for other researchers who are interested to study in such or related area in depth.

1.7 *Research methodology*

The study on the "Impact of CRs in the vocational education of Ethiopia" has a strategic focus on employing qualitative methodologies within a case study. There has been seen an increasing trend to use mathematical models and quantitative methods with surveys to explore the research problems. For its purpose, this study combines exploratory and descriptive research with both quantitative and qualitative assessment.

Exploratory research bases on secondary research, such as reviewing the available literature, qualitative approaches, such as informal discussions with the principals, and more formal approaches through in-depth interview, focus groups and case studies (Babbie, 1989). It is also used when the topic is new or it often concludes that a perceived issue does not actually exist and when data is difficult to collect. As matter of fact, the objective of exploratory research is to gather preliminary information that helps to define problems and suggest hypotheses by structuring a conceptual framework (Babbie, 1989).

The field of vocational education and the practice of reforming TVET curriculum are still young in Ethiopia, and thus it needs to structure a conceptual framework related to the effectivity of the CRs and its impact on the status of TVET graduates and employers based on the background of the literature. Descriptive research describes data and characteristics about the population or phenomenon being studied, known as statistical research (Babbie, 1989). Descriptive statistics utilizes data collection and analysis techniques that yield reports concerning the measures of central tendency, variation, and correlation.

Descriptive study can be either quantitative or qualitative, for which researchers may use observational survey, and interview techniques to collect data. Description emerges following creative exploration, and serves to organize the findings in order to fit them with explanations, and then test or validate those explanations. Exploratory and descriptive researches are combined to explore the study questions with methods of *literature review, survey, case study and document assessment*.

Survey method was also employed to understand the effects of TVET CRs and collect data about the impact on the status of TVET graduates currently employed in the industries and the employers in *Akaki kality*. That is to test external effectivity of the CRs conducted during 2001 and 2010. To validate the conceptual framework through statistical analysis, survey method was used to collect the data on a phenomenon that cannot be directly observed such as the effect of TVET CRs. Therefore, survey method was conducted through questionnaires with both quantitative and qualitative questions (Babbie, 1989). The subjects of the survey were graduate employees, employer industries, college principals and instructors of TVET-based colleges.

Furthermore, a case study method was selected to evaluate the effectivity of the TVET CRs in Addis Ababa TVET based college and *Akaki kality* industrial zone by comparing the impact of the two TVET curricular reform programs (addressed ESDP II and III) to the status of TVET graduates and employers. As indicated by Peterson (2005) case study is used in an effort to understand more about a little known or poorly understood situation. In our case *the impact of TVET CRs in Ethiopia*.

Therefore, a qualitative research method through case study was chosen for generating information and in-depth understanding of the TVET CRs and its impact on the employer industries and the employees who graduate from VET based colleges in Addis Ababa. Thus an in depth interview were conducted with the COC agent vice director, Federal TVET agent director, Addis Ababa TVET agent director and curriculum division vice director, TVET college dean, two department heads, and a foreigner TVET curriculum advisor.

For the cross sectional study, a quantitative research method was also employed to collect data from the industries. Therefore, further questionnaire to graduate employees and teachers of VET based colleges were conducted. This was done for its flexibility and it allows for new questions addressed during interviews based on the responses of the interviewees. The questionnaire contains closed-ended, multiple choice, open-ended and scale type questions relating to the TVET CRs and its practice in the TVET-based colleges. Finally, documents from Central statistics Agency, COC,

Ministry of education (MOE) and/or Addis Ababa TVET agency and federal TVET agency were assessed. The study evaluates the impact of TVET CRs since 2001, to investigate their external effectivity, on TVET graduates and employers. Further, the challenges and opportunities (with SWOT analysis) in the practice of the TVET CRs and the challenges for its effectiveness would be observed. In general, impact of the TVET CRs should be measured with three parameters in mind:

(a) *Qualitative measures*: measures that locate the intervention in a wider context of the issue being addressed the theory that we can draw to illuminate in our case the TVET CRs in the position of stakeholders.

(b) *Quantitative measures*: the depth and breadth of, in our case, the impact of the TVET CRs on TVET clients (students and enterprise) with the intervention on potential stakeholders in relation to those of comparable position that are not participating.

(c) *Temporal measures*: indication of the value relevance, in our case, the TVET CRs to the status of graduates and employers over a longer timescale to see effects that may result from the initial intervention (Descy & Tessaring, 2004, p. 40).

The following figure 1.3 describes the overview of research methodology applied in this study.

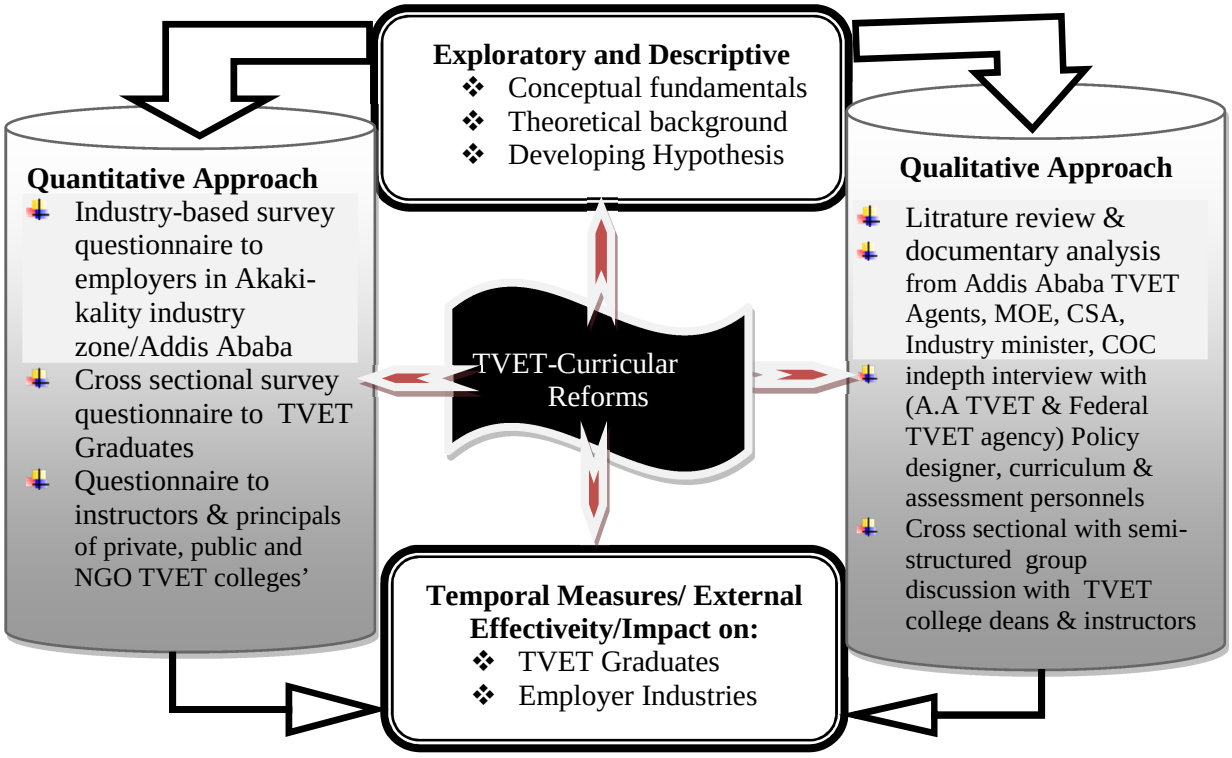


Figure 1-3: Overview of research methodology

To achieve the purpose and objectives of this study, selection of sampling or estimate the characteristics of the whole population were conducted from within a statistical population. The key

players of the study were TVET colleges/institutions, employer organization and stakeholders such as MOE, CSA, TVET Agents. Therefore, the subjects for this study would be TVET college instructors and principals, TVET graduates, employers, and TVET officials.

According to TVET agency in Addis Ababa currently there are 287 (MOE, 2010) TVET colleges and institutions. Among these, 234 private, 33 governments and 20 NGO are accredited as TVET colleges\institutions in Addis Ababa. Among these colleges 83 were selected because these colleges are actively implemented the TVET CRs in Addis Ababa for the provision of the middle level skilled manpower within Level I, II, III, IV and V (previous 10+1, 10+2 and 10+3 levels). Furthermore, the number of industries in *Akaki kality* zone in Addis Ababa were 660, among these 165 industries were selected as sample. It is believed that there are many TVET graduates who are likely to employ in these industries. Therefore, after identifying the number of industries and TVET colleges in Addis Ababa, both purposive and convenience sampling techniques were employed, in order to select the sample graduates and employers from 83 TVET colleges and 165 industries respectively.

1.8 *Methods of data analysis*

Different methods of analysis relevant to each variable in the study were employed to analyze the data gathered. Accordingly, the analyses were divided into two stages an exploratory and inspection stage. Hence, respondents were categorized and frequencies were tallied with support of statistical software (SPSS version 20) data were analyzed.

1.9 *Overview of the literature review*

Literature on educational reform from other countries and Ethiopia is used to identify what has been researched and is relevant to this exploratory case-research. This research is interested in analyzing more fully the CR in TVET colleges where the practice and implementation is supported in a reformed education system.

For accessing the impact of TVET CRs in Ethiopia and constructing the conceptual framework for the development, the author reviewed the available literature with published documents and case studies. For searching the article for impact of the TVET curricular reform, the author used some main key words, such as reform, curriculum, impact, input-based curriculum, outcome-based curriculum, TVET and factors/indicators of reforms.

The term “TVET” is the main topic in many research papers and articles and is readily available in German literature and books in addition to 1,920,000 number of appearance in the internet (www.google.de 2012). The author can find also a phrase “TVET reform” with about 343,000 internet results. Books and internet results are available regarding the practice of TVET CRs in many developed and developing countries such as sub-Saharan African countries like Ethiopia. However, not many of them belong to academic research. Yet, TVET curriculum reform has been revealed as the main concern of many countries.

Concerning “impact of reforms”, there are many articles and research works in different field of study. Hence, the researcher found out about 49,700,000 related results in internet. However, most of them did not have the direct content to the research problem. The phrase “The impact of reforms in the vocational education” is used in relevant papers but has not been studied in detail in some aspects to the status of trainees and employer especially in the Ethiopian case. The literature review related to each research topic is presented on chapter 3.

1.10 *Research structure*

The previous review of literature demonstrates that there are many subjects of research inherent to TVET reforms during the last decades. The structure includes three parts and nine chapters as shown in figure 1-4 apart from the chapter’s acknowledgement, abbreviations, executive summary, introduction and appendix.

PART ONE- BACKGROUND OF THE STUDY

This part includes four chapters such as the introduction, literature review, brief history of TVET reform in Ethiopia, and the methodology.

Chapter one- It introduces the research project with information about problem statement and motivation, objectives and basic questions, research methodology, survey method, case study, overview of literature review and research structure. This chapter is very important because it explains the reasons why the research is implemented and with which method the study be conducted.

Chapter two- it contains a brief history of vocational education policy reform in Ethiopia. It has three parts, such as during imperial regime (before 1974), during the Derg regime (1974-1991) and the current regime (after 1991)

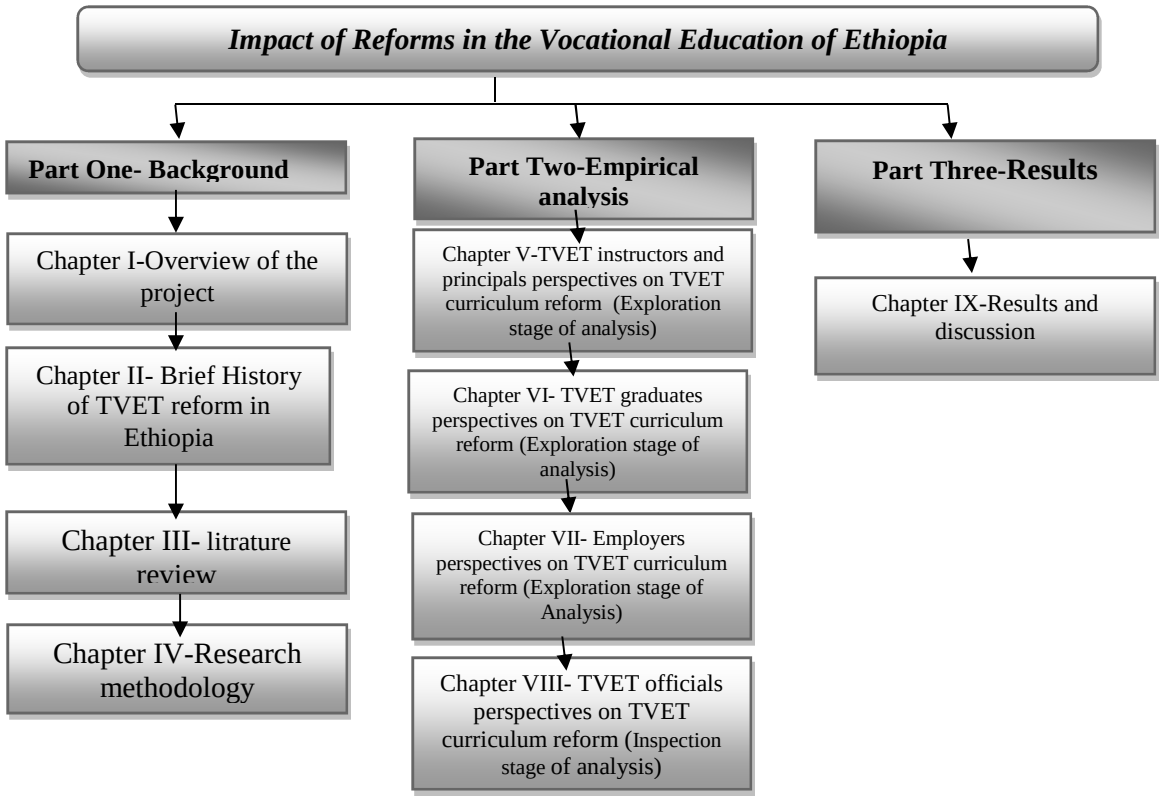


Figure 1-4: Structure of the research

Chapter three- it analyses the literature reviews and theoretical background of the impact of TVET reforms, Theories of reforms in education, Theories of reform and TVET, effectivity, internal and external factors of TVET reforms which may in some certain circumstances influence the effectiveness of the reform programs.

Chapter four-research Methodology- It describes the methods used in detail such as overall approach and rationale, description of the study area, samples and sampling techniques, source of data and data gathering tools, methods of data analysis and development of research hypotheses.

PART TWO- EMPIRICAL ANALYSIS

This part has four chapters-chapter five, six, seven and eight

Chapter five- TVET instructors and principals perspectives on CRs (Exploration stage of Analysis). This stage of the study has a detailed description of the data collected from the primary sources, questionnaires.

Chapter six- TVET graduates perspectives on CRs (Exploration stage of Analysis). This stage of the study contains data collected from primary sources such as questionnaire analysis.

Chapter seven- Employers perspectives on CRs (Exploration stage of Analysis). This stage of the study contains data collected from primary sources, questionnaire.

Chapter Eight- TVET officials' perspectives on CRs (Inspection stage of Analysis). This stage of the study contains data collected from primary sources such as interviews and documentary analysis.

PART THREE- RESULTS

This part has only one Chapter -chapter nine

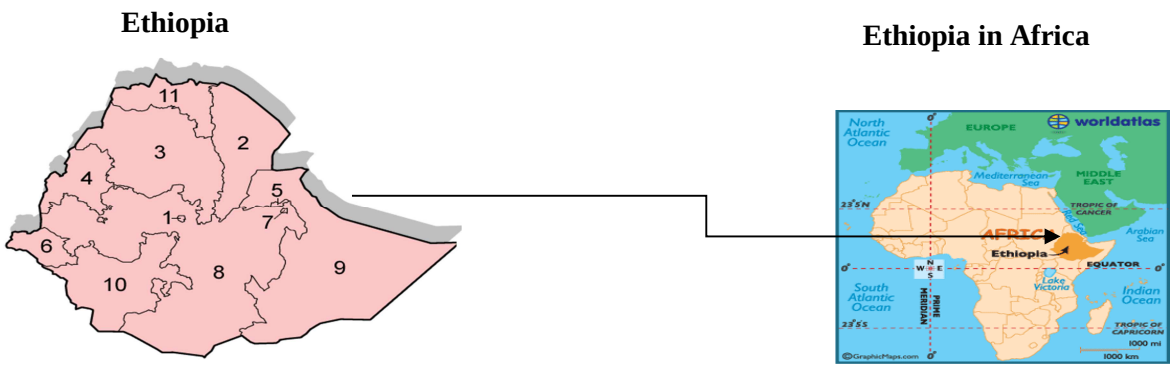
Chapter nine- this chapter contains summary of the main results, and discussion in addition to discussing the limitations, significance of the study, recommends guidelines for future research on TVET CR and their impact to the status of TVET graduates and employers.

2 BRIEF HISTORY OF VOCATIONAL EDUCATION AND EDUCATION POLICY REFORMS IN ETHIOPIA

Introduction

Within the Ethiopian context, the weak state of reforms in education policy also has its roots in the complex political history of the country. The educational system of Ethiopia has suffered greatly over the past 50 years, withstanding two drastic regime changes and civil wars. By virtue of the comprehensive and centralized nature of education policies between 1966 and 1991, the government consolidated decision-making power over education, even at the lowest levels. Essentially, it took the responsibility for primary education away from average community members and placed it in the hands of the central government. However, 1991 marked the advent of the Government of Federal Republic of Ethiopia (GFDRE) and a change in education policy, in favor of Central Planning (CP) in education. Although the GFDRE made it clear that it could not take sole responsibility for education, communities were not mentally, financially, or institutionally prepared to take even partial responsibility for education. Thus, the promotion of central planning of education has become an added challenge. For this reason, international NGOs and bilateral aid agencies have also taken on the charge of re-stimulating central planning and a sense of community ownership in the education sector. This study tries to identify the Ethiopian vocational history by classifying into three regimes as the Imperial regime, the *Derg* regime and the current regime (Ethiopian People Republic (EPDR) (CIA 1991).

Ethiopia is divided into nine ethnically based administrative systems and subdivided into sixty-eight zones and the two chartered cities *Addis Ababa* and *Dire Dawa* (subdivisions 1 and 5 in the map, below respectively). It is further subdivided into 550 *Woredas* and several special *Woredas*.



***Source*:** www.mapsofworld.com/ethiopia/ethiopia-politic...

Figure 2-1: Current map of Ethiopia

The nine regions and two chartered* cities are:

1. *Addis Ababa**
2. Afar
3. Amhara
4. Benishangul-Gumuz
5. *Dire Dawa**
6. Gambela
7. Harari
8. Oromia
9. Somali
10. Southern Nations, Nationalities, and People's Region (SNNP)
11. Tigray

According to the FDRE (2012), the total population of Ethiopia was estimated to be 80 million. Ethiopia is the second -most populous nation in Africa after Nigeria, with the land area governing 1.13 million km^2. Females' ratio was 49.9%. The population of the country is increasing at the rate of more than 2% every year. Thus, Ethiopia will have more than 120 million people by 2030, and this has become an additional concern to planners, development workers and the government at large. Addis Ababa is the capital and largest city in Ethiopia, with a population of 3,384,569 (CSA, 2007). About 17% of the total population lives in urban settings and 83% in rural areas. About 50% of the population is between the ages of 15 and 54 and 4% of the population is over the age of 60 (MOE, 2006).

2.1 *During the imperial regime (Before 1974)*

According to the CIA (1991), formal education, until the early 1900s, was confined to a system of religious instruction, organized and presented under the guidance of the Ethiopian Orthodox Church. Church schools prepared individuals for the clergy and for other religious duties and positions. In the process, these schools also provided religious education to the children of the nobility and to the sons of limited numbers of tenant farmers and servants associated with elite families. Such schools mainly served *Amhara* and *Tigray* inhabitants of the central highlands. Toward the end of the nineteenth century, *Menelik II* had also permitted the establishment of European missionary schools. At the same time, Islamic schools provided some education for a small part of the Muslim population. Hence, the curriculum was religious based.

2.1.1 **Curriculum reform**

Different curricular reforms have been conducted during the imperial regime. Firstly, at the beginning of the twentieth century, there was a need of reform in education because of the failure of the existing education system to meet the needs of people involved in statecraft, diplomacy, commerce, and industry, which led to the introduction of government-sponsored secular education (CIA, 1991). Although the Ethiopian government passed the first Educational Act in 1905, which

stipulated the rights of children's age six and older than six to modern education, and the responsibilities of parents and guardians to send their children to school. This Act was not actually put into effect, mainly due to the strong opposition of the church towards a secular education, which was portrayed as one that will encourage the young people to abandon their faith in the church and their obedience to the authorities.

It was Emperor *Minilik II* who established the first western type of elementary school in Ethiopia in 1906 around his Palace in Addis Ababa. This school signals the beginning of a secular and modern education era in the country. A year later, another primary school was opened in the eastern part of the country (in *Harer*). Thereafter, many other schools started to flourish. The focus of the secular education in Ethiopia was given to the teaching of foreign languages, like French, English and Italian. In addition, elementary mathematics and rudimentary basic science were taught in French to a limited number of students, along with Amharic and religious subjects (CIA 1991).

Secondly, in 1928 the Empress *Zewditu* Regime passed the second Education Act of Ethiopia and was an attempt to balance the secular and religious education provisions in the country. As the role of the church in the country's politics and governance was influential, the expansion of modern education has been limited due to its objection. (MOE, 2005; Abraham, 1993)

Thirdly, in 1930 Emperor *Haile Sillasie*, the new emperor of the country after *Zewditu*, established the first Ministry of Education and Fine Arts of the country. He was educated in one of the first modern schools built by Minilik II. In the same year he was crowned as Emperor. It is believed that *Haile Sillasie's* education has been instrumental for his strong support to expand modern and secular education. The Ministry of education was entrusted with the management and expansion of education. Despite efforts adopted by the government for the expansion of secular education in 1925, ten years later, in 1935, the country had only twenty public schools that enrolled 8000 students. A few students also studied abroad on government scholarships.

During the Italian occupation, 1936-41, many schools were closed. After the restoration of Ethiopian independence, schools reopened, but the system faced shortages of teachers, textbooks, and facilities. The government recruited foreign teachers for primary and secondary schools to offset the teacher shortage (CIA 1991). This was the time, with the objective of fulfilling the skilled manpower for both industrial and commercial sectors, the government established the technical school of Addis Ababa (1941), commercial school of Addis Ababa (1942), Asmara technical school

(1953), *W/r Siheen* comprehensive secondary school in Dessie (1961) and Bahrdar Polytechnic school (1963) successively (Girma, et.al. 1990, p. 10-12).

Fourthly, in the 1940s and 1950s a number of educational reforms, new legislations and restructuring were introduced which were more influenced by experts from Britain in terms of consulting the ministry with regard to curricula, examination and certification. The medium of instruction in junior and secondary school was mostly English. However, it was an era where the country opened its first higher education institution, the *Haile Sillasie* University College in 1950, until 1967 the national school leaving examination for those students completing their secondary education were taking the London Matriculation examination (Abraham, 1993). After 1953, reforms regarding the involvement and participation of educated Ethiopians were put in place. This is because the fundamental principle, which directed the development and implementation of school curricula before 1952, was the political agenda of the aristocracy and their foreign advisors (Zewdie, 2000).

Furthermore, during this time, a gradual advancement in curriculum development occurred. The first formal written curriculum was published in 1947/48. It was developed by committees consisting of Ethiopians and foreigners of varying nationalities. Later on, the structure of the education system was changed on the basis of the perceived interests of the ruling class. After the development of the first curriculum, seven revisions were made between 1948 and 1968.

Initially the structure of the education system was designed to be a three-tier 4-4-4 system (four years of primary, intermediate, and secondary education) by the Long Term Planning Committee. (Bekele, 1966). In 1947, the first 10 Year Education Plan was drafted, and a 6-6-4 system (six years of primary school, six years of junior secondary education, and four years of senior secondary education) was introduced. It was in 1947 that the first official elementary school curriculum for grades 1-6, which covered a wide range of subjects, was published. It was later improved in 1949, and was extended to include grades 7 and 8. The secondary school curriculum was issued in the same year (Tesfaye and Taylor, 1976).

The subjects offered at this level were Amharic, English, science, art, geography, history, arithmetic, music, handicraft, and physical education. Amharic was the medium of instruction in grades one and two. In grade three and four, English was used as a medium of instruction for teaching of art, science, physical training, handicraft, music, geography, history, and arithmetic. In

grade five and six, all subjects with the exception of Amharic were taught in English (Ayalew, 1964).

The revised version of the first curriculum, otherwise known as the second curriculum, becomes operational from 1949 to 1963. The pattern of school organization was an 8-4 structure (eight years of primary education and four years of secondary education). The major reason for the change of curriculum was the need to expand education and alleviate English language deficiencies (Ayalew, 1964). There were two institutions of higher education: The *Haile Selassie I* University in Addis Ababa formed by imperial charter in 1961, and the private University of *Asmera (*the capital city of Eritrea*)*, founded by a Roman Catholic religious order based in Italy.

Between 1961 and 1971, the government expanded the public school system more than fourfold, and it declared universal primary education a long-term objective. In 1971, there were 1,300 primary and secondary schools and 13,000 teachers, and enrollment had reached 600,000. Despite the fact that money spent on education increased from 10 percent of total government expenditures in 1968 to 20 percent in the early 1970s, funding remained inadequate. Expenditure on education was only 1.4 to 3 percent of the gross national product between 1968 and 1974, compared with 2.5 to 6 percent for other African countries during the same period (CIA, 1991).

In 1963, a national examination was set for evaluating the achievements of students in grades 6 and 8 based on the three-tier (6+2+4) structure. The national grade 12 test, which was introduced in 1954, became the Ethiopian School Leaving Certificate Examination (ESLCE). At this time, the ESLCE became a test prepared by subject matter experts at the *Haile Selassie I* University (Zewdie, 2000). However, the curriculum was not based on the economic, social and cultural realities of Ethiopia. Instead, its components were copied from other countries Textbooks, for primary education, they were translated from other languages without reflecting the Ethiopian situation. The secondary school syllabus was based on the London School Leaving Certificate Examination. Moreover, the methods and materials used for classroom instruction were inadequate as there was a shortage of textbooks and other teaching aids. The Bible served as an Amharic textbook from grade one to four. As a result, non-Christian peoples were obliged to follow the Bible (Ayalew, 1964).

The Ethiopian curriculum also was criticized for the lack of emphasis on vocational education. Not until the 1930s, few schools prepared pupils for technical and professional works through courses related to production. One of such schools was *Lycee* Haile Selassie, which offered courses in mathematics, physics, chemistry (Alemayehu, 2012 p. 57).

Generally, the education sector in the 1950s and early 1960s was characterized as an era where; the demands for education remained unfulfilled, access to education was limited to a small circle, unfair equity, high student failure in national examinations, and increased the demand for a relevant and contextualized curricula and text books (MOE, 2005, Abraham, 1993).

2.1.2 **Technical and vocational education and reform**

Until 1960, technical education was obviously neglected. Even though, some technical and vocational schools were opened after 1941 and in 1942 the first high school, the *Haile Sillassie* secondary school was established in Addis Ababa (Abraham, 1993). It was Empress *Zewditu* who understood the relevance of vocational education, which enabled youngsters to secure money for their livelihood. On this point the proclamation stated "*. . . after learning writing and reading to secure money for his life, the child has to learn one of the handicrafts available in our country*" (Ayalew, 1964, p. 159). However, this idea was radical at the time, as leatherwork, smiting and clay making were considered low caste jobs (Alemayehu, 2012 p. 55).

The Ministry of Education developed a new education policy, which was in effect until 1974. This policy reform was implemented to improve the credibility of the ministry of education. It was designed in conjunction with the objectives of the government's second and third five-year development plans, extending from 1962 to 1973. This policy gave priority to the establishment of technical training schools, although academic education was also expanded. Curricular reforms introduced were a mix of academic and nonacademic subjects but Amharic language became the medium of instruction for the entire primary cycle, which disadvantaged all children who had a different mother language (CIA, 1991).

In 1963, the ministry of education has modified the three-tier structure of the general education system from that of (1947) 4+4+4 to 6+2+4 system. Under the revised system, the two-year junior secondary schools offered a general academic program for individuals who wished to continue their education. A number of vocational subjects prepared others to enter technical or vocational schools. Some practical experience in the use of tools was provided, which qualified graduates as semiskilled workers. The curriculum in the four-year senior secondary schools prepared students for higher education in Ethiopia or abroad. Successful completion of the cycle also qualified some for specialized agricultural or industrial institutes. Others were qualified for intermediate positions in the civil service, the armed forces, or private enterprises (Abraham, 1993).

The relevance of technical and vocational education and training (TVET) and its provision as an integral part of the secondary education was one of the main issues of discussion during the 1962 Education conference on secondary education in Ethiopia. One of the conference resolutions led to the change in the curriculum of the secondary schools of the country. The changes brought about a significant shift from the academic subject dominated curricula to that of *comprehensive curricula* where the academic, technical and vocational subjects are offered in a balanced way in the secondary school education (CIA, 1991).

The comprehensive secondary school (grades 9-12) curriculum was put in practice in 1963. The inclusion of such subjects as Industrial Arts (mainly woodwork, metalwork and electricity), Commerce, Agriculture and domestic science in the curricula were clear indication of making the education more relevant to the immediate needs of the student's employment and the local economy. Around 140 comprehensive secondary schools were implementing these curricula in 1979 (Worku, 1981, Teferra and Altbach, 2004).

Finally, in 1971 the *Education Sector Review* (ESR) was designed. It was one of the famous educational reforms conducted during the imperial period. It was however, conducted due to the pressure of growing public dissatisfaction and mounting student activism in the university and secondary schools. The imperial government initiated a comprehensive study of the education system that was completed in July 1972. The most radical aspect of the change it recommended was the expansion of education in favor of the countryside and its rural population at the expense of the urban population. This meant that resources were re-allocated. The recommendations of the Education Sector Review (ESR) were:

- attaining universal primary education as quickly and inexpensively as possible,
- ruralizing the curricula through the inclusion of informal training,
- equalizing educational opportunities, and
- relating the entire system to the national development process.

The ESR criticized the education system's focus on preparing students for the next level of academic study and on the completion of rigid qualifying examinations. It also criticized the government's lack of concern for young people who dropped out before learning marketable skills, a situation that contributed to unemployment. The report stated that, by contrast, "The recommended system would provide a self-contained program at each level that would be terminal for most students."

The report of ESR was not published until February 1974. This gave time for rumors to spread opposition among students, parents, and the teachers' union to the ESR recommendations. Most resented what they considered the removal of education from its elite position. Many teachers also feared salary reductions. Strikes and widespread disturbances ensued, and the education crisis became one of the contributing factors in the Imperial regime's fall in 1974 (Teferra and Altbach, 2004; Abraham, 1993 CIA, 1991).

2.2 *During the Derg regime (1974-1991)*

Introduction

The *Derg* regime, a Military Coordinating Committee, proclaimed itself as the Provisional Military Administration Council (PMAC) and took over the state and government power in 1974 after the Monarchy was toppled, the imperial government. The Ethiopian socialist revolution led by the *Derg* continued until it was overthrown by EPRDF in 1991. During this period, the curriculum of the Ethiopian education system was changed to a socialist oriented system. As Tekeste (1990) indicates that socialism was the fundamental political philosophy of the government. Marxist-Leninist philosophy was the central theme that guided the political, economic and social life of the country. As a result, the development of the curriculum was based on the philosophy of Eastern European education systems (East Germany, Bulgaria, Hungary, etc.) (Alemayehu, 2012, p. 63). Hence, the curriculum during this period was highly politicized so that students were required to take courses in political education. The following part covers a brief vocational history from 1974 to 1991.

2.2.1 **Vocational school development**

During the *Derg* regime, the development of TVET was supported by the United States, the Soviet Union, Italy and many national non-governmental organizations (NGOs), and then by Japan and Germany. After the sector-wide program in education was established, the foreign aid projects had to support the goals defined in Ethiopia (CIA 1991).

As Tesafaye (1995) and Toyland (2001) observed, a comprehensive model of upper secondary vocational school was introduced in Ethiopia with support from US AID in the 1960s. During the period, 105 practical modules were introduced in secondary schools in four areas: Industrial Arts, Home Economics, Commercial and Agricultural. The practical streams were aimed at fostering the value of all labor and the promotion of standards of efficiency and workmanship. The practical subjects covered about 20 percent of the 160 hours study programs. The comprehensive schools,

some of which still exist have mainly offered academic programs preparing the students for the national academic examination.

A polytechnic program was introduced and developed in Ethiopia from the 1970s with Russian support. Students were offered general polytechnic courses in Grades 9 and 10, after which three-year advanced technical/vocational training programs were delivered. The programs prepared middle level skilled manpower and staff for technical, managerial or administrative positions at professional level. Teachers, assigned to the junior and senior secondary schools, were expected to have college diplomas and bachelor degrees.

Some NGOs and missionary groups have also played an important role in vocational education and skills training. The variety of conflicting philosophies of TVET and skill development programs was unsustainable due to discontinuity, poor quality and incompetence, and a lack of resources. Community Skill Training Centers (CSTC) were established in the mid-1970s by the *Derg* regime as a part of a non-formal education system. The centers' aims were designed to promote indigenous skills and increase productivity in the community. Training courses were offered in trades and fields such as weaving, sewing and embroidery, wood work, pottery, making and using fuel saving stoves, candle and soap making, dying, basket and mat making, metal work, agriculture, home economics, carpentry and construction (Alemu, 2000). For example, the Oromia Region had 175 Community Skill Training Centers in 1995. The number of trainees has doubled after six years to 3000 persons, consisting of slightly more female than male in 2001 (Froyland, 2001).

There was also more emphasis on the creation of TVET schools, most of which were operated by the government. The Ministry of Education operated or supervised nine such schools scattered around the country. These schools enrolled more than 4,200 in 1985/86, and their graduates were in great demand by industries. It was with Soviet assistance, Ethiopia established its first polytechnic institute, in Bahir Dar, in the 1960s. It trained personnel in *agro mechanics, industrial chemistry, electricity, and textile and metalworking technology*. Currently, a system of general polytechnic education had been introduced into the senior secondary school curriculum so that those who did not continue their education could still undertake into the skilled job market (Tesafaye, 1995 and Froyland, 2001).

Further, Alemayehu, (2012, p. 64) added that the new polytechnic curriculum was referred to as the Transitional Curriculum. General polytechnic education, with the aim of producing middle-level manpower, was proposed to alleviate the problem of unemployment of secondary education

graduates. "*A lack of sufficient financial investment and the downfall of the communist ideology led to the collapse of the program in the late 1980s*" (Birhanu and Demeke, 1995).

Generally, the reasons for the failure of polytechnic education were not well documented. However, UNESCO has indicated some factors motivating curriculum reform. For example, the centralized education and management, only hired employment orientation curricula (disregarding self-employment), the curricula alienated from manual labor and creativity, unintegrated curricula with the reality of the learners and the society at large, disregarding the quality of the teaching-learning output, lack of interrelatedness of the subject area objective with problem solving skills, and the curricula was unrelated with the socio economic of the country that leads to the 1994 education and training policy reform in Ethiopia (2001, p. 19).

2.3 *The current regime (EPRDF after 1991): The context*

Introduction

Following the establishment of the new Education and training policy in 1994, i.e., after rebel forces overthrew the socialist *Derg* regime in 1991, Ethiopians witnessed a dramatic increase in school enrollment. For example, in 1990/91, approximately 2.8 million children were enrolled in primary school (grades 1-8) and by 2003 - 2004; the number had increased to over 9.3 million students (World Bank, 2005).

According to the MOE (2006), the major barrier to economic and social development is a low level of skill and very low average educational attainment. The Ethiopian work force around 35 million people is plighted by this. Approximately 26% of the urban work force is unemployed; in rural areas, this figure is even much higher.

The way out of the poverty trap is thought to be comprehensive capacity building and human capital formation. The Non-Formal and Formal TVET institutions are expected to play a key role in building the needed skilled, motivated and competent work force.

The current government of Ethiopia took a number of steps in the areas of education and training since it came to power in 1991. Some of the major steps were:

- Education and Training Policy (ETP, 1994).
- Education Sector Development Programs (ESDP)

2.3.1 **The 1994 education and training policy (ETP)**

Even though Ethiopia had its first formal TVET School in 1942, this area made little progress to serve the majority of the population. It remained a neglected sub-sector until the proclamation of ETP in 1994. TVET is seen as a second rate education by the society. This prejudice has stunted the growth of a competent workforce in Ethiopia. Prior to the enactment of ETP, very few students at secondary level enrolled in TVET programs. Moreover, the graduates of these schools had no or little chance to further their education at the institutions of higher learning. As a result of this, there are still people who think that TVET is only for those who did not make it to go to universities (MOE, 2003).

The recent policy documents, such as the Agriculture Development Led Industrialization Strategy (ADLI), the Interim Poverty Reduction Strategy Paper, the Development Framework and Plan for Action 2001-2010, the Education and Training Policy and the Education Sector Development Program, emphasize the important role of education and training to promote equality and to reduce poverty (MOE, 1998).

According to a National Report of Ethiopia (2001), the 1994 educational reform encompasses every aspects of the educational system such as:

- the curricula,
- teacher training ,
- educational inputs,
- educational finance,
- organization and management,
- structure of education,
- carrier structure of teachers and
- evaluation system of TVET courses

The report further states that the reform is aimed at a total restructuring of the educational system to deal with the following problems in the sector such as: low primary school participation; rural areas and girls are not well provided for; the quality of education is low; the system is insufficient; funding is inadequate, and capacity for planning and management is weak.

The Transitional Government of Ethiopia (1994) issued an education policy and strategy with the objective to:

> "*…bring up citizens endowed with human outlook, country wide responsibility and democratic values having developed the necessary productive, creative and appreciative capacity in order to participate fruitfully in development and the utilization of resources and the environment at large (ETP, 1994, p. 34).*

The policy papers identified three major areas for change:

- making education more relevant to the demands of the community and curriculum change;
- quality improvement; and
- the expansion of primary and vocational education.

The shift in policy would have major resource implications such as expansion of primary education and vocational training. The Education and Training Policy document presented specific objectives and strategic measures on TVET in the paragraph 3.2 as follows: (Transitional Government of Ethiopia, 1994)

- Parallel to general education, diversified technical and vocational training is provided for those who leave school at any level of education.
- Apprenticeship training was provided in agriculture, crafts, construction, and basic bookkeeping for those at the appropriate age and leaving primary education.
- TVET in agriculture, industrial arts, construction, commerce and home science were provided after primary education for those who may not continue in general education.
- TVET was provided for those who complete Grade 10 to develop middle-level manpower.
- Students participating in technical and higher education programs were helped to gain the necessary field experience before graduation.
- Teachers and researchers were helped to gain the necessary field experience of various development and service institutions; while professionals working in such institutions were helped to achieve similar field experience in teaching will be facilitated.
- Coordinated curriculum development was ensured so that students and trainees will acquire the necessary entrepreneurial and productive attitudes and skills.
- Research of practical societal impacts were given priority and the necessary steps were also taken to facilitate the coordinated effort of all those concerned.

The 1994 policy documents have provided guidelines for the planning of TVET reforms by the end of the 1990s. An urgent need for capacity building has been acknowledged at the highest political level.

2.4 *Input Based Curriculum Reform (IBCR): The 10+System in Ethiopia*

Input Based Curriculum (IBC) is known to be 10+System or content-based system in contrast to outcome based system. It is characterized by rote learning, teacher centered, subject center, rigid in time frames and exam and grade driven system (Spady, 1994). Hence, in Ethiopia the IBC for the middle level technical education program (10+1 and 10+2) has been introduced since the 1994 policy in almost 130 schools (Skill Development Centers (SDC), TVET schools, former

Comprehensive Secondary Schools) and has involved 2000 TVET teachers. The teachers have various qualifications and experience levels that are required from instructors in one of the 24 trades offered in the new program within four main occupational areas: Business Education, Home Science, Construction Technology and Industrial Technology (MOE, 1999).

The 10+-system reform is more similar to the structure of school-based vocational education found in some European countries such as Finland, Norway and Sweden. The curriculum for the 10+I+II+III is based on the concept of Modules for Employable Skills (MES) developed by International Labor Office (ILO) (MOE, 1999c). The training is broken down into small units with defined behavioral outcomes.

The new department for TVET (skill development) headed by the Vice-Minister in the Ministry of Education was established in November 2001. Until then the sub-sector was led by a small TVET panel, comprising TVET Panel Head and five experts in the fields of mechanical engineering, home economics, business education, agriculture and electrical/electronics (Lasonen, Kemppainen, and Raheem, 2005).

In addition to this, the new education and training policy has also addressed the issues of technical vocational training. It is stipulated in the document that parallel to general education, diversified technical vocational training will be provided for those who leave school from any level of education for the development of middle level manpower (MOE, 1994, p.16).

The component of the modules is developed to improve the TVET system in order to train middle level skilled human resources of good quality and a good standard. The appropriate numbers and mixture to supply the growing demand of the socio-economic plan of the non-agricultural sector of the country are included (FDRE, 2000, p. 7).

As indicated in the report of the Ethiopia development of education, UNESCO (2004) a great idea of attaining quality education for all youth remains a challenge. Providing Technical Vocational Education is only one-step to alleviating the problems while absorbing the graduates either by providing paid employment opportunities or for self- employment.

Hence, due attention is given to the organization and management of sub-sector, curriculum and educational materials development, teachers training, the expansion/establishment and building the capacity of institutions. Attention on providing quality assurance and accreditation provision and a

supply of education facilities, technology, books, vehicles, and materials as well as involving the private sector is essential (UNESCO, 2004).

To ensure the advancement of Ethiopia from a largely agrarian to an industry-based economy, the development of middle level workers is required to satisfy the labor demands of the different sectors of the economy. In order to increase the employability of individuals, it is important to build a demand driven, flexible, integrated and high quality TVET system, which shows that Ethiopia has made considerable progress towards universal primary education and continues to work hard to ensure relevance and quality at each educational level (Kingombe, 2011, P. 29).

The Government of Ethiopia (GoE) has involved all stakeholders in the planning, policymaking, training delivery and monitoring and evaluation of the TVET system. The on-going reform seeks to increase the engagement of the private sector – of private both TVET providers and enterprises as future employers of TVET graduates – and to provide students and trainees with knowledge, skills and abilities relevant for the world of work (GTZ, 2006).

2.4.1 Education Sector Development Programs (ESDP)

According to Sharma (2008, p. 4) TVET programs are conducted in a variety of institutional locations. The choice of location depends mainly on the goals that the programs are intended to achieve. There are at least three distinct institutional settings:

1. *School-based* TVET programs. These include initiatives such as the diversification of the whole secondary school system, the vocationalisation of the school curriculum and introduction of TVET streams and schools parallel to the dominant academic model.
2. *Post-school TVET* institutional programs. These provide pre-vocational market-oriented training courses to secondary school graduates.
3. *Workplace-based TVET* programs, epitomized historically in apprenticeship systems and undergoing transformation in the post-industrial era. This type of TVET is found in many countries but is particularly popular in western nations where there is a substantial degree of industrialized economy.

In Ethiopia, however, school based TVET programs are conducted within the framework stated in the 1994 Education and Training Policy. So far the government came up with three Educational Sector Development Programs (here after ESDP) and two proclamations dealing with higher education and TVET in 2003 and 2004 respectively.

The main thrust of ESDPs was to improve educational quality, relevance, efficiency, equity and to expand access to education with special emphasis on primary education in rural areas and underserved areas, as well as the promotion of education for girls as a first step to achieve universal primary education by 2015 (ESDP-III, 2005).

The major purpose of ESDPs (2005) is to translate the policy statement into action. Accordingly:

- The first Education Sector Development Program (ESDP-I) covered the period between 1997/98 – 2001/02.
- The second Education Sector Development Program (ESDP-II) covered the period between 2001/02-2004/05.
- The third Education Sector Development Program (ESDP-III) covers the period between 2005/06 – 2010/2011.

As a result of the aforementioned Education and Training Policy (1994) and the implementation of ESDP- II, III, and I have been made modest progress in all levels of education. As numerous research reports indicated that because of massification of education in a short span of time, quality, relevance as well as efficiency have been seriously compromised at all levels. Consequently, the quality of graduates from different levels of educational institutions has been affected. This phenomenon has become a source of concern for government officials, educators, stakeholders as well as parents (MOE, 2005). Steps are being taken by the government and other stakeholders to address the issue of quality, equity, relevance, as well as efficiency at all levels of the country's educational system.

To increase the efficiency on the TVET sub-sectors, much has been done. One of the major undertakings was the TVET Proclamation that was issued in March 2004 to give proper guidance to the system. Accordingly, guidelines have been prepared on the procedures of internship, certification, board and council establishment, standard management and human resource organization, vocational guidance and counseling, facilities maintenance, cost-sharing, occupational standard development hand book and production (service) centers organization and implementation. According to the proclamation, trade testing for skills acquired through formal and non-formal training also supports quality assurance measures (ESDP, 2005, p. 21).

To address the shortcomings of the Education Sector Development Program (ESDP II), the Government of Ethiopia formulated ESDP III, covering the period 2005/06-2010/11. The broad objective of the ESDP III was to attain the Major Development Goals (MDGs) and other development goals by providing necessary, relevant and demand driven education and training that

corresponds to the needs of the economic and social sectors for employment and self-employment. TVET was to be reorganized into an outcome-based system, with competencies and skills identified as being in demand on the labor-market informing the design and content of TVET. Quality is to be measured through an assessment of learners' achievements. A demand-oriented curriculum has already been developed with the involvement of experts in the field *(OECD, 2008).*

The overall goals of ESDP III with regard to TVET are: (ESDP-III 2005, p. 34)

- To provide relevant and demand-driven education and training that corresponds to the needs of economic and social sectors for employment and self-employment through labor market assessments and by re-orienting and re-focusing the existing TVET system.
- To assure the quality of TVET training programs.
- To develop a demand-oriented curriculum based on the occupational standard and occupational quality framework.

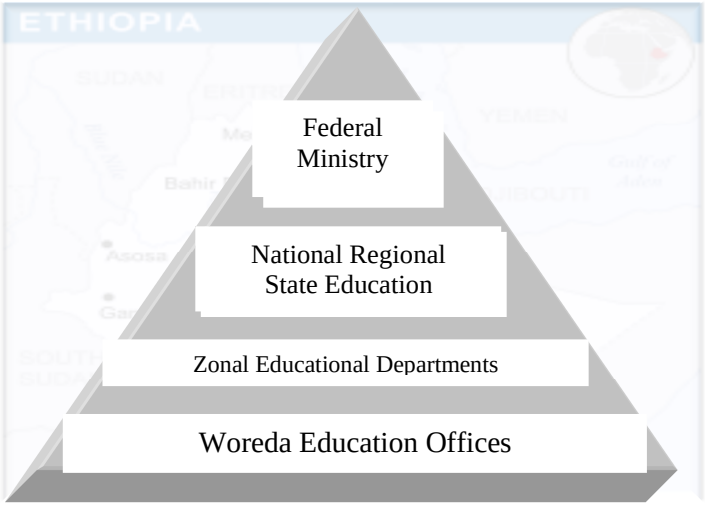
2.4.2 **The organization, structure and management of TVET system**

The 1994 educational policy approach is a total departure from the old approach of the educational system that has lingered for over 50 years centralized. The new educational system reform is provided an opportunity to decentralized system of organization. It is consistent with the Federal Government's State Structure as depicted in the Figure 2.2

Accordingly, each of the nine National Regional States, and the two City Administrations, has its bureaus of education responsible for administrating and managing the educational system. Within each of these networks, the management structure involving Zonal Educational Departments and *Woreda* Education offices. The latter is the smallest educational authority responsible for all educational institutions in its territory.

Each National Regional States Education Bureaus is both administratively and financially responsible with substantial subsidies from the Federal Government for the general education and technical vocational training as well as teacher training colleges that operate in their respective States. However, tertiary educational institutions are the mandate of the Federal Government's Ministry of Education. The management of the education system is a collective responsibility of the Ministry of Education and the National Regional State Education Bureaus. The former is mainly responsible for policy and guidelines that help implement general education based on research and policy analysis. The Bureaus, although they also have input in this process, are largely responsible to adopt and implement the guidelines considering the objective realities without any major

departure from the overall policy (UNESCO, 2001). Hence, the management structure from top to bottom is displayed in the Figure 2.2 as follows:



Source: Modified from MOE (2003)

Figure 2-2: TVET management structure

The cone of experience above in Figure 2.2 displays the TVET management structure in the Ethiopian education system encompassing formal and non-formal education. Non-formal education covers wide areas of training. Though the Ministry of Education is expected to play a leading role, other ministries also get involved depending on the field of training and target of trainees. (MOE: 1994, p.18) The formal program has been divided into general, TVET and tertiary education programs.

The organization, governance and administration of TVET vary depending on the ownership status of the institutions, while half of the TVET systems are public in nature, however currently the share of private TVET institutions reaches 50%. According to UNESCO (2001), TVET systems merge public and private organization, administration, finance and delivery. Effective management of TVET reform is important to ensure that TVET systems keep pace with technological change and the needs of each nation.

As indicated on the Table 2.3, the educational structure in the Ethiopian educational system has three major levels. These are primary, secondary and tertiary. The primary level has two cycles. The first cycle consists of grades 1-4 and the second cycle consists of grades 5-8.

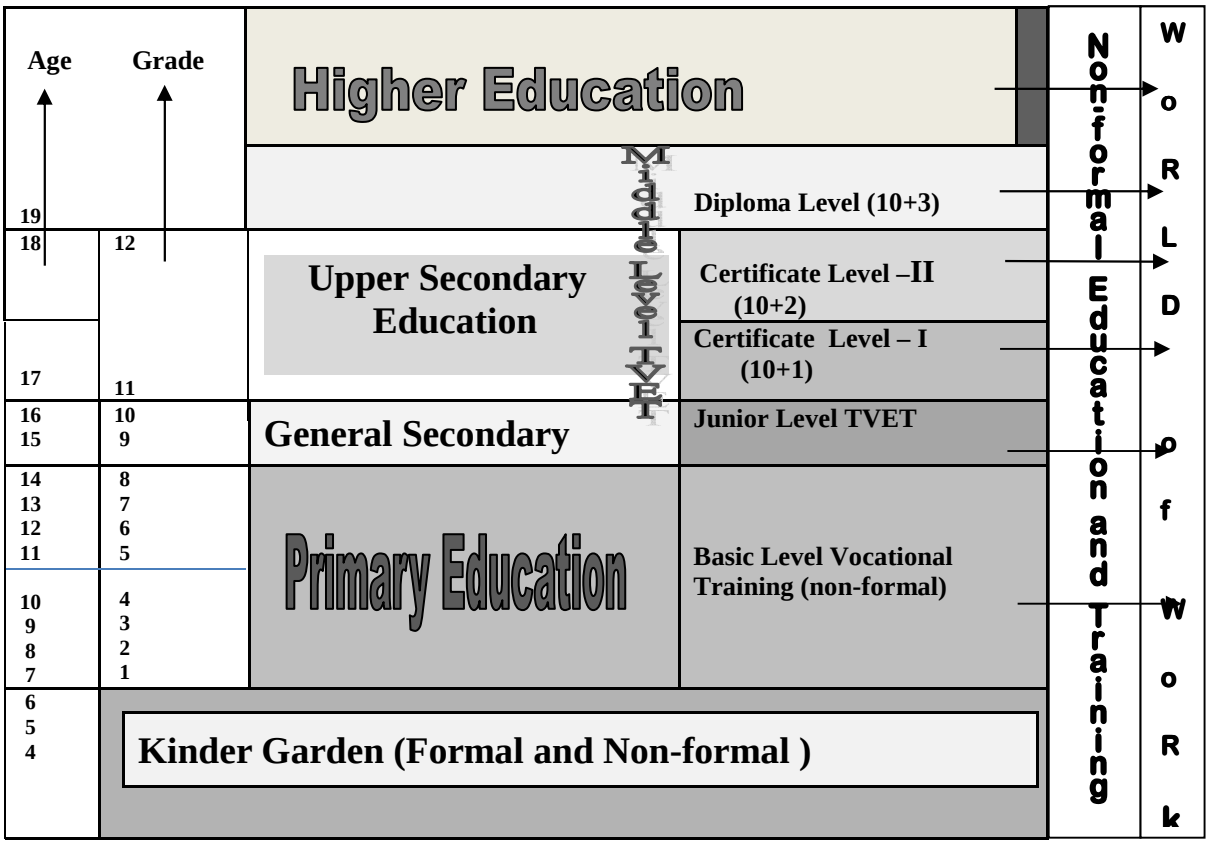


Figure 2-3: The Ethiopian education and TVET system structure (10+system) (MOE, 2003).

The secondary level also has two cycles having different goals. The first cycle (grades 9-10) is for general secondary education in order to prepare students for higher secondary education or for TVET areas. After completing grade 10, students join either TVET programs or the academic stream (college preparatory, i.e., grades 11 and 12) based on their performance in general secondary education. Those who plan to join the tertiary level education are required to sit for a placement examination after completing the two-year preparatory program (MOE, 2003). Following the New Education and Training Policy, the structure of Education in Ethiopia, which was of 6-2-4, has been replaced by the 8-4 structure. The latter offers 8 years of primary education divided into two cycles, each lasting 4 years duration and the next 4 years structure is a secondary education divided into another two cycles, each having 2 years duration (Educan, 2009).

Those who enroll in TVET programs after completing grade 10 have three options to choose from, depending on their performance in general secondary education. The three options to get training are: (a) 10+1 (grade 10 completion and one year of training) (b) 10+2 (grade 10 completion and two years of training (c) 10+3 (grade 10 completion and three years of training). Those who had three years of training, after grade ten, are considered as having completed the first year college level

education and are eligible to join higher learning institutions to complete their undergraduate degrees (MOE, 2003).

The TVET proclamation No.391/2004 was put in place to transform this sub-sector into an effective program so that it can play a major role in the process of skill development, needed in all sectors of the economy. According to the ESDP- III document (2005), in the years between 2006 to 2010, TVET programs focused on creating quality oriented and demand driven systems so as to provide adequate and skilled manpower for the implementation of Agricultural Development Led Industrialization (ADLI) and the Poverty Reduction Strategy (PRS).

TVET Program	Formal Entrance Requirement
Middle Level Technical and Vocational Certificate Level II	3rd Year -Middle Level Technical and Vocational Diploma
Middle Level Technical and Vocational Certificate Level I	2nd year- Middle Level Technical and Vocational Certificate Level II
General Education (Grade 10) Certificate Junior Level Technical and Vocational Certificate and Bridging Courses	1st Year Middle Level Technical and Vocational Certificate Level I
Primary Education (Grade 8) certificate dropout 9-10 grades, basic level vocational certificate +Bridging courses	Junior -(=6 months) Junior level technical and vocational certificate
Basic Education (Grade 4) Certificate, Drop outs 5-8 grades	Basic- (~4-months) Basic Level Vocational Certificate

NB. Entrance through recognition of non-formal/informal training (MOE, 2003)

Table 2-1 Entry Requirements, Program Duration and Certification Levels.

As can be seen in the Table 2.1, the government is setting qualification standards, valid assessment and certification methods and acceptable outcomes for quality assurance. Moreover, the integration of TVET programs with the rest of the educational systems, which enable horizontal and vertical movement for both formal and informal education and training, however the number is decreasing upward.

2.4.3 The TVET reform strategy

According to the Edukan (2009), the overall objective of the National TVET Strategy is

> *to create a competent, motivated, adaptable and innovative workforce in Ethiopia contributing to poverty reduction and social and economic development through facilitating demand-driven, high quality technical and vocational education and training, relevant to all sectors of the economy, at all levels and to all people.*

This is more specifically stated as the National TVET Strategy aims to:

- create and further develop a comprehensive, integrated, outcome-based and decentralized TVET system for Ethiopia;

- strengthen TVET institutions in view of making them Centers for Technology Capability, Accumulation & Transfer;
- create a coherent framework for all actors and stakeholders in the TVET system
- establish and capacitate the necessary institutional set-up to manage and implement TVET in ensuring the Quality Management System (QMS);
- improve the quality of TVET (formal and non-formal) at all levels and make it responsive to the needs of the labor market;
- facilitate the expansion of relevant TVET offers which are crucial to national development;
- strengthen the private training provision and encourage enterprises to participate in the TVET system;
- empower women and rural people through skills development; and ensure equal access of women and people with special needs to TVET;
- strengthen the culture of self-employment and support job creation in the economy, in particular in the emerging regions;
- develop a sustainable financing system for TVET with efficient and cost-effective delivery systems and management structures;
- build the necessary human capacities to effectively manage and implement TVET (MOE 2007)

Accordingly, the TVET strategy (MOE, 2006) provides the following useful statistical information:

- around 35 million people of the Ethiopian work force are characterized by low skill levels and very low average educational attainment,
- only 10% of the urban population has post-secondary school education. As a consequence, 75% of the workforce is concentrated in the low skill employment sectors such as commerce, services and elementary occupations,
- 90% of the poor live in rural areas, most of them exclusively engaged in agriculture,
- out of the registered small and medium sized enterprises, 85% are grain mills. Most of the registered large and medium sized enterprises in the manufacturing sector (about 800 of them) are concentrated in Addis Ababa,
- only 27% of the large-scale manufacturing industries in 2002/3 were privately owned.
- less than half of the urban workforce is engaged in wage/paid employment. A significant portion of the urban workforce works for unpaid family business,
- more than 40% are self-employed in the informal economy, most of which live on the edge of poverty,
- in urban areas, about 26% of the workforce is officially unemployed, a figure believed to underestimate the real situation.

The TVET strategy makes it clear that unemployment among the youth is significantly higher than the rest of the workforce. Generally, it is possible to say that there is a substantial skill gap throughout the economy, especially in economic sectors with a higher skill level outside Addis Ababa. (Edukans, 2009).

Ethiopia's TVET Strategy of 2006 indicated that there is a significant increase in TVET enrolment in Ethiopia. It has been managed by a combination of government funding, intensive short-term teacher training and building of TVET centers. However, the rationale was still that of a supply-driven system. Hence, the future stages of the TVET reform require a paradigm shift towards a demand- and outcome-driven system. This holds not only for the training itself, but for the management of the TVET system and its institutions as well. The deciding factor for the success is not input or supply, but performance (GTZ, 2006).

At an international symposium on implementation issues of diversified financing strategies for TVET, which was organized by the Ethio-German Engineering Capacity Building Program (ecbp) on November 20-21, 2006 in Addis Ababa, Ethiopia, about one hundred experts and practitioners from eleven countries and four continents were attended the events. They agreed that the Ethiopian approach to TVET reform and TVET financing are very much in line with international best practice in terms of performance. All stakeholders seem to agree that partnerships (among the public sector, the private sector and civil society) would be the key in making any TVET reform process succeed (GTZ, 2006).

However, the formulation and implementation of TVET policies is still the responsibility of the Ministry of Education. Since 2006, the Ministry of Capacity Building (MCB) has been implementing the Education Capacity Building Development (ECBD) Program, with technical assistance from the German government (GTZ). The program is aimed at improving the competitiveness of the private sector through a reform of TVET, non-formal education and universities. The government was considering reforms of TVET governance and management structures through the establishment of autonomous TVET authorities at federal and state levels, which will be governed by a TVET Council (GTZ, 2006).

For guiding the development and implementation of the TVET system, the following guiding principles are also stated in the TVET strategy:

- *demand orientation* i.e. consideration of responding to the competence needs and qualification requirements in the labor market,

- *quality relevance*: Striving for the highest quality and relevance of TVET provisions,
- equal *access* and *equal* opportunity: Increasing access to learning opportunities for all target groups while ensuring quality,
- *pathways*: Creating the possibilities of career progression and continuation of learners,
- *flexibility* responding to the changing occupational requirement and accommodating different demands of various groups,
- *lifelong learning*: Extending opportunities for all time learning,
- *gender sensitivity:* Providing access to females to all TVET programs,
- contributing to fight against HIV/AIDS: Awareness creation and training about *preventive* measures in all programs.
- contributing to *environmental* protection.

The government is considering reforms of the TVET governance and management structures through the establishment of autonomous TVET authorities at federal and state levels, which will be governed by the TVET Council. Joint review missions and annual review meetings were conducted to assess the implementation of the second Education Sector Development Program (ESDP II). They revealed, among other things, that although considerable efforts have been made to enhance access to TVET, quality has not kept pace with expansion. Another finding is that most TVET graduates do not meet the expectations and requirements of employers. (FDRE, 2006).

According to the ESDP III Strategy (2005), the government intends to focus on creating quality and a demand-driven TVET system that can produce adequate skilled human resources for the implementation of the Sustainable Development and Poverty Reduction Strategy. To this end, enrollment in TVET programs was intended to increase to 315,403 in 2009/10. The result shows in 2009/10 the enrollment increased to 353,420 more than the stated plan. It is also planned to increase the enrolled numbers of trainees in Government TVET institutions and to improve the quality of training. A total of 3,304 classrooms and workshops also planned to construct and to equip and furnish all classrooms and workshops in the institutions fully. The strategy also intended to recruit and deploy an additional 4,561 teachers. The result shows 12,990 teachers in 2010/11.

Generally, among sub-Saharan African countries Ethiopia has achieved the highest increase of 5,565 % in its TVET enrolment from 3,000 (1999) to 191,000 (2007). Further, the number of training institutions in Ethiopia is ranking second among the countries in Africa (Kingombe, 2011,

P. 29). An increase in public spending and more provisions TVET courses by private institutions have achieved the recent growth in TVET enrolment and provision (GTZ, 2006).

2.4.4 TVET curriculum development in Ethiopia

Curriculum development in the Ethiopian context Educans (2009) shows that at the beginning of the launching of the TVET program, the Ministry of Education was in charge of identifying the vocational areas and the specific trades offered under each vocation. It was also responsible for developing training materials centrally. All training centers were using similar materials for the same training areas. Practicing the existing experiences of other countries could promote Ethiopia to the technological and economic development level that others have reached, as much as possible within the shortest time. With the technical support of GTZ experts, the experiences of Australia and Philippines have been adapted and used as a benchmark.

Occupational standards were developed for all the trades being provided for formal TVET institutions with the involvement of stakeholders. The Ministry of Education has also facilitated the development of occupational standards for vocational trainings provided by the Ministry of Agriculture, Ministry of Health, Ministry of Culture and Tourism, Ministry of Defense, Road Authority and a few others (Educans, 2009, p. 9).

TVET curriculum in Ethiopia is no more centralized. Each training institution is accountable for developing its training materials based on the centralized occupational standards. It is facilitated, monitored and evaluated by regional TVET Bureaus or Commissions. Developing training materials has become a challenge for all TVET institutions. To solve the problem, model-training materials have been developed and disseminated. However, training institutions are still using old materials and the model materials without much change. The government expects all training institutions to develop materials that reflect local needs and environments. It is these and other factors that have been accumulating over the previous years that kicked off the CRs supported by the new political environment (UNESCO, 2001).

The other major problem in curriculum development as observed by Educans (2009, p. 10) was its continuous change. At the beginning, all training materials were prepared centrally and used by all institutions with similar inputs and processes. That was changed shortly by occupational standards, which were prepared for the 10+1, 10+2 and 10+3 program. Lately the development of the occupational standards has been re-categorized into five levels i.e. Level I, Level II, Level III, Level

IV and Level V packages. This has considered as a waste of time and other resources and has created a feeling of discomfort on both developers and implementers.

The Level I and Level II training packages are developed for students who drop out before completing grade 10 and for those not entitled to enroll in the 10+1, 10+2 and 10+3 programs. The Level I and Level II packages are short-term programs for those who need to acquire specific skills to enter the world of work.

Generally, according to UNESCO the problems of the curricula in Ethiopia, which has been in operation for a long time, are closely associated with the centralized educational structure and the management of the education sector (2001). That is why Freiger stated it in a nutshell is that the causes of unsuccessful CRs are "Without adequate participation of all members of the college, no academic reform is worthy of this designation" (Freiger, 1973, p.106). Furthermore, he added that many CRs approaches fail, as the following complications arise during the trial to conduct the academic reform pile, because of:

- the existing agreements and framework examination regulations of institutions,
- restrictive policies of the government administration and legislative hardened reactionary positions, especially the higher education legislation, and participation of the states in the academic reform,
- the unwillingness and inability of many high school members, especially the ordinary members participation in the academic reform,
- lack of co-operation of the majority of academic staff in the higher institutions. (pp. 100-101)

In addition to this, Haan noted that parents viewed TVET as a failure in academics, as "a severe cultural bias [exists] against vocational training and work" which has been reflected historically in the academic focus of secondary education (Haan, 2001, p. 98). Paradoxically, TVET has also suffered from the stigma of negative attitudes associated with a system of academically poor performers, manual labor, and low status jobs (UNESCO, 2001, p. 12). UNESCO summarizes the following factors that have been instrumental in embarking upon total reform in the curricula:

- The curricula and the contents thereof are not generally integrated with or related to the realities of the learner and the society at large. In particular, it has not been presented in such a way that it can be beneficial to the social development and economic growth;
- the curricula have not distinctly laid out the objectives of particular levels of education and training in accordance with the country's requirement and capacity. Instead, it tended to enroll as many students as possible and just moving them through the system disregarding the quality of the teaching-learning output;

- the subject area objectives are such that they do not indicate the interrelatedness and integration with the subject areas within the same class or level. This has led the learners to consider the teaching-learning process as limited to absorbing the facts and not an understanding of the environment to become creative and possess problem solving skills;
- the other paradoxical result of the old curricula is the development of an unrealistic sense of modernism that does not match with the level of the country's socioeconomic development. This mismatch between what they perceive, the products of learning, and the objective reality of the country led to frustration and hopelessness as opposed to being motivated and participating in the development of the country to bring about the change expected.

UNESCO also identified that a recurrent problem in TVET is the high cost of construction, equipment, maintenance and the provision of consumable training materials. Routine and preventive maintenance have also constituted perennial problems. These issues have implications for TVET finance, instructor training, curriculum development and the delivery of instruction. If one of these attributes is diminished, the others are affected. Many TVET systems have utilized cost-recovery, industrial levies, linkage with enterprises and employer participation mechanism to address this issue (UNESCO, 2001).

Therefore, TVET curriculum needs to change dramatically to adjust to new global realities in the economy, technology, culture. Bearing this in mind, the Ethiopian Ministry of Education came up with the idea that after every five years or more the curriculum has to be reviewed, so that it matches the dynamism of the society and also to match global trends (MOE, 2006). As a result, the input based curriculum (10+ systems) was changed in 2006 to the new outcome based curriculum (Level system) in Ethiopia.

2.5 *Outcome Based Curriculum Reform (OBCR): The level system in Ethiopia*

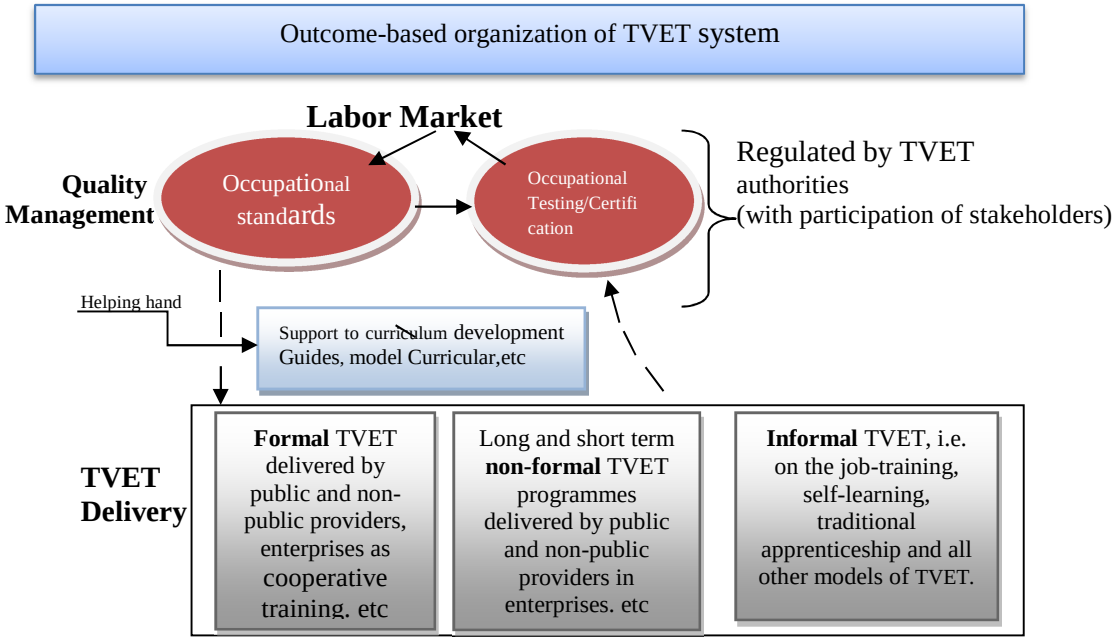
With the objective of the TVET sub-sector to train middle level human power and transfer demanded technologies, the TVET sector (addressing ESDP II) has benefited from significant policy and strategy development. One major milestone was the development of the national wide TVET strategy. This stipulated that the vision for TVET in Ethiopia is to create competent and self-reliant citizens and transfer of demanded technologies to contribute to the economic and social development of the country, and thereby improving the livelihood of all Ethiopians and sustainably in reducing poverty. Furthermore, a major shift from a system based on input to outcome orientation has been achieved. In order to initiate the reform under the TVET strategy, a new emphasis was laid on the enhancement of quality. This was involved in implementing an outcome based training system dedicated to promote trustworthiness and cooperation among stakeholders, as

well as strengthening the role of the TVET system in becoming an agent in technology acquisition, accumulation and transfer (MOE 2010, p. 53).

Further, according to MOE (2011), within the policies and strategies of the Ethiopian government, the TVET System has embarked on a process of reforming based on technology transformation, by using international standards and international best practices as the basis, and, adopting, adapting and verifying them in the Ethiopian context is a central element. TVET is given an important role with regard to technology transfer. The new paradigm in the outcome-based TVET system is the orientation at the current and anticipated future demand of the economy and the labor market.

2.5.1 Overview of the Ethiopian outcome-based TVET Qualifications Framework

However, the current TVET sector outcome-based organization system is depicted in such a way that it encompasses the formal, non- formal and informal education system as follows:



Source: MOE (2008) & Zuraidah (2008)

Figure 2-4 Framework of TVET system in Ethiopia

The above figure shows how the outcome based TVET system is related with each other in the organization system. This is important to provide qualified TVET graduates to achieve the labor market needs within which the occupational standard is a part of the monitoring for the private sector to seek their skilled workers based upon the skills needed in the labor market.

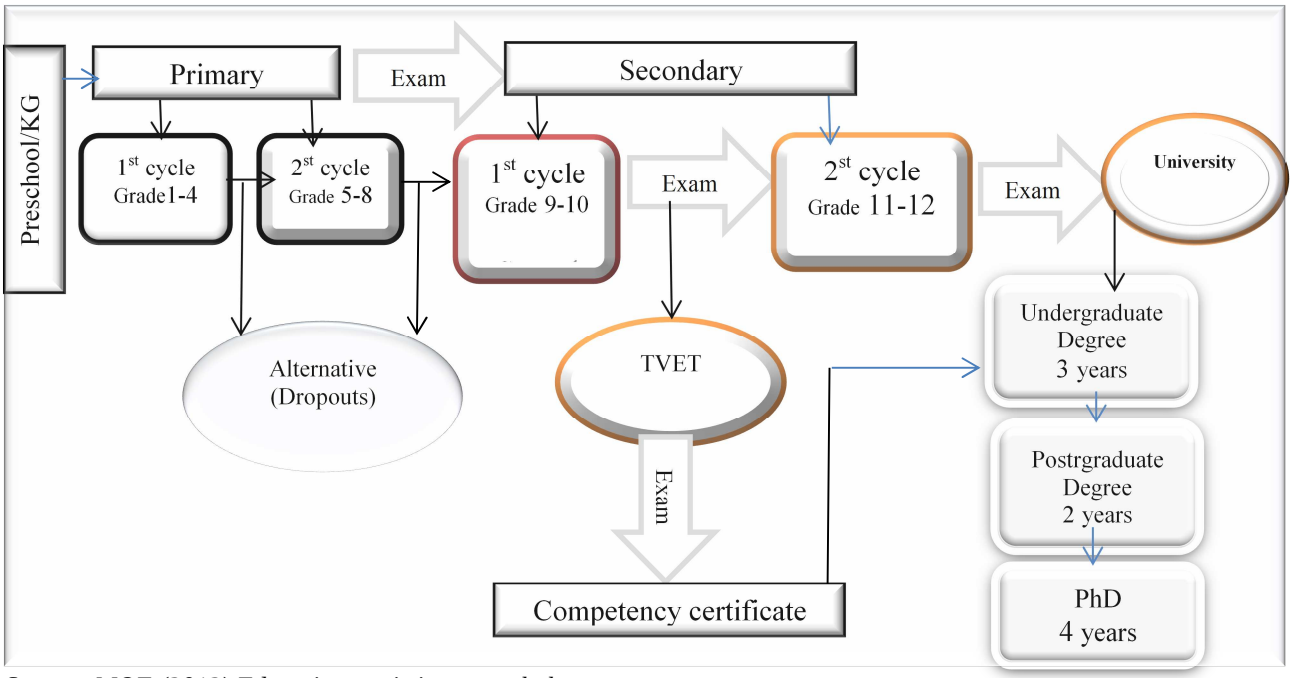
Furthermore, the Ethiopian Occupational Standards (EOS) are a core element of the Ethiopian National TVET-Strategy, and an important factor within the context of the National TVET-

Qualification Framework (NTQF).They are national Ethiopian standards, which define the occupational requirements and the expected outcomes, related to a specific occupation without taking TVET delivery into account.

Generally, as MOE (2006, p. 40) concludes the other countries' experiences can provide valuable lessons in designing and implementation qualifications frameworks. However, it is important to realize that a TVET qualifications framework or an NQF is not a magic tool for the reform of education and training systems. There are no recipes or manuals from other countries, which can be implemented in Ethiopia without any adjustments to the country's capabilities and circumstances.

2.5.2 Structure of Education and TVET Level-System in Ethiopia

Figure 2.5 displays the structure of both formal and non-formal education systems available in Ethiopia including the examinations that influence education options.



Source: MOE (2012) Education statistics annual abstract

Figure 2-5 Structure of Education and TVET System in Ethiopia

As indicated earlier on the 10+system educational structure, the Ethiopian educational system in the level system has similarly three major levels. These are primary, secondary and tertiary. The primary level has two cycles. (1st cycle grades 1-4) and (2nd cycle grades 5-8). As indicated in the figure 2.5 above, the track to the secondary school is the Primary School Leaving Certificate (PSLCE). The secondary level also has two cycles. (1st cycle grades 9-10) is for general secondary education in order to prepare students for higher secondary education or for TVET areas.

After completing grade 10, the Ethiopian General Secondary Education Certificate Examination (EGSECE) determines whether the students join either TVET programs or the academic stream (college preparatory, grades 11 and 12). The minimum cut-off scores to preparatory, for instance, in 2012 was 2.29, the rest go to TVET with minimum score 2.0. Finally, for those who complete the 12th grade, the track to the university is the Ethiopian Higher Education Entrance Certificate Examination (EHEFCE), in the same year, the minimum cut-off score was 276 points (MOE 2012).

As can be seen from Figure 2.5, the national examinations (EGSECE) provided access to TVET truck. Those who enroll in the TVET program after completing grade 10 have five options to choose from (Level I to V), depending on their performance in general secondary education. The five options to get training are: (a) Level I/II (b) Level III/IV (c) Level V. The track for TVET graduates to join higher learning institutions to complete their undergraduate degrees, the competency assessment and two years services are mandatory.

The Alternative Basic Education (ABE) program is for the Adult and Non-formal Education (NFE) program, it serves as an alternative approach to complement the formal education program in the effort to increase access to basic primary education (MOE, 2005, p. 45).

2.5.3 TVET sector in Ethiopia (Formal, Non-formal and Informal)

TVET is seen as an overarching term to describe all modes of formal, non-formal and informal training, and learning below higher education, provided by all government and non-government providers. The TVET aims to provide more TVET opportunities to a wide range of different groups including, school leavers, dropouts, people without formal education including illiterates, entrepreneurs and employees, farmers and their families, people from marginalized ethnic groups and other groups (FDRE, 2006).

According to the Federal Democratic Republic of Ethiopia (2006), TVET in Ethiopia comprises both formal and informal training. Several public and private institutions provide TVET to the informal sector, although the qualifications they offer are not recognized, due to lack of systematic testing and certification systems. In addition, a number of small and micro enterprises offer apprenticeships. Realizing the need for skilled human power, FDRE (2006) projected the following:

> *Technical and Vocational Education and Training (TVET) in Ethiopia seeks to create competent and self-reliant citizens to contribute to the economic and social development of the country, thus improving the livelihoods of all Ethiopians and sustainably reducing poverty*.

It was with this vision that measures were taken to expand the formal and non-formal TVET program across regions and *Woredas*. Formal TVET has been provided mainly to secondary school leavers. Working people have also benefited from the program through evening classes and distance learning. Non-formal TVET has been offering training to a wide range of groups.

According to the Education and Training Policy (ETP, 2006), the formal TVET system of the country requires completion of a tenth-grade education to obtain a certificate, diploma and an advanced diploma upon completion of the levels 10+1, 10+2 or 10+3 of the TVET programs. In order to provide options for the increasing number of school leavers, the Government embarked upon a massive expansion of formal TVET since 1993. Between 1996/7 and 2006/7, the number of TVET institutions providing formal and non-agriculture TVET increased from 17 to 388, and the enrolment from 3,000 to 191,151. Of these, over 30% were trained in non-government TVET institutions. Around 60% of formal TVET is provided in the form of regular programs and 40% in evening classes.

The informal TVET sector is also recognized and described as those operations, which are unregistered and operating on a very small scale and with a low level of organization. The informal sector operates without fixed locations or in small shops, outlets or through home-based activities. The government has little or no direct involvement in informal TVET, in other words it is not supported, or regulated by the government (Edukans, 2009).

Informal training is offered in a variety of fields: textile and garment production, bakery and pastry, hotels and catering, electronics, electricity, auto mechanics, secretarial services and construction Despite this massive increase in provision, there are indications that the demand for TVET education services far exceeds its supply. A high percentage of Ethiopians do not have access to TVET. Increasing access to TVET services is hampered by the lack of qualified TVET teachers and adequate funding (Edukans, 2009).

Non–Formal (NF) TVET is any organized form of training for which the content and learning aims and targets have been defined. By definition, NF–TVET means training based on well-defined curricula, either within or without an institution, with or without guidance from a teacher or trainer. From the general economic development and the demand for a better living standard, NF-TVET is considered a broad area of learning that accommodates learning/training needs of various target

groups both in content, scope and depth and goal orientations. It also includes informal training, e.g. learning on the job or self-learning (Edukans, 2009).

For decades, short-term non-formal TVET in Ethiopia has been provided to different groups of youths and adults through Community Skill Training Centers (CSTC), prisons, farmers training centers, and rural appropriate technologies. They are known as non-formal TVET training centers. The government of Ethiopia, NGOs and the private sector have been running the different training programs such as woodwork, metalwork, tailoring, embroidery, weaving, typing, computer training, driving. Unfortunately, the scale at which training has been given was so small that it has not made substantive changes on the life of the majority of the poor (FDRE, 2006).

Non-formal TVET includes every other form of formal technical and vocational education and training. This includes:

- Training over different periods of time – from short-term courses of a few days to long-term programs of up to 6 months,
- Training through different modalities: (institutional, community based, mobile, link and apprenticeship)
- Life skills or add-on components for Alternative Basic Education ABE/Primary Educations
- Training for a wide range of target groups:
  - Unemployed, youth and adults.
  - School dropouts and those with grade 8 - education or lower including illiterate people.
  - People potential /active in the informal economic sector.
  - People from urban and rural areas.
  - Landless poor and disadvantaged groups.
  - People with disabilities (Edukans, 2009).

Action plan in the TVET programs (OBCR)

As indicated by MOE (2005 pp. 49-53), in the TVET program action plan (addressing ESDP III), it was planned to achieve within five years (2005 to 2010) as:

- TVET programs focus on creating quality and demand-driven system that can produce adequate skilled human power by strengthening Quality-Assurance guided by competency-based acquisition and competencies rather than the completion of a fixed period of study (such as input based curriculum), both formal and non-formal education and training,

- increase enrollment in TVET programs and improve the quality of training, targeting improvement to female participation in all training programs through counseling and career guidance arrangements,

- upgrading physical facilities, equipment and instructional materials, libraries and ICT infrastructure,
- recruiting and deploying additional teachers improving teacher competence by upgrading and expanding pre-service and in-service training programs in addition to introducing E-learning education and training systems and provision of short term training for government and non-government employees in their area of specialization,
- setting qualification standards, certification processes, valid assessment methods,
- establishing an accreditation system and putting in place and centers of excellence,
- implementing apprenticeship/internship arrangements to foster effective skill formation,
- adapting the curriculum to the specific needs of the regions which is responsive to industrial and social sector needs of the country by identifying the required competencies as a foundation for curriculum preparation,
- establishing networks between training institutions, employers, professional associations, industry and the local community to exchange experience,
- establishing tracer studies for employment and self-employment to enhance employment and income generation of TVET graduates (MOE, 2005).

Achievements and challenges of OBCR (addressing ESDP III)

The implementation of the activities foreseen in the TVET strategy is well underway, for example, in 2008/2009, a revised TVET strategy was elaborated and adopted and a shift from an *input-based to an outcome-based* TVET system has been initiated. Consequently, the following results are presented in to two parts as Achievements and Challenges.

Achievements:

- Many documents of TVET strategy shows working changes as a result of the TVET strategy were prepared and presented.
- The National TVET Qualifications Framework (NTQF) is completed and the TVET Leaders and Trainers Qualifications Framework (LTQF) is (soon to be) finalized.
- 250 occupational standards were prepared and completed by 2009/10.
- Assessment tools for 211 occupations were prepared and completed by 2009/10.
- Training was given to trainers based on gap analysis and occupational standards.
- TVET institutions started to train based on outcomes and occupational standards and implementing co-operative and in company training by working in collaboration with micro and small scale enterprises in extending training opportunities

- A clear system for technology capabilities accumulation and transfer has been established consequently, 180 demanded technologies were identified, developed and transferred to users based on value chain analysis nationwide.
- A clear system for technology capabilities accumulation and transfer has been established thereby the mind set of TVET trainers, management staffs and trainees towards technology capabilities' accumulation and transfer has been changed (MOE, 2011).

Challenges:

- low awareness of TVET benefits (the society and implementing bodies),
- inadequacy of participation of stakeholders' in the management and delivery of TVET,
- lack capacity and competence of TVET trainers and experts to implement the new TVET strategy,
- inadequacy of monitoring and evaluation systems,
- low capacity of TVET institutions in adopting and transferring technology,
- inadequacy of labor market information system to assess labor market demand,
- weak system of information sharing and coordination between the regions and the federal level,
- shortage of teaching materials especially in newly developed Occupational Standard (OS),
- inefficient utilization of resources and equipment,
- inadequacy of equipment in TVET institutions,
- low capacity to assess and certify TVET candidates (MOE, 2011).

2.5.4 Occupational levels and types of trades

Compared to the experiences of other countries, the types of trainings provided in Ethiopia are very few (only 26 types) in numbers, according to the Educan foundation (2009), although there is a distinct variation in terms of models of trainings given in government, NGO and private institutions.

Table 2.2, shows the number of trades identified and the levels at which the trades are provided. The major types of training provided in government institutions are basic metalwork, tailoring, knitting and embroidery. Non- government organizations have been usually providing training in leather craft, heavy machine operation, metalwork, secretarial science and photographing. Private institutions were also provided training, such as woodwork, embroidery, hairdressing, food preparation, leatherwork, car decor, massage, driving, basic computer skills, computer maintenance, and beauty skills training. The training areas given by community-based institutions were few in number, i.e. trading and family planning (Educan, 2009).

No.	Occupations	Number of trades	Levels at which the trades will be provided
1	Construction	18	*Level III (6); Level IV (7)*
2	Electricity/electronics	7	*Level III (3), Level IV(3)*
3	Metal manufacturing	3	*Level (III) (2); Level IV (1)*
4	Automotive	5	*Level III (2); Level IV (3)*
5	Textile technology	7	*Level II (1); Level III (4); Level IV (2)*
6	Leather technology	11	*Level III(6) Level IV (5)*
7	Agro food processing	23	*Level III (3) Level IV (5)*
8	Industrial laboratory	5	-
9	Business and services	10	*Level III (3); Level iv (5)*
10	Hotel and tourism	9	*Level III (3); Level IV (4), Level (v) (1)*
11	Information-communication technology	5	*Level III (2); Level iv (2), Level V (1)*
12	Metrology	5	*Level III (1); Level IV (3), Level v (1)*
13	Health	16	*Level III (1); Level IV (13); Level (2)*
14	Culture	8	*Level III (4); Level IV (3) Level V (1)*
15	Craft	1	
16	Transport	14	*Level I (2), Level II (3) Level III (3) Level IV (6)*
17	Defense	10	*Level IV (10)*
18	Water technology	-	
19	Agriculture	-	
20	Sport	-	
Total		**163**	

Source: Educan, 2009

Table 2-2 Number of Trades and levels

The above table displays, twenty broad vocational areas that have been identified for the TVET program by the MOE. Over 163 trades were also intended under the twenty vocations. The number of trades is not yet exhausted; more could be identified. Currently the formal TVET institutions are providing about 39 trades in regular, evening and distance learning. There is great disparity in terms of trades offered by the different regions. It ranges from 6-39 in regular classes, 5-18 in evening classes and 2-11 in distance learning in government institutions (Educan, 2009).

2.5.5 Assessment and certification

Assessment is the process of gathering evidence about a learner's competence and making judgments using pre-determined criteria. It uses different methods and instruments (e.g. test, interview, observation and documentation of performance, simulation, examination) to collect this evidence which is determined by the Occupational Standard (OS). This also applies to the assessment of prior learning and of current competence. Recognition of prior learning (RPL) is the acknowledgement of a person's skills, knowledge and abilities acquired through previous training, work or life experience. Recognition of Current Competence (RCC) describes the same phenomenon (MOE, 2006).

During the input based TVET system (10+system) in the Ethiopian context, the only way to acquire formal qualifications was through formal training programs. Thus, skilled people who have acquired their competences outside of the TVET system, e.g. through non-formal training, learning on the job, traditional apprenticeship, or self-study, have no chance of obtaining a formal qualification. This also leads to in-transparency on the labor market, where people with different certificates compete for employment. For these reasons, with the reform of an outcome-based system, an assessment and certification system independent of TVET provision has been designed and implemented (MOE, 2006, p. 33).

In Ethiopia, during the outcome-based system, formal recognition has been done through the allocation of credit to the learner who is able to demonstrate the outcomes described in the standard and who wants to achieve a qualification or to enter a training program. Mechanisms have been established which recognize prior learning and current competence, regardless of how they were achieved (MOE 2006).

ETQF level	TVET Band Level	Level description
5	National TVET Certificate V	Breadth, depth and complexity covering planning and initiation of alternative approaches to skills or knowledge applications across a broad range of technical and/or management requirements, evaluation and co-ordination. The self-directed application of knowledge and skills, with substantial depth in some areas where judgement is required in planning and selecting appropriate equipment, services and techniques for self and others. The general environment context is characterized by a very high degree of complexity, interconnectedness, in-transparency and dynamics.
4	National TVET Certificate IV	Breadth, depth and complexity of knowledge and competences cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organizing activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature. The general environment situation is characterized by a considerably high degree of interconnectedness, in-transparency and dynamics.
3	National TVET Certificate III	Breadth, depth and complexity of knowledge and competences cover selecting, adapting and transferring skills and knowledge to new environments and providing technical advice and some leadership in resolution of specific problems. This is applied across a range of roles in a variety of contexts with some complexity in the extent and choice of options available. The general environment situation is characterized by a high value of interconnectedness, in-transparency and dynamics.
2	National TVET Certificate II	Breadth, depth and complexity of knowledge and skills prepare a person to perform in a range of varied activities or knowledge application where there is a clearly defined range of contexts in which the choice of actions required is usually clear and there is limited complexity in the range of options to be applied. The general environment situation is characterized by an average value of interconnectedness and by a low value of dynamics.
1	National TVET Certificate I	Breadth, depth and complexity of knowledge and skills prepare a person to perform a defined range of activities most of which may be routine and predictable. The general environment context is characterized by a low value of complexity, interconnectedness, in-transparency and dynamics as well as by a high degree of stability.

Source: (MOE 2006 p.25)

Table 2-3 Overview of ETQF levels and their descriptors

All assessment have been based on occupational standards. Assessment have been taken place at testing centers (e.g. Centers of Competence) and through independent testers, who would be appropriately qualified. If a candidate successfully passed the assessment, he or she could get a nationally recognized certificate, the occupational qualification (MOE 2006, p. 34).

As displayed in the above Table 2.3, the national TVET certificate is provided based on level description described in the framework. The level system (outcome-based) curriculum has been reformed based on the ETQF. Hence, each trade person has to be assessed to be certified from lower level (I) to higher level (V) based on the level description. Accordingly, the Ethiopian TVET strategy designed that the TVET quality and relevance should be enhanced through making the system outcome based. Outcome based strategy implies that the training received in TVET should be measurable according to the skill assessment based on the occupational standards. This outcome base measured is not to be confused with the measures of the final labor market outcomes of the graduates, such as wage and employment (MOE, 2008).

2.5.6 **Employability skill and the labor market**

Human capital' is considered a major component in the generation of economic growth. Two major factors influence the impact of human capital: (i) the quality of the education and training systems and the resulting quality of human capital and (ii) the allocation of human resources into the labor market. (Mediterranean, 2006, pp.103-125).

Education and training are means of generating employment opportunities, enhancing productivity and increasing the incomes of various groups of people. Education is therefore an important component of the economic and social development process. The success of educational systems depends on their focus on the skills that are relevant to economies and societies. Adequate development of human resources is also a fundamental requirement in the battle to resolve the inequities of globalization (UNESCO, 2001).

Therefore, good education does not guarantee economic development. An educated workforce in a dysfunctional economic environment will produce high unemployment, not high growth and wages. The structure of the labor market is critical both for the quantity and for quality of human capital. As shown by Pissarides (2000), a major function of the labor market is to allocate human resources to their best uses and to determine quality, quantity and productivity of human capital through reward mechanisms. The structure of the market will determine, for example, how much human capital is put into growth-enhancing activities and how much into other activities. Depending upon

how well the labor market functions, the level of efficiency in the use and allocation of human resources varies and this has significant effects on employment, unemployment and economic growth.

Self-employed workers, most of whom are own-account workers and unpaid family workers, are considered the major component of the rural and urban informal sectors. Becker (2004) estimates that in sub-Saharan African countries 70% of the informal sector is comprised of those who are self-employed with the percentage rising to 81% if South Africa is excluded. The number of self-employed in non-agricultural activities, measured by household surveys, has increased over the past two decades. Own-account and family workers represented nearly two-thirds of the non-agricultural labor force in Africa. Women's share of informal employment is higher than that of men's in about half of the countries for which data are available (UNESCO, 2001).

The self-employed dominate employment in the informal sector. In a survey of the characteristics of informal sector enterprises in Botswana, Kenya, Malawi and Zimbabwe, Mead and Liedholm contend that on average almost two-thirds of all informal sector enterprises are one-person businesses (quoted in Haan, 2006). Most of these enterprises are labelled as subsistence level firms with only a small likelihood of growing into larger enterprises. Earnings and profits in these small enterprises are low by comparison with larger enterprises that hire other workers (UNESCO, 2009).

These small enterprises are sometimes referred to as the 'working poor'. Earnings of self-employed non-agricultural workers for example in Ghana in 2005, a proxy for informal sector workers, were 35% higher than those for self-employed agriculture workers (World Bank, 2008).

CSA (2006) defines economically active population as all persons aged ten years and over who were employed or unemployed in a given period of time. Based on this definition, in 2006, the size of economically active population is estimated at 4.6 million. It shows a 3 % increase from 2004. Similarly, the urban population growth rate is estimated at 4.9 % per annum. This fact indicates that there are a large number of new entrants into the labor force. For example, because of new TVET entrants from colleges and universities, the 2013 data shows that unemployment rates (16.5%) in Ethiopia but much higher in Addis Ababa (25.1%) (CSA, 2013, p. 4).

However, general factors that have significant impact on the demand and supply of labor are: 1) public and private spending on investment, 2) introduction of new technology, 3) population growth and distribution, 4) education and training and 5) availability and access to labor market information. As a result, there occur a mismatch on labor demand and supply in the labor market in

Ethiopia. Despite improvement in supply of quality and quantity of the workforce, the supply of labor seems to exceed the demand in formal labor market. The reason behind this disequilibrium is slow growth of formal private sector economy, particularly the manufacturing sub sector development, to accommodate and absorbs the fast growing urban population employment needs (CSA, 2005).

Paid employment and self-employment

Employment of TVET graduates in the labor market in developing countries like Ethiopia is characterized by an informal and a formal sector economy. The informal sector economy and employment is defined, as it is a non-officially registered household establishments/business without having business licenses or fixed place of business. Hence, the informal sector economic activity overlaps with the small cottage industries and micro and small enterprises and absorbs the largest segment of the labor force. About half of the operators are between 25 and 44 years old. A significant percentage of the urban youth and women are generating earnings and are employed (CSA 2005).

Informal sector employment includes the self-employed mechanics, domestic workers, real estate and other financial intermediaries, daily laborers, small food and beverage producers, clothing enterprises, street vendors of all types including neighborhood outdoor food markets, small scale bar and restaurant services and seasonal farm labor. Because of the heterogeneous nature of the sector, many of the operators engage in one or more line of businesses. The informal sector contribution to the GNP of Ethiopia is estimated at up to 40% and its share of total employment was estimated at 70% (MOE, 1999). Hence, the demand for labor in Ethiopia is mainly made up of the self-employment and informal sector employment, however, wages and benefits are lower. Self-employment appears to be the major source of employment to significant portion of the skilled labor force in urban areas (CSA 2005).

The formal sector urban employment and economic activities include self-employment, public sector employment and private business employment. Self-employed people draw income from trade and service business activities they operate personally. Public sector employments play a major role in job creation and in facilitating economic growth. The private business employment constitutes employment in industrial and manufacturing, service, trade, and transport sub sectors (Edukan, 1999, p. 24). Generally, the unemployment rate, for example, in Addis Ababa has declined from 2009 (32.3%) to 2013 (29%) by 6.3%, the youth unemployment rate has dropped only by half

(3.3%) of the general unemployment trend in Addis Ababa. Unemployment rates for females were much higher than males in the last five years (CSA, 2013).

In summary, different curricular reforms has been conducted in Ethiopia since 1905. For example, during Emperor Minilik II (1905) reform of secular education, during queen Zewditu (1928) the reform combines secular and religious education, during Emperor Hailesilasie the reform combines secular and modern education and higher education curriculum conducted in 1940. In the history of TVET curriculum in Ethiopia, no attention was given until 1941/42; however, the formal written curriculum with three-tier structure (4+4+4) was developed in 1947/48, which was changed to 6+2+4 structure in 1963, which provided an opportunity to the development of TVET system in the country. Generally, in Ethiopia TVET has got higher attention after the development of the 1994 education and training policy in Ethiopia.

3 LITRATURE REVIEW

Introduction

A literature review was conducted to provide a context for the impact of CRs in the vocational education of Ethiopia. The review drew upon theory of TVET CRs, essays by informed experts and other research to build a logical framework for the proposed study and situate the study within a tradition of inquiry and a context of related studies. The literature review served several objectives: (1) Inform the research paradigm that under gird the study; (2) Identify related research and intellectual traditions; (3) Identify gaps in previous research; and, (4) Add further dimensions to the research questions to be investigated (Marshall and Rossman, 1999, p. 4). Therefore, the literature review will be designed to answer the following parts of the basic questions of the study:

- What are the causes of TVET CR?
- To what extent have the CRs impacted on the nature of curricula reviewed in TVET course of studies?
- What are the curricular intervention factors of the CR?
- Which constituencies are actively engaged in the process of TVET curriculum development?
- Which internal/external factors influence the effective implementation of TVET CR?
- Which of the key impact indicators have impacted by the CR?
- Which graduate and employer relevance indicators have impacted by the TVET CR?

3.1 *Theoretical traditions*

This case study draws critically the CRs of vocational education theories to frame the inquiry of the impact of TVET CRs to the status of TVET graduates and employer organizations. Eight theoretical traditions are brought together that may contribute to the understanding of the impact of CRs in the context of TVET system. Hence, this framework highlights the contextual nature of reform and curriculum, nature/extent of curriculum development, constituency participation in the design of curriculum, Intervention factors of CR, causes of CRs, factors influencing effective Implementation of CR (internal/external), and impact and relevance of CRs. In addition to this, the vocational education (historical and present-day) inherent in TVET reform policy and practice in Ethiopia. It also creates space to explore the consideration of middle level TVET work force. Viewed through these theoretical prisms, inconsistencies and conflicts in policy and practice that characterize the reform of TVET curriculum, prioritization, and the privilege to different aspects due to the reform of TVET curriculum and its impact can be better understood.

In seeking to understand how TVET reforms have affected their beneficiaries equally or are some individuals or groups more advantaged because of changes in policy and practice, especially in this study the value relevance of the CR to the TVET graduates and employers are more considered. Hence, it is important to evaluate the reformed TVET curriculum is effective towards the provision of employability skills to the labor market.

Within academia, the body of work in TVET CR should be well established. Research in the reform needs, for example, for Carl (2000, p. 454) means the following: “It is the scientific exploration, processing and securing practical reform-related and pedagogical knowledge. This type of research has two tasks: filling the gap of knowledge, and methods of ’Didactics’ for 'scientific knowledge’ into practical knowledge of the reform”.

Carl added, research needs are not therefore based on ideally, somewhat in the sense of systematic insight into important areas of school pedagogical knowledge, but practical reform in the sense of constraint-oriented in the know-how-gap for the next step in building a school practically useful reform encyclopedia. She suggests six steps in the development of practical reform:

- Preparatory work for the determination of the output / target position and the needs;
- Development and establishment of an efficient and generally accessible medium;
- Collection of relevant educational reform and social scientific knowledge;
- Integration and 'translation' of this knowledge into effective reform;
- Preparation of this knowledge into usable forms;
- Advertisement for input, utilization and further development of the medium (Carl, 2000, p. 454)

Reform of education in general and TVET CR in particular, is a key and must prepare people to utilize the new technologies, which are knowledge and skill-intensive. Education in science, mathematics and technology is critical but training also needs to prepare people for new ways of working together (collaborative, team orientation) and develop their adaptability to change. “Being adaptable in a flat world, knowing how to ‘learn how to learn,’ will be one of the most important assets any worker can have, because job churn will come faster, because innovation will happen faster” (Friedman, 2005, p. 239).

The distinctive features of indigenous TVET in the Ethiopian context are learning by doing, learning through authentic experiences, and individualized instruction. Because of the lack of research and development in the field of early indigenous vocational knowledge, a big gap has been seen between the early and modern vocational system. Therefore, research should be conducted

before developing a new system to minimize the gap between the indigenous and the modern vocational systems in the field of modern science. However, if there is nothing done to promote the learning of local or indigenous vocational knowledge, the coming generations will definitely not understand where they are in the world or even lose the root of the local knowledge, ideas, and culture.

In the Ethiopian context for example, before Ethiopia adopted an educational system from the West, Ethiopia had had its own educational system which was informal and more of vocational and provided in three institutions, such as home, church and palace. Parents taught children family occupation, social values and traditions while monks taught reading, morality, religion. The palace was the place where all kinds of the nation's classical art were developed, preserved and taught (Girma, et.al, 2000).

Therefore, TVET CR in the globalization age should balance the integration between global knowledge and indigenous knowledge. The modern science and technology must also go hand in hand with indigenous or local knowledge, to ascertain sustainable development in developing countries like Ethiopia.

Curricular reforms in recent decades have been characterized by a shift away from school-based (input-based) initiatives towards state-mandated attempts to promote forms of outcome-based education (Kennedy, 2005, p. 109). Under the influence of the rapid movement of the economy away from reliance on manufacturing and towards service industries, and the resulting change in the nature of the competencies needed by school-leavers, Ethiopia developed and introduced its own version of outcome-based education since 2006 (MOE, 2006). This initiative was originally termed as competence based, and eventually become outcome-based curriculum. This is because it provides an opportunity to explore issues related to curriculum policy and its impact in the context in which certain pedagogical practices are the source of emulation by several western countries like Germany, but also because the shifting socio-political and educational features of the context that make it a potentially fascinating case. This study tries to investigate the impact of the CRs by comparing the input based CR and outcome-based CR programs implemented between 2001 and 2010 in Ethiopia.

3.2 *Theories of reform*

This study tries to identify first the concept of reform before discussing on the CR. The notion of reform has been introduced in society since 1663 (Taylor, 2002). The Oxford English Dictionary

(2003) provides a definition of reform as "The amendment, or altering for the better, or the removal of some abuse or wrong" (Reform) of an institution or practice. With this definition and with the implications that it connotes the tendency is to associate reform with movement in an improved or better direction, may be even synonymous with progress. Regardless, it seems that the basic meaning of reform should be a change for the better. Specifically, change is more suited for the achievement of goals outlined by decision makers in a particular field of studies such as education, but it is important to recognize education as something that happens inside and outside the physical boundaries of school buildings (Taylor, 2002).

3.2.1 **Concepts and definition of reform**

The concept of reform in education has been pursued for a variety of specific reasons, for example, most reforms aim at redressing some issues such as vocational education. It is believed that all measures of reform were driven by the guise or belief that would transport education to a better and more appropriate place. . . in effect responding to conditions and results created by a previous reform that a difference in conceptualization and effect exists. To consider desired universal marks of reform, one should probably look at the goal of education situated in a specific broader context. In fact, this broader context determines the goal of education and consequently of reform in any setting (Taylor, 2002).

Similarly, Scheffler accepts a mark of reform aimed at achieving the stated goal. The expected outcomes will create a sort of citizenry concept of education in a democracy then one could accept a notion of reform predicated on the expectation of certain outcomes. In fact, these reforms have equated pursuit of economic gain, individual success, and privatization (Scheffler, 1997, pp. 436-437).

In the context of education system, there are a variety of reforms in areas such as access, equity, curriculum, teacher recruitment and preparation, standards and accountability, articulation and leadership (Watkins, 1993, p. 30). Carnoy (in Wood 2008) also identified three broad types of reforms driven, respectively, by *competition, finance, and equity* concerns, which are not mutually exclusive.

He states *Competition-driven* as reforms aim primarily to improve economic productivity by improving the 'quality of labor' and of educational institutions. Such reforms include decentralization, the introduction of achievement standards, the improved management of educational resources, improved teacher recruitment and training and changes in the curriculum and

pedagogy aimed at improved educational quality and relevance. (Carnoy, 1999, p. 37 in Wood, 2008)

Carnoy further expressed *Finance-driven* reforms as motivated by the need to improve the economic climate and conditions for economic growth in a country by reducing public spending and increasing efficiency and quality in service delivery. Such reforms include shifting public funding from higher to lower (i.e., basic) levels of education, the privatization of education, and the reduction in per student costs at all levels by increasing class size. Whether such reforms are made for ideological reasons (e.g. a preference for private investment in education) or because a country is too poor to increase its public investment in the education sector make a difference in how such reforms are carried out. (Carnoy, 1999, in Wood, 2008)

Finally, the *Equity-driven* reform aims at providing high-quality basic education or greater educational opportunities. Such reform addresses the issues of access for the disadvantaged populations. These include students at risk, students from low-income families, students with special physical and mental needs, women and rural populations. Recollection of resources within the educational system, creation of educational programs, development of non-formal education and alternative methods of program/course delivery, such as distance education (UNESCO, 1993). This, for example, is the motivation for the Education for All (EFA) and universal primary education movements which seek to ensure that everyone has an opportunity to acquire a basic education and that such an education is fee-free.

Generally, the practice in the Ethiopian educational reform context, the equity driven reform is relatively practical. For example, Universal primary education for all in Ethiopia was effective since the announcement of the national campaign against illiteracy in 1979. The reduction in illiteracy rate from 95 percent at the start of the Ethiopian National Literacy Campaign (ENLC) to 24.7 (Seyoum, 1996).

Conley (in Lane, 2000, p. 8) identifies three types of changes that schools undergo, sometimes simultaneously. They are *renewal, reform, and restructuring*. He defines them as follows: 1) "*Renewal* activities are those that help the organization to do better and/or more efficiently which is already doing." 2) *Reform-driven* activities are those that alter the existing procedures, rules and requirements. It enables the organization to adapt the way it functions to new circumstances or requirements. 3) *Restructuring* activities change fundamental assumptions, practices, and relationships, both within the organization and between the organization and the outside world.

To accurately define what Scheffler, (1997, pp. 436-437) advocates the desired universal marks of reform one should probably look to the goal of education situated in a specific broader context. In fact, this broader context determines the goal of education and consequently of reform in any setting.

This study uses the words change and reform interchangeably; however, some authors of contemporary literature delineate the distinction between reform and change according to their use. They consider them to be synonymous, and use them interchangeably (Gomaa, 2008). This is where intention and will for that change appear and a person forms a suitable plan, which he implements to achieve his purpose or part of his purpose.

In contrast, Gomaa states that reform is not a change in the substance or in the primary modification of the object, but a direct application of a remedy to the grievance, . . . reform assumes there is a deficiency in the world, which could reach the extent of a flaw, and which necessitates a certain amount of demolition and rebuilding. This is why reform also demands one that is not submit to that which has been passed down. All these are the first and essential steps in a plan of reform. Reform understood in this way, usually faces strong resistance (Gomaa, 2008). Because reform:

- clashes with the prevailing culture,
- puts forward an idea that hasn't been tested before so there is fear of accepting it,
- formulates that idea in an original manner that differs from the formulations of established disciplines that have been studied and passed on from one generation to the next, and
- describes a part of inherited knowledge as being deficient.

Therefore, the task of reform is not a one-time event, but more difficult, and requires more time, so that one can see its actual practical implications on the beneficiaries, otherwise it will be a mere reform.

Generally, Miles proposes some academic change features, which is assumed faulty map of change (Miles, 1998, p. 38):

- Resistance is inevitable, because people resist change.
- Every school is unique.
- „*Plus ca Change, plus c'est la me'me chose*". (the more it changes, the more it stays the same)
- Schools are essentially conservative institutions, harder to change than other organizations.

- Live the reform one day at a time,
- Set a mission, objectives and series of tasks laid out well in advance,
- All can never be pleased, so just push ahead with reforms,
- Full participation of stakeholders in the change is essential,
- Keep it simple, demanding ones, go for small, easy changes rather than big,
- Mandate change, because people will not do it otherwise.

Such propositions are very common in the educational reform process, what really drives curriculum change in developing countries like Ethiopia.

However, a good theory of change should confirm the reform before calling for an evaluation by stakeholders. It should be revisited throughout the implementation and evaluation of the initiatives (Connell, 1998, p. 3). They are:

- *Reform should be plausible*. Do evidence and common sense suggest that the activities, if implemented, will lead to desired outcomes?
- *Reform should be doable.* Will the economic, technical, political, institutional, and human resources be available to carry out the initiatives?
- *Reform should be testable.* Is the theory of change specific and complete enough for an evaluator to track its progress in credible and useful ways?

Hence, effective reform can take place only when our conceptualization of systems and structures are changed.

Beer, Eisenstat and Spector, (in Lane 2000, p. 6) describe five-step change strategy on "the process of change that leads to performance improvement." They are: 1) Mobilize commitment, 2) develop a shared vision, 3) foster consensus, 4) spread revitalization without directive and 5) institutionalize revitalization through formal policies.

Furthermore, Szabo (2002) identifies the following specific characteristics of reform:

- Reform requires significant attention to the socio technological system, which grows up around a technical innovation,
- reform cannot be separated from professional development of our major resource-the intellectual capability and leadership of our personnel,
- people most affected by the reform must be empowered to make the decisions and generate the direction of the renewal proceeds.
- reform is driven by the development of a mutually shared vision of a future,
- reform requires commitment and sacrifices, which should be visibly embraced by all affected,

- reform involves taking risks and taking risks involves making mistakes; people should be encouraged to take calculated risks, certainly not penalized,
- reform must be concentrated in areas where there is maximum leverage and conventional methods for diffusion must be questioned and replaced as necessary,
- management and administrative style must adapt from dealing with first-order change to second-order change (Szabo, 2002, p. 12)

Finally, Schubert (1991, P. 80) compares reform and curriculum. The former is easier to define than the later. Reform merely means to reshape, to reconfigure, to make different. Nevertheless, mere change does not mean improvement and with reform too. Thus, the saga of re-form here is not intended to imply an evolutionary development. Reformers themselves generally hope that their brand of reform will bring improvement. Therefore, before changing the old curriculum, one should think about the past years of CRs, whether the re-forming carried out was improvement or not.

Generally, Blakely et.al. (2004, p. 12), presents four options that could be used to reform the TVET curriculum: 1) Require life-skills, job readiness, and career exploration courses; 2) provide students opportunities to gain real work experience; 3) offer an intensive general education preparation course; and 4) increase vocational course offerings. Hence, (Brolin in Blakely, et.,al. 2004, p. 15), suggests that without teaching life skills, investing in job training efforts would be wastage. Job-readiness skills are also similar to life-skills to acquiring and preparing for a job.

What does all this mean for the curriculum? Curriculum change/reform is a learning process that includes the interventions from both school and non-school environments; both overt and hidden curriculums; and broad as well as narrow notions of content in its development, acquisition, and finally its impact. Good understanding of change and clear conception/theory of curriculum are necessary conditions for better implementation of new curriculum into practice (Sahlberg, 2004 P.1).

Reform models

The United States Department of Education (USED, 2010) in America grants four reform models for the final Requirements for school improvements such as: *Turnaround*, *Restart*, *School Closure* and *Transformation*. One of the above four reform models may be applied, when the school or program is identified as persistently low achieving, the school/program may need federal funds or other resources. There may be a new organization, or vendor, involved with overseeing changes at the school. The school's principal and 50 percent of the staff may be removed, and the staff that remains may receive more training (professional development). Extended learning opportunities

may be available for students at the school. This means there could be longer school days, Saturday academies or online learning as well as credit recovery programs. The models are (USED, 2010):

- *The Turnaround Model* requires replacement of the school principal or school leader and all instructional staff and the rehire of no more than 50 percent of the school staff.
- *The Restart Model* calls for the conversion of a school or the closing and reopening of a school under the management of a charter school operator, a charter management organization (CMO) or an educational management organization (EMO) selected through a rigorous review process.
- *The School Closure Model* requires a closing of the school and an enrollment of the students who attended the school in other, nearby higher-achieving schools.
- *The Transformation Model* requires replacement of the principal and institutes comprehensive instructional reform strategies.

These models ensure significant changes in the operation, governance, staffing and/or instructional programming at a given school. However, in the Ethiopian context, the application of these models is challenging due to the lack of enough human, material and financial resource. Yet, the Ethiopian government provides an opportunity for further training for the existing human resources in short and long training sessions for a better effectiveness of the reforms. In general, for the success of the reforms, all stakeholders, such as parents, teachers, politicians, principals, administrators, scientists, entrepreneurs do in cooperation systematically (Carl, 2000, P. 447).

TVET CR is aimed at providing an opportunity for employment, paid either employment or self-employment. However, the transition from school to work is organized in different ways, which is related to different modes of production. Grollman and Rauner (2007) describe four models of organizing the school-to-work transition, which is associated with different types of problems. These transition reform models are: 1) *Direct, 2) Hardly Regulated*, 3) *Regulated Overlapping* and 4) *Shifted.* The detail descriptions are as follows:

- *'Direct Transition 'model'* is based on the Japanese situation and does not contain an organized 'bridge' between school and employment. Rather, extra training is offered in independently chosen employment in large companies, which offer training for their employees. This type of training is described as successful because of a high company loyalty and high work morale.
- *'Hardly Regulated Transition'* model is based upon the typical situation in the UK, which arises to a lesser extent. This model is characterized by a relatively long and lightly

regulated transition phase with extensive search and orientation processes for youths. It is accompanied by a high rate of youth unemployment and other social risk situations. Participation in training programs is closely linked to entry in the employment system and commencement of gainful employment can be a temporary solution during one's search for a job, for example, Italy and Spain.

- *'Regulated Overlapping Transition'*, is based upon central European countries such as Austria, Switzerland and Germany and Denmark. The transition from school to work takes place via a regulated system of apprenticeship. The young person is a trainee, a student in a vocational school, as well as an employee working in a company with the status of an apprentice at the same time. Youth employment is low as vocational education acts as a bridge between the working world and the education system.

- *'Shifted Transition'* model is based upon countries with a well-developed, school-based state-provided vocational training system. A vocationally related or vocationally oriented form of schooling follows completion of general education. On completion of the vocational school, students usually acquire a state certificate for special subjects or a school occupation attained. School and work thus remain institutionally separate (Grollmann and Rauner, 2007, pp. 2-6).

However, the above *s*ystems differ depending on the significance assigned to the relative occupation, the organizing principle for labor markets, the company work organization and vocational training.

In fact, the Ethiopian case seems the shifted transition model with a type of apprenticeship/cooperative training methods. However, the transition is more challenging due to the lack of enough industries to accommodate the graduates from different TVET institutions in Ethiopia. That is why Majumdar (2007, p. 2) states that even though TVET in many countries remain locked into the role of being a mere supplier of skilled labor to industry, to respond effectively to the sustainable development strategies, the TVET professionals should consider TVET curriculum towards the principles of 6Rs that is *Reduce, Reuse, Renew, Recycle, Repair and Rethink* perspectives.

The context of reform in TVET differs from country to country depending on the objectives set that forces promoting change. For example, in the European context, countries like Spain, Italy, the Netherlands, Finland and Sweden. In this regard, Descy & Tessaring (2004, p. 24) describe six

forces that promote the context of TVET reform: (a) the political wish or mandate to reorganize TVET; (b) economic necessity; (c) relief of social issues; (d) the need to find more equitable ways of funding TVET; (e) the need to overcome bureaucratic barriers; and (f) feedback from enterprises about skills needs and shortages. As a result, the impact of the TVET reform also depends on the context of the reform.

Generally, the goals of education reforms referred to improving economic performance by raising skills levels or improving access to the labor market for disadvantaged groups or developing a culture of professional development. However, in the European context, for example, goals or aims of the reforms were usually stated in broad language and not related to impact on individuals or organizations and their consideration is on the process rather than on the outcome. (Descy & Tessaring, 2004, p. 23). Watkins (1993, p. 198) indicated the goal of vocational education as:

> *Vocational education is not a goal, it is a vehicle to get us to get out goal, it is a type of education, and its purpose is to focus on skills, concepts etc. That is "for and about work". Therefore, workplace skills cannot be separated from knowledge. Learning to do cannot be separated from learning to know. Work is doing plus knowing.*

Specifically, Keuffer (2008, p.77) also points out the goals of secondary education ("*Sekundarstufe II"*) reform in Germany, for example are: 1) reducing the social and ethnic selection and to promote the integration, 2) to open qualified, promising employment opportunities for all and 3) to meet in the long-term the needs of economy for skilled workers. Specifically, the overall objective of the National TVET Strategy in Ethiopia is to create a competent, motivated, adaptable and innovative workforce that contributing to poverty reduction and social and economic development through facilitating demand-driven, high quality technical and vocational education and training, relevant to all sectors of the economy, at all levels and to all people (MOE, 2008, p.12).

3.2.2 **Criteria for judging reforms**

Although it is challenging to develop analytical criteria for judging reforms, a set of criteria was developed by Cedefop (2010) using a range of literature and the views of other experts within the group of researchers working with Cedefop on the third research report and within the Qualifications and Curriculum Authority (QCA) (e.g., Barrett, 1998; European Commission, 1999; Plewis, 2001; World Bank, 2002).

These criteria are developed based on the conventional anatomy of reforms (conception, consultation, initiation, pilot phase, implementation, review, refine, etc.). Instead, it was proposed to look more closely at the evaluation procedure as well as the reform and to focus strongly on impact.

For the reform, this meant looking at the aims and objectives of it closely and, for the evaluation, looking for baseline assessment, comparative approaches and impact or performance criteria. It also meant looking for unexpected outcomes and system-wide implications.

According to Descy & Tessaring (2004, p. 22), the structure of this set of criteria was based on the chronology of an evaluation process – before the reform was implemented, during implementation and post reform. To these three a set of general criteria were added on the evaluation process itself. Later, it was considered advantageous to introduce a further set of organizing headings to make it clear that a chronological approach was only one way of organizing the criteria. This additional set of headings is as follows:

(a) **context**: what external influences are likely to influence?
(b) **goals**: how are the aims, objectives, milestones described?
(c) **planning**: what is discussed in anticipation of what might happen?
(d) **management**: what is done to make the program function effectively?
(e) **drivers**: who is shaping the evaluation?
(f) **impact**: what is the effect of the evaluation?

However, the focus of this study emphasis more on impact being served as a higher proportion of criteria than would normally be expected from the other distribution criteria of a reform.

Therefore, the existing TVET curriculum should be evaluated based on some evaluation criteria before a new reform is undertaken. The following five criteria have been developed by the Development Assistance Committee (DAC) of the Organization for Economic Cooperation and Development (OECD 2010) and are internationally recognized as guidance for evaluation of projects, programs and policies. It is adapted the wording slightly so that it also fits development interventions promoted by local or national institutions. The five criteria are: 1) Relevance, 2) Effectiveness, 3) Efficiency, 4) Impact and 5) Sustainability (Descy 2004, p. 24).

Relevance: It is the extent to which the development intervention is suited to the priorities and policies of the target group, recipient and promoting institution. In evaluating the relevance of a development intervention, it is useful to consider the following questions:

- To what extent are the objectives of the development intervention still valid?
- Are the activities and outputs of the development intervention consistent with the overall goal and the attainment of its objectives?

- Are the activities and outputs of the development intervention consistent with the intended impacts and effects?

Effectiveness: It is a measure of the extent to which a development intervention attains its objectives. In evaluating the effectiveness of a development intervention, it is useful to consider the following questions:

- To what extent were the objectives achieved / are the objectives likely to be achieved?
- What were the major factors influencing the achievement or non-achievement of the objectives?

Efficiency: Efficiency measures the outputs – qualitative and quantitative – in relation to the inputs. In a purely economic context, this would imply using the least costly resources possible in order to achieve the desired results and comparing alternative approaches to achieving the same outputs, to see whether the most efficient process has been adopted.

In the context of development interventions, this kind of analysis needs to take into account that reform processes require considerable upfront investments (of time, human and financial resources) before they can be scaled up and unfold their intended benefits at all levels (outputs, outcome and long-term impact). For example, the cost per graduate of developing an entirely new TVET system may seem very high if only the first groups of graduates are taken into consideration. However, the cost per graduate will continue to decline as new groups graduate. When evaluating the efficiency of a development intervention, it is useful to consider the following questions:

- Were activities cost-efficient with regard to the benefits (outputs, outcome and long-term impact)?
- Were objectives achieved on time?
- Was the development intervention implemented in the most efficient way compared to alternatives? (Please note that 'alternatives' here can only apply to other approaches which would have produced a similar degree of benefits at all levels (outputs, outcome and long-term impact).
- At which time intervals does it make sense to carry out such analysis? (Please note that if this analysis is conducted 'too early', the results may be distorted because the break-even point of the investment has not been reached yet).

Impact: Impact is the positive and negative changes produced by a development intervention, directly or indirectly, intended or unintended. This involves the main effects resulting from the development intervention according to the local social, economic, environmental and other

development indicators. The examination should be concerned with both intended and unintended results and must also include the positive and negative impact of external factors, such as environmental and financial conditions. When evaluating the impact of a development intervention, it is useful to consider the following questions:

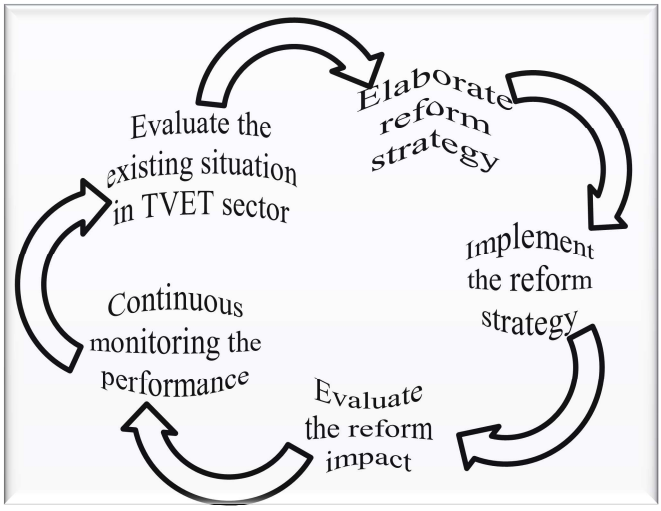
- What has happened as a result of the development intervention?
- What real difference has the development intervention made to the beneficiaries?
- How many people have been affected?

This item is the focus of this study that intends to evaluate the impact of TVET CRs on TVET clients (Graduates and industries).

Sustainability: Sustainability is concerned with measuring whether the benefits of a development intervention are likely to continue after extraordinary funding has been withdrawn. Development interventions need to be socially, environmentally as well as economically sustainable. When evaluating the sustainability of a development intervention, it is useful to consider the following two questions:

1. To what extent did the benefits of a development intervention continue after extraordinary funding ceased?
2. What were the major factors that influenced whether the development intervention was sustainable or not? (Descy, 2004, p. 25)

Generally, ILO (2012) presents five steps to build an effective and efficient TVET reform as depicted in the following figure 3.1. However, it is recommended to use several steps as necessary.



Source: Modified from ILO, 2012, p. 46

Figure 3-1 Building an effective and efficient TVET

Figure 3.1 displays an effective process in building TVET reform. Initially, an evaluation of the existing situation in the TVET sector should be observed before conducting a reform. Secondly, elaboration of a strategy to reform the system is needed followed by the implementation of the reform strategy as a third step. Forth, evaluation of the reform impact and finally, there is a need for continuous monitoring the performance in the sector.

These evaluating criteria are important to assess the relevance, effectiveness and efficiency of the reforms in TVET curriculum to see their impact on the clients and its sustainability for further improvement, especially in developing countries like Ethiopia. The following section provides the nature of TVET reforms in developing countries.

3.2.3 The nature of TVET reforms in developing countries

Existing TVET policies in developing countries such as in Asia and African countries are often fragmented and limited in scope. So far, the formal training sub-sector attracts the largest proportion of government support. This supply-driven system is exclusive, inefficient and unresponsive to labor-market needs. Globalization and the failure of development policies in the fight against poverty have put TVET back at the center of national and international policy debates. As a result, TVET reform constitutes a vibrant area of public policy (Atchoarena, 2009).

In many countries, this issue is no longer about partial and isolated change measures but rather about changing overall systems. This means not just addressing all the different building blocks of national systems (system-wide), but increasingly even how vocational education and training as part of overall lifelong learning systems is on the agenda, even though individual countries are at different stages of readiness to face the challenge (Atchoarena, 2009).

The purpose of a TVET Reform Project is to support change within the TVET system. The TVET reform consists of a broad range of program of TVET activities that focus on:

- Development of new national TVET policy,
- implementation of competency based training,
- new teacher training arrangements (e.g. development of the National Technical and Vocational Education Qualification Framework development of teachers training qualifications),
- a greater role for the private sector and
- more decentralized management of the formal TVET institutions.

Constant innovation is a key ingredient in the reform process. If done properly, the results can be spectacular and TVET can lead to high economic growth. No single model should be emulated universally (Maclean & Wilson 2009).

Finally, the ultimate challenge of reform in developing countries lies in keeping up-to-date with technological change. To keep curricula relevant, the plan is to tighten links to the private sector (Maclean, & Wilson, 2009). Within these challenges, TVET CR in developing countries like Ethiopia is not a simple task especially the implementation of the reforms. The following section elaborates more about the concept of TVET CR.

3.3 *TVET curriculum reform*

Curriculum is one of the foundational elements of effective schooling and teaching, it is often the object of reforms, most of which are broadly intended to either mandate or encourage greater curricular standardization and consistency across states, schools, grade levels, subject areas and curses (GSP, 2013). Undoubtedly, out of curriculum comes CR. CR is a challenging and difficult task. Even the effort to ascribing a single definition to curriculum is difficult. Curriculum serves as a body of knowledge to be transmitted. It is also viewed as a process, and as praxis. If there is a common strand that runs through all definitions of curriculum, it is that curriculum represents a course or guide of study to be run. CR is defined as bringing changes to the subject content, delivery, and assessment of curriculum. (Simmons, and Llewellyn, 2009).

3.3.1 **Concepts and definitions of curriculum**

Different literatures on curriculum theory do not provide a commonly agreed definition of curriculum. Therefore, there is a wide variety of definitions of the term curriculum in the academic literature (Marsh, 2004). The definition of curriculum highly dependent on Historical circumstances, pedagogical approaches and national contexts. For example, Rule (1973) identified 119 definitions of the term curriculum. It is not the objective of this study to evaluate these definitions.

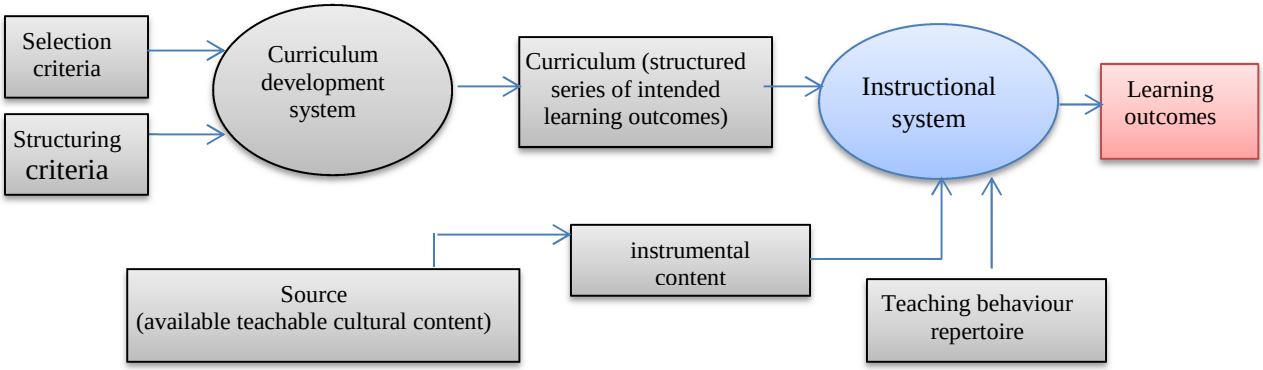
Even though there are many considerable disputes to curriculum meaning. The word curriculum has its origins in the running/chariot tracks of Greece. It was literally a course. In Latin curriculum was a racing chariot, *Currere* was to run. The term curriculum as Paul (1981) viewed as it consists of all the situations that the school may select and consistently organize aiming at bringing about changes of pupils behavior as a means of reforming the personality of the individuals. In practice,

curriculum is the sum of all the activities, experiences and learning opportunities for which an institution (society or teachers) takes directly or indirectly the responsibility. This includes in such a broad concept of curriculum the formal and the informal, the explicit and the implicit, the recognized and the overlooked, the intentional and the unintentional.

The concept of curriculum is classified into two understandings as a document (confined form of educational intentions) and a total of (planned) activities that influence a teaching learning process. The concept of curriculum is also related to the learner, as an equivalent of the school career or a pupil or the apprenticeship of a trainee (Cedefop, 2010, p. 16). As a product of a technical process, the notion of curriculum is taken as the original understanding of the term document, which means *a document prepared by experts, depending on the state of the art of disciplinary and pedagogical knowledge* (Praslavisky, 2001 in Cedefoop, 2010). The author notes, however, the understanding of the concept of curriculum is changing towards the contract between society, the state, and educational professionals.

Some educators misguidedly think of curriculum in terms of syllabus documents. That is why, Nickolaus (2007, p. 127) states that the term curriculum is often used as a synonym for the syllabus. In contrast to conventional syllabus the theory of curricula formulates the expectation, not only details regarding education-policy fixed course objectives and the course content, but also the lesson plans and the design encapsulating social and scientific claims. The curriculum is first a policy statement about a piece of education, and secondly an indication as to the ways in which that policy is to be realized through a program of action/implementation. Consequently, curriculum materials (learning experiences) are of paramount importance in developing people's understanding of changes that are being promoted under the reform. (Norman, 2005, p. 1). The commonness of all these definitions is the focus on the *learner* in contrast to the focus on the contents.

Johnson defines curriculum as [. . .] a structured series of intended learning outcomes (Cedefop 2010). p. 130). It is not the means that are prescribed, but the results of instruction. Johnson's ultimate understanding of curriculum concept is described in the following citation: *"Although curriculum is not a system, it may be viewed as the output of a curriculum-development system and as an input into an instructional system" (*Cedefop 2010). *p. 133).* Therefore, Johnson views curriculum as a facilitator between two systems *(see Figure 3.2):*



Source: Cedefop 2010, p. 19

Figure 3-2: Curriculum as an output of one system and an input of another

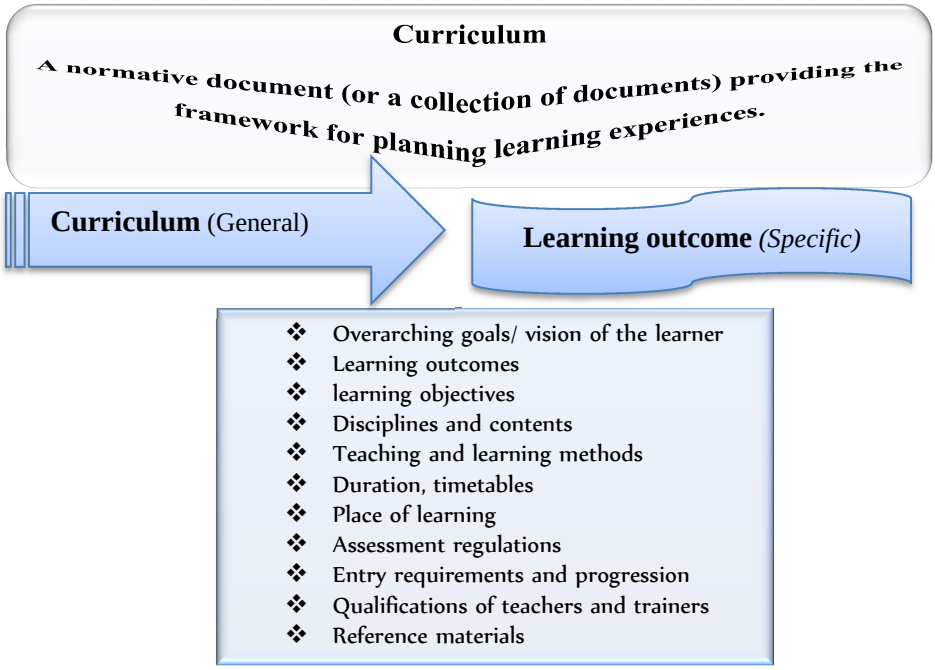
For the purpose of this research, the following working definition of curriculum proposed by Cedefop is used:

> T*he inventory of activities implemented to design, organize and plan an education or training action, including the definition of learning objectives, content, methods (including assessment and material, as well as arrangements for training teachers and trainers. "Learning program, by contrast, are an inventory of activities, content and/or methods implemented to achieve education or training objectives (acquiring knowledge, skills and/or competencies), organized in a logical sequence over a specified period of time* (Cedefop, 2010, p. 19).

This definition can be assumed that the term curriculum refers to the design, organization and planning of learning activities, whereas the term program refers to the implementation of these activities. These definitions provided a range of useful elements to characterize curricula:

- A list of possible items included in a curriculum (learning objectives, contents, teaching and assessment methods, materials and arrangements for training teachers and trainers).
- Differentiation between the general level, at which curricula address all training and teaching processes, and the specific level at which curricula are broken down to define learning programs addressing the needs of a definite group of learners at pre-determined place in a given period of time.

Generally, both curriculum and learning program belong to the *written curriculum* referring to a planning instrument. In contrast, implementation refers to the *thought curriculum* (Cedefop, 2010, p. 21). The relationship between this broad working definition of curriculum and definition of curriculum and learning programs used in the study is illustrated below (Figure 3.3)

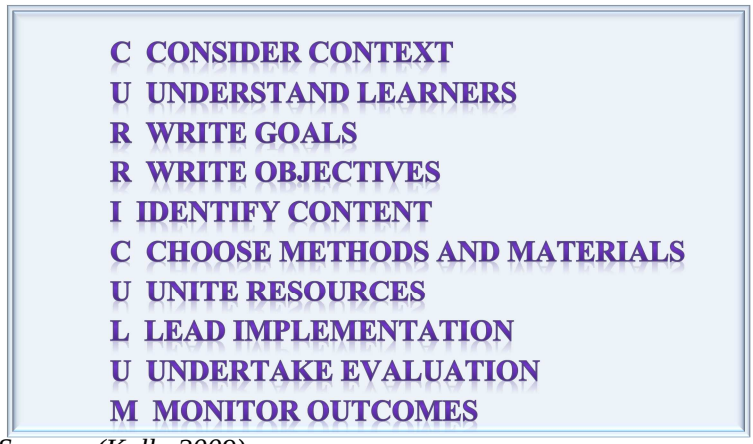


Source: Modified from Cedefop 2010, p. 22

Figure 3-3: Definition of curriculum and learning programs

Learning outcome is defined based on the European qualifications framework, as statements of what a learner knows, understands and is able to do on completion of a learning process, which are defined as knowledge, skills and competences (Cedefop, 2010, p. 22). This definition may overlap with concepts such as *competence, learning objectives or aims and learning output*. For example, learning outcomes are more comprehensive than competences, and hence the term learning outcome can be used as an umbrella term for competence(s). . . . Competence refers to performance in a given situation, i.e. to the ability to use knowledge and skills in an appropriate way. Hence, competence can be defined as contextualized learning outcomes (Cedefop, 2009e, p. 6). However, learning objectives or aims are concerned with teaching and the teachers intention (expressed in the aims of a module or course), whilst learning outcomes are concerned with achievement of the learner. Learning output is learning outcome, hence, the term outputs and outcomes are used interchangeably (Cedefop, 2008, p. 1).

Generally, for the purpose of this study curriculum includes the interventions what Kalb identifies a simple mnemonic for curriculum design the C-**U-R-R-I-C-U-L-U-M** as follows (Kalb, 2009). Each letter representing a phrase important in curriculum design:



Source: (Kalb, 2009).

Figure 3-4: Mnemonic for curriculum design

3.3.2 Causes/Factors of curriculum reform

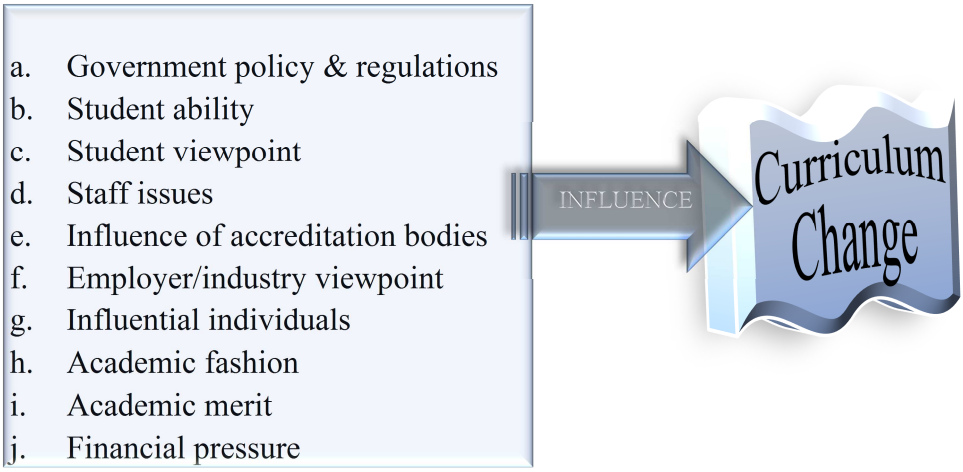
What drives curriculum change?

Dewey (1992) presents four historical perspectives that have contributed its own set of factors to reform as intellectual traditions, social behaviorists, experientialist, and conciliator. The five factors that contributing to CRs are presented as follows: 1. Societal forces, 2. Conceptions of learners, 3. Interpretation of subject matter, and 4. curriculum development technology (such as strategic planning) five. Teacher added by Joseph Schwab (1969).

Black and Atkin (1996) also develop a consistent list of factors that drive reform among which national economy, professional development, inclusiveness and equity, student training, teacher empowerment, involvement of parent and community, involvement of administration and government, business, industry and publishers, involvement of professional and voluntary organizations, new educational technologies.

Furthermore, (Gruba et al, 2004) identify the following factors affecting curriculum change that are hypothesized significant and influencing decisions about curriculum change: (A) Influential or outspoken individuals. (B) Financial pressures, including resource availability. (C) Staff availability or workload. (D) Employer or industry viewpoints. (E) Current or prospective student viewpoints. (F) Student abilities or limitations, or intake considerations. (G) Pedagogical argument or academic merit. (H) University or Government requirement or regulation. (I) Professional accreditation needs, or syllabi set by professional bodies. Moreover (J) Academic “fashion”, including the desire to remain in step with other institutions.

Gruba et al., (2004) displays the model used to evaluate the ten significant factors affecting curriculum change in Australia.



Source: Modified from Gruba et al., (2004)

Figure 3-5: Factors influencing decisions about curriculum change

Two additional factors were added for further evaluation that was assumed as drivers of curricular changes in the Ethiopian context.

- *Adaptation of new curriculum change from abroad (change of benchmarking)*
- *Inadequacy of the TVET curriculum to provide employability skill in the job market*

Institution and government policy/regulations- The government policy and institutional administrations increasingly push the case for efficient use of resources. Change in policy has considerable pressure to reform subjects and enrolments. Such pressures can have impact on teaching methodologies in general, and many have been exposed to pressure to remove practical classes in some specific subject, or to remove tutorials altogether. Such factors can be a strong influence on curriculum. Another source of pressure is the institutional administration's determination on internal, national, and international benchmarking *(*Gruba, et al., 2004).

Therefore, the changes of government regulation and policy have played significant role for the change of a curriculum. For example, if the recurrent funding to the institutions is government-driven, the changes, however, may have directly, or indirectly impact on the curriculum changes.

Student abilities- In an ideal world, educational programs would be dictated by the desires to create graduates of the highest possible calibre. However, weaker students do not meet the expectations of the institution in terms of skills, or in breadth of knowledge. If the design of the curricula is not for the excellent students but instead for the average ones that confused their way through the available

course programs, as a result never excelling and sometimes failing. The consideration of low student's needs, and their application across the scope of student abilities, favours to the truly excellent students (Gruba, et al., 2004). This suggests that if the curriculum does not consider the ability of the students within that community, the curriculum may be subject to change. In the Ethiopian context the low background of the students has criticized for having negative influence on the performance at higher education level (TVET institutions) (MOE, 2012).

Student viewpoints- Students often assert that they are not clients and cannot influence decisions. But it maybe by the opinions of parents. As a consequence, student demands appear to be a limited influence on curricula. British cross-disciplinary survey suggests that "student preferences do not tend to push the curriculum either to more academic or to more vocational treatment" and that student choice continues to be determined primarily by personal interest (Henkel & Kogan, 1999). This concept points out that the demand of student, for example, in Ethiopia, has got minimal effect on curriculum changes relative to other influential factors of curriculum change.

Staffing issues, including workload- the change of professional staff can affect the staff issues because a colleague resigned or skilled teachers may not be found in the national labour market. So staff shortages can mean that the range of subjects offered could be narrowed because, many of curriculum decisions are based upon the zero-sum policy. Surplus staffs are a related issue (Gruba et al., 2004). In general, the availability of competent staff in the institution is considered as a decisive factor in influencing the change of a curriculum. The shortage of sufficient TVET teachers/instructors represents one of the obstacles to TVET development in Ethiopia. Most TVET teachers/instructors have relatively low formal qualifications. As a result, the quality of TVET teachers/instructors is low and has suffered as a result of the low reputation of their profession. This is also severely affecting TVET delivery in Ethiopia, especially, at higher qualification levels. The available technical teachers did not choose to become technical teachers, since they are not motivated. As a consequence, TVET teachers left their jobs *(MOE 2008, p.11).* This could be a decisive factor of curriculum change in the country.

National and international accreditation bodies- Another source of positive influences on course structures are the various program structures prepared by the existed professional bodies and other bodies scrutinize course programs, even in the absence of specific curricula in certain directions. Hence, accreditation is usually considered as marketing necessity, however the relevance of the curriculum is not even mentioned (Gruba, et al., 2004). The issue of accreditation currently in Ethiopia is based on indicators defining physical and human resource assets (such as availability of

classrooms, workshops, number and qualification of teachers, etc.) derived from national curricula in addition to internal management processes, capacities for labour market analysis, curriculum development, personnel management and human resource development strategies and financial management. The purpose is to set quality benchmarks and to attain transparent working system, thereby protecting trainees from low quality status (MOE, 2008, p. 36).

Employer and industry viewpoints. Professional bodies should reflect the expectations of employer and industry. These pressures are also sometimes applied directly. There is much anecdotal evidence that employers have strong opinions about the curriculum, usually requesting more emphasis on transferable skills (such as communication, social, analytical, and critical thinking skills) in graduates, but employers are feeling that these requests are not heard. For example, Jones (2003), citing the cover story of the may-June 2003 ASEE Prism[3], writes that:

> *Educators are struggling to prepare well be rounded engineers for today's workplace. Stimulated by the broadening required in ABET's[4] Criteria 2000, engineering educators have been overhauling or tweaking their curricula. However, employers are complaining that change is not happening fast enough, in critical areas such as communication skills. University officials explain that many institutions are research based, and thus concentrate curricula on more of theoretical work. In addition, crowded curricula and scarcity of resources to implement changes contribute to the slow progress (Jones 2003, p. 11).*

This opinion provides that the position of employers in TVET curriculum is an important issue for changing the existing curriculum, because TVET system must be steered and implemented with the involvement of a wide stakeholder group and with more of employer involvement. Different stakeholders should contribute their own expertise, experience and capacities, to combine efforts and improve the relevance and effectiveness of the TVET system (MOE, 2008, p.18).

Influential individuals- This is an academic courtesy (and apathy) sometimes means that the outspoken individuals are not contradicted, even when they are wrong. Watson (1994) suggests that key individuals have so much influence because of a lack of alternatives: "the pace of change required by departments to keep up leaves little room for mistakes and reflection".

---

[3] *ASEE -American Society for Engineering Education may-June 2003. Annual conference by Educators Struggle to prepare well-rounded engineers for today's workplace.*

[4] *ABET, incorporated as the Accreditation Board for Engineering and Technology, Inc., is a non-governmental organization that accredits post-secondary education programs in "applied science, computing, engineering, and engineering technology"*

Gruba et.al (2010) acknowledged that the main driver of every category of change was the opinion of influential or outspoken individuals. However, the major changes were driven as much by academic fashion, financial concerns, and student demands as by academic merit. Thus, external curricula were virtually irrelevant. Only for change within an individual subject were pedagogical concerns dominant. Furthermore, this factor explained by Lachiver & Tardif (2002) divided into four sub key factors as:

- Strong leadership accepted by the academic staff,
- Sharing and accepting the need for change, often stimulated by observing the discrepancies between the current output and what is desired by employers,
- The extent of a curricular change, whether wide-scale or minor,
- The degree of flexibility for departmental staff because many academic staff holds embedded teaching and professional practices.

This is particularly important in the context of the driving factors for the curriculum change and the fact that influential individuals such as internal or external experts, political parties sometimes researchers have roles to change the TVET curriculum in Ethiopia.

Academic fashion- In principle, institutional programs are chosen on reputation: academically strongest, most up-to-date, greatest industry relevance, best teaching, or whatever particular features that an institution believe describes the particular approach to higher education. In practice, however, students also consider many other factors: how easy subjects are to pass, flexibility in delivery, hours required on campus, articulations paths, and so on. The other kind of academic fashion is an influence of an innovation that appears to be successful elsewhere (Gruba et al., 2004). Currently, TVET is an academic fashion in Ethiopia that trainees are concentrated on a specific area and assessed their competency to get competency certificate. It is believed that if a program is attractive to students, then the best students will choose the institution. Hence, institutions are liable to change their curriculum accordingly.

Pedagogical argument, academic merit- many changes are proposed because they are an unquestionably "good thing" one would find it hard to argue, for instance, lectures and tutorials are not better thing than the laboratory classes. Nevertheless, most accept that project-based courses are indispensable for students going into the industry. If the program do not include these features, and there are strong factors at work that prevent their adoption. For some decisions, the relevance of academic merit is unclear. For example, where pedagogy is relevant, but only somewhat, certain subjects should be core or elective (Gruba, et al., 2004). Thus, the academic merit also found to be vital especially, during outcome based TVET CR, for being more attention is given to practical

courses than theoretical courses. The opposite is true during the input based TVET CR in the Ethiopian context.

Financial pressures- change of curriculum clearly influenced by the powerful budgetary forces. For example, class sizes are a consequence of the financial stringencies. For a large class it could be difficult to have any personal knowledge of the students' aptitudes or abilities. Contrastingly, smaller classes would greatly improve the lot of the average student, and enable them to build a personal relationship with at least one staff member. Cost pressures can influence issues other than staff consignments and students do not always have the opportunity to fully refine their skills before entering the work force (Gruba, et al., 2004). This suggests that financial issues are factors, for example, the assignment of budget to TVET by the Ethiopian government and external financial supports are some of the indicators that drive curriculum change. However, as a consequence of budgetary constraints, most urban public TVET programs are under-funded while rural public TVET programs suffered from poor facilities and shortages of training materials (MOE 2008, p.11).

Benchmarking- In this study, it is considered as a process of comparing countries/ institutions' best practices in TVET system to that of others using objective and subjective criteria. The process compares programs and strategic positions of competitors of exemplary TVET systems to those in other TVET systems reviewing its status for use as reference points in the formation of organization decisions and objectives. Comparing how a country performs a specific activity with methods of a competitor or some other countries doing the same thing is a way to identify the best practice and to learn how to lower costs, reduce defects, increase quality, or improve outcomes linked to countries excellence (TESDA, 2010)

A benchmark represents a value, standard, parameter, or goal for a course. The context of curriculum benchmarks reflect the values expressed by the vision, mission, strategic policies, and beliefs of the institution as well as the important dimensions, guidelines, and standards for reform in education espoused by the leading agencies of change. Benchmarks represent an overlay of a school's big picture on a single course or program. Shelly (2000, p. 41) points out about initiation of benchmarking as "Whenever we initiate a new course, or when we want to measure the effectiveness, appropriateness, or degree of fit of an established course, we enter the course into a benchmarking cycle".

This cycle lasts for two years, a time span chosen because it needs two data points to show improvement. If a course is not meeting expectations, serving students, or is simply in need of

adjustment, or depending on the benchmarking process it needs. This helps to provide the data needed to fix or to go in another direction. During the first year of the process, the best direction of the efforts might be determined. The second year affords an opportunity to begin and to track mid-course corrections that will help to meet the institutional goals (Shelly, 2000, p. 41).

Shelly, further indicates that the process of benchmarking includes the input from teachers, students and portfolio evidence as major data sources. For example, faculty member accumulates portfolio materials that illustrate how plans were carried out, how contents were delivered, and how goals were achieved. Evidences to be collected are course syllabi, approved course competencies, state standards of learning relevant to the course, examples of lab, projects, major activities, test and assessments, rubrics, evidence of teaming and interdisciplinary connections, and other relevant plans or assignments. Evidentiary materials may also include a summary of student grades (p. 43). This suggests us benchmarking is not an easy task which needs systematic evidences and a participatory change process which helps to minimize a mismatch between the need of the indigenous labor market and the new benchmarking, since it is one of the influencing factors in the decision making of the curriculum change.

3.3.3 **The input based vs. outcome based curriculum**

In educational theories, the concepts of, content, input, competence, and outcome based education is elaborated differently based on the goals specified. For example, content learning is defined as the topic, themes, beliefs, behaviors, concepts and facts, often grouped within each subject learning area under knowledge, skills, values and attitudes, that are expected to be learned and from the basis of teaching learning. Similarly, input based learning is based on traditional theoretical approach, which characterized by rote learning, teacher and subject centered focused on supply driven system Spidy 1994). Whereas, competence is defined as a combination of knowledge, skills and attitudes appropriate to the context. It indicates the ability to apply learning outcomes . . . and not limited to cognitive elements but also encompasses functional aspects, interpersonal attributes and ethical values. Sometimes the term skill is used as an equivalent to competence (cedefop 2011). On the other hand outcome learning is defined as the totality of information, knowledge, understanding, attitude, values skills, competencies or behaviors the learner has mastered upon the successful completion of an education program (UNESCO, 2013). Generally, the goal of these approaches is to attain skill, knowledge and attitude.

In this study, the input based curriculum is characterized by content oriented system of curriculum. Outcome-based education has its roots on competency-based education (Butler, 2004). Hence,

competence-based education (CBE) has received a lot of attention in research and practice in Europe. According to the European Qualification Framework (EQF), outcome-based education is defined as: "*The proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and personal development*" (MOE, 2008).

Currently, in the area of vocational education, for example, the notion of competence has been almost completely replaced by the concept of education and qualification (Nickolaus, 2007, p. 129). On the point that competence is considered to be the broad combination of knowledge, skills and attitudes, which are necessary for effective performance. This philosophy is also institutionalized in the countries, such as the United Kingdom, Ireland, Germany and Netherland. This approach further becomes famous and using it in their capacity development strategy in Asia, Africa and Latin America (MOE, 2008).

In other side, the German Federal Ministry for Economic Cooperation and Development (2005) agrees that labor market information is vital for developing demand-driven training. In their strategy paper, TVET and the Labor Market in Development Cooperation, the German Ministry states that "reliable labor market information and monitoring of employment impacts are extremely important in developing needs, related TVET and labor market policy measures" Consequently, Germans are considered as one of the leaders in Vocational/technical training (Prasad & Bahr, 2010, p. 4).The following Table 3.1 presents a system of content versus outcome based learning.

Content Based Learning System **Passive students**	**Outcomes Based Learning System** **Active learners**
Assessment process – exam & grade driven	Continuous assessment
Rote learning Content based/broken into subjects	Critical thinking, reasoning, reflection & action Integration knowledge, learning relevant/ connected real life situations
Textbook/worksheet focused & teacher centered	Learner centered & educator/ facilitator use group/ teamwork
See syllabus as rigid & non negotiable	Learning programs seen as guides that allow educators to be innovative & creative in designing programs/ activities
Teachers/trainers responsible for learning - motivated by personality of teacher	Learners take responsibility for their learning, learners motivated by constant feedback/ affirmation of worth
Emphasis what teacher hopes to achieve	Emphasis outcomes – what learner becomes & understands
Content placed in rigid time frames Stay in single learning institution until complete	Flexible time frames - learners work at own pace Learners can gather credits different institutions until achieve Qualification
Previous knowledge & experience in learning field ignored – Each time attends whole course	Recognition of prior learning: after pre-assessment, learners credited outcomes demonstrated or transfer credits elsewhere

(*Source: Spady, 1994 in Butler 2004, p. 8)*

Table 3-1: Content Based Learning versus Outcomes Based Learning

The outcome-oriented curricula provided an active learners participation, which can offer a valuable platform for bridging the worlds of education, training and work, providing a common language

between competences acquired in learning and the needs of occupations and the labor market, however the prevalent irrelevance of curriculum may be one of the greatest obstacles to matching education and training provision successfully to learner and labor market needs, especially for VET providers and employers (cedefop, 2010, p. 1). Therefore, this leads many nations to the development of curriculum either competence and/or outcome based system.

The focus of the competence-based curriculum (CBC) has been on content, on the knowledge to be acquired by each student. If students learned the information and performed well on tests and assignments, they received credit for the course and moved on to the next. The purpose is to produce academically competent student. The daily schedule in a school is organized around the content. Each hour is devoted to a given topic; some students responded well to the instruction, and some may not.

In contrast, outcome based education (OBE) will change the focus of schools from the *content to the student*. It is one of those reforms that have been driven by educators in response to demands and for greater accountability by stakeholders and as a vehicle for breaking with traditional teaching. This approach to curriculum could change the TVET system more than any other reform proposal in the past. (Spady, 1998, p. 2)

On the other side, the common arguments against outcome-based education is summarized as the follows (NESIC 1993):

- conflicts with admission requirements and practices of most colleges and universities, which relay on credit hours and standardized stets scores,
- some outcomes focus too much on feelings, values, attitudes and beliefs, and not enough on the attainment of factual knowledge,
- relies on subjective evaluation, rather than objective tests and measurements and
- undermines local control.

Further, Boweden in Spady (1977) points out basic principles and intentions of OBE: greater workplace relevance, outcomes as observable competences, assessments as judgments of competence, improved skills recognition, improved articulation and credit transfer and “a focus on outcomes” (Spady, 1977).

Hundert, Hafferty & Christakis (1996) develop a six stage progressive process in the implementation of a competency based curriculum that begins with agreement on the competencies and ends with implementation and evaluation of the outcomes. The process is cyclical, as

competencies need to be evaluated and updated in response to the continued evolution. There are varieties of competency models used by different country while the design and implementation process is consistent across all models. The six-stage processes of CBE are: 1) agreement on competencies. 2) TVET programs and practice partners, 3) gap analysis of curricula, 4) designing new models addressing the gap. 5) implementation of seamless progression models and 6) evaluating and updating competencies.

Currently, different nations have turned their face towards a system of the outcome-based curriculum rather than a concept of competence curriculum. Outcomes based education (OBE) is a process that involves the restructuring of curriculum, assessment and reporting practices in education to reflect the achievement of high order learning and mastery rather than the accumulation of course credits" (Tucker, 2004 in Butler 2004 p. 3). Therefore, Outcome based curricula (OBC) is a curriculum design based on what the student can achieve "outcome is a broad statement of what you want students to know and be able to do as a result of teaching/learning" (Erickson 1995, p. 196) and assessing the results. However, educational structures and curriculum are regarded as means not ends (Willis & Kissane, 1995).

Generally, these processes ranging from agreements on competencies to evaluation are important in the TVET curricula. However, the development of the competency-based model is an intensive and time-consuming process (Sroczynski, 2008, p. 7). A shift from input based curriculum to outcome base curriculum system has been made in Ethiopia since 2006. However, the implementation of the outcome based curriculum found to be challenging due to less participation of the industry sectors (MOE 2006).

3.3.4 **Evaluating TVET curriculum reform**

Descy & Tessaring (2004, p. 22) state that before the old TVET program is changed, it is important to know whether the new program works. Program evaluation therefore requires (usually quantitative) measures of impact to judge if an intervention has worked or not – and (usually qualitative) information to discover the reasons why the intervention has succeeded or failed.

Different countries have different approaches to curriculum evaluation; but generally, there are three types of CR evaluation (UNESCO, 2007, p. 55):

1. *Diagnostic evaluation*-This method of evaluation is carried out at the beginning of a program or project, by first identifying aspects of a curriculum that have to be improved and then by making

appropriate decisions to do so. Diagnostic evaluations provide essential information for designing appropriate programs in curriculum development.

2. *Formative evaluation*- It is an ongoing process where there is continual talking and planning, with educational personnel, on matters regarding the change of content in the curriculum or the student body. The evaluators who carry out formative evaluations are usually people who are already involved in the educational program under evaluation. They are often individuals or groups who are internal to the educational system.

3. *Summative evaluation*- It occurs mostly at the end of a project/program. Summative evaluations are used to determine what has been achieved over a period of time, to summarize program progress, and to report the findings to the stakeholders. The evaluators who conduct this type of evaluations are usually external evaluators. They are candidates independent of and unaffected by the object of the evaluation.

According to Maclean & Wilson (2009, p. 1521), evaluation is defined as follows:

> *Evaluation is a systematic and objective process that assesses the relevance, efficiency and effectiveness of policies, programs and projects in attaining their originally stated objectives. It is both a theory and practice- driven approach, whose results feed back into the policy-making process and help in formulating an assessing policy rationales. However, there is still a lot of confusion on what evaluation can realistically and effectively achieve.*

Evidence from evaluations of TVET can be useful for: (a) inform government decisions (including allocating funds); (b) improving employer decisions on training; (c) informing individuals of their options; (d) designing new programs; (e) refining program design; (f) improving program targeting; (g) identifying ineffective programs; and (h) encouraging public debate about TVET.

Generally, Stern (2003) summarizes the purposes of TVET evaluation under four categories: 1) accountability for policy-makers; 2) development for program improvement; 3) knowledge production and explanation; and 4) social improvement and change.

3.4 *Implementation of curriculum*

According to UNESCO (1999, p. 10), before the implementation of a new curriculum, a number of factors must be taken into consideration, such as:

- An analytic assessment of the existing curriculum,
- reviewed learning needs and national development needs,

- established a consensus to CR,
- determined curriculum objectives, content and methods appropriately,
- provided curriculum materials,
- personnel for the design, implementation and evaluation of the reformed curriculum,
- acceptance of the reformed curriculum by educators and in educational institutions,
- established evaluation and feedback procedures,
- determine the means of costing and financing the reform program.

If the above requirements are not considered, as Dawson (2005, p. 9) states that most reforms fail because they are not implemented and institutionalized in schools. Teaching, learning and assessment processes must be considered to make sure the curriculum are embedded in the effort of the school. It is critical to consider the fundamental policy decisions about the nature and extent of the reform process, on the ongoing decisions about the progress and impact of educational reform. However, the decision should be based on valid and reliable evidence rather than assumption or supposition. Generally, if the existing curriculum is no longer responsive to the needs and interests of the society, it is intended to serve, reform is necessary. CR may be either evolutionary or revolutionary.

3.4.1 **Curricular interventions**

Interventions are defined by Anderson (2004, p. 35) as the activities that will be put in place to bring about a particular precondition (or a group of them). Interventions can be programs or communitywide change initiatives that implement several programs. The term also used to describe changes to public policy or institutional practice that need to be in place for an outcome to occur.

What constitute an intervention?

Zigmond, (1997, p 385) points out six components of an instructional intervention. It is a planned set of procedures that are aimed at teaching a specific set of academic or social skills to a student or students. An intervention would have the following components:

- *It is planned*. Planning implies a decision-making process. Decisions require information (data) therefore; an instructional intervention is a databased set of teaching procedures.
- *It is sustained*. This means that an intervention likely is implemented in a series of lessons over time.

- *It targets, or is focused on* a particular student or students and on a particular set of skills or knowledge. This means an intervention is intended to meet a specific set of needs for a student(s). However, this does not mean that an intervention must be conducted in one-to-one teaching. An intervention, even a special education and individualized intervention, can be implemented for an entire class.

- *It is goal oriented*. This means that the intervention is intended to produce a change in knowledge/behavior (academic or social) from some beginning or baseline state toward some more desirable goal state.

- It is typically a *set of procedures* rather than a single instructional component/strategy. Interventions typically address a range of considerations. For example, *instruction* (e.g., pace, guided practice) *Curriculum* (e.g., correct level of difficulty, sequence); *Educational Environment* (e.g., allocation of instructional time or arrangement of the instructional setting), and, *Learner* (e.g., motivation patterns or prior knowledge of task).

- There is no minimum number of things that should be included in the description of an intervention, nor is there a maximum number of things to include. Re-administering performance probes for progress monitoring is NOT an intervention.

Specifically, Howell (2009, p. 7) also identified intervention activities as curricular adaptations (benchmarks), materials (equipment, finance), time allocated, instructional method, and compatibility with other high-impact variables (e.g., Classroom ecology, Curriculum analysis, Performance monitoring procedures).

One of the major challenges for curriculum reform is creating balance and consistency between the various interventions of a curriculum. Curriculum includes three major planning elements: *content*, *purpose* and *organization* of learning (Walker 1990; in Akker, 2010, p. 7). He further points out the nine interventions that address ten specific questions about the planning of learning.

Rationale	**Why are they learning?**
Aims & objectives	Toward which goals are they learning?
Content	What are they learning?
Learning activities	How are they learning?
Teacher role	How is the teacher facilitating their learning?
Materials & resources	With what are they learning?
Grouping	With whom are they learning?
Location	Where are they learning?
Time	When are they learning?
Assessment	How to assess their learning progress?

Source: Akker, (2010 P. 7)

Table 3-2 Curriculum Interventions

Figure 3.2 displays the nine elements as the rationale for curriculum, such as the contents, aim and objectives, learning activities, teachers' role, materials and resources, grouping, time, location and assessment are considered as important interventions in a model of CR.

Generally, interventions on reform of TVET can rarely, if ever, be isolated from other contextual influences and this makes measuring impact highly complex. To help focus hard on impact there are two questions that might be asked (Descy & Tessaring, 2004, p. 23):

(a) What are the changes in TVET (including changes to those involved in TVET and the contexts in which TVET learning is applied) that have occurred during the period of intervention and after the intervention?

(b) is there evidence to link these changes directly or indirectly to the TVET intervention?

In the Ethiopian context, it is acknowledge the development of model curricula and of related teaching, training and learning materials are accessible to all TVET providers, but the extent of intervention is given to the institutions (MOE, 2008, p. 36).

3.4.2 **Curriculum development**

Curriculum Development can be defined as a systematic planning of what is taught and learned in schools as reflected in courses of study and school programs. Onyike (1981) defines curriculum development as a process of planning learning opportunities intended to bring about certain changes in an individual and the assessment of the extent to which these changes have taken place.

It is difficult to give a definition for curriculum development, because it will always be affected very strongly by the context in which it takes place. Curriculum development is taken as a continuous process, which is relevant to the situation where it takes place, and flexible (Otunga and Nyandusi, 2009).

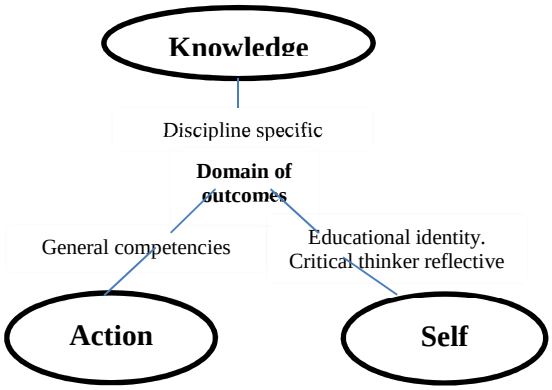
Curriculum development describes all the ways in which training or teaching organization plans and guides learning. This learning can take place in groups or with individual learners. It can take place inside or outside a classroom. It can take place in an institutional setting like a school, college or training center, or in a village or field. It is central to the teaching and learning process (Rogers and Taylor, 1998).

The curriculum professionals are guided into an analysis of the building blocks of curriculum at the macro level, through three activities:

1. *The structure of a curriculum framework***.** It includes the typical components of curriculum frameworks to be used as a structural analysis tool.
2. *Formulation of what students should know and be able to do***.** It helps the participant to revise and choose several alternatives to define the expected achievements of students.
3. *Approaches to curriculum integration***.** It reviews existing strategies for curriculum integration with different focus and depth.

Furthermore, Barnett, (2001) identify three curriculum domains during curriculum design:

- *knowledge* of concepts and practices of the subject specialism;
- *action* competencies - the theory -in-use and generic (work and communication) skills acquired through doing the work of the discipline; and
- the development of '*self*' - the student's own identity and personal in relation to the disciplinary community. This curriculum domain can be extended to include development of the student's identity (self) beyond the discipline within society.



Source: Barnett, 2001

Figure 3-6*: Curriculum domain during curriculum design*

Generally, the central concepts curriculum design involves such as defining national curriculum standards, defining curriculum outcomes, standards, competencies, and objectives, content; and current approaches to curriculum integration, diversification and differentiation (technology,) and the principle and practice of curriculum design for Education for Sustainable Development (ESD) (UNESCO 2001). Therefore, to organize a curriculum there is a need to deal with the curriculum contents, the process of selecting curriculum elements from the subject, the current social life and the students 'experiences, then designing the selected curriculum elements properly so that they can form the curriculum structure and type in addition to the extent of the curriculum change properly.

3.4.3 **Nature/extent of curriculum change**

The scope of a curriculum depends on the range or extent of content that will be included in a course or program. However, there is a constant tension between breadth and depth when considering scope. Hence, the following are the broad categories of curriculum change that shows the extent of the change (Khobragade and Nilesh, 2012):

- Introduction of a *whole new program* or specialized stream at the specified level,
- introduction of a whole new (*course-work*) program at the specified level,
- introduction of *a new subject*, or deletion of an existing subject,
- change to or within a first-year or other *core subject*,
- change to or within an *elective subject.*

These categories are important to evaluate the curricula to what extent the content/course of a curriculum is changed during the process of the CR. However, most curriculum changes should be implemented piecemeal. Therefore, curriculum change is managed logically in five-steps: 1) An analysis of the current offerings and context, 2) the expression of key program aims in a mission statement, 3) a prioritization of resources and development strategies, 4) the implementation of the targeted curricula change, and 5) the establishment of monitoring tools and processes (Lachiver & Tardif, 2002).

Generally, Winterhager (1974, p. 151) points out that, a meaningful reform of TVET curriculum is necessary in the context of curriculum change. The extent of the curriculum change depends on the intention of the change; however, the notion that changing the curriculum means changing people, which apparently have taken from the roots. Group work under various guides and the group process are almost universally advocated as effective methods for changing people and thus the curriculum (Hubert, 1957, p. 287).

3.4.4 **Constituency participation in curriculum development**

A research conducted different constituencies actually participated in curriculum development, such as Administrators, supervisors, teachers, students, board of education, Parents, Community representatives, college professors and independent consultants. The survey finding indicates the average degree to which each constituency was involved in curriculum development. Heavy involvement was reported for instructors, professionals and directors of curriculum. Assistant superintendents and principals also had a great deal of involvement. Community-based

constituencies, especially parents, had less input. Students, on the average, had little input, and teacher aides almost none (Martin, Saif & Thiel, 1986, p. 48).

Further, Martin's finding indicates that two-thirds of the respondents thought those administrators, supervisors, teachers, students, the board of education, parents, and community representatives should be involved in curriculum development. About half thought that independent consultants should be involved and about one-third that college professors should participate. While there appears to be support for some degree of involvement by a wide range of constituencies, the degree of involvement supported by administrators remains undetermined. The universal involvement of teachers and principal in curriculum development is found significant (Martin, 1986, p. 48).

Further, Johanson (2001) indicating that practicing educators, both administrators and classroom instructors, must be directly involved in successful curriculum revision processes. The practitioners strongly suggested that a willingness to adapt their instruction would occur as soon as the curriculum revision became significant enough to merit continuous discussion and implementation, i.e. evaluation, student involvement, teacher involvement, parental involvement, and administrative support.

Educational literature, theory, and reform trends have long promoted putting teachers in a central role in curricular design. The work of early theorists recognized the importance of the role of the classroom teacher in curricular development at the building level (Ornstein & Hunkins, 2004).

Literature on teacher leadership demonstrates that efforts to generalize teacher-leadership within educational organizational systems have occurred for more than two decades without significant or sustained success (York-Barr & Duke, 2004). Scholars across the decades have identified limited engagement of teachers in meaningful decision-making as a major flaw in educational organization and suggest that it has been elemental in the failure of meaningful educational reform efforts (Ornstein & Hunkins, 2004). They further indicate the contemporary curriculum scholarship places teachers in a central role in curriculum development, implementation, and evaluation. The appropriateness and potential for successful role fulfilment by most teachers, however, remains unclear and poorly supported.

Generally, if there would be meaningful reform in TVET curriculum, the teacher should be participated in the reform program.

3.4.5 **Employer involvement in school/college**

The evidence suggests that employer involvement has a positive impact on students' vocational skills, knowledge and understanding; academic and learning outcomes; health and well-being; enjoyment and engagement; employment, earnings and family life (Wilson, and Smith, 2005, p. 3). Furthermore, the research evidence also highlights the potential benefits of employer involvement for employers themselves. Therefore, employers are involved to improve the curriculum in schools in different ways. Burge, Wilson, and Smith, (2005, p. 3) indicated the following types of involvement of employers in school/colleges:

- The most frequently mentioned ways in which employers work directly with students is through *work experience, school/workplace visits, apprenticeships/ training and mentoring*.
- Employers/businesses use their skills and experience to support the leadership and governance of schools. This may involve sitting on the *board of governors of a school* or providing professional development for teachers. In some cases, it may also involve providing financial support to schools.
- Employers may also be involved in supporting the curriculum. The literature shows that this includes *advising on and developing relevant curricula* as well as developing curriculum-related and lesson resources.
- Employers also work directly with students to develop skills and awareness. The evidence suggests that this involvement raises student aspirations as well as helping them to develop skills that are important to employers.

In the Ethiopian case, however there are communities who involved in such a way that the overarching principle of the ESDP and the associated Guideline of 2002 could be implemented. It is encouragement of community involvement in school management. The establishment of active Parent Teacher Associations (PTAs) and *Kebele* Education and Training Boards (KETBs) appears now to be quite widespread in all regions. PTAs are established according to the Guideline of 2002. They are involved in the monitoring of the teaching-learning process, which can include taking action against poor performing teachers (MOE, 2005, p. 77).

3.4.6 **Apprenticeship/cooperative training**

First, apprenticeship training may be mainly industry-specific or rather firm-specific (Becker 1964 in Zwick, 2007). Zwick (2007, p. 4), further stated that the crucial motives for apprenticeship training in their own firm. Company owners often point out the social responsibility, the positive effects on the company's image, or the company's tradition in apprentice training. In contrast, empirical studies show that the concrete decision for apprenticeship efforts mainly depends on the company owner's individual cost-benefit-calculation (Wolter et al. 2006). Further, indicated the

most important reasons for not conducting apprenticeship training were inability to retain the apprentices after the end of apprenticeship training and too laboriousness/expensiveness of Self-conducted apprenticeship training. By contrast, reasons such as “We meet our requirements by hiring qualified staff“ or “We would like to offer apprenticeship training but no appropriate applicants are available“ were not mentioned as widely (p. 3).

In all apprenticeship countries except Australia and England most apprenticeship programs take three years to complete or, in the case of Ireland, 4 years. In Australia, traditional apprenticeships last for three years and traineeships last on average for one year. For example, in England the average for all apprenticeships is between one and two years (Steedman, 2010, p.2). In Ethiopia, apprenticeship take 936 contact hours to complete diploma (10+3) program (MOE, 2003, p. 5). However, cooperative training is provided for several months. This workplace internship depends on agreements between the TVET institutions and the enterprises. See the practice on the picture (Appendix 10)

From this, wide perspective Sharma (2008, p.5) identified three particular job orientations:

1. *training for identified jobs*. It is closely connected to the ‘human capital development’ approach that is still popular in some countries. The emphasis here is on preparing human resources for projected employment opportunities. However, jobs do not often materialize, owing to changing circumstances or the limited number of jobs in the modern wage sector.
2. on *job creation*. It is largely concerned with an attempt to prepare human resources for self-owned and self-managed enterprises, especially in the informal sector. This orientation often fails to realize its full potential because the informal sector is unable to provide or generate gainful employment opportunities for the many graduates of TVET programs.
3. *on-the-job-training*, is concerned with upgrading the level of available skills by means of pre-service and in-service training programs. Such programs, however, often encounter problems because the work sector does not keep pace with changes to accommodate the high-level skills acquired.

3.4.7 **Assessment and certification in TVET system**

The national systems of examination and certification remain necessary and continue to require improvement. The role of national occupational standards in TVET curriculum development has major importance in the design and development of testing and certification mechanisms and will continue to be of importance in the future. There are international student testing associations, for example UNESCO (2001) indicates such as:

- the International Association for Educational Achievement (IEA),
- the Trends in International Mathematics and Science Study (TIMSS) and
- the Program of International Student Assessment (PISA)

However, the evaluation system in TVET may differ from country to country. Winter & Wolfgang (1974) states that the examination regulations should be adopted as the legal regulations of the federal government. They should prescribe objectified (programmed) written and oral tests and can be dispensed the oral examinations, if they are not needed because of the nature of the occupation.

He added further, the training assessment and final examination should determine whether and to what extent the knowledge and skills acquired, which are necessary for wage and self-employment in the profession. Performances while training in companies and vocational schools are recorded according to their importance for the training objective in the overall assessment. Federal Uniform applicable training goals call for uniform national examination papers. They must consider to include the industry and school curriculum.

The representatives of employers, workers and teachers/trainers at vocational schools act solely on the basis of their expertise in designing the examinations. The participation in the training is not a prerequisite for participation in designing tests. Continuous assessment must show whether the planning and implementation of training match with the intended performance level. The task should take into account the company-training plan (Winter & Wolfgang, 1974, p.160).

These are more visible upon ‘academic’ education, and are also influencing TVET. In addition, the desire of international/multinational employers to hire persons with recognized qualifications is affecting (and will increasingly continue to affect) hiring practices. While this is a current practice at the university level, it has also become increasingly important at the technician, technologist and skilled-trades levels (UNESCO, 2001).

Since TVET institutions differ in their organizational set up and course offerings, each training center has its own way of awarding certificates for the graduates. Thus, the need for consistent and unified system of certification is essential (Bakri, 1998, p. 2). However the problem could be in the process of implementation that may not be reliable that is why Nasta (1994, p. 18) states that assessment standards should be both valid and reliable. Hence, assessment and certification should be valid and reliable so that it can serve the TVET graduates and the demand of the labor market.

Quality assurance. It is a planned and systematic pattern of all actions necessary to provide adequate confidence that the product, its components, packaging and labeling are acceptable for their intended use (MOE, 2010). In Ethiopia, quality is assumed to be assured through developing effective assessment system. Assuring education quality is centered mainly on the relevance of the learning outcomes. They are expressed in terms of knowledge, competencies, values and attitudes that can be obtained by attending and finalizing a study program. For example, according to the methodology elaborated by the Romanian Agency for Quality Assurance in Higher Education for authorizing the study programs (2006), the main instruments used in the process of assuring the quality of educational programs are: a) effective planning and realizing of the expected learning outcomes; b) monitoring of the outcomes; c) internal outcome evaluation; d) external outcome evaluation; and e) permanent improvement of education outcomes (Kaunas, 2008, p. 64).

3.5 *Factors influencing effective implementation of CR*

Studies show that the existing unsettled economic, political and social factors in the developing countries have pressure for change of the existing curriculum in different educational institutions. Recognizing and understanding the factors that influence curriculum from within and out with the institutional context provides a sound rationale for decision making in relation to CR in the Ethiopian context. These factors themselves can be isolated and examined one by one, but the true complexity and richness lies in their fluid interplay. Hence, Fotheringham states that "If we focus too much on any one of the factors, no matter how pivotal it may seem, we are in danger of reforming a distorted view and of reaching a skewed conclusion about the whole" (Fotheringham, Strickland, & Aitchison, 2012, p. 24).

Wang (2006) categorized the factors of CRs into two groups: external factors and internal factors. *External factors* are factors that stem from outside the classroom, for example cultural, organizational, or administrative characteristics those teachers and students have little or no control over it. *Internal factors* are factors related to teachers and students in the classroom.

On the other side, Otunga and Nyandusi (2009) in a synthetic vision indicated that the external factors are testing, text books, teacher training, resource support and the internal factors are teachers' beliefs and decision-making in innovation, teachers' attitudes towards innovation, teachers' understanding and ownership of innovation since internal factors are factors related to teachers and students in the classroom. Furthermore, Otunga analyzes the context of curriculum development by considering six major factors that influence the curriculum development process in

Kenya: political forces, the socio- economic context, the cultural context, the ICT context and the networking context.

This study, however considers both the external and internal factors as direct influencers for the effective implementation of CR. To get information about factors of effective implementation of the CR, the study evaluates the two reform programs implemented in Ethiopia since 2001, such as input-based CR (IBCR) and outcome-based CR (OBCR). Specifically, the study also evaluates the impact of the TVET CRs on the TVET graduates and employers. The following section describes in consideration of drivers or hindrances of CR generally.

3.5.1 **Drivers and hindrances of CR implementation**

There are several ways of conceptualizing what drives or hinders successful curriculum change. Inlow (1965) relate the purposes of education directly to the factors that facilitate or hinder curriculum change. These purposes are threefold: *cultural transmission*, *environmental adaption* and *total personality development*. That means it is widely understood that it exists in a turbulent economic, political and social context. Furthermore, during CR all the processes in curriculum initiative, including design and planning, trial testing, implementation, evaluation and redesign conducted in the whole circle of curriculum processes. The seven major facilitators or constraints, in the CR are: (1) Natural factors, (2) Time factors. (3) Cultural factors, (4) Physical factors, (5) Organizational factors, (6) Personal factors and (7) Financial factors (Ajidagba, 2012).

The above seven principles are often used in the process of implementing a new curriculum. Making sense of why a new curriculum is necessary, understanding the change process, capacity building, developing cultures of learning during implementation, developing cultures of evaluation, developing leadership for change, and utilizing the ideas that already exist in schools are the main drivers of curriculum change (see Fullan, 2005; in Sahlberg, 2004, P. 7). If the current practice of reform to be effective, ‘the reform process must be reformed themselves because its experience is marked by "frequent practice, little theory and hardly any research" (Rolff et. al. 1998, in Carle 2000, P. 449).

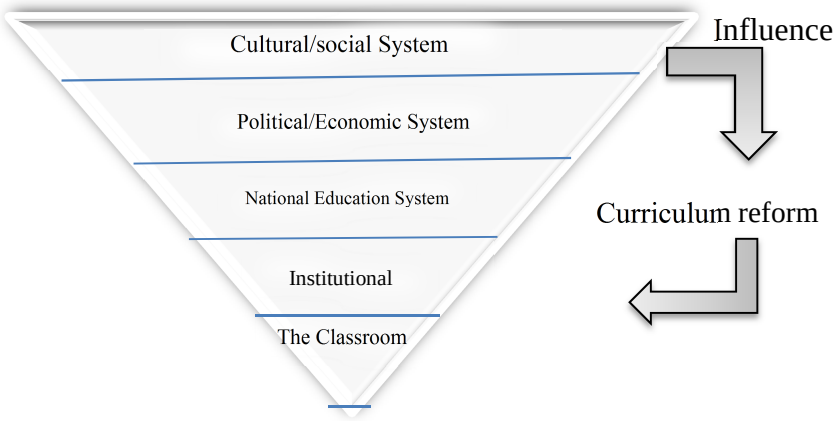
Horn (1947 p. 148) states also another six elements that support educational change process. They are: vision; public and political support; networks, networking, and partnerships: teaching and learning changes; administrative roles and responsibilities; and policy alignment. These elements or change are all involved in progress through the stages of change: maintenance of the old system, awareness of a need for change, exploring the change process and change options, transitioning

from the old to the new system, the emergence of a new infrastructure that supports the change, and finally a point where the new system is predominant.

Black and Atkin (1996), also develop a consistent list of factors that drive reform, such as (1) National economy, (2) professional development, (3) inclusiveness and equity, (4) student training, (5) teacher empowerment, (6) involvement of parent and community, (7) involvement of administration and government, (8) business, industry and publishers, (9) involvement of professional and voluntary organizations, and (10) new educational technologies.

According to Milner (2003), curriculum enactment and choice can be influenced by several variables including federal policies, state standards, school factors, and teacher factors. Morrison (1993) emphasized a sphere of influence on curriculum decision making consisting of society, legislation/policy, the local school district, individual people, professional organizations, business/industry, foundations/agencies, teachers, textbooks, lobbying/special interest groups, and testing. Each factors have their own role in the effectiveness of the curriculum.

White (1995, p. 152) states in his research about factors driving CRs and innovations, that several dynamics must be considered for curriculum to survive. These are external support for reforms, internal support for reforms, the clarity of the innovation, and resources and incentives for participating in reform. However, curriculum designers will ignore these at their peril, because if other cultural and political spheres influence the innovations as disruptive to their agendas, the reforms will be resisted, abolished, or severely curtailed to fit within existing norms. White indicates the following five factors that influence innovative CR.



Source: *Modified from White (1995 p. 152)*
Figure 3-7: Factors influencing CR

Figure, 3.7 displays the factors influencing curriculum change, starting from the top level of cultural/social systems to the lower grass root level, the classroom. Dressel also points out that

curriculum emerges from complex interactions among many factors, including faculty influences, academic traditions, social needs, political pressures, and business requirements (Dressel, 1982, pp. 400-405).

On the other hand, curriculum implementation could be hindered by a lack of the positive factors identified above. The following factors could have a negative impact on curriculum change. For example, staffing issues (high staff turnover, inexperienced teachers, and resistance to change), short time for planning and implementation, organizational structure and system of the institution, and conflicting demand of assessment ad qualification. Hence, without further intensive professional development that builds deep understandings of curriculum theory and practice, the reform will lead to failure of the existing practice (Schagen, S., 2010, p. 23).

Key Factors affecting CR

CATEGORIES	Internal factors	External Factors
Cultural	-age, experience, gender, Ethnicity - teaching philosophy	- cultural appropriateness
Economic	- capacity of obtaining resources	-resource support
Political	- decision-making; - participation and involvement	-government and other agencies; - education law
Organizational	- professional development needs - teacher training	-class size and workload - beliefs and attitudes towards innovation
Psychological	- understanding/ knowledge of innovation (need, clarity, complexity, and practicality); - ownership of innovation; - personal concerns	- communication; -leadership and administration
Pedagogical	-teaching experience; - teaching method	- educational objectives; - educational contents; - teaching strategies; - evaluation strategies
Legal	-respect of professional ethics code	-professional ethics
Technological	-ability to handle ICT	- access to audio-visual resources

Source: (Mâţă 2012, p 218)

Table 3-3 Key factors affecting CR

Table 3.3 elaborates the key factors affecting curriculum change: that presents a holistic overview upon factors affecting implementation of curricular innovations involved in the curricular change. These perspectives are divided into two dimensions: on the one hand, the categories of factors (cultural, economic, political, organizational, psychological, pedagogical, legal, technological) and on the other hand, the two levels (internal and external) (Mâţă 2012, p. 216)

Studies show that CR is considered as an essential strategy for bringing improvements in TVET system. Fullan (1991) tries to relate CR with curriculum innovation. For Fullan innovation is not always synonymous with change and reform, as it refers to specific curricular change. Curriculum change is defined as “any alteration in the aspects of a curriculum such as philosophy, values,

objectives, organizational structures, and materials, teaching strategies, student experiences, assessment and learning outcomes". Various approaches to key factors in innovative curriculum have regarded the contextual nature of these factors. The success of a CR and its implementation requires the application of a number of key features (Fullan, 1991).

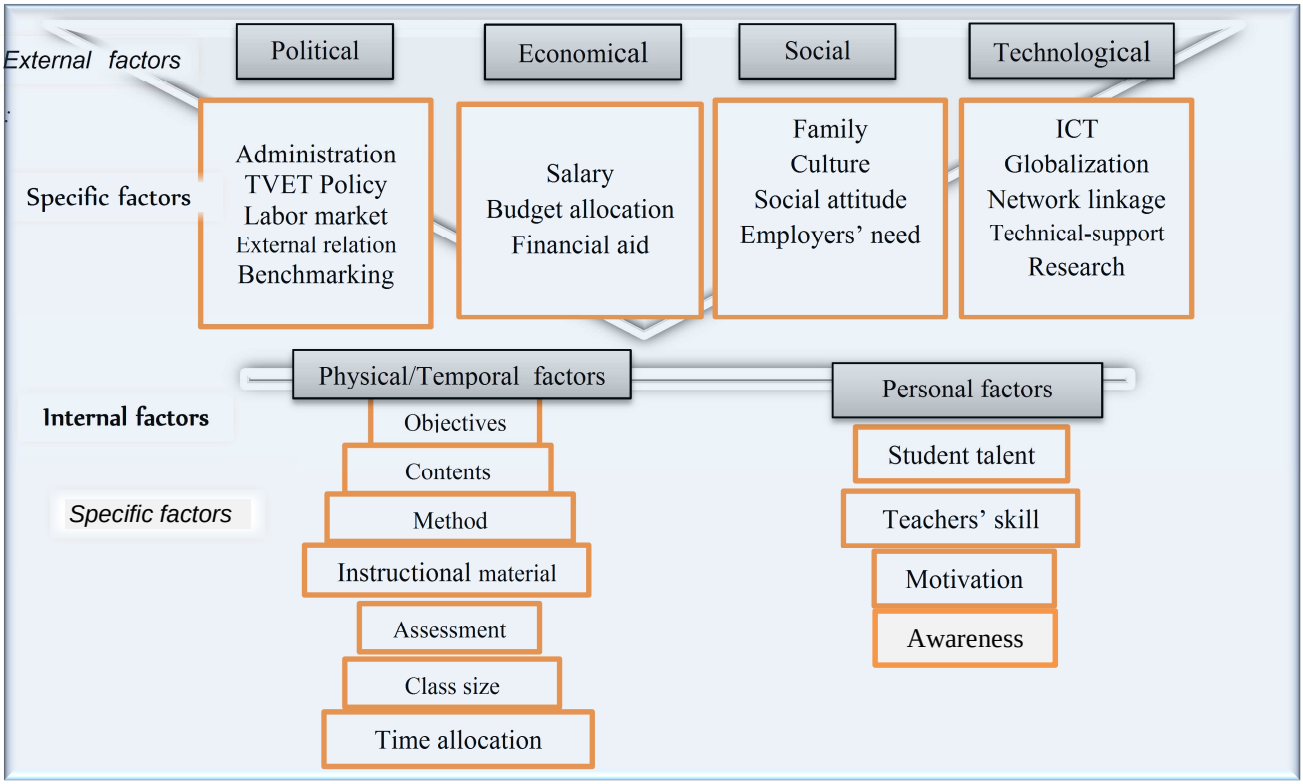
Posner (1995) also identified seven areas, called "*frame factors*" that can affect curriculum implementation. These factors are typically thought of as inhibitors to implementation; however, principals with strong curricular leadership are able to minimize the negative impact of frame factors, often even turning them into assets. The main factors of curriculum innovation underlying frame factors affecting curriculum implementation are:

- ***temporal*** (time: quantity, frequency, duration, scheduling);
- ***physical*** (natural and built environment, materials and equipment);
- ***political-legal*** (state and federal mandates, limits, requirements);
- ***organizational*** (administrative factors, including size, groupings, policies);
- ***personal*** (backgrounds, abilities, interests of students, staff, parents);
- ***economic*** (costs and benefits, broadly conceived) and
- ***cultural*** (values and beliefs of school and community).

Generally, decisions of CRs making runs the risk of being inconsistent-subject to being dictated by the flow of economic, political, and social events, a dominant interest that emerged was the call for curriculums to facilitate the emergences of large groups of underserved students population. Treagust and Rennie (1993) indicated separate facilitating factors are thorough planning, sufficient funds, effective communication, and good technological coordination. In contrast, limiting factors are limited human resources and technology, lack of sustainability. Based on the theoretical background and the discussion with concerned TVET instructors and principals, the following model is designed for analysis of the factors that influence the TVET CRs in the Ethiopian context. This part introduces the internal and external factors influencing the effective implementation of TVET CRs in Ethiopia.

A number of factors that may influence curriculum development are discussed here. These are not all the factors; they are just those deemed to be most salient in characterizing the Ethiopian context. Neither are these factors discussed in any order of importance. In fact, most of these factors overlap and convergent some point. These factors are very broad, so they will be presented here only in

outline form. The following framework (Figure 3.8) depicts the internal and external factors that are assumed the influential factors for the effective implementation of the TVET CRs in Ethiopia:



Source: Modified from Bransch (2005, p. 44)

Figure 3-8: Factors influencing effective CR

The above model displays the external and internal factors; the former contains the four PEST factors as *Political, Economical, Social and Technological* factors with their specific factors underneath. The latter contains two groups of factors; the first group as *physical/Temporal* factors with its seven specific factors and the second group contains the *personal* factors with its four specific factors. The following sections present each factor in detail.

3.5.2 External factors influencing effective implementation of TVET CR

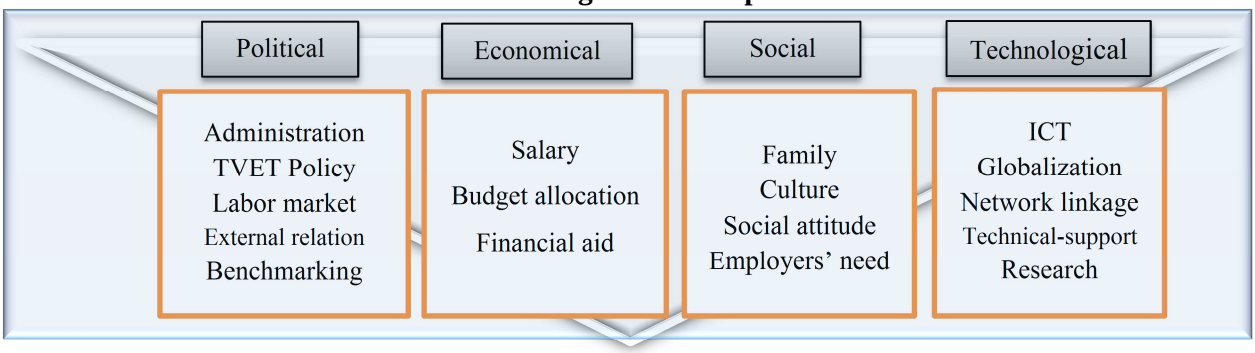
As indicated earlier in the literature, External factors are factors that originate from outside the classroom. A literature show that external influences such as society, government, graduates, and others are currently affecting curriculum development and the curricular change process (Stark & Lattuca in Oliver, et al., 2008, p. 31-32). Therefore, accreditation bodies for example, expect more from educational institutions especially in the area of assessment of student learning. This external influence has caused a number of educational institutions to engage in curricular review in an effort to identify the desired student learning outcomes (Alstete, 2004; Lucas, 2000; Wolf & Hughes, 2007 in Oliver 2008).

Oliver et.al. (2008, p. 32) states that one benefit of external accountability has been the pressure by the market to require institutions to shift the focus from teaching to learning and this approach also requires that faculty work together in the design of the curriculum and therefore, breaks down the barrier of faculty autonomy over individual courses. The external push from accrediting bodies, government, and society has created a greater sense of urgency to review curricular issues. In theological education, these external influences include the Association of Theological Schools, the church, denominations, alumni, and counseling agencies.

Several factors have influenced CR in TVET. In the context of CR, a number of factors that influence the CR programs include political, social and cultural, psychological, pedagogical, economic, technological, and legal. Similarly, these factors have influence on the reform of TVET curriculum since it is part of educational curricular, which may result from external factors such as international educational policies or from internal needs such as educational values, and goals of a society. Lawton (1980) highlights the importance of political factors that observes about selecting the curriculum development because it is the most important aspects of culture for transmission to the next generation.

This study considers PEST factors as External factors from TVET point of view. PEST is a mnemonic standing for Political (P), Economical (E), Social (S), and Technological (T). PEST Analysis is a useful tool for understanding the 'big picture' of the environment in which you are operating, and for thinking about the opportunities and threats that lie within it. It is useful to understand the environment, and to take advantage of the opportunities and minimize the threats. PEST is used widely by leaders worldwide to build their vision of the future (Mind Tools Ltd. 2011). Bruniges (2005) proved, in his study, that in Australia a number of social, political, cultural and educational developments found to be driving factors of CR.

External Factors influencing effective implementation of CR



Source: Modified from Bransch, (2005)

Figure 3-9: External Factors influencing effective CR

Political Factors

The political factors are seen as important factor in the implementation of CR depending on the acceptance or rejection of educational government policies. They have roles in the process of determining and defining goals, content, learning experiences and evaluation strategies in education, but also curricular materials, sometimes the hiring of personnel, funding and examination systems (Otunga and Nyandusi 2009). This study considers factors such as the TVET administration practice in TVET colleges, TVET policy practice, National labor market influence, and curricular benchmarking.

Administration- If the right people are put in charge, curriculum development would be facilitated; otherwise, there would be impediment. International experience (Philippines, Jordan, South Korea, Brazil, Tanzania, Mauritius, Botswana, Zambia) shows to manage national TVET system, the autonomous organization is given to Federal TVET Agency (MOE, 2008, p. 46). Due to lack of effective management and administration, many TVET institutions in Ethiopia are closed. Effective administration of TVET institution play vital role in its functioning and its responsibilities includes such as setting objectives for the functioning of the institution, formulating policies and programs to achieve it, and controlling all the functions, which directly or indirectly affect the effectivity implementation of the curriculum. The Federal TVET Agency in Ethiopia is responsible for coordinating and steering all TVET nationwide and for driving the ongoing TVET development (See MOE, 2008, p. 46).

Policy - Bouck (2008, P. 299) also indicates in his study that the policy affected the curriculum enactment in the programs. A number of policy issues are critical to CR in TVET. Poor decision-making hinders the effective implementation of TVET. (Osuala, 1981). Decision-making is the backbone of administrative functions. This is because decisions are direct actions (Marvin, cited in Igwe, 1992). Good and effective decisions can only be made when right information is made available at the right time to the right recipient. Johnson, Newell & Vergin (1972) in (Cedefop 2010) stated that information for decision-making is dynamic; therefore, it needs to be constantly up-dated. TVET policy in the Ethiopian case is based on Plan for Accelerated and Sustained Development to End Poverty (PASDEP). It is designed to achieve mainly through commercialization of agriculture as well as economic growth and employment creation through private sector development (MOE, 2008, p. 8).

Labor market- To make the transition from school to labor market, an analysis of recent international initiatives identified the four underlying principles of effective school-to-work programs, such as new curricula should be created that integrate vocational and academic studies;

occupational and educational performance standards should be explicitly related to each other; initial education and training should include a certain amount of work-based learning for all students; employers and educators, including both vocational and academic educators, must share both responsibility and power in new school-to-work systems (Stern, Bailey and Merritt, 1996, p. 4). In the globalized world, young people should be equipped with skills that are flexible and relevant to the needs of a constantly evolving labor market (Atchoarena et al., 2007). Labor market monitoring and forecasting system in Ethiopia is not well developed due to lack of labor market information on the supply side of the labor market, i.e. demographic developments, number of school leavers, number of unemployed, demand for skills and occupational qualifications, skill gaps, employment trends by sectors and occupations, emerging markets, new investments and economic opportunities in rural areas (MOE, 2008, p. 43). The lack of these sources can influence the effective implementation negatively.

External relation- Germany is the first who show its initiation to support in the process of reforming the TVET system in Ethiopia (ecbp, 2007). For example, in 2004 the heads of government of Ethiopia and Germany decided that Germany would lend its support to the Engineering Capacity Building Program (ecbp) that Ethiopia launched in 2005. For example, in its first three-year phase, from 2005 to 2008, funding for ecbp amounted to 118 million euros, with each government contributing half. Employing over 100-seconded experts, it is currently the German development cooperation program involving the most intensive deployment of human resources. Generally, in order to achieve these objectives a whole range of policies are necessary, Ethiopia share the examples of other countries such as South Korea, Taiwan, Singapore, Hong Kong, Japan and Germany show that the development of human capital will play a pivotal role in Ethiopia's social and economic development (ecbp, 2007). Benchmarking is elaborated in section 3.3.2.

Economic factors

The economic factors have great role in the effectiveness of CR. Hence, in adaptation of TVET curriculum to the needs of the contemporary society and for the successful integration on the labor market, finance played its role, however economic considerations related to curriculum implementation are often out of the direct control of the school. Therefore, those who have a clear picture of economic constraints and potential resources at the federal, state, and local levels should try to minimize the constraints and capitalize on the resources. (Posner, 1995). In this study, the economic factor includes salary of TVET instructors, budget allocation to TVET, and foreign financial aid to TVET (Donors).

Budget allocation and salary- education as a whole is a costly venture, especially, TVET CR implementation is difficult to accomplish without sufficient budget allocation. This is because recently technological advanced, analytical and communication skill are required that makes TVET, alike other general education, is more capital incentive. The amount of money required to run an effective TVET program has always been a source of discouragement to administration (Ogwo & Oranu, 2006). Thus, budgetary forces are powerful to influence decisions on the reform of curriculum and implementation. In the Ethiopian context, TVET is suffered from low public image, low status job, low salary, and low quality programs. Within this in mind, the government generates sufficient resources for public TVET provision and for the intended reinforcement of its governance and management structures, as well as to develop necessary support services. New funding mechanism for TVET is developed to address the resource constraints in TVET system. For example, combination of cost saving mechanisms, generation of external resources, and diversification of funding sources (MOE, 2008, p. 40).

Financial aid (Donation) - For the effectiveness of the TVET curricular reform, financial stability that includes resources and incentives in the change effort. . . . are necessary for curricular reform and implementation (Innes, 2004, p. 256, in Oliver, 2008 p. 34). In Ethiopia, the principles of good aid management require, among other things, that transaction costs are minimized by synchronizing donor activities and harmonizing donor procedures and activities, and by using government systems. It requires systematic consultation amongst all the partners (notably Federal and Regional Governments and aid donors to the sector). External financing agencies will participate in joint reviews and other supervision missions in consultation with the Government (ecbp, 2005, p. 76) Generally, financial resource, adequate land, necessary buildings, supporting facilities, library, well equipped laboratories and workshops, availabilities of teaching aids, seminar rooms, conference room and advance computing facilities etc. These facilities are initial prerequisite for any TVET institution, which must be present to ensure proper implementation of the CRs.

Social/cultural factors

The Social/cultural factors should include consideration of such aspects as religion, gender, ethnicities, but also professional associations and other cultural groups. A curriculum depends upon two sets of cultural factors: those of the school, and those of the society. The TVET curriculum represents aspects of particular societies' culture, the accepted beliefs and norms of both the school and society to implement the CR effectively. It is especially important that the curriculum be developed to fit the needs of the society, rather than perceptions of those outside of the society

(Mâţă, 2012, p. 216). The social factor in this study includes family influence on TVET, cultural appropriateness, social attitude to TVET and employers need to TVET graduates.

Cultural appropriateness- Culture is simply the way of life of a people, including religious, moral political belief and philosophy. Ethiopia represents a good example of a heterogeneous society, with her diverse ethnic-cultures. Hence, the consideration of the psychological and pedagogical factors of the society are the most crucial ones in curriculum implementation because "they deal with human considerations, and all change ultimately depends on the willingness of the people culture involved to adapt" (Posner, 1995). From socially supported (inter-psychological) to individually (intra-psychological) controlled performance as:

> *Socially supported controlled performance makes sense of learning in different cultural contexts since cultures hold such different beliefs about the nature of learning. Children acquire their thinking skills through the discourse of interaction within different social and cultural groups* (Smith, 2005, p. 240).

Inclusion of the social and cultural system of a country in a curriculum is important because a relevant and functional curriculum is the vehicle that ensures the relevance of an education system. The lack of relevance of borrowed curricula has caused the education systems of developing countries to be in a state of perpetual crisis. Today, a surplus of curricula reform projects has been implemented in Africa - with little success. These reform activities have all suffered from a major, inherent structural defect; they have only changed the contents of the curriculum. As a result, the western cultural influences embedded in the foundations are still being transmitted to students, making curricular materials irrelevant and unrelated to the culture and philosophy of these students. This failure has compelled concerned and genuine scholars to seek an alternative approach to curriculum development and study (Yishak & Gumba, 2012).

Family influence- The concept of "cultural capital" encompasses the idea that students' academic achievements are shaped by the social and cultural resources of both the family and the school (Bourdieu & Passerson, 1977). Most parents want to be actively involved in decisions about their children's leaning and achievements that are most highly valued (ERO, 2008, in Schagen 2010, p. 14). Family has low influence in the curriculum implementation in Ethiopia. However, the government believes that the interest of different stakeholders may change overtime as the national economy and society develop and specific demands on the TVET system change. Among others, the trainees and their families are the once (MOE 2008, p.19).

Employers need to TVET graduates –Since employers are job market for TVET graduates, they need skilled graduates who meet the need of the industry. Thus, TVET institutions should ask the employers before designing a curriculum and provide graduates in the labor market. Because employer need changes over time due to the development of the technology in the world. Therefore, to minimize the mismatch between the need of employers and TVET institutions, they need to build well-designed partnership between them. The input based curriculum system in Ethiopia was characterized by fragmentation and lack of coordination between the different delivery system that might not satisfy the need of the employers (MOE, 2008, p. 16).

Generally, societal forces in any educational reform that attempt to rewrite a curriculum will have significant effects on what the students know, how they know it, and how they see themselves fitting into society (Horn, 1947 p, 202). Therefore, there must be a common curriculum framework with the flexibility to respond to the diversity of student needs and families in differing local contexts within the countries' education systems (Bruniges, 2005). Unless the new curriculum is accepted by the society, it is challenging for the effective implementation of the TVET CR in a country like Ethiopia.

Technologic*al *factors

Advances in technology have helped to diversify production, reduce economies of scale and boost industrial productivity to the extent of de-industrializing the economies, thus causing a movement of labor from industry to the service sector. The 1995 Congressional Office of Technology Assessment report entitled Teachers & Technology: Making the Connection, encourages the teaching and explained how technology facilitates it (OTA, 1995, pp. 1-2, in Molebash, 1998):

> *Using technology can change the way teachers teach. Some teachers use technology in 'teacher-centered' ways...On the other hand, some teachers use technology to support more student-centered approaches to instruction, so that students can conduct their own scientific inquiries and engage in collaborative activities while the teacher assumes the role of facilitator or coach.*

There seems to be no consensus regarding the impact of technological change on the workplace and its effects on jobs and skills. Some believe that technology is de-skilling jobs, while others argue that technology is up-skilling jobs (UNESCO, 2003, p. 20). For the purpose of this study, technological factor includes accessibility of ICT, research development, globalization influence, network and linkage system and external technical support to TVET.

Information and communication technology (ICT) is rapidly enhancing students' engagement and necessitates learning and achievement in new literacies (Harris, 2004). The evolution and

development of ICTs has resulted in a paradigm shift in the educational system. Besides their potential to providing education to anyone, anytime and anywhere, ICTs have encouraged new research and development in teaching and learning techniques (UNESCO, 2003, p. 27). The Government of Ethiopia announces ICT policy of 2002 to promote a systematic introduction and use of ICT solutions in TVET delivery. Teachers are encouraged to explore ways that ICT can enhance the opportunities for learning to this end TVET authorities will facilitate access to software and electronic teaching and learning materials for TVET sector which may facilitate the effective implementation of the CRs in Ethiopia (MOE, 2008, p. 32).

Research and development activity is very much essential to survive in this competitive world. The institution must have proper infrastructure to carry out research and development activities. The school need to provide access to research materials such as books, scientific Journals and other modern library facilities, qualified and experienced research oriented and motivated professionals, and adequate financial provision. At the moment, in the Ethiopia TVET related researches are provided mostly by international experts due to the fact that relevant capacities within the country are rather underdeveloped. A research unit need to be established in the federal and in the state TVET executive bodies in close coordination with other research initiatives in the Ministry of Capacity building. However, due to lack of relevant data and information, research activities, the effective implementation of TVET is hampered (MOE, 2008, p. 42).

Globalization drives the global production processes, reductions in barriers to trade in services and advances in ICT and transport systems have brought about rapid change and diverse challenges in the curriculum. For example, it creates (1) additional employment in the capital goods sector, (2) decreases in prices resulting from lower production costs, (3) new investments made using extra profits, (4) decreases in wages as a consequence of the initial job losses, and (5) new products created using new technologies (Getinet, Srour, and Vivarelli, 2013, p. 3).

Globalization requires societies to realize new skills, as well as new ways of organizing, working and living together, and of understanding and interpreting the world. Curriculum must provide students with the opportunities to develop these skills. Globalization, for example, in Australia created a greater need to understand other people, their cultures and circumstances. While the benefits of globalization are often widely announced, there is a sense that for some people it has not necessarily been a good thing. Students across the country must consider the implications and social issues that are generated through globalization, besides curriculum must enable students to evaluate critically the diverse effect it has on different places in the world (Bruniges, 2005). Globalization

continues to leverage international and transnational partnerships in program delivery and open access to education and developments in the available technologies have enabled disseminated models of the curriculum (Fotheringham, et.al, 2012). In the Ethiopian case, globalization is found to have a labor extending effect to trade and foreign ownership. As a result, no negative employment effects of globalization are obvious in the Ethiopian manufacturing sector (Getinet, 2013, p. 20).

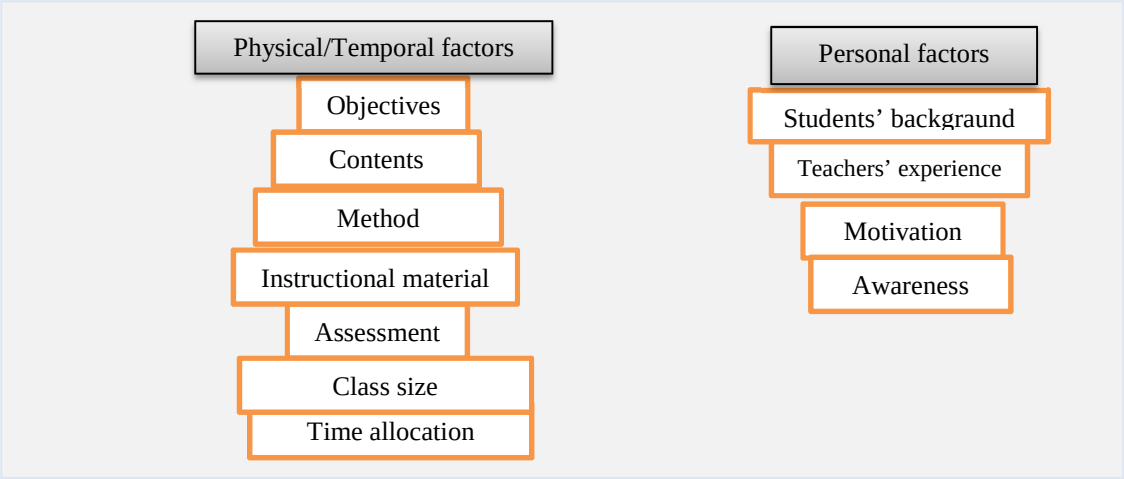
Networking and linkage system- Linkage and networking are different in the degree of commitment by the partners. In linkage, the relationship between partner organizations is quite loose, while in networking, it is much stronger, usually because the groups and agencies have common objectives and beneficiaries. Networking is extending the outreach of the resources in different ways to increase the effective implementation of the curriculum. The areas of operation can also be increased through networking. TVET colleges can appreciate linkages and networking activities with international, national and local organizations in the community for mutual benefits and assistance needed (Juan, 2013). In Ethiopia the network and linkage system between TVET institutions seems weak but the government believes the successful TVET system should built strong and well-defined partnerships between government and non-government sectors (MOE, 2008, p. 19).

External Technical support- The process of TVET requires the successful implementation of substantial expertise and resources. Hence, the Ethiopian Government invites its cooperating partners to continue and increase their financial and technical assistance to the TVET sector and creates appropriate mechanisms for donor cooperation to insure coordinated approaches and to avoid duplicating or conflicting activities (MOE, 2008, p. 51).

Generally, different authors raise different factors for evaluating the significance influence on the effective implementation of CRs in different topics. However, they are common in evaluating the political, social, economical and technological factors but in different ways. In order for CR in TVET to proceed efficiently and effectively, these contextual factors have to be taken into account, a universal overview upon factors affecting implementation of CRs is an attempt to unite all these factors such as cultural, economic, political, organizational, psychological, pedagogical, legal, and technological. Therefore, this study focuses on the factors that influence the effective implementation of TVET CRs as external factor, such as political, economical, social and technological factors with sub factors in it. The Internal factors influencing effective implementation of CRs are presented in the following section.

3.5.3 Internal factors influencing effective implementation of TVET CR

This study also considers the internal factors that influence the effective implementation of TVET CRs. They are: subject area objectives, professional teachers teaching skill and experience, background inherent cognitive skill of students, application of teaching methods, organization of modular contents, assessment and evaluation process of learning outcomes, availability of instructional materials, usage of assigned time allocation, class size, and motivation of teaching staff. The following model depicts the internal factors that are assumed to be the influential factors for the effective implementation of TVET CRs in Ethiopia.



Source: Modified from Bransch (2005, p. 44)

Figure 3-10 Internal factors influencing effective implementation of CR

Curriculum Objectives-They depend largely on the society for which they are designed. However, the major factors that contribute to the identification of curriculum objectives are: (1) The needs of the learners (2) The needs of society (3) National goals and ideals (4) Educational policy (5) The requirements of religious groups (6) The requirements of professional groups (7) The requirements of politicians and (8) The recommendations of international organizations (UNESCO, 1999, p.16). Thus, the curriculum planner has an obligation to consider all these factors, and to draw up the CR plan accordingly. Further, Atolagbe, et al., (1997, p. 1396) summarizes the learning objectives as: problem solving skills and decision-making, communications skills, analytical skills, and social skills. These objectives need to be considered during CR that might provide the necessary foundation for learners and may allow for progressive development in the industries.

Curriculum Content - It is a major aspect of curricular reform, and is closely related to curriculum objectives. The curriculum planner is faced with the need to translate the national goals and ideals, the national policies and policy objectives for education, into a set of disciplines and teaching and learning activities. All three domains of education - the cognitive, affective and psychomotor - have

to be addressed. Curriculum content is affected by many considerations. For example, (1) curriculum objectives, (2) the competencies to be achieved, (3) the different stages of the education cycle, (4) the ages and educational levels of the learners, (5) the national education infrastructure and the environment, (6) the teacher trainers and the teachers, (7) materials available for use in teaching, (8) the special needs of learners, e.g.: the disabled, slow learners, gifted learners, etc. (9) the amount of learning time available for covering the curriculum and (10) teacher/pupil ratio (UNESCO, 1999, p.16). Furthermore, Meymand (2011, p. 588) states that the curriculum planner should consider during organization of curriculum contents such as student & learning experience, society and its needs and special knowledge's need modern knowledge of the world and other resources. The lesson subjects include such as separate subjects, multidisciplinary, interdisciplinary and broad fields.

Methods of instruction- the instructional methods used for effectiveness of the curriculum should provide the student with the opportunities to participate in, develop, or discover expert strategies in simulation modeling contexts. This includes strategies that would encourage student exploration and independence (Atolagbe, et al., 1997, p. 1396). The curriculum method depends on the extent of the following factors, as use participatory teaching and learning approaches, emphasize the development of the affective domain, encourage self-learning, self-evaluation and independent research, allow group work, accommodate individual difference among students, allow for mastery of competencies, create a sense of achievement, use positive aspect to the culture and provide pleasure in the teaching and learning process (UNESCO 1999, p. 25)

Instructional materials- For the effectiveness of the curriculum, the necessary instructional materials should be available in the classroom. The structural and infrastructural facilities are needed for a meaningful curriculum development. There must be also sufficient classroom facilities, library, laboratories as well as office accommodation, all fully furnished with necessary materials, including electrical, electronic fittings, and computers. Teacher involvement in curriculum development should be fashionable. Morrison (1993) discussed 'textbooks' deterministic influence on curriculum representation, indicating that they tend to cater to the lowest ability students in the classroom, rather than the average or the more able students. Dyck and Pemberton (2002) also claimed that textbooks should represent a central feature of curricula, particularly at the higher grades. Generally, the quality of teaching and learning materials should be suitable in terms of content and presentation of concepts consistent with the curriculum and use the environment as a source of teaching and learning aids (UNESCO 1999, p. 26).

Assessment- Curriculum evaluation is not carried out in a vacuum. It is done in order to obtain the necessary feedback, which will ultimately lead to an improvement in the quality of learning and bring positive results. Most recommendations made as a result of evaluation, which should be adopted after discussion with the beneficiaries (UNESCO 1999, p. 22). Nevertheless, due to many challenges, it may prevent from being implemented. Developing an effective assessment system in a country can facilitate the effective implementation of a curriculum.

Student Factors- Learners are another factor contributing to CR. It is the conception of learner that is held by Curriculum Reformers. If learners are passive recipients of the wisdom of the ages; nevertheless, they expect learners to actively engage in discussions, demonstrate knowledge and skills through oral and written presentations, and exemplify the attributes of self-directed learners in search of a liberal education (traditionalists). Learners' interests must be considered in the curriculum and should be cooperative partners with educators in determining the purposes and experiences of learning (experientialist). The student interests and concerns as aspects of student life to use as linkages to gain access for "delivery" of curriculum determined by adult experts for students (behaviorists and traditionalists) (see Schubert, 1991, pp. 88-90).

The students constitute the input of the whole system. A student's own awareness and interest for learning and the inherent aptitude to grasp together with his sincerity, regularity and honesty are key to his successful accomplishment of his course. It is also necessary to boost the morale of the students by motivating the students. All these aspects when carefully implemented and nurtured bring about a total turn around in the quality of education (Sahu, et.,al. 2008 p. 7).

Teacher Factors- A study by Mâţă highlights that "teachers play the key role in the success or failure of a planned reform, because they are the executive decision makers in the actual setting in which the intended innovation is to be integrated – the classroom". In addition to this, Jones (2002) lists six conditions that promote and sustain changes in the curriculum: 1) mutual trust amongst stakeholders; 2) committed and consistent leadership; 3) proceeding with a non-threatening, 4) incremental pace of change; 5) professional development for academic staff; and 6) the use of purposeful incentives (Mâţă, 2012, p. 216).

Hence, developing effective teaching staff is needed because the quality of students coming out of the universities and colleges largely depends upon the quality of the teaching staff employed. The staff should try to update themselves through enhancing their qualifications by attending various

quality improvement programs, such as workshops, seminars, and conference, summer and winter school. (Sahu, et., al., 2008, p. 7).

Thus in the process of CR, teachers must be able to exercise autonomy, creativity and professional judgments in operationalizing curriculum while remaining accountable and consistent. The role of the teacher must be recognized as integral to the design, development and delivery of curriculum (Bruniges, 2005). Experience means sufficient length of service in teaching. This is so important that qualification does not and cannot be substituted for it. It is possible to improve instructional materials, dubious can also fake certificate, but definitely, experience cannot be faked or purchased. It can only be acquired through constant and long practice.

Teachers' pedagogical approaches, beliefs about course content, knowledge about the community in which students live, content knowledge, and their own personal experiences all influence the delivery of curriculum (Milner, 2003). Teachers could influence students in terms of their histories, preparation, beliefs and philosophies, and expectations for students. It has often been said that no nation can rise above the quality level of the teachers. As crucial implementers of curriculum, teachers should be considered from three perspectives. These are qualification, experience and motivation. Considering teacher qualification as a variable in curriculum development implies putting the right personnel to teach in schools.

Time Factor-Every activity of man revolves around time. Similarly, the success or failure of anything depends on time. In the implementation of CR, time may mean duration, period, session or semester. Time is very crucial in curriculum implementation, because content should necessarily associate with the time and it should be borne in mind while planning TVET curriculum so that what is being earmarked for the study would not exceed what it should be (Sahu, et.al., 2008 p. 7).

Class size - It refers to the actual number of pupils taught by a teacher at a particular time. Thus, the pupil/teacher ratio is always lower than the average class size, and the discrepancy between the two can vary, depending on teachers' roles and the amount of time teachers spend in the classroom during the school day (Ehrenberg, et al., 2001, p. 2). Likewise, class size affects the effective implementation of CR.

Motivation – It is also an important variable as far as teacher is concerned. A motivated teaching staff is a great asset that could facilitate the realization of the established goals and objectives. The concept of motivation includes prompt payment of remunerations, provision of conducive and

enabling environment, opportunity for capacity building and utilization and training and retraining programs (Sahu, et.al., 2008 p. 7).

Curriculum awareness-, According to McBeath (1997), curriculum change should be disseminated among the teachers in such a way that informing about the process of new or revised curriculum ideas, documents or materials, so that they understand and accept the reform. The level of public awareness of TVET curriculum requires further attention to rectify misconceptions of TVET. For example, the association of TVET with low status jobs, low salaries, and lack of personal development opportunities. This is partly due to low quality TVET programs that may not allow TVET graduates to successfully competent in the labor market. It is perceived as a place of last resort for those students who failed to get into higher education.

Therefore, for the effective implementation of the curriculum, TVET authorities/institutions with stakeholders, should invest in public awareness campaigns to promote a renewed TVET system offering high quality TVET programs and occupational qualifications based on the needs of the labor market with clear opportunities for personal career advancement. Special efforts should be directed to create awareness and ownership of TVET among employers and private business sectors (UNESCO 2000, p. 31).

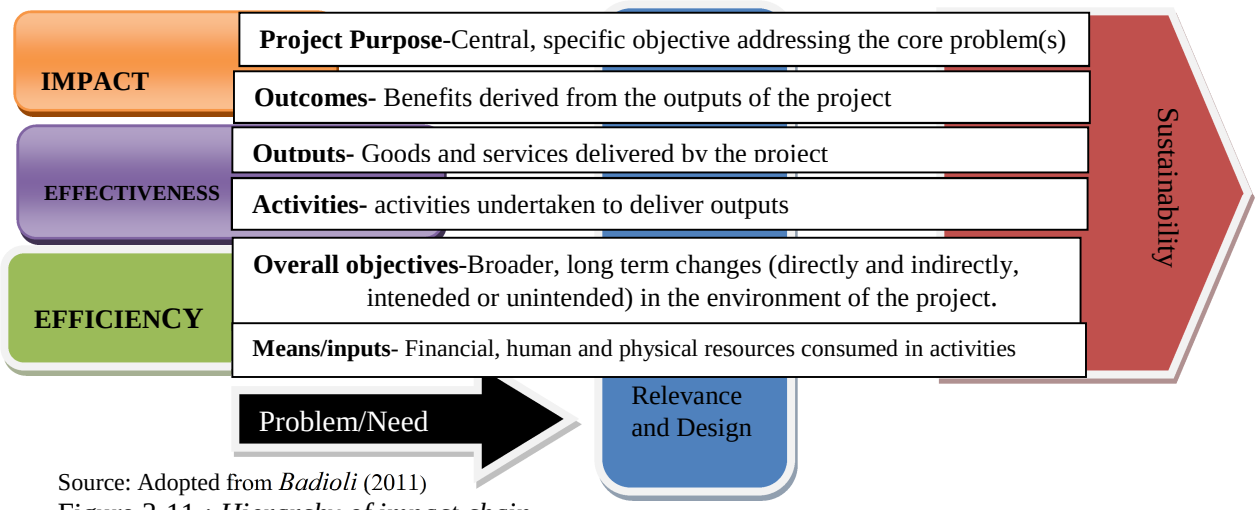
3.6 *Impact assessment of TVET CR*

3.6.1 Concepts of impact

Impact is the positive and negative, primary and secondary long-term effects produced by an intervention, directly or indirectly, intended or unintended. It describes how and to which degree the project has contributed to the solution of the problem and to the achievement of the overall objective

The following Figure 3.11 displays the hierarchy chain of impact from the bottom up that can be expressed in terms of the following process (Badioli, 2011):

- IF adequate inputs/resources are provided, ***then*** activities can be undertaken;
- IF the activities are undertaken, ***then*** results can be produced;
- IF results are produced, ***then*** the purpose will be achieved; and
- IF the purpose is achieved, ***then*** this should contribute towards the overall objective



Source: Adopted from *Badioli* (2011)

Figure 3-11 *: Hierarchy of impact chain*

Likewise, impact can be assessed by considering the changes in the overall welfare of the society that can be attributed to a particular program by answering the following questions:

- Can the changes in outcomes be explained by those programs, or are they the result of some other intervening factors occurring simultaneously?
- Do key program impacts vary across different groups of intended beneficiaries (males, females, and indigenous people), regions, and over time?
- If so, what are the cultural, economic, and political factors that limit the full participation of vulnerable groups (women or others) in the program benefits?
- Are there any unintended effects, either positive or negative?
- How effective are key programs in comparison with alternative interventions?
- Are key programs worth the resources they cost?
- Did key project/policies/programs achieve the intended goal? (ILO 2012, p. 27)

However, other people want to consider the impact of a program based on the designed policies and interventions; and based on the changing behavior/intentions/knowledge of households, individuals, and organizations. Generally, assessing the impact of a project provides an opportunity to understand the changes produced and to learn from them and understanding vitally what can change behavior in the information about these mechanisms and the impact achieved on the targeted environment / beneficiaries from the project/investment (Badioli, 2011).

According to OECD DAC (2002-2008) impact of a curriculum depends on the design of a specific intervention. Hence, it may cover aspects such as reforming a curriculum that:

- changes the income of employee,
- improves competency of individuals,

- changes the status of graduate employees and industry,
- increases quality of productivity,
- changes the attitude of society towards TVET,
- changes equity, access, efficiency and accountability,
- improves living standard for employees, or
- minimizes rate of unemployment.

In turn, the impact or long-term goal can be seen to contribute to an ultimate or overarching goal such as *'poverty reduction'*. This kind of impact is also sometimes called 'overarching development goal' or 'aggregated impact'. Another kind of impact is more closely related to the development intervention and is sometimes referred to as 'indirect benefit' or 'long-term goal'. A single development intervention such as curricular reform can contribute to achieving this kind of objective but it is unlikely to achieve it by itself. However, impact varies depending on the design and scope of a certain inputs and processes (OECD DAC, 2002-2008).

Generally, the TVET outcome on the labor market can be measured by the share of TVET graduates obtained a job after completion of training, the time span between graduation and placement, the ratio between the average wage of TVET graduates and the average wage of those who did not follow the TVET path. (ILO, ETF & UNESCO, 2012, p. 28).

3.6.2 **Impact indicators of TVET curriculum**

Indicators are defined by Anderson (2004, p, 35) as concepts that will be used to assess the extent to which outcomes are achieved. Often, indicators are simple ideas that can be counted, but sometimes they reflect more complex ideas that must be observed qualitatively.

How to select indicators

Indicators should be selected carefully to evaluate the TVET program designed. Hence, good indicators need to be relevant to the project and its environment, relevant to the national/international standards, feasible to collect, easy to interpret. They should allow tracking a change over a time. Indicators should also as much as possible specify quantity, quality, time (QQT), be realistic, involve the right people, and allow to evaluate targets on a regular basis. Specifying objectives helps to check the feasibility of objectives and helps form the basis of the project's monitoring and evaluation system (Euromed, & Heritage, 2011). The most common tool to assess the performance and then the impact of the project is to use the specific indicators that:

- can measure the accomplishment of the project goals and targets,
- can assess the qualitative or quantitative, and provide a way of spotting and measuring underlying trends,
- should define during the formulation stage, but they often can and need to be specified in detail during implementation,
- should measure intangible as well as tangible changes, particularly in projects that value factors such as personal and social development.

The key international agencies such as UNESCO and its statistical branch (UIS), the ILO and the European Training Foundation (ETF) with technical support from the European Commission, the OECD, Asian Development Bank, the World Bank and the German Agency for International Cooperation (GIZ), who are active in the field of TVET, proposes a set of indicators that can support countries in assessing the efficiency and effectiveness of the TVET systems. In order to evaluating and monitoring TVET performances ILO (2012, p.7) provides the following components to be considered***:*** *Financing, access and participation, quality* and *innovation, relevance,* and *governance.*

Further, Cedfop focuses on the following six impact indicators of TVET CRs, such as access, graduation, employability, cost-effectiveness, quality and mobility (Cedfop 2010). Further elaborated as:

Access: Access and participation consider the extent to which various types of TVET promote equity and inclusion and the implications on expanding learning opportunities for excluded groups. This is examined through the lens of access and participation. While this second component focuses on important social aims of TVET, it simultaneously has a strong relation to the relevance dimension as it prioritizes increasing the numbers of people with viable and effective opportunities to benefit from high quality TVET leading to labor market outcomes (ILO 2012, p.7).

There is a diversity of definitional understandings of “access” as a general term and “access to education”, and “access to TVET” in particular. The question of evaluation can be:

- What is the impact on entry/admission rates?

For the purpose of developing indicators, access should be observed at around three elements as participation, opportunities and transition.

- A narrow sense of *participation*, which is reflected in enrolment in education and training programs, including its breakdown by individual subgroups (gender, socio-economic background, participation by sector and profession, etc.);
- Another dimension is related to *opportunities* for access to TVET. Although TVET is seen as a second chance in many countries, access to TVET is in itself limited and there are many barriers and constraints (for example cultural barriers in certain countries that impede or limit the female participation to education in general and TVET in particular;
- Finally, increasingly TVET policy makers look beyond the notion of access as participation to focus also on *transition* from and within TVET tracks. In this context, there are many policy challenges that require broader analysis. In many countries, forms of vocational and academic secondary and post-secondary TVET are often weakly articulated. A major barrier are the absence of forms of pathways and transfer across study programs at the same level and transitions to higher level (ILO. 2012, p 16).

Graduation: For the purpose of this study, graduation is related with a student or trainee who was enrolled in a particular course and has completed the requirements set for that course/program. To evaluate the impact on graduation the following questions can be raised (TESDA, 2010).

- What is the impact on graduation rates?
- Has time to employment been affected?
- Do the CRs minimize unemployment of TVET graduates?

Employability: For the purpose of this study, employment is related with TVET graduates who are employed at private or governmental enterprise as self-employment or paid employment.

A TVET curriculum must be designed to provide qualified people to the labor market. Nevertheless, it does not mean that TVET is an effective response of unemployment in a country. There are external factors which better influence employment than TVET such as a high proportion of high-qualified people in low qualified jobs that affects the placement rate of lower qualified people, a surplus of experienced workers or a low demand of qualified people (Atchoarena D. et.al. 2000).

One way to measure impacts of TVET in employment is to trace TVET graduates regarding employment. A long period after training must be established to measure impacts of employments, depending on the type of technical and vocational training (Calmand J., Epiphane D. and Hallier P. (2009). As an example, the European Quality Assurance for Vocational and Training advise a period 12-36 month to measure the placement rate of TVET graduates (ENQA-VET 2009).

- Do the curricula provide TVET graduates with paid employment opportunity?
- Do the curricula provide TVET graduates with self-employment opportunity?

- Do qualifications match with the need of the labor market?
- Do the curricula provide access for further training for graduates already active in the labor market?

Building bridges between the world of work and training providers in order to match skills provision to the needs of enterprises is essential. Policy-makers in the majority of developing countries lack the education, training and labor statistics and the evidence-based analysis to identify and address the factors that impact the transition to decent work. The set of indicators to be collected and analyzed represents an important step to develop, implement, monitor, evaluate, and revise sound TVET policy.

The means and mechanisms put in place to ensure a smooth and rapid transition of TVET graduates to activity or to other forms and levels of education/training are important. Guidance and counselling is an important element in this respect, and public or private employment services have a crucial role here.

Specificities of the labor market that may stimulate or obstruct the insertion of TVET graduates should also be considered. Administrative and institutional barriers may hinder the smooth transition of TVET graduates to the world of employment (rigid contractual provisions and conditions for hiring/firing people, for example). On the other hand, the skills spectrum demanded by the labor market may change more rapidly than the TVET sector is able to respond.

Ideally, the TVET outcome on the labor market should be measured by the share of TVET graduates that obtained a job after completion of training, the time span between graduation and placement, the ratio between the average wage of TVET graduates and the average wage of those who did not follow the TVET path.

From a qualitative perspective, it is important to know: if a graduate remains with the job for a long period of time, meaning that the acquired skills correspond effectively with company's needs; the extent to which his/her competences are fully used in practice; the quality of job the graduate obtained. Consequently, the assessment of TVET performance from this point of view should rely on student, graduate and employer satisfaction ratings (ILO 2012, p. 27).

***Quality of education*:** Quality addresses the policy options leading to a TVET system focused on the teaching and learning process and its effectiveness. It is a measure of the quality of any TVET program, that it is effectively conducted and relevant in terms of meeting skill needs. Quality facilities and equipment is also fundamental to the provision of quality TVET (ILO, 2012, p.7).

Quality and innovation is one of the broadest policy areas in education and training, and at the same time, it is a domain with some of the most difficult challenges. In the specific context of TVET, high quality is often taken to mean that the education and training received by students is relevant to the needs of industry and self-employment needs in the labor market, authentic and rigorous, resulting in graduates who are ready for employment. Hence, quality can be measured by the graduates' employability and – ultimately - employers' satisfaction or the satisfaction of those who are self-employed. Questions to be answered are:

- Do TVET graduates assess their competency?
- Have 'Scores' on assessment performance of TVET graduates improved?
- Do the competency of TVET graduates appreciated by employers?
- Does the quality of production increased in the industries?

Further, the effectiveness of the TVET programs is assumed to be a measure of the quality of the teaching and learning process. Lacking exact measures of what happens in the classroom is also possible to consider the educational and occupational background and training of teachers as a proxy for quality. The better the teachers are prepared to teach and train, the better one would expect the teaching and training to be. Not only must the educational and occupational qualifications of teachers be taken into account, but also the teachers' possibilities of being re-trained at a later stage. How regular are teachers and trainers given training to upgrade their skills, and what is the share of teachers who have undergone training in a given period (ILO 2012, p. 28)?

Cost effectiveness: It is another way to measure how TVET is cost-effective regarding income of the TVET graduates. It implies calculating the ratio between the cost of one-year of training regarding the number of participants who found a job and the respective wages (Thomas, 2010). Here a question to be answered is *Have the CRs led to better financial inputs assigned for TVET colleges?*

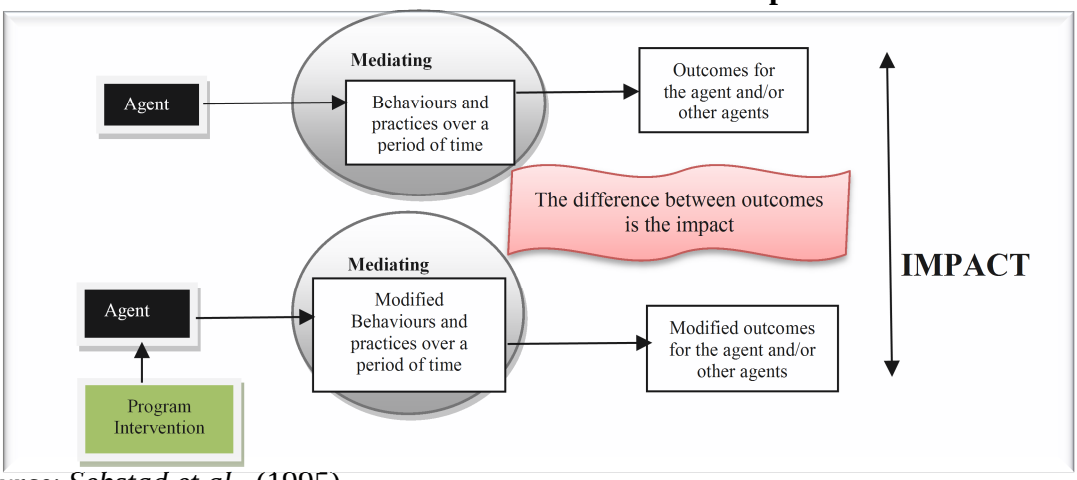
Actually, a cost-effectiveness and cost-benefit analysis can also be performed as part of an impact evaluation. This comprises relating the effects of the program to its costs. In a cost-effectiveness analysis, effects are measured using physical variables such as number of additional diplomas, number of jobs created, etc. whereas in a cost-benefit analysis, these effects are measured in monetary terms such as salary increases, added value, etc. In the latter case, ratios such as internal rate of return can be calculated, so that the return on an investment in such a program can be compared with the return on other measures (ILO, 2012, p 14).

In this study, however, cost-effective calculation is not conducted due to absence of valuable data but analysis is conducted based on the opinion of the respondents of the study. Generally, data are collected considering the above five indicators. Whereas, mobility is not part of this study since it is not as such relevant for this. Consequently, the instruments of data collection for the five indicators based on perceptions and views/comments gathered through interview and in-depth survey collected from TVET instructors, principals, employers and TVET graduates and from some additional document analysis.

3.6.3 Models of impact chain

Behind all CR programs is the assumption that intervention will change human behaviors and practices in ways that lead to the achievement of desired outcomes. Impact assessments assess the difference in the values of key variables between the outcomes on "agents" (individuals, enterprises, households, populations, policy-makers, etc.) which have experienced an intervention against the values of those variables that would have occurred, had there been no intervention. The fact that no agent can both experience an intervention and at the same time not experience an intervention generates many methodological problems. All changes are influenced by mediating processes (specific characteristics of the agent and of the economic, physical, social and political environment) that influence both behavioral changes and the outcomes in ways that are difficult to predict (Sebstad et al., 1995).

The conventional model of the impact chain



Source: Sebstad et al., (1995)

Figure 3-12: *Conventional model of the impact chain*

All impact assessment practices have a conceptual framework at their heart. In well-planned and well-resourced impact assessments with long "lead-in" times, such frameworks are usually explicitly identified. By contrast, in many smaller scale practices, the framework is implicit and

may have been seen as “common sense.” The above Figure 3.12 depicted the impact chain very simply in its more detailed conceptualization which would present a complex set of links as each “effect “ becomes a “cause” in its own right generating further effects. For example, in the CR program, it provides different services to clients (such as graduates and industries). The complexity of such chains provides the assessor with a range of choices about which link/s in the chain to focus on (Sebstad, et al., 1995).

3.6.4 **Relevance of TVET curriculum: Measuring employment of TVET graduates**

Relevance is considered as the extent to which TVET is responsive to labor market needs and requirements. The related policy area to be considered here are labor market links to TVET programs and outcomes of the TVET programs. This component reflects the assumption that the primary and key role of TVET is to raise skills levels and to help matching skills needs at all levels in today’s complex and changing labor markets. Relevance also entails the mechanisms and available capacity to understand transition from school and all types of TVET programs to work as well as to capture labor market signals and to anticipate emerging skills needs and the extent to which this informs TVET provision.

Relevant indicators depend on the coverage and scope of public and private funding of the various types of TVET programs. For example, calculating the percentage of formal TVET spending to total education spending would be less relevant in a country where the majority of TVET programs are provided outside of the formal education and training system (ILO, 2012, p. 14). TVET CR can affect the situation of a region/country, depending on several external factors such as economic, social and environmental context. For example, as Atchoarena shows that the issue of economic impact today is not so much about the value and importance of TVET but how to ensure its relevance, responsiveness and value in an increasingly global economy. Moreover, social impact of TVET represents a safety net for youth at risk in leaving schools early, and the changes of behavior such as the skills, attitudes and values in the institutions where TVET graduates have been employed, which considered as environmental impact of TVET (Atchoarena, et al., 2000).

The major problem of developing countries is building bridges between the labor market and training providers to the needs of the industries. Because policy-makers in the majority of developing countries lack the education, training and labor statistics and the evidence based analysis to identify and address the factors that impact the transition to decent work (ILO, 2012, p. 27). In summary, ILO presents the importance of investigating an impact in the flowing Figure 3.13:

Accountability	Impact indicators measure what a project has achieved relative to its aims and thus promote accountability.
Public relations and advocacy	Impacts and Performance indicators can be used to create consensus, to advocate for the project's goals.
Dissemination of best practices	A project develops a "good practice" when its impact is credible, measurable, effective.
Benchmarking of current situation	Performance indicators can generate data against which to measure subsequent projects.
Quality management	Performance indicators can be used to measure beneficiaries' satisfaction and assess how the project is managed.
Policy review	Performance indicators can be incorporated within a national population policy framework with baseline information clearly specified and benchmarks set out on a medium to long-term basis.

Source: ILO (2012, p. 29)
Figure 3-13 Importance of investigating an impact

3.7 *Important points from the literature*

In summary, this chapter reviewed the scholarship on TVET CR, which shows the key debates and discourses that support these conceptions. At the inception, there is a widespread view that reform concept and TVET curriculum has been undergoing significant changes in different countries in the world since the beginning of the twenty century because of the change in socio-economic and political contexts. These changes have influenced the reform of the TVET curriculum to the needs of the labor market. In general, the new political and socioeconomic context demands, especially, the change of the content (input) based curriculum to the outcome based curriculum in order to transform the curriculum from the traditional theoretical approach to practical skill based approach.

The literature draws attention to the dominant role of the factors influencing decisions to reform the curriculum, i.e. government policy, student ability and viewpoint, staff issues, accreditation bodies, employer viewpoint, influential individuals, academic fashion and merit and financial pressure in addition to benchmarking and inadequacy of TVET curriculum to provide employable skills.

Many developing countries tray to benchmark a curriculum from different developed countries without considering the challenges in the process of implementation. In this study, scholars argued the factors that influence the effective implementation of the CR. Factors are discussed by dividing into two parts as internal and external factors. Such factors as political, economic, social and technological factors with sub items each are discussed as external factors. The internal factors include such items as objectives, contents, methodology, instructional materials, assessment,

student ability, teachers' skill and experience, time allocation, class size, staff motivation, and staff awareness.

Finally, the concept of impact in relation to CR is also a key debate of the scholars that TVET curriculum should be relevant to the need of the labor market. Here, five impact indicators are considered in the discourses, such as access, equity, graduation, employment and income. The study tries to investigate the impact of these factors specifically on the TVET curriculum that intended to provide the middle level employable skill in the labor market. What is then these discourses to the Ethiopian context? The results are discussed in the analysis part of this study (Chapter V). The following section (chapter IV) deals with the research methodology used in this study in detail. Generally, the literature review provides an opportunity to answer the following main hypothesis with sub hypothesis in chapter V.

This study evaluates the Hypothesis that TVET CRs will have positive impact on curricular intervention factors, degree of involvement of constituencies in the process of curriculum development, the extent/nature of contents reviewed in TVET course of studies. Causes of reform, Internal factors of reform, External factors of reform, Impact indicators, Graduate relevance indicators and Employer relevance indicators that will be significantly varied between two groups of respondents (TVET instructors and principals), type of TVET CRs and among types of TVET institution (public, private and NGO). The following chapter provides the methodology used in the study and the hypothesis in detail.

4 RESEARCH METHODOLOGY

4.1 *Overall approach and rationale*

This study examines the impact of CRs in the Vocational Education of Ethiopia, with a particular focus on the middle level employable skill in TVET colleges in Ethiopia. Data is collected from Addis Ababa City Administration. The central research question is *to what extent TVET CRs have enforced a substantial change in the vocational education of Ethiopia*. Specifically, the study sought to achieve four principal objectives:

- To provide a comprehensive *picture* of the CRs implemented in the vocational education of Ethiopia since 2001,
- To investigate the *factors* that influence the effective implementation of TVET CRs in Ethiopia since 2001,
- To evaluate the impact of TVET CRs by *comparing* the current picture of the reforms with earlier pictures over the decade since 2001,
- To develop a decision support model that influence TVET CR and factors that influence the effective implementation of CRs.

The empirical data underpinning this study is gathered through, expert interview (i.e. representatives of TVET curriculum such as Federal and Addis Ababa TVET Agency, TVET qualification assessment agency (COC), or other individuals regularly involved in curriculum design, such as teachers, department heads, and deans), academic literature, policy documents from the Ministry of Education, TVET colleges, Central statistics Agency (SCA), assessment agency, federal industry minister, federal and Addis Ababa Small and Micro Enterprises (SME), and federal financial agency. The interview transcripts were analyzed following a common analytical framework.

This research is an exploratory case study in the field of TVET CR. Because of the fragmentation and diversity of some of the national TVET system, this study is limited to the Ethiopia context. Regarding impact of the TVET CRs, data were collected from Addis Ababa TVET colleges and *Akaki-kality* industrial zone where many industries and TVET graduates are available.

4.1.1 **Description of the study area**

The capital city of Ethiopia, Addis Ababa, is selected as a subject area of the study. It is located in the geographical coordinate of 9° 1’ N and 38^{0} 45’ E, covering a total area of over 530.14 km² (51,000 hectares). It is a city of political and economic significance being a base for African Union

and many other international organizations. According to the projection of the population census 2009, it had a population of 3,230,771 (CSA, 2000).

Present day Addis Ababa is made up of 10 sub-cities, namely *Addis Ketema, Cherkos, Bole, Kolfe Keranio, Nefas Silk Lafto, Arada, Yeka, Lideta, Gullele and* ***Akaki-Kality***.

The *Akaki-Kality* is an industrial zone, which is the largest of the eight industrial zones in Addis Ababa. In 2003 for example, the number of medium and large-scale industries in the zone were 88. Hence, 60% of industries of Addis Ababa are found in *Akaki kality* zone. According to officials of the sub city, there were more than 300 industries with estimated labor force of 80,000. (CSA, 2000).

Among the industrial zones in Addis Ababa, *Akaki Kality* Industrial Zone (AIZ) is particularly selected to collect data from TVET graduates and employer industries for three main reasons:

First, *Sufficiency:* it is convenient to get sufficient number of the study participants from one selected area i.e. data collected from the TVET graduate employees and employers are solely allows for an analysis of issues and concerns with the TVET CRs and its impact on the status of graduate employees and employers.

Second, it eliminates *confounding* factors, such as the influence of getting respondents of TVET graduate employees (10+3 or Level IV), in the location where more middle level manpower are likely to be employed, and

Third, *collective benefits:* it also avoids the influence of firm *locations* that comprised groups of industries clustered together in a given geographical area because of *collective benefits* suitable for the study to collect data from TVET graduate employees and employers.

Therefore, the study participants such as TVET graduate employees and officials of the employer industries are selected from AIZ. Among the available sample industries one fourth of the 660 industries (165) and among the graduates, *200* TVET graduate employees are assumed to be sufficient for the study.

Moreover, the project was exploratory in nature as it was designed to provide a preliminary assessment of the influence of TVET CRs implemented since 2001 in TVET colleges in Addis Ababa, to graduate employees and employer industries.

4.1.2 **Case study method**

The method used to determine the impact of CRs in the vocational education of Ethiopia is an exploratory case study. Since this research objectives are of a 'how' character and for its investigation this study chooses an exploratory case study approach with multiple case. Bennet (2001, p. 1513) defines case study as follows: *"a case study is thus a well-defined aspect of a happening that the investigator selects for analysis, rather than a happening itself*". Sturman (1997, p. 61) also defines a case study as a *"generic term for the investigation of an individual, group or phenomena"*. Whereas, Stenhouse (1985, p. 645) defines case study methods as *"involving the collection and recording of data about a case or cases and the preparation of a report or the presentation of the case"*. Smith et al. (2005, p. 129) state that the case study method is *"an approach to research which utilizes ethnographic research methods to obtain and portray a 'rich' descriptive account of meanings and experiences of people in an identified social setting"*.

Case studies are increasingly used when complex understandings of an issue or phenomenon are required. Case studies are a useful methodology when 'how' and 'why' questions are asked rather than 'what' questions. The reasons usually give for this preference is that 'How' and 'why' questions are more likely to be exploratory and thus suit the case study method. Yin (1994, p. 9) claimed that case studies have a distinct advantage when "a 'how' or why' question is being asked about a contemporary set of events over which the investigator has no or little control". Naumes and Naumes (1999, P. 7) argue that case study writing is like telling a story about an institution or situation. The story has a theme or message with details that make it vivid and memorable and good case studies, like good stories, are powerful in that they explain the world or teach us something. However, good case studies should also do more than just tell a story; they should present evidence for that story at key points of the study, and they should provide conclusions about the findings of that study.

Bouma and Atkinson (1995, p. 110) note that in a case study "a single case is studied for a *period of time* and the results recorded". They go on to describe a case study as "one person, one group, one family, one classroom, and one town, one nation" in which "the aim is description". This study is a type of case study in which a single cohort of TVET curriculum at college level is in the focus: it represents what Yin (1994, p. 39) called a 'unique' case, which is 'revelatory'. Further, this study uses the TVET CRs from 2001 to 2010. A long period is applied in a case study method because it is concerned with an understanding of the TVET CRs process, the influence and the effective implementation of the reform programs. Further, the impact of the reforms on TVET graduates and

industry employers in addition to what Stenlhause (1985, p. 646) called “the refinement of prudence through the systematic and reflective documentation of experience”.

According to Yin (2003), case study research can answer not only of “how” but also a question of “why”. It is important that the *generalization* gained from the case studies is not confused with these as he calls “statistical generalization”. There, it is possible to make an inference about a population on the basis of empirical data collected from a sample. In our case study, Addis Ababa is selected as a case study area. Addis Ababa is a center of diversified societal groups that represent different ethnic groups in Ethiopia. As cases are no sampling units, Yin recommends an “analytic generalization”, the researcher uses a developed theory as a template to which the case studies’ results are compared. For example, the study compares the retrospective data of input based curriculum with the outcome-based CRs conducted between 2001 and 2010.

Generally, the underlying epistemology of a quantitative field research, like the case study approach, can be positivist, interpretive, or critical. Yin chooses a positivist view and so does the current thesis. Basically, he discriminates three different purposes of a case study and six possible types of structures:

Type of structure	***Explanatory***	***Descriptive***	***Exploratory***
Linear-analytic	***X***	***X***	***X***
Comparative	***X***	***X***	***X***
Chronological	***X***	***X***	***X***
Theory-building	***X***		***X***
“Suspense”	***X***		
Un sequenced		***X***	

Source: [Yin, 2003, p. 152]

Table 4-1Purposes and structures of case studies

Exploratory case study is used if the research field is *new and unknown*. Another purpose of case study research can be the *description* of a specific phenomenon under investigation. Moreover, the third type whose step further than the descriptive one and already tries to explain the phenomena. Overall, it is possible to assign the current research to the class of exploratory case study research. Regarding the different TVET CRs programs, the study uses a comparative and a “linear-analytic”. Yin defines the sequence of the involved subtopics of the latter standard approach as follows (Yin, 2003, p.154): 1) the issue or problem of the study, 2) a review of the relevant literature, 3) the methods used, 4) the findings from the data collected and analyzed, and 5) the conclusions and implications from the findings.

Some authors clearly attribute case study research to qualitative research (Bennet, 2001) what consequently leads to the use of qualitative data collection methods. Nevertheless, Yin (2003) stresses out that case study research is not limited to these methods. According to Yin, also quantitative evidence serves as a possible data source. Normally, case study researchers use interviews and documentary materials as source for the collection of relevant data (Myers, 1997).

Additionally, there exist also other sources, like archival records, direct observations, participant observations, and physical artifacts (Yin, 2003). This study concentrates on the common sources, more precisely on documentation from Federal and Addis Ababa TVET agency, MOE, CSA. In addition, survey questionnaire to TVET college instructors, principals, graduates and employers in addition to interviews to officials responsible to curriculum, policy designers, deans, department heads, and competency assessment agency.

When using documents it should always be clear that they were originally written for a specific target group and a specific purpose. As this group or purpose is normally different to the one of the case study, the investigation must always be well thought-out. Moreover, the most important use of documents is the complete and supplements evidence from other sources like interviews. They usually appear in three different forms:

The *first* one, *open-ended interviews*, are designed for leaving much freedom to the respondent and only a few questions are prepared before the interview. *Second*, *focused interviews* are open-ended and conversational but concentrate on one topic being examined in detail. The *third* type, *structured interviews*, has more standardized questions without being fixed at all (Yin 2003).

Usually the interviewer uses a more or less specified interview-guideline. However, the opportunity to collect data from different sources is a major strength of the case study data collection (Yin, 2003). Every finding will be more substantiated and more robust if it is used on more than one evidence. Yin (2003) calls this “data Triangulation” pointing out that real triangulation is reached when more than one source addresses the same fact” (Convergence) and ”not if different sources address different facts” (non-convergence). Here based on Yin’s linear-analytic structure, the organization of this study is presented as follows:

- Definition and description of TVET, curriculum, impact, evaluation, and reform,
- previous research in the field of TVET CRs,
- theoretical framework, and models,

- formulation of assumptions based on existing research,
- investigation of causes/factors that influence the curriculum to be reformed,
- investigation of factors that influence the effective implementation of TVET CRs, and its impact on the status of TVET graduates and employer organizations,
- suggesting a supportive Model of factors influencing effective implementation of TVET CR, and causes of CR,
- conclusions and implications for future research.

For its validity and reliability as Altrichter et al. (2008) suggest that triangulation, "gives a more detailed and balanced picture of the situation." Moreover, O'Donoghue and Punch (2003) stated that triangulation is a "method of cross-checking data from multiple sources to search for regularities in the research data".

Therefore, triangulation of methodologies is being used in this study based on (survey questionnaires: Instructors and principals of TVET-based colleges, in addition to employer officials responsible for employment & training and TVET graduates). Case study (interview: Ministry officials responsible for TVET curriculum in Federal and Addis Ababa TVET Agency, and Addis Ababa TVET assessment. Documentary data: (Federal and Addis Ababa TVET Agency, COC, MSE, Addis Ababa finance bureau, Federal Industry minister, MOE and CSA). Triangulation of Methodologies is represented as follows: (qualitative and quantitative paradigms)

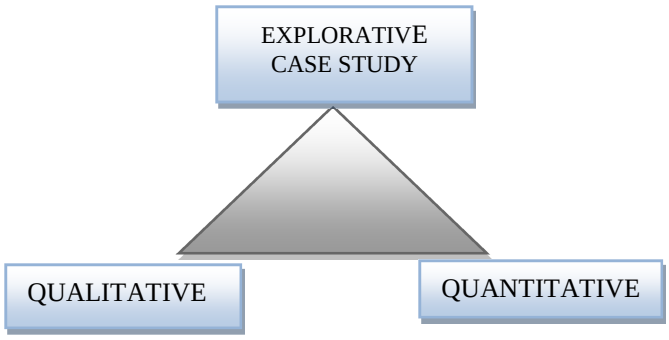


Figure 4-1 Research methodology

4.1.3 **Sampling technique**

To achieve the purpose and objectives of this study, the impact of CRs in the vocational education of Ethiopia, an exploratory case study method were employed.

Sample population was taken from Addis Ababa city Administration (capital city of Ethiopia). The key players of this project were TVET-based colleges, employer organization and other stakeholders such as MOE, CSA. Federal & Addis Ababa TVET agency and Addis Ababa competency assessment agency. Therefore, the subjects for this study were officials responsible for curriculum, principals of TVET-based colleges, TVET graduates, and trainers/supervisors employers.

As indicated by MOE (2010) statistical data, there were 287 TVET institutions, out of these, 234 non-government and 33 government and 20 NGO accredited VET-based colleges in Addis Ababa, where TVET CRs are implemented for the provision of the middle level manpower within Level III, IV and V (previous 10+1, 10+2 and 10+3 levels). However, according to Addis Ababa TVET Agency (2013) report currently only 83 institutions were actively participated in the training process.

According to Addis Ababa TVET agency statistic department, the current TVET colleges are 83 (70 private, 5 public & 8 NGO) with 1667 TVET instructors. To select TVET institutions, we used cluster sampling method. These institutions were divided into 8 clusters in Addis Ababa namely *Winget, Misrak, Nifas Silk, Entoto, Tegbareid,* and *Minilik* II medical college, Central medical college, and Betel medical college (See Appendix 9). Among these eight clusters of TVET institutions, (½ of 8) four clusters are assumed to be enough to collect data from pertinent respondents. Using purposive sampling method *Winget, Misrak, Nifas Silk,* and *Entoto* were selected, for the reason that they are convenient to collect data from pertinent respondents. Hence, among the total numbers of TVET instructors, i.e., 1667 (25% or 334) were assumed to be enough to collect data from respected instructors.

To distribute the questionnaires, we divide to 4 clusters, which are (25% of 334) 83 questionnaires were distributed to each cluster using simple random sampling technique. Before distribution, we ask permission from the deans of each TVET college. After elaborating the objectives of the study, they handed out the questionnaires to instructors and principals mainly during staff meetings. The same procedure was followed at all TVET institutions incorporated in this study. The entire data collection took six weeks to complete, extending the months of May and June 2013.

We use simple random sampling, since simple random sampling as cited in Westfall (2008), gives each unit of the population equal chance of being selected and every member of the population has equal probability of being included in the sample. During data collection, from *Winget* 75 (90%),

Misrak 37 (45%), *Nifas Silk* 71 (85%), and *Entoto* 70 (85%) totally 253 (75%) questionnaires were collected. Table 4.2 shows it in detail.

A comparison between the population and sample respondents (Cluster)

Cluster	Name of Cluster	No of distribution		No. collected		Percentile	
		Instructors	Principals	Instructors	Principals	Instructors	Principals
1	Winget TVET college	83	21	75	16	90%	**76%**
2	Misrak TVET college	82	20	37	10	45%	**50%**
3	Nifas Silk TVET college	83	21	71	14	85%	**67%**
4	Entoto TVET college	82	21	70	15	85%	**71%**
Total		**334**	**83**	**253**	**55**	**75%**	**66%**

Table 4-2 Data distribution and collection to instructors and principals

In addition to this, questionnaires were distributed to principals using cluster-sampling method. Among 332 principals, 25% or 83 were assumed to be sufficient. Hence, about 21 questionnaires were distributed to each cluster. Therefore, from *Winget* 16 (76%), *Misrak* 10 (50%), *Nifas Silk* 14 (67%), and from *Entoto* 15 (71%) and totally 55 (66%) were collected. Simple random sampling technique were employed to select the instructors and supervisors/principals, from TVET-based colleges,

Furthermore, it is believed that there are many TVET graduates and are likely to employ in different industries in Addis Ababa. Therefore, after identifying the current number of industries on the selected study area, i.e. *Akaki-kaliti* industrial zone in Addis Ababa, systematic sampling method were employed to select ¼ or 165 industries among the current available 660 small and large industries from the selected industrial zone at *Akaki-kality* sub city in Addis Ababa city administration.

Furthermore, purposive and random sampling technique was employed to select graduates of TVET-based colleges from the selected sample industries of the *Akaki-kaliti* industrial zone. Since the exact number of graduate employees were not known, 200 TVET graduates were believed to be sufficient among the available 80,000 employees.

In addition to this, both purposive and available sampling techniques were employed to select interviewee officials responsible for curriculum in Federal and Addis Ababa TVET Agency, and COC to collect pertinent data for the research under study.

4.1.4 Source of data and data gathering tools

This study relied on a mixed methods approach to data collection, analysis and interpretation. Generally, this approach provides a way of utilizing both qualitative and quantitative data (Creswell, 2003) and as Creswell & Plano (2007) verify:

> *As a method, it focuses on collecting, analyzing and mixing both quantitative and qualitative data in a single study or series of studies. Their central premise is that the use of quantitative and qualitative approaches in combination provides a better understanding of research problems than either approach alone (p. 59).*

The combination of qualitative and quantitative methods allows the quantitative data to be linked directly to the qualitative data to see if the two types of data showed similar results (Creswell & Plano, 2007). Therefore, the sources of this study considers the four dimensions of curriculum and curriculum research adopted by Adamson and Moris (2007)

Dimensions of curriculum research

Aspects of	Typical expression	Typical research method
Ideology	Books; academic papers; policy documents	Discourse analysis
Planed/intended	Policy documents, programs; . . . assessment materials;	Discourse analysis, interviews
Enacted	Teacher and student achievement (e.g. use of time and resources); roles of teachers and students; . . . student output.	observations; teacher's interviews; . . . activity records
Experienced	Impact of the CRs; change in teacher attitude and/or behavior; . . .	Questionnaires; interviews; . . .

Source: (Adamson and Moris, 2007, p. 274)

Table 4-3Dimensions of curriculum research

This study followed a model of data collection & presentation of qualitative data advanced by Neuman (2007, p. 160) which advocates a "first, second and third-order interpretation of data". In this study the first-order interpretation goes to a group discussion with instructors and deans of the TVET institution about the general idea of constructs of the questionnaires regarding TVET CR and the second-order interpretation involved understanding the personal philosophies of the curriculum experts and policy makers. During this stage, the researcher identified common elements in the curriculum experts' interviews. These identified elements were linked to the literature and existing questionnaires, and from here, the researcher was able to refine constructs of the general questionnaires. Finally, it is linked to theory and theoretical significance assigned to TVET CR as a third-order interpretation stage.

The data collection in this study took a sequential approach so that qualitative and quantitative data collection and analysis occurred in phases rather than concurrently. Hence, priority was given to the

qualitative approach within both the exploration and inspection stages. There was, however, the integration or mixing of two types of data collection in the exploratory stage. During the exploration stage, interviews with the instructors and principals of TVET colleges (qualitative approach) were conducted to develop a broad understanding of the research situation in the form of qualitative data. This is consistent with the perspective that researchers must acknowledge the importance of understanding the micro politics of the research site (Smeed, et al., 2009). These qualitative data were then combined with the literature to construct and use a theoretical-based and construct specific questionnaire (quantitative approach). These methods of data collection were selected in preferences to participant observation as interviews followed by a questionnaire represent a more efficient way of gathering data from all TVET instructors, principals, graduates and employer industries. The inspection stage of the study then involved further qualitative data collection through focus group and individual interviews (see chapter VI). It provided an avenue for further interrogation to the qualitative and quantitative data collection during the first stage of this study. An overview of sequential data collection process is presented on Figure 4.4.

Both primary and secondary data sources were used in the study. Primary data were collected from the subjects of the study through survey questionnaires, & interviews. The pertinent documents to the study were consulted as a secondary source of data such as relevant books, manuals, internet and journals, regarding the CRs conducted in the TVET colleges in the country and experience in developed and developing countries were reviewed. Therefore, based on the review of related literature and the basic questions raised, data gathering instruments were drafted in English and local (*Amharic*) languages (see Appendix 1-7).

Furthermore, for its qualitative and quantitative paradigms, documentary data was collected to explore the current picture of the TVET CRs. Hence, documentary data were collected from CSA and Federal and A.A. TVET agency, COC, MSE, MOE, Federal Industry Minister, and Federal Finance Bureau in Addis Ababa.

Based on the data collected from primary sources, that can explore the comprehensive picture of TVET CRs, interviews were conducted for the available officials responsible for curriculum, policy designers of federal and Addis Ababa TVET agents in Ethiopia. In addition to this, officials responsible for competency assessment, department heads and college deans were also interviewed. The purpose of qualitative interviewing as Patton attests:

> *. . . is to capture how those being interviewed view their world, to learn their terminology and judgments, and to capture the complexities of their individual perceptions and experiences (2002, p. 348).*

That is why Mason (2005, p. 62) argued that "most qualitative research operates from the perspective that knowledge is situated and contextual, and therefore the job of the interview is to ensure that the relevant contexts are brought into focus so that situated knowledge can be produced". Thus, in this study, all interviews were audio recorded and transcribed as recommended in the literature (Patton, 2002). This form of data collection in most qualitative research, Patton (2002) makes clear the purpose of interviewing as:

> *We interview people to find out from them those things we cannot directly observe . . . . We cannot observe feelings, thoughts, and intentions. We cannot observe behaviors that took place at some precious point in time. We cannot observe situations that preclude the presence of an observer. We cannot observe how people have organized the world and the meanings that attach to what goes on in the world. We ask people questions about those things. The purpose of interviewing, then, is to allow us to enter into the other person's perspective. (pp. 340-341).*

Generally, during the validation process, the survey were amended to include questions related to broader issues, including policy maker views on the effect of TVET CRs, its impact to the status of TVET graduates and employer organizations, as well as the potential factors that influence the effective implementation of TVET CRs in Ethiopia. Questionnaire that composed both open ended and closed ended items were set and administered, so that informants could express their ideas and opinions freely and confidentially. Therefore, for its reliability and validity, the questionnaires were pilot tested. Based on this, data collection instruments were distributed and collected from respective sources.

Figure 4.2 displays the flow of data collection starts from interview with officials responsible for curriculum at Addis Ababa and federal level. Then continued questionnaires to instructors, principals, graduates and employers, which is accompanied with document analysis collected from different sources as indicated above. TVET institutions in Addis Ababa were 83 of which 70 were private, five were public and eight were NGO. During data collection, the available numbers of instructors in these institutions were 1667. Among these ¼ (334) questionnaires were distributed to instructors and collected 253 (82%). Among the available principals, 332 (1/4 or 83) questionnaires were distributed and collected 55 (66%). Generally, 2859 was total population, among 782 distributed sample questionnaires, 549 (70%) were collected, in addition to 10 interviews. A copy of the questionnaires in both languages (English and Amharic) is attached in the Appendix 1-8.

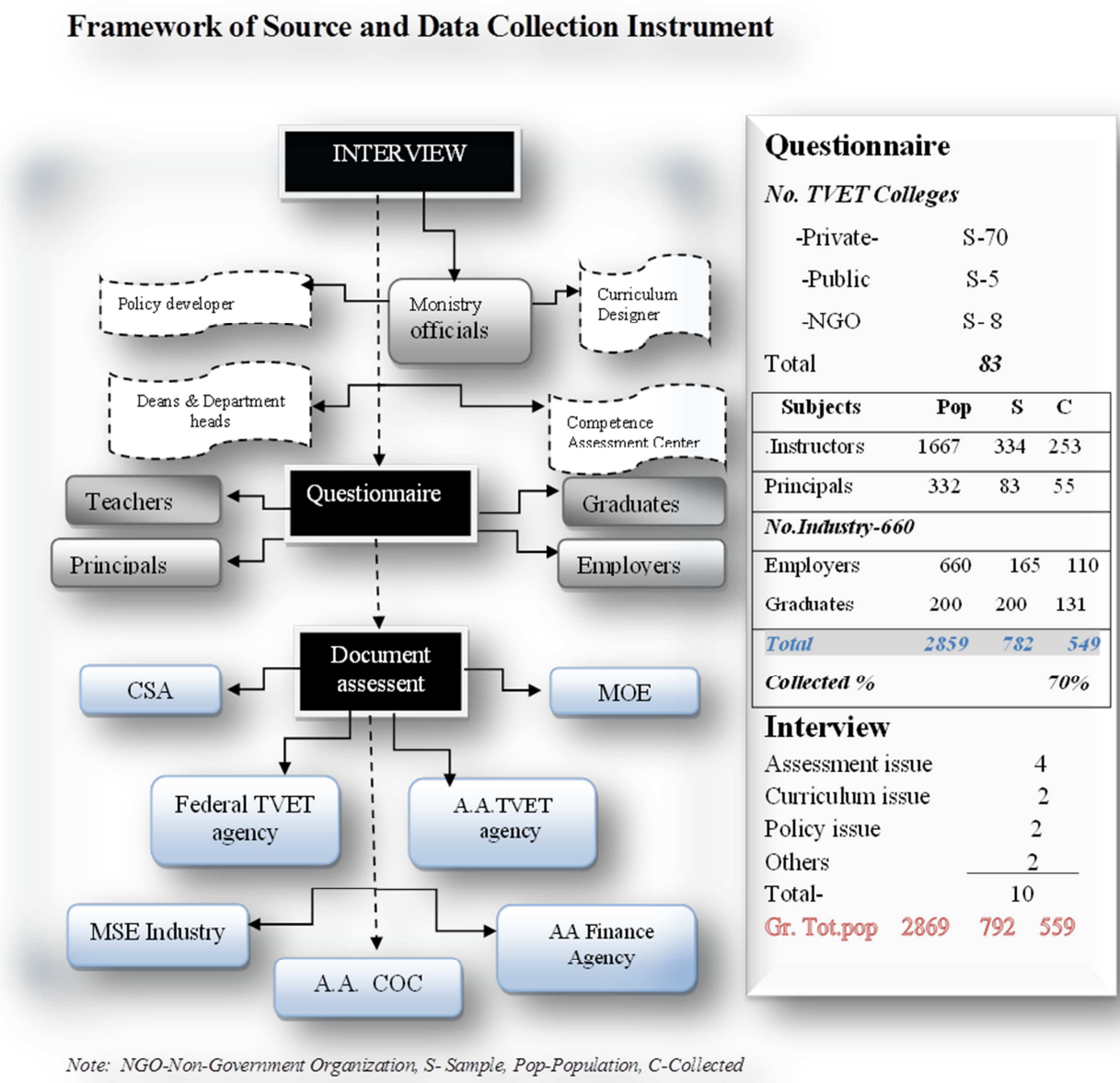


Figure 4-2 Framework of source and data collection instrument

4.2 *Assumptions*

Assumptions underlying the project intervention

This project is designed based on the following assumptions:

- There will be stable economic development and growth averaging 10.8% per year in (e.g. 2003/04 - 2012/13) and rapid economic growth, targeted for 11% per year (World Bank, 2015). Based on the predicted economic forecasts and that the demand for skilled 'employable' labor and the need for an improved TVET sector will remain a high priority;

- The Ethiopian Governmental Authorities responsible for the TVET sector, supported by GIZ project international technical assistance, will draft a national strategy including milestones and indicators of results, which the TVET CRs will fit together, in coordination with other donors (MOE 2005);
- The Ethiopian Governmental Authorities (Federal TVET agent) responsible for the TVET sector will have sufficient personnel to provide counterparts to the Technical Assistance Team so as to be fully engaged in the project's work, to help to build the capacity of staff on a continuing basis and to provide continuity in the future (MOE 2005);
- Active participation of all TVET colleges in Addis Ababa and stakeholders at national, regional and zonal levels in the TVET CRs project's activities;
- Supply of necessary equipment to TVET colleges to meet the requirements of the TVET CRs will be provided either by the government or through Public-Private Partnership or donor grants from abroad (MOE, 2005).

Based on these assumptions of this project, the research hypotheses are developed here under.

4.3 *Research hypotheses*

Introduction

One important role of vocational education CR is to provide a better employment opportunity to TVET graduates in the labor market. Therefore, this research expects that the quality of the vocational education curriculum has increased because of the continuous reforms and is more useful to improve the status of TVET graduates and employers in Ethiopia. Since this study focuses on two TVET CR programs in Ethiopia implemented since 2001, it compares the two CR programs implemented in different periods as IBCR between 2001 and 2005 and OBCR between 2006 and 2010. As Collins, et. al. (1997) points out the importance of analyzing the incremental explanatory power of the variables in the different periods. Further comparison is also conducted between TVET instructors and principals in addition to the Type of TVET institutions (public, private & NGO's institutions).

Based on the above basic assumptions of the project, the principal questionnaires encompasses the comprehensive picture of the impact of TVET CRs implemented in Ethiopia since 2001. They are the curricular intervention factors, constituencies of curriculum development, extent/nature of contents reviewed, and causes of TVET CRs, in addition to factors influencing effective

implementation of curriculum, impact indicators of curriculum and relevancy of curricular reforms to graduate and employer are reflected in the following 12 hypothesis and 43 sub-hypothesis:

Curricular intervention factors

TVET curriculum in Ethiopia is benchmarked from different well-experienced countries like Germany, Australia and Philippines. Hence, this study expects the reform may have impacted on the *curricular intervention factors* during the process of implementing the new curriculum. The intended intervention factors were *subject/trade change, content change, methodology change, time allocation change, professional change, evaluation/assessment change, instructional media change and technical/scientific change.* These factors will be tested based on the following 12 main hypothesis and 43 sub-hypothesis:

Hypothesis 1.0: ***TVET CRs will have positive impact on curricular intervention factors.***

Hypothesis 1.1: *There is perceptual variation between TVET college instructors and principals in terms of change of curricular intervention factors*.

Hypothesis 1.2: *The impact of the CRs on curricular intervention factors' changes will be significantly varied between the IBCR and the OBCR.*

Hypothesis 1.3: *The impact of the CRs on the curricular intervention factors change will be significantly varied between public, private and NGO's TVET institutions*.

Curriculum development

The constituency participation of curriculum development may be varied from country to country. However, this study projected the TVET curriculum could be developed with the participation of the following constituencies such as: *Professional TVET teachers, representatives of community/family, selected group of students, employer representatives, TVET college administrators, independent consultants and TVET curriculum experts.* Hence, the constituencies' participation in the process of curricula development in Ethiopia will be tested based on the following hypothesis and sub-hypothesis:

Hypothesis 2.0: ***The CRs will have impact on the degree of involvement of constituencies in the process of curriculum development***.

Hypothesis 2.1: *There is perceptual variation between TVET college instructors and principals in terms of degree of involvement of constituencies in the TVET curriculum development*.

Hypothesis 2.2: T*he CRs impacted on the degree of involvement of constituencies in the curriculum development will be significantly varied between the IBCR and the OBCR.*

Hypothesis 2.3: T*he CRs impacted on the degree of involvement of constituencies in the curriculum development will be significantly varied between the public, private and NGO's TVET institutions*.

Hypothesis 2.4: T*he participation of instructors and principals in the curriculum design will be significantly varied between the characteristics of respondents (gender, work status, ownership status of institutions, qualification, age and experience).*

Extent/nature of contents reviewed

The curriculum in Ethiopia is benchmarked from different well-experienced countries; however, it may be adapted to fit to the cultural, economic and political situations in the country. Therefore, the study evaluates to what extent *the CRs impacted on the nature of contents reviewed in TVET course of studies.* The constraints were: *continuation of the curricula with no change, continuation of the curricula with modifications, termination of the course of studies, and replacement of the course of study by the new one*. Hence, these tests based on the following hypothesis and sub-hypothesis:

Hypothesis 3.0: ***The CRs will have impact on the extent/nature of contents reviewed in TVET course of studies.***

Hypothesis 3.1: *The impact of the curricular reforms on the nature of contents reviewed in TVET course of studies will be significantly varied between two groups of respondents (TVET instructors and principals),*

Hypothesis 3.2: *The impact of the curricular reforms on the nature of contents reviewed in TVET course of studies will be significantly varied between two reform programs (IBCR and OBCR).*

Hypothesis 3.3: *The impact of the curricular reforms on the nature of contents reviewed in TVET course of studies will be significantly varied among ownership status of TVET institutions (Public, private and NGO's institutions).*

Causes of TVET CRs

There are different factors that my influence the reform of the TVET curricula in a country. Based on the literature review and practice of TVET CRs, this study identifies the factors that influence TVET CRs in Ethiopia. These factors of TVET CRs may depend on a variety of factors/causes, such as: ***Organizational factors*** *(influence of accreditation bodies, Benchmarking, influential individuals, Academic fashion and Academic merit),* ***Personal factors*** *(Student ability, student view*

point, staff issues, and Employer industry view point) and ***legal/economic factors*** *(Government policy regulations, and financial pressure) in addition to inadequacy of TVET curriculum to provide employable skill in the labor market.* Thus, the study tests the causes of CRs based on the following hypothesis and sub-hypothesis:

Hypothesis 4.0: Factors of reform (*Organizational, personal & legal/economic factors) will substantially enforce the CRs in Ethiopia*.

Hypothesis 4.1: *The factors that cause to reform the TVET curricular will be significantly varied between two groups of respondents (TVET instructors and principals),*

Hypothesis 4.2: *The factors* (*Organizational, personal & legal/economic factors) that cause the TVET curricular to be reformed will be significantly varied between two reform programs (IBCR and OBCR).*

Hypothesis 4.3: *The factors* (*Organizational, personal & legal/economic factors) that cause the TVET curricular to be reformed will be significantly varied among ownership status of TVET institutions (Public, private and NGO's institutions).*

Internal factors influencing effective implementation of CRs

The effective implementation of TVET CRs may depend on a variety of internal factors. These factors may not only increase the pressure, difficulty, and complexity of the CRs, but also facilitate it. Some factors are grouped as internal factors within the institution such groups as ***Physical factors*** (*Subject area objective set, Application of teaching methods, Organization of modular contents in TVET courses, Assessment and evaluation process of learning outcomes, and Availability of instructional materials such as computers).* ***Personal factors*** *(Professional TVET Teachers' teaching skill & experience, Awareness of teaching staff to TVET, Motivation of Teaching staff, and Background & inherent cognitive skill of TVET students) and* ***Temporal factors*** *(Usage of assigned time allocation to TVET courses and Number of students in a class (class size))* which may have great influence on its effective implementation. Based on the above factors the following hypothesis and sub-hypothesis will be evaluated.

Hypothesis 5.0: ***Internal* factors of reform (Physical, Personal & Temporal factors) *will substantially influence the effective implementation of TVET CRs in Ethiopia*.**

Hypothesis 5.1: *The internal factors influencing the effective implementation of the TVET CRs will be significantly varied between two groups of respondents (TVET instructors and principals),*

Hypothesis 5.2: *The internal factors (Physical, Personal &Temporal factors) influencing the effective implementation of the TVET CRs will be significantly varied between the two reform programs (IBCR and OBCR), ownership status (public, private, and NGO's institutions) and the interaction effect (reform programs X ownership status).*

External factors influencing effective implementation of CRs

The effective implementation of TVET CRs may also depend on a variety of external factors. These factors may not only increase the pressure, difficulty, and complexity of the CRs, but also facilitate it. For example, the application of ITs promotes the integration of the institution systems for planning, controlling, and implementing (Kim et. al. 2006). Some factors are proposed to group together into external ones such as ***Legal/political factors*** (*TVET Policy practice, National labor market influence on TVET, External relation to develop TVET, and Adaption of external curriculum (Benchmarking) [administrative practice]).* ***Social /cultural factors*** *(Employers need to TVET graduates, Family influence on TVET, Cultural appropriateness to TVET, and Social Attitude to TVET) and* ***Technological factors*** *(Accessibility of ICT in TVET colleges, Network & linkage system to develop TVET, and: External technical support to develop TVET, [Globalization and research development])* ***Financial Factors*** *(Salary of TVET instructors, Budget allocation to TVET, and: Foreign financial aid to TVET (Donors)).* As indicated earlier, (Inlow, 1965) the factors that facilitate or hinder the effective implementation of curricula reforms are cultural transmission, environmental adaption and total personality development. That means it exists in economic, political, social, cultural and technical context. Recognizing and understanding the factors that influence TVET CRs from within and out with the institutional context provides a sound rationale for decision making in relation to planning and designing an effective implementation of TVET CRs. Based on these considerations, the study will try to resolve the following hypothesis:

Hypothesis 6.0: ***External*** **factors of reform (Legal/political, Social/cultural, Technological and Financial factors)** ***will substantially influence the effective implementation of TVET CRs in Ethiopia****.*

Hypothesis 6.1: *The external factors influencing the effective implementation of the TVET CRs will be significantly varied between two groups of respondents (TVET instructors and principals),*

Hypothesis 6.2: *The External factors (Legal/political, Social/cultural, Technological and Financial factors) influencing the effective implementation of the TVET CRs will be significantly varied between the two reform programs (IBCR and OBCR),*

ownership status (public, private, and NGO's institutions) and the interaction effect (reform programs **X** *ownership status).*

Impact indicators of CRs

Badiolli states the concept of impact as the positive or negative, primary and secondary long-term effects produced by an intervention, directly or indirectly intended or unintended (2011). Hence, to evaluate the impact indicators of TVET CRs implemented in Ethiopia since 2001, the study considers the following indicators such as: *Access to the program of study (enrolment rate), Graduation rates, Employability of graduates, Quality of training, Creating a competent/skilled workforce, Creating access to trainees for competency assessment, Cost-effectiveness, New methods of training, and Time table/schedule adjustment.* Therefore, by considering the above impact indicators the following hypothesis and sub-hypothesis will be tested.

Hypothesis 7.0: The TVET CRs will have positive affect on the estimated impact indicators of the implemented curricula.

Hypothesis 7.1: *The impact indicators of the TVET CRs will be significantly varied between two groups of respondents (TVET instructors and principals),*

Hypothesis 7.2: *The impact indicators of the TVET CRs will be significantly varied between two reform programs (IBCR and OBCR).*

Hypothesis 7.3: *The impact indicators of the TVET CRs will be significantly varied among three-ownership status (public, private and NGO's TVET institutions).*

Graduate relevance indicators - TVET instructors and principals' perspectives

Failure to reject this hypothesis implies either that the TVET CRs have no significant effect on the needs of graduates or that the relationship is so distinctive that one cannot observe these effects using statistical procedures designed to identify systematic patterns across the reforms. This study considers the following graduate relevance indicators of TVET CRs implemented in Ethiopia since 2001 from the perspectives of TVET instructors and principals. Such as "*The curricula minimized unemployment rate of TVET graduates, The curricula provided TVET graduates with paid employment opportunity, The curricula provided access to make the qualification of TVET graduates match with the labor market, The curricula increased the quality of jobs found by the TVET graduates, The curricula prepared TVET graduates for self-employment,* and *The curricula provided access for further training for TVET graduates*". Based on these indicators the following hypothesis and sub-hypothesis will be tested.

Hypothesis 8.0: The TVET CRs will have positive impact on the estimated graduate relevance indicators.

Hypothesis 8.1: *The graduate relevance indicators of the TVET CRs will be significantly varied between two groups of respondents (TVET instructors and principals),*

Hypothesis 8.2: *The graduate relevance indicators of the TVET CRs will be significantly varied between two reform programs (IBCR and OBCR).*

Hypothesis 8.3: *The graduate relevance indicators of the TVET CRs will be significantly varied among ownership status of TVET institutions (Public, private and NGO's institutions).*

Employer relevance indicators - TVET instructors and principals' perspective

Since employers are one of the clients of TVET, they provide not only their inputs in the TVET curriculum but also they benefit from it. Therefore, TVET CRs have directly or indirectly an impact on the status of employer industries. To identify the employer relevance indicators of TVET CRs implemented in Ethiopia since 2001, this study considers the following employer relevance indicators from the perspectives of instructors and principals such as*: "The competency of graduates is appreciated by the employers, TVET graduates are more productive in industries, employers are satisfied with the performance of TVET graduates, improved technology transfer in the industries, the qualification of TVET graduates match with the industry standards for employment, and the curricula responded the human resource needs of employers"*. The following hypothesis and sub-hypothesis were tested:

Hypothesis 9.0: The TVET CRs will have positive impact on the estimated employer relevance indicators.

Hypothesis 9.1: *The employer relevance indicators of the TVET CRs will be significantly varied between two groups of respondents (TVET instructors and principals),*

Hypothesis 9.2: *The employer relevance indicators of the TVET CRs will be significantly varied between the two reform programs (IBCR and OBCR).*

Hypothesis 9.3: *The employer relevance indicators of the TVET CRs will be significantly varied among ownership status of TVET institutions (Public, private and NGO's institutions).*

Taking competency assessment

Taking competency assessment became a big issue in the Ethiopian TVET system for quality assurance during the implementation of the OBCR since 2006. Hence, every instructors and

principals were obliged to take competency assessment so that they can stay on the job. The following unintended hypotheses were developed to prove the positive impact of the CRs and the variation between the characteristics of the respondents *(gender, work status, ownership status of institutions, qualification, age and experience)* from the perspectives of instructors and principals.

Hypothesis 10.0: The TVET CRs will have positive impact on taking competency assessment of instructors and principals.

Hypothesis 10.1: Taking competency assessment *of instructors and principals will be significantly varied between the characteristics of respondents (gender, work status, ownership status of institutions, qualification, age and experience).*

Graduate relevance indicators - TVET graduates perspective

Graduates of TVET were asked related questions on the impact of the CRs on graduates. Different issues of graduate relevance indicators were observed from the perspectives graduates. The following hypothesis and sub hypothesis were developed to prove statistically.

Hypothesis 11.0: The TVET CRs will have positive impact on the estimated graduate relevance indicators.

Hypothesis 11.1: *The graduate relevance indicators of the TVET CRs will be significantly varied between two reform programs (IBCR and OBCR).*

Hypothesis 11.2: *The graduate relevance indicators of the TVET CRs will be significantly varied among ownership status of TVET institutions (Public, private and NGO's institutions).*

Hypothesis 11.3: *The graduate relevance indicators of the TVET CRs in terms of cooperative/apprenticeship training in industries will be significantly varied between two reform programs (IBCR and OBCR).*

Hypothesis 11.4: *The graduate relevance indicators of the TVET CRs in terms of cooperative/apprenticeship training in industries will be significantly varied among ownership status of TVET institutions (Public, private and NGO's institutions).*

Hypothesis 11.5: *The graduate relevance indicators of the TVET CRs in terms of competency assessment and certification of TVET graduates will be significantly varied between two reform programs (IBCR and OBCR).*

Hypothesis 11.6: *The graduate relevance indicators of the TVET CRs in terms of competency assessment and certification of TVET graduates will be significantly varied among ownership status of TVET institutions (Public, private and NGO's institutions).*

Hypothesis 11.7: *The graduate relevance indicators of the TVET CRs in terms of competency assessment and certification of TVET graduates will be significantly varied between gender difference (male and female).*

Hypothesis 11.8: *The graduate relevance indicators of the TVET CRs in terms of employment indicators of TVET graduates will be significantly varied between two reform programs (IBCR and OBCR).*

Hypothesis 11.9: *The graduate relevance indicators of the TVET CRs in terms of employment indicators of TVET graduates will be significantly varied between types of TVET institutions (public, private & NGO's).*

Hypothesis 11.10: *The graduate relevance indicators of the TVET CRs in terms of Quality assurance indicators of TVET graduates will be significantly varied between types of TVET institutions (public, private & NGO's)and between IBCR & OBCR.*

Hypothesis 11.11: *The graduate relevance indicators of the TVET CRs in terms of income indicators of TVET graduates will be significantly varied between IBCR & OBCR.*

Hypothesis 11.12: *The graduate relevance indicators of the TVET CRs in terms of income indicators of TVET graduates will be significantly varied between types of TVET institutions (public, private & NGO's).*

Employer relevance indicators - employers' perspectives

Employers were also asked related questions on the impact of the CRs on the industries. Different issues on employer relevance indicators were observed from the perspectives employers. The following hypothesis and sub hypothesis were developed to prove statistically.

Hypothesis 12.0: The TVET CRs will have positive impact on the estimated employer relevance indicators.

Hypothesis 12.1: *The employer relevance indicators of the TVET CRs in terms of participation in the design of TVET curriculum development will be significantly varied between employers TVET instructors and principals.*

Hypothesis 12.2: *The employer relevance indicators of the TVET CRs in terms Cooperative/ apprenticeship training in industries will be significantly varied between employers and TVET graduates.*

Hypothesis 12.3: *The employer relevance indicators of the TVET CRs in terms of Employer involvement in TVET institutions will be significantly varied between employers and principals of the TVET colleges.*

Hypothesis 12.4: *The employer relevance indicators of the TVET CRs in terms of quality assurance indicators will be significantly varied between TVET* graduates and employers.

4.4 *Methods of data analysis and interpretation*

Data analysis and interpretation of data applied in this study relates with the type of data approach chosen by Creswell (2003) for the investigative process in mixed methods research. For example, descriptive and inferential numeric analysis occurs *within* the quantitative approach. Interpretation of data involves assigning significance or meaning by using numbers; the study then relates these numbers to the hypotheses or research questions. Alternatively, descriptive and thematic analysis occurs within the qualitative approach, and interpretation of data involves the researcher relying on words (and other visual representations) to discuss their significance or meaning. Data analysis and interpretation within the different data types does not pose a problem, provided that the researcher is competent in both quantitative and qualitative approaches. However, mixed methods research brings the additional challenge of analysis and interpretation between the data approaches. The following sections show the data analysis and interpretation *within* and *between* different data approaches in this study.

Quantitative approach

Data analysis and interpretation within the quantitative approach used by researchers by taking a number of key steps and embedded in each of these steps in a number of specific concepts and tools. For example, Creswell (2003, p. 222) recommended that as a first step the quantitative researcher "prepare and organize the data … by assembling all data, transforming it into numeric scores, creating a data-base for computer or hand tabulation, and selecting a computer program to use in performing statistical test on the data". The second step involves "exploring and descriptively analyzing the data" using a process that "consists of two general steps: 1) Exploring and describing the data, and 2) Conducting statistical test on the data" (pp. 225-226). As a third step, Creswell (2002, p. 235) recommends, "Analyzing the data to test hypotheses (research questions)" which involves choosing appropriate statistical tests. The fourth step involves interpretation or "representing and summarizing the data in tables, figures and a detailed discussion of the results" (p. 222). Finally, as a fifth step, Creswell (2002) recommends concluding the research "by summarizing key results, explaining the results, noting limitations, and advancing suggestions for future investigations" (p. 222).

Therefore, in this study, the analysis and interpretation of quantitative data occurred during the exploration stage of the study was based on the data prepared and organized with a support of a sophisticated software program, Statistical Package for the Social Sciences (SPSS v.20). This process then allowed for the exploration and description of the data in terms of validity and normality. Checking normality was deemed important, because departure from normality violates the underlying assumption of normality when conducting parametric tests of statistical inferences. In this study normality were checked for the data collected from different four subjects such as 1) TVET instructors, 2) Principals of TVET colleges, 3) TVET graduates and 4) Employers form industries. Each part of these section ends with a conclusion.

Qualitative approach

Data analysis and interpretation within the qualitative approach as Creswell (2002) describes that this process in terms of preparing and organizing the data for analysis, exporting the data by describing and developing themes from the data, interpreting the findings and validating the accuracy and credibility of the findings.

The initial preparation of the data for analysis requires organizing the vast amount of information, transferring it from the spoken or written words or text. This process will yield many pages of text that need to be managed. A general reading of this text provides a sense of the information found in this database. However, this first reading need to be followed up by coding the text, as codes are used to build descriptions and to develop themes from the data. To this end, Auerbach and Silverstein (2003) recommend a number of guidelines. These guidelines include writing down the research questions, and keeping it in view during a filtering process leading to the selection of relevant text. By constantly referring to the research questions, it is possible to select the text that is relevant. In the same way, it is also easier to exclude text with the knowledge that it is not relevant to the research purpose.

Once text relevant to the research question has been selected, the researcher is then able to begin a coding process. "Codes are labels used to describe a segment of selected text" (Creswell, 2002, P. 266). These codes are written in the margin of the text and many represent the participants' "own words or standard educational terms" (p. 266). For example, the selected text has been coded such that ***I2p22T3*** represents Interview 2, Page 22 of the transcript, Text line 3.

Ones the selected text is coded, it is possible to "reduce overlap and redundancy codes" (Creswell, 2002, p. 266). Finally, it is possible to collapse the codes into themes with themes similar to codes,

but aggregated together to form a major idea. These themes could then be linked to the themes developed from the other data source. After selecting text, coding the data and developing themes, the final step in qualitative data analysis is reporting and representing the findings in the form of a narrative or theory development (Creswell, 2002). This step represents the final act of interpretation and involves a subjective assessment by the researcher. Here it is assumed that the researcher can never be 'neutral' or 'objective', as this final narrative contains "personal reflections of the researcher about the meaning of the data, personal views compared or contrasted with the literature, the limitations of the study and suggestions for future research" (p. 278). Consequently, theory is the integration of concepts and relationships that explain the phenomenon under study (O'Donoghue, 2007). This discussion is presented in chapter six.

Data analysis and interpretation between the quantitative and qualitative data approaches

As noted above data analysis and interpretation between quantitative and qualitative data approaches can be challenging in mixed methods research. To address this issue, Creswell (2003) recommends that researchers link the process of data analysis and interpretation with the overall research strategy. Developing its thought, he offers four different approaches to data analysis and interpretation between the data sources: "data transformation", "instrumental development", explore outliers" and "examine multiple levels" (p. 221). Of these four types, Creswell suggests that "explore outliers" and "instrumental development" are most appropriate to a sequential research strategy**.**

Instrumental development: In a sequential approach, the researcher obtains themes and specific statements from participants in an initial qualitative data collection. In the next phase, use these statements as specific items and themes for scales or create a survey instrument grounded in the views of the participants. A third and final phase might be to validate the instrument with a large sample representative of a population (Creswell, 2003, p. 221).

Explore outliers: In a sequential model, an analysis of quantitative data in the first phase can yield extreme outlier cases. Follow-up qualitative interviews with the outlier cases can provide insight about why they diverged from the qualitative sample (p. 221).

This study was designed around the theoretical framework of symbolic interactionists and followed the recommendation of a two-stage investigative process, including an "exploration stage" as well as "inspection stage" (Charon, 2007, p. 147). This research strategy represents a sequential approach, and consequently lends itself to instrument development and the exploration of outliers as

described by Creswell (2002). The exploration stage as identified by Blumer (1998) has two distinct functions. Firstly, this stage provides the researcher with the opportunity to become familiar with the empirical social world under study. Charon (2007, p. 194) interprets this as an opportunity to understand "What's going on around here?" (p. 147). Secondly, this familiarization process allows the researcher to refine the inquiry process that then leads to the inspection stage of the inquiry. This second stage of inspection involves the isolation of significant elements within the empirical world or situation, describing the situation in relation to these elements, and then using this understanding to inspect other forms of interaction.

During the exploration stage of this study, the researcher used analysis of initial qualitative interview data to develop a questionnaire. This questionnaire, in turn, was used to collect additional quantitative data that highlighted extreme issues or outliers that were further investigated during the inspection stage. Beyond these analytical processes, this study also followed a model of data interpretation of qualitative data advanced by Neuman (2007 p. 160). In short, this model advocates a "first, second and third-order interpretation of data". The first-order interpretation is from the point of view of the people being studied. The second-order interpretation is from the point of view of the researcher, and involves eliciting the underlying coherence or sense of meaning in the data. The third-order interpretation involves general theoretical significance to the data.

Within this study, the "first order interpretation" (Neuman, 2007, p. 90) occurred in the first stage of the study, and involved understanding the personal philosophies of the officials responsible for TVET curriculum and policy. During this first stage of the study, the researcher identified common elements in the officials responsible for curriculum and policy's interviews. These identified elements were linked to the literature and existing questionnaires, and from here, the researcher was able to begin construction of a general questionnaire. This first order interpretation of data is displayed in chapter Five. Neuman's (2007) second and third order interpretation was conducted in the second stage of the study. This second order of interpretation allowed the researcher to develop a reasoned understanding of the data collected during this second stage by placing it within a context that generated themes (O'Donoghue, 2007; Woods, 2006). These themes were developed from analysis of the teacher's interview responses recorded during interview with officials. This second order interpretation of data is displayed in Chapter eight. The "third order interpretation", is the final step in the second stage of this study. This is when themes were linked to theory and theoretical significance assigned. This third order interpretation of data is displayed in Chapter nine as theoretical propositions. The following chapters provide the detailed empirical interpretation of the data.

PART TWO

EMPRICAL ANALYSIS

5 TVET INSTRUCTORS AND PRINCIPALS PERSPECTIVES ON TVET CR

(Empirical analysis of individual items of TVET instructors and principals' questionnaires: Descriptive statistics)

5.1 *Introduction*

The purpose of this section is to analyze individual items and scales in the questionnaire. This is the exploration stage of the study. Exploration stage as defined by Blumer (1998) has two distinct functions. Firstly, this stage provides the researcher with the opportunity to become familiar with the empirical social world under study. Charon (2007 p. 94) interprets this as an opportunity to understand 'what's going on around here?'

Secondly, this familiarization process allows the researcher to refine the inquiry process that, in turn, guides the inspection stage of the inquiry. Generally, the exploration stage enabled the researcher to identify issues or areas of interest that deserve further investigation during the inspection stage.

This questionnaire consists of 94 items out of these, 79 items were assigned to nine underlying scales and seven items that were not assigned to any scales, in addition to eight items in the demographic data. The first section starts with an introduction part (5. 1). And continuous with Demographic data, then the seven individual items that were not included in the scales were elaborated (5.2), descriptive statistics for items such as Item 1: *Part of curriculum implementation program,* Item 2: *participating in the design of TVET curriculum,* Item 3: *Roles in the design of TVET curriculum,* Item 4: *Major reasons for not participating in the process of designing curriculum,* Item 5: *Taking competency assessment,* Item 6: *Competency level certification, and* Item 7: *Effectivity of CR.*

Second section (5.3) deals with descriptive statistics for items assigned in the scales, such as scale 1 Curricular Interventions (CI), Scale 2 continues with the TVET Curriculum development (CD), Scale 3 reports the extent of CRs (NR), Scale 4: causes of CRs (FR), Scale 5 provides us with the Internal Factors that influence the CR (IF), Scale 6 deals with the External Factors that influence the

CR (EF), Scale 7 deals with estimation of Impact Indicators of the CR (IR), Scale 8 considers graduate relevance of the CR (GR), and finally, scale 9 considers Employer Relevance estimation of the CRs (ER).

Generally, section 5.2 and 5.3 provide descriptive tabulations for the frequency distributions of each item and scale; it also highlights items that have particularly high or low levels of endorsement. Section 5.4 deal with the comparison of items and scales (inferential statistics) described in section 5.3. Factor analysis of the scales is displayed on sub section 5.4.6; 5.4.7 and 5.4.8.

The descriptive statistics for graduate and employer questionnaires are displayed in chapter 6 and 7 respectively. The inferential statistics also displayed in section 6.8 (graduate) and 7.8 (employer). In this way, the exploratory stage provides baseline findings on the research questions of this study. Chapter 8 deals with TVET officials perspectives and chapter 9 presents the results and discussion. In general, these sections shed light on possible areas to be investigated.

Demographic data

Respondents of this study were asked to indicate their characteristics such as *sex, age, qualification, status as instructor, the subject area/field of study, experience, and name of institutions and the ownership status/types of institutions* where they are working. Accordingly, descriptive statistics was conducted to show their frequencies and percentages from SPSS version 20. As can be seen from Table 5.1, 253 (82%) respondents were instructors and 55 (18%) respondents were principals. Among these respondents, the numbers of female were small (56 or 18%) compare to male participants (252 or 82%). Among the principals of TVET institutions 4 (7.3%) were females. Generally, this indicates that a small numbers of female respondents participated in this study. The majority respondents 162 (52.6%) were young (18-29) among these 143 (56.5%) and 19 (34.5%) were instructors and principals respectively. The second age group 30-44 years were 80 (25.97%) and 66 (21.43%) were the third age group of respondents.

Table 5.1 further shows the type of TVET institutions. Among respondents from TVET institutions 57 (18%), 199 (65%), 52 (17%) were from public, private and NGO institutions respectively. Regarding experience of respondents, the majority of respondents 106 (34.4%) were below five years of teaching experience in TVET institutions, these were all relatively new instructors employed to provide training in TVET area. However, none of principal reported below five years of experience. The other group regarding experience was 95 (35.58%) had service year between 11

and 20 years, and 41 (15.36%) had service years above 20 years. This indicates that valuable data can be obtained from experienced instructors of each institution.

Respondents' demographic data

Items	Instructors		Principals		Total	
	No.	%	No.	%	No.	%
Sex						
Male	201	79.4	51	92.7	252	81.82
Female	52	20.6	4	7.3	56	18.18
Total	253	100	55	100	308	100.00
Age						
18-29	143	56.5	19	34.5	162	52.60
30-44	66	26.1	14	25.5	80	25.97
45-59	44	17.4	22	40	66	21.43
Total	253	100	55	100	308	100.00
Qualification						
Diploma	52	20.6	0	0	52	16.88
Bachelor's Degree	165	65.2	34	61.8	199	64.61
Master's Degree	36	14.2	21	38.2	57	18.51
Total	253	100	55	100	308	100.00
Experience						
Below 5 years	105	41.5	0	0	105	39.33
5 - 10 years	51	20.2	16	29.1	67	25.09
11 - 20 years	73	28.9	22	40	95	35.58
Above 20 years	24	9.5	17	30.9	41	15.36
Total	253	100	55	100	267	100.00
Types of Institution						
Public Institution	44	17.4	13	23.6	57	18.51
Private Institution	165	65.2	34	61.8	199	64.61
NGO' Institution	44	17.4	8	14.5	52	16.88
Total	253	100	55	100	308	100.00
Instructors level						
A-Level (Master & above)	27	10.7	-	-	27	10.67
B-Level (Degree)	165	65.2	-	-	165	65.22
C-Level (L/3 & L/4)	61	25.1	-	-	61	24.11
Total	253	100	-	-	253	100.00

Table 5-1 Demographic data of respondents

Table 5.1 also represents the levels as respondents (instructors and principals) and their qualification. 52 (16.9%), 199 (64.6%) and 57 (18.5%) were diploma, bachelor-degree and master's-degree holders respectively. However, none of the responses was reported at the PhD level. About 36 (14.2%) master's degree holders were A-Level but few master's degree holders 9

(5.5%) were on the B-Level status. Generally, majority 165 (65.2%) were B-Level instructors. 7 (13%) of the C-Level instructors were bachelor's degree holders, however 47 (87%) of diploma holders were at C-Level (L/3 & L/4).Yet, seven respondents did not report at any Level, indicating that they were not competency assessed or not passed the assessment.

5.2 *Items not assigned to the scales: Descriptive statistics*

This part deals with the descriptive analysis for items not assigned to the scales. They are: Item 1: *Participation in the process of implementing the curricular reform programs* (IBCR & OBCR), Item 2: *Participation in the design of TVET curriculum*, Item 3: *Roles in the design of TVET curriculum*, Item 4: *Major reasons for not participation in the process of designing curriculum*, Item 5: *Competency assessment*, Item 6: *Certification*, and Item 7: *The effectiveness of CRs*.

Item 1: Curricular reform programs (IBCR & OBCR)

Respondents were asked whether they participate in the process of implementing the TVET CRs programs, so that they can be divided into two groups as IBCR and OBCR implementation programs. The question was stated as: *I was part of the CRs implemented during: (please answer only one to which you belong to).* The responses were *A. the curricula changes between 2001 and 2005 (10+system) B. the curricula changes between 2006 and 2010 (Level system).*

Part of TVET CRs

Items	Frequency	%
I was part of the input-based CR (IBCR) (10+system curriculum)	**136**	**44.1%**
I was part of the outcome-based CR (OBCR) (Level system curriculum)	**150**	**48.7%**
Total	**286**	**92.8%**
No reply	**22**	**7.2%**
Total	**308**	**100%**

Table 5-2 Part of the CRs programs

As can be seen from the Table 5.2, 136 (44.1%) and 150 (48.7%) of the respondents were reported their participation during the implementation of the IBCR (10+system curriculum) and OBCR (Level system curriculum) respectively. The other 22 (7.2%) respondents were replied on both programs, however they are not considered in the comparative analysis. The study used these two groups for the purpose of comparative analysis further in the inferential statistic section of the exploration stage of the study.

Item 2: Participation in the design of TVET curriculum

To investigate who was involved in the process of TVET curriculum development, respondents were asked Item 2: *Did you participate in the design of TVET curriculum?* Answering *yes* or *no.*

Design of TVET curriculum	***No***	***Yes***	***Total***
I have participated in the design of TVET curriculum	**159(53%)**	**143(47%)**	**302(100%)**
Instructors	**52%**	**48%**	
Principals	**56%**	**44%**	

Table 5-3 Participation in the design of TVET curriculum

Table 5.3 shows a 302 out of 308 provide their responses. Out of these about 47% of respondents replied that they (Instructors and principals) *participated in the process of designing TVET curriculum, however* approximately 52% of respondents did not participate in the design of the curriculum. This finding gives an area of interest for further investigation during the exploration stage of the study based on the characteristics of respondents.

The above table further shows the involvement in the curriculum design comparatively between instructors and principals. Hence, more instructors (48%) than principals (44%) were involved in the process of designing TVET curriculum, indicating that the CRs provide an opportunity for the participation of both instructors and principals in the process of designing TVET curriculum.

Item 3: Roles in the design of TVET curriculum

To investigate the extent of involvement in the process of curriculum design, an additional question was asked for those who participated in the design of TVET curriculum (47%) (See Table 5.3). The question was stated as. *"If you participated in the design of TVET curriculum, then what was your main role?"* The given alternatives were *displayed in Table 5.4.*

Roles of Participants	Instructors	Principals	Total Frequency	Total %	Total Valid %
No role to change the curriculum contents	57%	57%	80	55.9	58.0
Able to modify the curriculum contents	23%	25%	32	22.4	23.2
Able to replace the curriculum contents	18%	11%	18	12.6	13.0
Others-has power to design a new curriculum	7%	7%	8	5.6	5.8
Total			138	96,5	100,0
No reply			5	3,5	
Total			143	100,0	

Table 5-4 Roles in the design of TVET curriculum

As can be seen on the Table 5.4, 80 of 138 respondents (58%) have reported that they had no any role to change/modify the curriculum contents, even though they have got a chance to participate in the curriculum design. However, some 23% and 13% of participants reported that they had roles to modify and change/replace the curriculum contents in their field of study respectively. This data suggest that some participants have played their roles in the design of TVET curriculum.

Comparatively, 57% of instructors and similarly 57% of principles had *no active role* to change or modify the curriculum during the designing process, whereas the power of *modification* of the curricular contents goes to 23% of instructors and 25% of principals. The *power to change/replace* the curriculum contents was leaned to 18% of instructors and 11% of principals. This data suggests that there is no significant difference between the instructors and principals in terms of roles to change or modify the contents of the adopted curriculum.

Item 4: Reasons for not participation in the process of designing curriculum

Contrastingly, to identify the reasons for not being involved in the TVET curriculum development, question was raised for those 159 (53%) respondents (see Table 5.3) who have no chance to participate in the designing of the curriculum, an open-ended question was raised as: *What was the reason/s for not participating in the design of the curriculum?* Hence, similar responses were tabulated from 126 responses among 159 non-participant respondents.

Reasons for not participation	Frequency	%	valid %
Unfortunately, I was not in a position to participate in the design of the TVET curriculum.	12	3.9	9.5
I did not get a chance to participate in the design of TVET curriculum, since the participant are randomly selected.	**60**	19.5	**47.6**
Because the curriculum was reformed or designed by the industry professionals, trainer or agency.	14	4.5	11.1
I did not have good experience and knowledge to design a curriculum.	23	7.5	18.3
Because I am not interested to participate in a curriculum since it is a direct copy from other sources of internet.	8	2.6	6.3
Since the Ethiopian occupational standard and the curriculum were designed by the known body, the trainers would expect only to arrange what is already designed.	9	2.9	7.1
Total	126	40.9	100
NO reply	182	59.1	
Total	308	100	

Table 5-5 Major reasons for not participating in designing curriculum

As can be seen on Table 5.5, a majority (48%) respondents indicated that they *did not get a chance* to participate in the design of TVET curriculum for being random selection, 18% were reasoned out for being *not having good experience and knowledge* to design a curriculum. 11% pointed out that the curriculum is *designed by the industry professionals or trainer*. The other respondents 10%

indicated, "*Unfortunately I was not in a position to participate in the design of the TVET curriculum*"

The other group of respondents (7%) also replied "*Since the Ethiopian occupational standard and the curriculum are designed by the known body, the trainers are expected only to arrange what is already designed* and 6% of the respondents suggested as "*Because I am not interested to participate in a curriculum since it is a direct copy from other sources of internet*". Generally, this indicates that respondents have got a narrow chance to participate in the design of the curriculum.

Item 5: Competency assessment of the instructors and principals

Regarding competency assessment, respondents were asked, Item 4: H*ave you taken competency assessment?* They replied 1="*No*" or 2="*Yes*" answers. The following table provides the detail*:*

Taking competency assessment	Instructors	Principals	Total
No	96(38%)	5(9%)	101(32.8%)
Yes	157(62%)	50(91%)	207(67.2%)

Table 5-6 Assessing competencies

Table 5.6 perceived whether instructors and principals have assessed their competency. Among 253 instructors 107 (62%) were assessed their competence and among 55 Principals 50 (91%) were assessed. Generally, 207 (67%) were reported for being assessed their competency. Whereas 101 (33%) were not yet assessed their competency but still active in the teaching learning process, suggesting that the CR has an impact on taking competency assessment of instructors and principals. The following Table 5.7 displays the certificate level awarded by 67% respondents.

Item 6: Certification of the instructors and principals

Furthermore, respondents were asked, Item 5: *what was the reward for being assessed in the Center of Competency? In addition, they chose among the given level of competencies awarded in the Ethiopian context the Certificate Level from lowest to the highest as level II, III, IV or V.*

As indicated on Table 5.7 below, TVET instructors replied their levels of competence awarded from the Center of Competence (COC). The majority 164 (80%) respondents reported that they were certified for competency level IV, and 31(14%) were at level III, whereas 4 (2%) respondents

awarded level II & V. Generally, among 207 assessed respondents (Table 5.6) 204 or 98% were awarded for being certified their competencies.

Certificate Levels	Frequency	%	Valid %	Instructor	Principal
II	4	1.3	1.9	3%	0%
III	31	10.1	14.4	19%	4%
IV	164	53.2	80.8	76%	40%
V	4	1.3	2.0	3%	1%
Total	203	65.9	100.0		
No Reply	105	34.1			
Total	308	100			

Table 5-7 Competence assessment level awarded

Comparatively, the majority 76% of instructors and 40% of principals were certified to level IV and some 19% of instructors and 4% of principals were certified to level III, however very few percent (1% to 3%) were on level II and V.

Item 7: The effectiveness of CRs

To investigate the opinion of instructors and principals regarding effectiveness of the TVET CRs implemented in Ethiopia from 2001 to 2006 (IBCR) and 2006 to 2010 (OBCR), the respondents were asked to what extent they agree/disagree about the effectiveness of the two reform programs. The question was stated as: *"I agree the curricula in my area of study at my institution were effective in terms of:" a) IBCR and b) OBCR.* They reply among the given six Likert scales alternatives, ranging from *strongly disagree (1) to strongly agree* (6).

Items	Strongly Disagree	Disagree	Mildly Disagree	Mildly Agree	Agree	Strongly Agree
Effectivity of input-based curriculum reform (IBCR)	109(36%)	69(23%)	34(11%)	33(11%)	38(13%)	19(6%)
Instructors		70%			30%	
Principals		70%			30%	
Effectivity of outcome-based curriculum reform (OBCR)	37(13%)	32(12%)	5(2%)	43(16%)	65(24%	94(34%)
Instructors		27%			73%	
Principals		24%			76%	

NB: Total percentage is given for instructors & principals

Table 5-8 Effectivity of CRs

Item 7 (Table 5.8) shows that the only 30% of respondents endorsed the effectiveness of input-based CR (IBCR) whereas the majority 74% of respondents endorsed the effectiveness of outcome-based CR (OBCR). Suggesting that the CRs have impacted on the effectiveness of the OBCR.

As can be seen in the Table 5.8, the majority 109 (36%) responses of IBCR goes to the negative end of the scale, strongly disagree, whereas the about 94 (34%) responses of OBCR were leaned towards the positive end of the scale, strongly agree. This indicates that the OBCR (2005 - 2010) were more effective than the IBCR (2001-2005) according to respondents of the study. Further investigation is displayed in inspection stage of this study (Chapter VI).

A comparative descriptive statistics shows that the effectiveness of OBCR was agreed by both Instructors (70%). and principals (70%), whereas, the effectiveness of the IBCR was negatively reported by both instructors and principals by 73% and 76% respectively (see Table 5.8).

In these items (Item 6) the finding identified no statistically significant differences between two groups (TVET Instructors & Principals) by running t-test on group responses in terms of effectiveness of OBCR $t(274) = -1{,}276$, $p = .203$, and IBCR $t(274) = ,033$, $p = .974$,. The t-tests ($p > 0.05$) result in no statistically significant mean differences between the two groups.

However, paired sample t-test shows that there is statistically significant difference existed between the effectiveness of the IBCR and the OBCR. The results of the paired sample t-test were significant, t (269) = 10,081, $p < .001$, $d = 0.928$, suggesting that better effectiveness of OBCR (M = 4.23, SD = 1.798, N = 270) than IBCR (M = 2.62, SD = 1.667) Cohen's d was estimated at 0.928 which is a large effect size based on Cohen's (1988). Further explanation was displayed in the inferential section of this study.

5.3 *Items assigned in the scales: Descriptive statistics*

The purpose of this part is to explore the 79 individual items grouped under the 9 contrast scales. Respondents were asked to provide their attitude towards the TVET CRs conducted in the TVET colleges since 2001 in the Ethiopian context. These questionnaires' responses were based on the Likert scale 1)

Strongly disagree/hindrance (2) Disagree/hindrance (3) Mildly disagree/hindrance (4) Mildly agre e/driver (5) Agree/driver and (6) Strongly agree/driver. However, for the purpose of simple analysis the comparison between instructors and principals, the scales were decoded from "*strongly disagree/hindrance, disagree/hindrance & mildly disagree/hindrance" to "Disagree/Hindrance (D/H)" and from "strongly agree/driver, agree/driver & mildly agree/driver" to "Agree/Driver (A/D)*".

Scale 1: Curricular Interventions

Scale one deals with the curricular intervention factors of TVET CRs. Respondents were asked, "How *do you agree/disagree with the following interventions of the TVET curricular review/changes conducted in your area of studies at your institution?* Respondents were replied from (1) strongly disagree to (6) strongly agree as presented in the following Table 5.9 in detail below:

Items	Strongly Disagree	Disagree	Mildly Disagree	Mildly Agree	Agree	Strongly Agree	Percentage Instructors		Percentage Principals	
Scale 1; Interventions of CR	%	%	%	%	%	%	D	A	D	A
Item 1: Subjects/trades changes	11.7	5.8	2.9	21.8	45.1	12.7	21	79	16	84
Item 2: Contents changes	10.4	6.8	11.7	16.6	37.7	16.9	31	69	18	89
Item 3: New learning areas/methods changes	4.9	9.7	5.2	16.6	58.4	5.2	21	79	16	84
Item 4: Time allocation changes	10.0	12.3	15.0	14.3	36.5	12.0	41	59	22	78
Item 5: Professional change	17.4	17.1	6.3	13.8	39.1	5.3	45	55	25	75
Item 6: Evaluation system change	5.5	17.9	16.9	15.3	32.8	11.7	42	58	33	67
Item 7: Instructional media change	13.3	20.1	19.8	9.7	22.7	14.3	58	42	33	67
Item 8: Technical or scientific change (New media)	10.1	21.1	9.7	19.8	30.5	8.8	38	62	44	56

NB.A-Agree D-Disagree

Table 5-9 Interventions of the CRs

In Scale 1, *Interventions of CR*, there is almost total agreement that changes were conducted during the implementation of the CRs. Among the eight items mentioned above, respondents disendorsed only one item such as *instructional media change* (item 7) 53.2%. The rest seven items were endorsed by respondents such as *Professional change* (item 5) 50,3%, *evaluation system change* (item 6) 59,7%, and *learning Time allotment change* 62.8%, whereas *Method change* were highly supported by 80.2% respondents. Similarly, *Subject change* (item 1), *Content change* (Item 2) and *Technological change* (Item 8) were positively supported by 57.8%, 71.1% and 59.1% of respondents respectively.

Specifically, responds of all items inclined to agreement scales. For example, *Instructional media change* (item 7), about 22.7% responds leaned to agreement but still 20.1% responds goes to disagreement scale. *Subject/trade change* 45.1% *Content change* 37.7%, *Method change* 58.4%, *Time allocation change* 36.5%, Professional change 39.1%, Technical scientific change 30.5% and *evaluation system change* 32.8% (Table 5.9). These proportionally disagreements for the changes

conducted during implementation of the CRs warranted further investigation during the inspection stage of the study.

Comparatively, Table 5.9 additionally shows the statistic results of instructors and principals. Yet, the principals endorsed all intervention factors, whereas instructors supported all intervention factors except item 8: *The change of instructional media* (58%). The above responses indicate that the CRs have an impact on the curricular intervention factors. Details of statistical analysis was presented in the inferential statistics section of this study.

Scale 2: Constituency participation in TVET curriculum development

Respondents (instructors and principals) were asked to indicate the degree to which different constituencies actually participated in the curriculum development. Question raised were "Review *of the curriculum in my area of study at my institution was conducted with the participation of:"* Since the curriculum organization deals with the curriculum content, it needs the participation of stakeholders in the process of selecting curriculum elements from the subject, the current social life and the students' experience. Respondents replied from (1) strongly disagree to (6) strongly agree as presented in the following (Table 5.10) in detail below:

Items	Strongly Disagree	Disagree	Mildly Disagree	Mildly Agree	Agree	Strongly Agree	Percentage			
							Instructors		Principals	
Scale 2: Curriculum development	%	%	%	%	%	%	D	A	D	A
Item 1: Professional TVET teachers	21.1	9.7	20.1	13.0	13.0	23.1	52	48	46	56
Item 2: Representatives of Community/family	35.4	30.2	9.4	11.4	3.9	9.7	74	26	78	22
Item 3: Selected group of students	15.9	19.8	29.5	10.7	9.4	14.6	65	35	65	35
Item 4: Employers representatives	38.6	27.3	10.4	16.6	3.9	3.2	76	24	76	24
Item 5: TVET College Administrators	14.0	12.0	15.9	13.6	26.6	17.9	43	57	38	62
Item 6: Independent consultants	18.9	26.7	10.0	13.3	17.8	13.0	56	44	53	47
Item 7: TVET curriculum experts	22.7	9.7	17.2	13	21.1	16.2	33	67	27	73

NB. A-Agree D-Disagree

Table 5-10 Curriculum development

Generally, respondents disendorsed four of the five constituencies during the curriculum review. Such as TVET teachers 50.9%, Representatives of *community/family* 75%, *Students* 65.2%, *Employers* 76.3% and *independent consultants* 55.6%, whereas two items were endorsed by 58,1% and 50.4% respondents for *TVET college Administrators*, and *TVET curriculum experts*

respectively, suggesting that respondents voted for administrators and experts as active participants in the process of TVET curriculum development.

Specifically, responds of five items inclined to the negative scale. For example, responses of Item 2: *community/family*, strongly disagree by 35.4%, plus 30.2% disagreement. Item 3: Selected group of *students*, 29.5% leaned towards mildly disagree plus 19.8% agreement. Item 4: *Employers* representatives strongly disagree by 38.6%, plus 27.3% disagreement Item 6: *Independent consultants* and Item 7: *TVET curriculum experts* by 22.7% strongly disagreed but 21.1% goes to agreement scale plus 16.2% to positive end, strongly agreed, whereas two items goes to positive scale. For example, Item 1: *professional TVET teachers*, 23.1% responses leaned towards strongly agree but 21.1% goes to the other negative end of the scale, strongly disagree, and Item 5: *TVET college administrators* were supported by 26.6%, agreement plus 17.7% strongly agreed. These discrepancy responses may lead us to further investigation, during inspection stage of this study.

Comparatively, the TVET instructors disendorsed five items, except Item 5: *TVET college Administrators were* supported, as participants, more by 62% principals than 57% instructors and Item 7: *TVET curriculum experts* also reported as participants more by 73% principals than 67% instructors, in addition to the participation of *TVET instructors* (Item 1) supported more by 56% principals than 48% instructors themselves.

Scale 3: Extent of curricula review

Respondents were asked to what extent the curricula/course of study changed in their field of study, the question was stated as:"*How do you agree/disagree the extent of the curricular review/change conducted between 2001 and 2010 in your area of study at your institution". Four items were raised to be evaluated by respondents from TVET institutions (Instructors and principals).*

Items	Strongly Disagree	Disagree	Mildly Disagree	Mildly Agree	Agree	Strongly Agree	Percentage Instructor		Percentage Principal	
Scale 3: Extent of curricula review	%	%	%	%	%	%	D	A	D	A
Item 1: Continue with no change	14.4	**43.6**	7.9	18.6	10.0	5.2	54	46	60	40
Item 2: Continue with modification	7.8	14.6	8.8	18.6	**31.0**	20.6	46	54	47	58
Item 3: Termination of course	9.2	**39.4**	15.2	7.1	16.0	13.1	54	46	60	40
Item 4: Replaced by new course	15.9	**31.2**	14.0	12.3	**20.5**	6.2	67	33	67	33

NB. A-Agree D-Disagree

Table 5-11 The extent of Curricula review in the course of study

As can be seen in the Table 5.11, all but item 2 were disendorsed by the respondents. That means, the curricula continued *with no change* (Item 1*), termination* of courses (Item 3) and *replacement of* courses by the new one (Item 4) were disendorsed by about 66%, 64% and 61% of respondents respectively, whereas the curricula were continued with *modification* was endorsed by 70% of respondents. This suggests that the adopted curricula were reviewed more to the extent of modification.

Specifically, Table 5.11 shows that three items responses were inclined to disagreement scale. For example, the most (44%) respondents replied for Item 1: *Continue the course of study without any change*, disagreement. Item 3: *Termination of courses* (39%) goes to disagreement and Item 4 indicates that *course replacement* was also disagreed by 31% of the respondents but about 21% were in the agreed scale. However, the curricula review, *with modification of the course of study* was agreed by 31% plus about 21% respondents goes to the end of the scale, strongly agreed.

Comparatively, the instructors and principals disendorsed all three items similarly but Item 2: "*continue the curricula with modification*" were more endorsed by 58% principals than 54% of instructors. However, continue with no change and terminations of courses were more supported by 46% of instructors than 40% of principals.

Scale 4: Causes of reforms

To investigate the causes of TVET CRs conducted in Ethiopia, question was raised as "*The following factors can be considered as the causes that may influence to reform the curricula conducted between 2001 and 2010. What do you think of these roles?*

As can be seen on the Table 5.12 (Scale 4), five items were negatively endorsed, whereas the rest seven items were positively endorsed. For example, Item 1*:* Change of *Government policy & regulation* 85%, Item 3: *Student viewpoint (Labor market employment needs)* 75% endorsed as a first rank.

As a 2nd rank endorsed were: *Item 2: Student ability (Dissatisfaction of students with the method of teaching)* 69%, Item 12*: Financial pressure (The availability of external funds)* 67%.

As a 3rd rank Item 4: *Staff issues (Change of Professional staff)* 59%. Item 8*: Employer/industry viewpoint (Influence of employers)* 58% and Item 11*: Academic merit (Need to change*

trades/courses) 56%, of respondents were endorsed as causes of the TVET CRs conducted between 2001 and 2010.

Items	Strongly Disagree	Disagree	Mildly Disagree	Mildly Agree	Agree	Strongly Agree	Percentage Instructors		Percentage Principals	
Scale 4:causes of reforms	%	%	%	%	%	%	D	A	D	A
Item 1: Government policy & regulation	2.6	10.2	2.2	8.6	44.7	25.7	19	81	30	70
Item 2: Student ability (Dissatisfaction of students with the method of teaching)	5.5	12.0	13.6	22.7	38.0	8.1	32	68	29	71
Item 3: Student viewpoint (Labor market employment needs)	-	7.1	17.9	11.0	39.0	25.0	25	75	24	76
Item 4: Staff issues (Change of Professional staff)	2.8	24.4	13.4	23.0	22.3	12.7	42	58	39	61
Item 5: Influence of accreditation bodies (Quality assurance)	20.7	27.3	8.9	5.2	31.8	11.1	53	47	48	52
Item 6:Inadequacy of TVET curriculum to provide employable skill in the labor market	11.9	29.7	10.2	4.6	32.3	11.2	52	48	49	51
Item 7: Adaptation of new curriculum (benchmarking)	29.5	19.2	8.4	14.6	24.4	3.9	58	42	53	47
Item 8: Employer/industry viewpoint (Influence of employers)	6.1	29.6	5.8	20.7	26.8	10.5	42	58	40	60
Item 9: Influential individuals (Influence of TVET experts)	32.1	15.2	7.3	18.5	23.2	3.6	54	46	58	42
Item 10: Academic fashion (Market & industry shift)	24.4	12.7	13.7	22.2	23.8	3.3	53	47	42	58
Item 11: Academic merit (Need to change trades/courses)	17.4	19.5	6.7	29.2	23.2	4.0	43	57	47	53
Item 12: Financial pressure (The availability of external funds)	3.5	20.8	2.1	23.7	29.9	15.7	33	67	31	69

NB: A-Agree D-Disagree

Table 5-12 The causes of CR

Lastly, the rest five items were endorsed as the last rank, such as Item 10*: Academic fashion (Market & industry shift)* 49%, Item 6*: Inadequacy of TVET curriculum to provide employable skill in the labor market* 48%, and Item 9*: Influential individuals (Influence of TVET experts)* 45%. *Influence of accreditation bodies (Quality assurance)* (item 5) 43% and Item 7: *Adaptation of new curriculum (benchmarking)* by 43% of respondents were disendorsed as a factor for CR in Ethiopia.

Specifically, among the causes of CRs, four of twelve items were highly polarized to the strongly disagreement scale by the respondents, such as Item 9*: Influential individuals (Influence of TVET experts)*32%, Item 7: *Adaptation of new curriculum (benchmarking)*by 30%, Item 10*: Academic fashion (Market & industry shift)* 24% and *Item 5: Influence of accreditation bodies for quality assurance 21%,* indicating that these four items were perceived by the majority of respondents not as the major issue to the change of the CR.

On the other side, two items goes to strongly agreement scale, such as government policy and regulation 26% and labor market employment needs 25%. This is an indication of agreement that these factors are the main causes of curriculum change. As can be seen on the Table 5.12, all the

estimated twelve items are polarized to the agreement scale from 23% to 45%, indicating that the 12 factors had roles to influence the CRs in the vocational education of Ethiopia.

Comparatively, the study tries to evaluate the perceptual difference on the causes of curricular changes between two respondents (*instructors and principals*) of TVET colleges. As a result, the TVET instructors disendorsed about five out of twelve items to be the cause of CRs in TVET colleges in Ethiopia. The results were between 52-58%. These items were Item 9: *Influential individuals* (Influence of TVET experts), Item 10: *Academic fashion* (Market & industry shift), Item 5: *Influence of accreditation bodies*, Item 6: *Inadequacy of TVET curriculum to provide employable skill in the labor market*, and Item 7: *Adaptation of new curriculum (benchmarking)*. On the other side, the principals disendorsed only two items such as Item 7: *Need to Change by a new benchmark*, and Item 9: *Influential individuals (Influence of TVET experts*) 53% and 58% respectively. Hence, the majority factors that cause the TVET CRs were supported by both principals and instructors, indicating that no variation was existed between the responses of instructors and principals. However, it may not be enough to conclude since some inconsistent results are existed in the findings that justify further investigation in the inferential section of this study.

Scale 5: Internal factors influencing effective implementation of TVET CRs

Items of the fifth scale were asked to investigate whether the internal factors hinder or drive the effective implementation of the TVET CRs conducted at the college level between 2001 and 2010 in Ethiopia. Question was raised as: *"The following internal factors can be considered as hindrance or drivers for the effective implementation of the TVET CRs conducted between 2001 and 2010 in Ethiopia. What do you think of their roles?"*

Table 5.13 displays 11 factors that might influence the effective implementation of CRs in TVET institutions in Ethiopia. Four factors are disindorsed by the respondents of this study from about 51%-69%. For example, Item 3*: Background & inherent cognitive skill of TVET students was* considered to be polarizing to hindrance scale *68.5%*. Item 1*: Subject area objective set 50, 8%, Item 8: Usage of assigned time allocation to TVET courses, 53, 8 % and* Item10: *Motivation of teaching staff* 53.2%, suggesting that student's background, objectives, time allocation and staff motivation appeared to be as hindrances for the effective implementation of TVET CRs in Ethiopia.

Items	Strongly Hindrance	Hindrance	Slightly Hindrance	Slightly Driver	Driver	Strongly Driver	Percentage Instructor		Percentage Principal	
Scale 5: Internal factors of Effective implementation of TVET CRs	%	%	%	%	%	%	H	D	H	D
Item 1: Subject area objective set	45.3	5.5	-	2.8	17.3	29.1	51	49	53	47
Item 2: Professional TVET Teachers' teaching skill and experience	16.7	16.7	12.5	21.0	30.6	2.5	47	53	43	57
Item 3: Background & inherent cognitive skill of TVET students	44.5	13.0	11.0	12.7	18.2	.6	68	32	71	29
Item 4: Application of teaching methods to TVET	39.9	6.8	1.0	.3	2.3	49.7	51	49	35	65
Item 5: Organization of modular contents on TVET courses	17.3	11.2	9.2	26.1	32.2	4.1	38	62	37	63
Item 6: Assessment and evaluation process of learning outcomes to certify competencies	15.3	11.0	10.1	27.9	21.1	14.6	36	64	38	62
Item 7: Availability of instructional materials such as computers	38.6	2.6	-	.6	14.3	43.8	41	59	44	56
Item 8: Usage of assigned time allocation to TVET courses	18.6	13.8	21.4	24.8	17.6	3.8	57	43	39	61
Item 9: Number of students in a class (class size)	14.7	14.7	10.7	25.3	26.3	8.3	41	59	38	62
Item 10: Motivation of teaching staff	15.3	16.9	21.1	19.8	10.7	16.2	42	58	43	57
Item 11: Awareness of teaching staff to TVET	14.2	18.2	9.5	22.6	26.4	9.1	53	47	57	43

NB. D-Driver H-Hindrance

Table 5-13 Internal factors influencing effective implementation of TVET CRs

Drivers, on the other hand, three factors appears to be polarizing to endorsement by the respondents, from 60%-64% such as, Item 6*: Assessment and evaluation process of learning outcomes* to certify competencies was assumed as the highest drivers to effective implementation 63,6%, Item 5: *Organization of modular contents on TVET courses* 62,4%, and Item 9: *Number of students in a class(class size)* 60% of respondents, indicating that assessment, modules and class size seem to be moving towards high consensus as driver to effective implementation.

Moreover, four items also moved towards endorsement from about 52%-59%. For example, Item 7: *Availability of instructional materials such as computers* 58.8%,, Item 11: *Awareness of teaching staff to TVET* 58, 1%, Item 2: *Professional TVET Teachers' teaching skill and experience* 54.1% and Item4: *Application of teaching methods to TVET* 52.3%, suggesting that available materials, staff awareness, skill and experience and used methodology appeared relatively little movement towards drivers to the effective implementation of the CRs.

Specifically, the modalities of items in the scale 5 are presented here in detail. Three items appeared to be polarizing towards hindrance scales, for example, the responds to item 1, *subject area objective set* leaned towards the negative end of the scale, strongly hindrance (45%), however there is still 29% responds to the positive end of the scale, strongly driver, Item 3: *Background and*

inherent cognitive skill of students 45% leaned towards the negative end of the scale, strongly hindrance, and Item 5: *Organization of contents* 32% responses moved towards driver scale.

On the other hand, items polarized towards driver scales are Item 4: *Application of teaching methods*, supported as strongly driver by 50%, however 40% responds moved to the other end of the scale as strongly hindrance. Another factor, Item 7: *Availability of instructional materials such as computers*, were also highly reported by 44% as strongly driver, however high negative, strongly hindrance, response was also reported by 39% respondents, Item 2: *the role of Professional Teachers' teaching skill and experience* leaned towards driver scale by 31%, Item 9: *Number of students in a class (class size)* 26% respondents, and Item: 11 *Awareness of teaching staff to TVET considered as drivers by* 27% respondents,

Finally, uncertainty, slightly consensus and disconsus have appeared in three items responses. For example, *slightly driver* scores go to Item 6: *Assessment and evaluation process of learning outcomes* (28%) *with 21% driver* and Item8: *Usage of assigned time allocation by* 25% slightly driver but 21% moving towards slightly hindrance. Another slightly driver goes to Item10: *Motivation of teaching staff* by 20% but still 21% respondents motivation considered as slightly hindrance to the effective implementation of TVET CRs. This indicates the existence of uncertainty responses for assessment, time allocation and motivation. These discrepancies among the responses initiated to further investigation.

Comparatively, the study tries to examine the perceptual difference between the responses of instructors and principals of TVET colleges on the internal factors of curricular changes. As a consequence, four of the 11 items were moving towards disconsus by TVET instructors as hindrances factors for the effective implementation of TVET CRs, such as Item 3: *Background & inherent cognitive skill of TVET students* (68%), Item 4: *Application of teaching methods to TVET*(51%), Item8: *Usage of assigned time allocation to TVET courses*(57%), and Item 11: *Awareness of teaching staff to TVET* (53%), whereas the rest seven items have been assumed as drivers to effective implementation.

The principals, on the other side, disendorsed only three items such as Item1: *Subject area objective set* (53%), Item 3: *Background & inherent cognitive skill of TVET students* (71%), and Item 11: *Awareness of teaching staff to TVET* (57%), however, the majority factors were appeared to be moving towards consensus by principals as drivers to the effective implementation of TVET CRs in

the TVET colleges in Ethiopia. Generally, no variation has been existed between the principals and instructors on any items except for item 4 in the scale.

Scale 6: External factors influencing effective implementation of TVET CRs.

TVET college instructors and principals were asked to identify the factors that may influence the effective implementation of TVET CRs conducted at college level during 2001 to 2010. Table 5.14 shows the external factors divided into four parts as Political (P), Economical (E), Social(S) and Technological (T) factors to examine the roles as hindrance or drivers of effective implementation of CRs. Hence, question was raised as *"The following external factors can be considered as hindrance or drivers for the effective implementation of the TVET CRs conducted between 2001 and 2010 in Ethiopia. What do you think of their roles?"* Table 5.14 shows in detail:

Items	Strongly Hindrance	Hindrance	Slightly Hindrance	Slightly Driver	Driver	Strongly Driver	Percentage Instruct		Percentage Principal	
Scale 6: External factors influencing Effective implementation of TVET CRs.	%	%	%	%	%	%	H	D	H	D
Item 1: TVET administrative practice(P)	27.8	21.2	6.9	18.0	22.5	3.6	57	43	51	49
Item 2: TVET policies practice(P)	14.9	20.5	16.6	12.3	17.9	17.9	50	50	60	40
Item 3: National labor market influence on TVET(P)	18.5	20.9	16.6	12.3	17.9	13.9	56	44	58	42
Item 4: External relation to develop TVET(P)	17.3	30.3	8.2	18.4	20.4	5.4	56	44	56	44
Item 5: Adaption of external curriculum (Bench mark)(P)	7.8	26.7	2.0	24.1	27.4	12.1	35	64	42	58
Item 6: Salary of TVET instructors(E)	44.2	12.0	12.0	14.0	17.5	.3	68	32	71	29
Item 7: Budget allocation to TVET(E)	19.3	15.6	9.3	17.3	26.2	12.3	45	55	40	60
Item 8: Foreign financial aid to TVET (Donors)(E)	16.6	17.6	17.2	19.3	17.2	12.1	51	49	53	47
Item 9: Employers need to TVET graduates(S)	15.7	35.6	15.4	6.5	18.6	7.5	68	32	63	37
Item 10: Family influence on TVET curriculum(S)	7.6	22.6	14.2	15.3	33.7	5.9	44	56	49	51
Item 11: Cultural appropriateness to TVET(S)	12.2	28.7	10.6	4.6	32.3	11.6	53	47	46	54
Item 12: Social Attitude to TVET(S)	10.8	23.6	15.4	10.8	33.8	5.2	52	48	42	58
Item 13: Accessibility of ICT In TVET colleges(T)	39.0	11.0	12.0	9.7	4.2	24.0	58	42	82	18
Item 14: Research development in TVET Curriculum(T)	49.0	12.7	4.5	6.2	17.2	10.4	64	36	75	25
Item 15: Globalization influence on TVET(T)	12.9	15.9	15.5	22.4	20.7	12.5	43	57	50	50
Item 16: Network & linkage system to develop TVET (T)	49.7	2.0	-	1.4	12.2	34.7	52	48	51	49
Item 17: External technical support to develop TVET(T)	38.8	2.8	-	.7	24.5	33.2	39	61	52	48

NB. D-Driver H-Hindrance

Table 5-14 External factors influencing effective implementation of TVET CRs

Here one out of five political factors were endorsed, i.e., Item 5: *Adaption of external curriculum (Benchmarking*) (P) by 64%, of respondents as it has been taken as drivers to the effective implementation of TVET CRs in Ethiopia. The other four factors were disendorsed. For example, Item 1: *TVET administrative practice*(P) (56%), Item 2: TVET policies practice(P) (52%), Item 3 *National labor market influence on TVET*(P) (56%) and Item4: *External relation to develop TVET*(P) (56%) were considered as hindrances for the effective implementation of the TVET CRs in Ethiopia.

Among economic factors, Item 7: *Budget allocation to TVET (E*) was taken as drivers of effective implementation by 55.8% of respondents, whereas Item 6: *Salary of TVET instructors* (E) and Item 8: *Foreign financial aid (Donors*) *to TVET (*E) were reported as hindrances for effective implementation by 68.2% and 51.4% of respondents respectively.

Among the social factors Item 10: *Family influence on TVET curriculum* (S) and Item 12: *Social Attitude to TVET*(S) were taken as drivers to effective implementation by 55% and 50.2% of respondents respectively. The other social/cultural factor Item 11: *Cultural appropriateness to TVET*(S) and employers need to TVET graduates were suggested as hindrances by 52% and 66% of respondents respectively.

The last group was technological factors; two out of five items were endorsed. Here, Item 15: *Globalization influence on TVET* (T) and Item 17: *External technical support to develop TVET* (T) was considered as drivers by 56% and 58% of respondents respectively. However, three technological factors were disendorsed. For example, Item 13: *Accessibility of ICT In TVET colleges* (T) (62%), Item 14: *Research development in TVET* (T) (66%), and Item 16: *Network & linkage system to develop TVET* (T) (52%) were reported as hindrances for the effective implementation of TVET CRs.

Specifically, scale 5: scales of *external factors* appeared to be polarizing, here among political factors 4 out of 5 items were leaned towards the negative end of the scales. For example, Item 1: *TVET administration practice* 28% leaned towards strongly hindrance, but on the positive side 23% inclined to driver scale, Item 2: *TVET policy practice* 21% leaned towards hindrance scale but 18% inclined to positive end of the scale, strongly driver plus 19% to driver scale. Item 3: *National labor market influence on TVET* 21% moved to hindrance scale but 18% to driver scale and Item 4: *External relations to develop TVET 30% were* perceived as hindrance but 20% leaned to driver. However, Item 5: *Adaption of external curriculum* (Benchmarking) were reported as drivers by

27%, besides as hindrance by 27% inclined to the other scale. Here the political factors appeared to be polarizing however, the majority factors perceived negatively for the effective implementation of CRs in Ethiopia.

Among economic factors Item 6: *Salary of TVET instructors* was reported strongly hindrance by 44% but still there are 18% positive reply as drivers. The other factor, Item 7: *Budget allocation* to TVET were revealed as 'driver' by 26%, but the other end of the scale indicates 19% as 'strongly hindrance' for the effective implementation of the CRs, whereas Item 8: *Foreign financial aid to TVET (Donors)* 19.3% of respondents replied as 'slightly driver' but 16% goes to the negative end of the scale as 'strongly hindrance, indicating that among the economic factors the salary of instructors seem hindrance of effective implementation for the majority of respondents.

Four factors were grouped under social factors, among these, only Item 9: *Employers need to TVET graduates(S*) reported by 36% respondents as a driver to effectivity, even though 19% reported as driver to the other side of the scale. The other three items were considered by respondents as 'drivers', these are Item10: *Family* influence on TVET curriculum 34% but 23% reported as hindrance, Item 11: *Cultural* appropriateness to TVET 32% but 29% perceived as hindrances, and Item 12: *Social Attitude* to TVET 34%, but 24% leaned to hindrance, suggesting that the social factors also seems highly polarized despite positive consensus was reported for effective implementation of the CRs.

Finally, five technological factors were evaluated by respondents of the study. Hence, majority factors reported as strongly hindrance except Item 15: *Globalization influence on TVET* revealed by 22% as mildly driver with 21% as driver. The other items reported extremely to the negative end of the scale, strongly hindrance, such as: Item 13: *Accessibility of ICT In TVET colleges* 39% strongly hindrance but reported 24% as strongly driver on the other positive end of the scales, Item 14: *Research development* in TVET Curriculum 49% strongly hindrance but reported 17% as driver, Item 16: *Network & linkage* system to develop TVET 50% strongly hindrance but reported 35% as strongly driver and .Item 17: *External technical support to develop TVET* 39% strongly hindrance but reported 33% as strongly driver on the other positive end of the scales, suggesting that three factors appeared to be highly polarizing such as ICT, Network & linkage and technical support, for effective implementation of the CRs. These controversial results justify further investigation before conclusion.

To evaluate the responses comparatively, items were examined with respect to respondents of TVET instructors and principals of TVET colleges to indicate whether the factors hinder or drive the effective implementation of the TVET CRs.

Three items were endorsed by both group of respondents, for example, Item 10: *Family influence on TVET curriculum* (S), were considered as drivers by instructors 64% and principals 58%, Item7: *Budget allocation to TVET*(E) also reported as drivers by instructors 55% and principals 60%, and Item5: *Adaption of external curriculum (Benchmarking)*(P) were also perceived as drivers by instructors 56% and principals 51% of respondents to effective implementation of TVET CRs, whereas Item 11: *Cultural appropriateness to TVET*(S) 54% and Item 12: *Social Attitude to TVET*(S) 58% were taken as drivers by principals, however item 11 and 12 were taken as hindrance by 53% and 52% of instructors respectively. In contrast, instructors were positively supported, Item 16: *Network & linkage system to develop TVET* (T) & Item 17: *External technical support to develop TVET* (T) by 57% and 61% respectively, whereas principals has taken item 16 and 17 as hindrance of effective implementation by 51% and 52% respectively. These controversial results justify further investigation.

Scale 7: Impact indicators of CRs

To assess the impact of TVET CRs (scale 7), respondents were asked whether the reforms had positive impact on the nine indicators assumed for both the input-based (IBCR) and outcome-based CR (OBCR). Question was raised as "*TVET curricular reform in my area of study at my institution had positive impact* on the following indicators:"

According to the respondents of this study, Table 5.15 shows 5 out of 9 items were endorsed as positive impact indicators of the CRs. For example, Item 8: *New methods of training* 52.5%, Item 3: *Employability of graduates* in my area of study 55%, Item 4*: Quality of training* in my area of study 61.3%, Item5 *Creating a competent/skilled workforce* 50.5%, and Item 1: *Access to the program* of study (enrolment rate) in my area of study 59.2% of the total respondents, whereas the rest 4 indicators were disendorsed by the respondents. For example, Item 2: *Graduation rates* by 50.6%, Item 6: *Creating access to trainees for competence assessment* (COC) by 52%, Item 7: *Cost-effectiveness of training* by 60%, Item 9: *Timetable adjustment/schedule of training hours reviewed* by 56% of respondents. The above findings denote that the CRs implemented in Ethiopia have impacted to a certain extent on the indicators despite of disendorsements mentioned above. However, these discrepancy findings need further investigation before arriving at any conclusion.

Items	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree	Percentage			
							Instructor		Principals	
Scale 7: Impact Indicators of CRs	%	%	%	%	%	%	D	A	D	A
Item 1: Access to the program of study (enrolment rate)	9.0	35.2	3.3	13.6	18.6	20.3	43	57	67	33
Item 2: Graduation rates	10.8	32.0	7.8	9.8	22.5	17.0	50	50	55	45
Item 3: Employability of graduates	5.3	34.3	5.3	14.3	24.0	16.7	45	55	46	54
Item 4: Quality of training	5.3	29.8	3.6	18.5	23.5	19.2	36	64	53	47
Item 5: Creating a competent/skilled workforce	6.9	37.3	5.3	16.5	21.1	12.9	49	51	54	46
Item 6: Creating access to trainees for competence assessment (COC)	7.5	41.4	2.6	9.4	30.0	9.1	56	44	32	68
Item 7: Cost-effectiveness	8.6	41.1	10.5	8.9	16.1	14.8	60	40	59	41
Item 8: New methods of training	4.9	26.1	9.8	15.4	23.5	20.3	38	62	55	45
Item 9: Time table/schedule adjustment	16.4	29.4	10.4	14.0	17.4	12.4	56	44	56	44

NB. A-Agree D-Disagree

Table 5-15 Impact indicators of CRs

Specifically, as indicated on the Table 5.15, all impact indicators leaned towards the disagreement scale. However, for example, Item 1: *Access to the program of study (enrolment rate)* reported by 20% as positive impact, strongly agree, in addition to 35% disagreement response, Item 2: *Graduation rates* also reported positively by 23% as agreement, in addition to 32% disagreement. Similarly, Item 3: *Employability of graduates*, reported by 24% positively, even though there is 34% disagreement.

The other factor, Item 4: *Quality of training* also positively reported by 24% with 30% disagreement. Item5: Creating a *competent/skilled workforce* also positively reported by 21% with 37% disagreement. The next factor, Item 6: *Creating access to trainees for competence assessment* (COC) was reported by 30% positively with 41% disagreement. Item 7: *Cost-effectiveness of training* seen by 41% of respondents negatively, disagree, even though 15% plus 16% accepted as positive, strongly agree and agree respectively. Item 8: The impact of the reform on creating *New methods of training* was supported by 20%, strongly agree with 26% disagreement response. Finally, Item 9: *Timetable adjustment/schedule of training hours* reviewed was perceived by 17% positively; however, 29% of respondents were replied as a negative impact of the CRs. Hence, the above findings depict that polarizing has been appeared in the data. These findings also need further investigation during the inspection stage.

Comparatively, these items were examined with respect to respondents of TVET instructors and principals of TVET colleges to indicate whether the impact indicators have positive impact of the

CRs. For example, 5 out of 9 indicators were endorsed by instructors, such as Item1: *Access to the program of study* (*enrolment rate*) 57%, Item 3: *Employability of graduates* 55%, Item 4: *Quality of training* 64%, Item 5: *Creating a competent/skilled work force* 51%, and Item 8: *New methods of training* 62% of instructor showed that these indicators warrant positive impact of the reforms. On the other side, the principals *endorsed* only 2 out of 9 items were revealed as having a positive impact of the reforms. For example, Item 6: *Creating access to trainees for competence assessment* (COC) 54%, and Item3: *Employability of graduates* 68% of principals. Items with significant differences between groups are presented below.

Scale 8: Graduate relevance indicators of CRs

To investigate the relevance of TVET CRs to TVET graduates, questions were raised as "*How do you agree/disagree the effect relevance of the CRs in your area of study to TVET graduates*".

Items	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree	Percentages			
							Instructor		Principal	
Scale 8: Graduate relevance Indicators	%	%	%	%	%	%	D	A	D	A
Item 1: Minimized unemployment rate of TVET graduates	26.3	24.4	9.7	13.6	18.8	6.8	60	40	64	36
Item 2: Paid employment opportunity	21.0	22.0	8.5	5.2	31.8	11.5	50	50	57	43
Item 3: The qualification of graduates match with the labor	28.9	19.2	8.4	15.3	25.3	2.9	57	43	56	44
Item 4: The quality of jobs found by the TVET graduates	31.7	15.3	7.0	18.7	24.0	3.3	53	47	59	41
Item 5: Self-employment opportunity	18.1	18.8	6.7	29.2	23.5	3.7	43	57	48	52
Item 6: Further training for TVET graduates	25.1	11.7	13.7	22.1	24.1	3.3	54	46	36	64

NB. A-Agree D-Disagree

Table 5-16 Graduate relevance indicators of CRs

Table 5.16 shows the results of respondents on the impacts of the CRs implemented between 2001 and 2010 on TVET graduates. Among these 6 graduate relevance indictors, only Item 5: "*The curricula prepared TVET graduates for self-employment*„ was endorsed by 56.4% respondents. The rest 5 indicators were disendorsed approximately from 50% to 60% of respondents. For example, Item1: *The curricula minimized unemployment rate of TVET graduates* (60.4%), Item 3: *The curricula provided access to make the qualification of TVET graduates match with the labor market* (56.3%), Item 4: *The curricula increased the quality of jobs* found by the TVET graduates (54%), and Item 6: The curricula provided access for *further training* for TVET graduates (50.5%). Finally, Item 2: The curricula provided TVET graduates with *paid employment opportunity* were

disendorsed by 51% of respondents, suggesting that the majority of items of graduate relevance indicators were not supported by respondents of the study.

Specifically, Table 5.16, displays 6 graduate relevance indicators, among these, 4 indicators leaned towards the negative end of the scales. For example, Item1: *minimized unemployment*, strongly disagreed by 26% plus disagreed by 24% of respondents that the curricula contribute to minimize unemployment, however 19% of respondents agreed. The other indicator Item 3: The curricula provided access to make *the qualification match with the labor market* also strongly disagreed by 29% plus disagreed by19% of respondents but agreed by 25%, Here, Item 4: *the quality of jobs found by the TVET graduates* was strongly disagreed by 32% but agreed by 24%. Furthermore, *the access for further training for TVET graduates* (Item 6) was strongly disagreed by 25% but agreed by 24% of respondents. On the other hand, two graduate relevance indicators were positively supported. For example, Item 5: *self-employment opportunity* was slightly agreed by 29% plus 24% agreed, however disagreed by 19% plus strongly agreed by 18% of respondents. Finally, Item 2: *paid employment opportunity* was agreed by 32%, however strongly disagreed by 21% plus disagreed by 22% of respondents. The findings suggest that the responses appeared to be polarizing.

Comparatively, these items were examined with respect to respondents of TVET instructors and principals of TVET colleges to graduate relevance of the CRs. Both respondents agreed on Item 5: "The curricula prepared TVET graduates for *self-employment*" with instructors 57% and principals (52%), However, Item 2: *paid employment opportunity* was agreed by 50% of instructors but disagreed by 57% of principals. Here, Item 6: "The curricula provided access for *further training* for TVET graduates, were endorsed by 64% of principals but disendorsed by 54% of TVET instructors. Finally, the rest 3 graduate relevance indicators, such as Item 1, Item 3 and Item 4 were disendorsed by both parties of respondents. Generally, these conflicting results warranted further follow up during the inspection stage.

Scale 9: Employer relevance indicators

Respondents of TVET colleges were asked to evaluate whether the employer relevance indicators of CRs were positively impacted. The question raised was "*How do you agree/disagree the effect relevance of the CRs in your area of study to employer industries*". Respondents were replied based on Likert scales ranging from (1) strongly disagree to (6) strongly agree as presented in the following Table 5.17:

Items	Strongly Disagree	Disagree	Mildly Disagree	Mildly Agree	Agree	Strongly Agree	Percentages Instructor		Principal	
Scale 9: Employer Relevance Indicators	%	%	%	%	%	%	D	A	D	A
Item 1: The competency of graduates is appreciated by employers	21.4	18.4	13.5	9.2	22.0	15.5	53	47	54	46
Item 2: TVET graduates are more productive in industries	28.2	19.0	4.9	11.1	26.9	9.8	52	48	55	45
Item 3: Employers are satisfied with the performance of TVET graduates	27.1	21.6	3.8	12.3	26.7	8.6	54	46	45	55
Item 4: Improved technology transfer in the Industries	14.1	19.1	8.6	14.8	26.6	16.8	41	59	44	56
Item 5: The qualification of TVET graduates match with the industry standards for employment	22.9	22.2	7.2	17.6	16.7	13.4	53	47	49	51
Item 6: The curricula responded the human resource needs of employers	18.8	25.0	10.9	17.1	14.8	13.2	55	45	52	48

NB. A-Agree D-Disagree

Table 5-17 Employer relevance indicators

As can be seen in the Table 5.17, one item out of the six-employer *relevance indicators* were endorsed, i.e., Item 4: "*Improved technology transfer in the Industries*" 58.2% of respondents. The other five items were disendorsed by approximately 52% to 55% of respondents. For example, Item 1: *The competency of graduates is appreciated by the employers (*53%), Item 2: *TVET graduates are more productive in industries* (52%), Item 3: *Employers are satisfied with the performance of TVET graduates* (53%), Item 5: *The qualification of TVET graduates match with the industry standards for employment (52%),* and Item 6: *The curricula responded the human resource needs of employers* (55%), suggesting that the majority items of employer relevance indicators were not supported by respondents of the study.

Specifically, Table 5.17 displays that among six items four items were leaned towards the negative end of the scales with one item disagreement. For example, Item 1: *The competency of graduates is appreciated by the employers* were strongly disagreed by 21%, however 22% were agreed. Item 2: *TVET graduates are more productive in industries* were strongly disagreed by 28% but 27% were agreed. Item 3: *Employers are satisfied with the performance of TVET graduates* were also strongly disagreed by 27.1% but another 26.7% were agreed. Here, Item 5: *The qualifications of TVET graduates match with the industry standards for employments were strongly disagreed by 23%, but 18% were* mildly agreed. Finally, Item 6: *The curricula responded the human resource needs of employers* were disagreed by 25% with 17% mildly agree, On the other side, only Item 4: *Improved technology transfer in the Industries* were leaned to agreement scale (26, 6%) however there was still 19% disagreement, indicating that in the scale 9: employer relevance of the CRs, more polarizing were appeared which might need further investigation during the inspection of the study.

Comparatively, these items were examined with respect to respondents of TVET instructors and principals of TVET colleges to employer relevance indicators. Table 5.16, both instructor and principals endorsed Item 4: "*Improved technology transfer in the Industries*" by 59% and 56% respectively. Further endorsement goes to Item 3: "*Employers are satisfied with the performance of TVET graduates*" by 46% and 55% respectively, and Item 5: *The qualification of TVET graduates match with the industry standards for employment* by 47% and 51% respectively. However, instructors and principals did not support the other three indicators of employer relevance. For example, Item 1: *The competency of graduates is appreciated by the employers* by 53% and 54% respectively, Item 2: *TVET graduates are more productive in industries* by 52% and 55%, and Item 6: *The curricula responded the human resource needs of employers* by 55% and 52% respectively were disendorsed. These results provided no further significance differences between instructors and principals.

Summary of descriptive statistics

Perceptual difference between instructors and principals

	Scales	#Items	Instructors	#Items	Principals
1.	Curricular intervention factors	7/8	△	8/8	△
2.	Constituency participation	5/7	▽	4/7	▽
3.	Nature/extent of curriculum change	3/4	▽	3/4	▽
4.	Causes of CR	7/12	△	10/12	△
5.	Internal factors of Implementation	7/11	△	8/11	△
6.	External factors of Implementation	12/17	▽	12/17	▽
7.	Impact indicators of the reforms	6/9	△	7/9	▽
8.	Graduate relevance indicators	5/6	▽	4/6	▽
9.	Employer relevance indicators	5 /6	▽	3/6	△

Note: Agree/Driver △ Disagree/Hindrance ▽

Table 5-18 Similarities and differences between TVET instructors and principals: Summary of descriptive statistics

Table 5.18 shows the acceptance or rejection of the items in the scales in the perception of TVET instructors and principals. First, the majority items in the curricular intervention factors were accepted positively by instructors and principals (all). Second, the majority items of the constituency participation in the curriculum design were not supported by instructors (5/7) and principals (4/7). Third, majority (3/4) items under the nature/extent of curriculum change were not accepted by both instructors and principals. Fourth, principals, (10/12), accepted the majority items under the cause of CR whereas instructors accept some items (7/12) in the scale 4. Fifth, the majority internal factors were supported by principals (8/11) and instructors (7/12) in the scale 5.

Sixth, the majority (12/17) the external factors were not supported by both principals and instructors. Seventh, items among the impact indicators the majority (6/9) were accepted by instructors, whereas principals did not accept the majority items (7/9). Eighth, instructors (5/6) and principals (4/6) did not support the majority items of graduate relevance indicators as positive indicator. Finally, the majority employer relevance indicators (5/6) were not supported by instructors, whereas principals supported (3/6) items as positive indicator.

5.4 Similarities and differences in the implementation of TVET CR: Instructors and principals' perspectives

Comparisons by the types of reform and ownership status of TVET institutions: Inferential statistics

Introduction

This section reports comparisons of the scores of the questionnaire to three different types TVET institutions: *Public, Private* and *NGO* TVET institutions. Furthermore, comparative analysis also conducted for the two different CRs programs implemented in Ethiopia in different time-periods: The *IBCR* implemented between 2001 and 2005 and the *OBCR* between 2006 and 2010.

It was believed that these characteristics might influence the perceptions of respondents of the TVET instructors and principals. As standard parametric tests assume that, the sample was drawn from a random population and statistical analysis for significance was used as a guide. For each comparison, effect sizes were computed to measure the strength of the relationship between two variables (Cohen, 1988). The difference in-group means per mutual group standard deviation was employed as a convenient index to measure effect size. Here it is argued that F-test for ANOVA effect size was calculated based on SPSS result (η^2) and set as 0.01 is small size, 0.06 is medium size and 0.14 is large size and for t-test effect size was calculated based on the following formula (Cohen's $d = M_1 - M_2 / s_{pooled.}$ where $s_{pooled} = \sqrt{[(s_1^2 + s_2^2) / 2]}$, $r_{Yl} = d / \sqrt{(d^2 + 4)}$ (see cohn's d effect size calculator - Http://www.ucc.ed/) the results are taken as 0.20 (small), 0.50 (medium), and 0.80 (large). Further, the effect size for chi-square test, Cramer's V was calculated based on SPSS result (Phi φ) and is set for 1 *df* as 0.10 (small), 0.30 (medium) and 0.50 (large) for 2 *df* as 0.70 (small), 0.21 (medium) and 0.35 (large) for 3 *df* as 0.06 (small), 0.17 (medium) and 0.29 (large) (Cohen, 1988).

Graphs, which illustrate mean scores for each item comparisons have been also provided as these graphs, further illustrate different perceptions of respondents depending on the characteristics indicated. The subjects of the study were instructors (n = 253) and principals (n = 55) of TVET institutions such as public (17.9%) private (65.3%) and NGO's institutions (16.9%). The number of participants for comparison between IBCR and OBCR were 150 and 136 respectively. Based on these data, chi-square test, t-test, and a one-way analysis of variance (ANOVA) was selected to evaluate the scales as required.

5.4.1 **Statistical properties of the items**

The development of the items was guided by the literature, existing questionnaires on TVET CRs and interview and discussion with TVET instructors and experts. As indicated earlier the context constructs 9 scales from 86 question items with some sub items in it. The following sub section reports the internal consistency reliability test of the items indicated and normality test of the items in the scales.

5.4.2 **Internal consistency reliability**

This study evaluates the internal consistency reliability of scales by testing their coefficient alpha (Cronbach α) for each construct in the theoretical model. Theoretically, the coefficient alpha is concerned with the degree of interrelatedness among a set of items designed to measure a single construct (See Cronbach 1951, p. 297). As indicated by Churchill, scale reliability refers to the proportion of variance attributable to the true score of latent variables, which can be defined as the internal consistency reliability. The internal consistency of a scale is an important measurement property as it implies that items of the scale, notwithstanding their distinctiveness and specificity, share a common core and measure the same concept (Churchill 1979, p. 64).

Reliability can be computed using the formula ($\alpha = \sum k/ (k-_1)*[1-(s^2_i)/s^2_{sum}]$ where s^2_i = variance for k individual items and s^2_{sum} = variances of the sum of all items. The variance of the sum will be the same as the sum of variances of the individual items. If there is no true score but only error in the items, the coefficient alpha will be equal to zero. If all items are perfectly reliable and measure the true score (identical) the coefficient alpha will be equal to 1. The goodness of the model is determined by the specified parameter scales of Cronbach's alpha (α) value suggested is, if $\alpha > 0.7$, indicates satisfactory internal consistency reliability (Nunnally & Berstein,1994 p. 34) and considered as the acceptable level of reliability. On the other hand, internal consistency reliability in the early stage of scale development, loadings α of = 0.6 to 0.7 is considered acceptable if there are additional indictors in the block for comparison purposes (Chin 1998, p. 295). Therefore, this study used the alpha level > than 0.6.

Subsequently, the responses from instructors, principals, TVET graduates and employers were entered into the statistical analysis program, SPSS-20. Cronbach's coefficient alpha was chosen to assess internal consistency reliability for each items construct. The usefulness of this statistic lies in the ability to give a numerical indication of the degree of correlation among the items in the same construct. As the correlation increases, the internal consistency reliability increases. Higher internal

consistency reliability, and therefore convergent validity, is indicated by high coefficient alphas. Therefore, the more highly correlated the items in the construct, the better the internal consistency reliability of the set of items. One reason why internal consistency reliability needs to be taken seriously when developing scales, concerns the subsequent use of these scales in comparisons of groupings. It is well established that relationships between variables are reduced if unreliable scales are employed in the analyses (DeVellis, 2003; Henson, 2001). It follows the statistical significance in inferential test (e.g. t-tests, Analysis of Variance, Univariate) can be difficult to establish if scales do not have sound internal consistency reliability and this was important as these tests guided the calculation of effect size between variables.

Reliability test of the constructs

Scales	Construct Name	Items	Cronbach alpha α
1.	Curricular Interventions (CI)	CI1,CI2,CI3,CI4,CI5,CI6,CI7,CI8	.843
2.	Curriculum Development (CD)	CD1,CD2,CD3,CD4,CD5,CD6,CD7	.673
3.	Nature/Extent of curricular changes (NR)	NR1,NR2,NR3,NR4	.840
4.	Factors/causes of CRs (FR)	FR1,FR2,FR3,FR4,FR5,FR6, FR7,FR8,FR9,FR10,FR11,FR12	.698
5.	Internal factors of effective implementation of CRs (IF)	IF1,IF2,IF3,IF4,IF5,IF6, IF7,IF8,IF9,IF10,IF11	607
6.	External factors of effective implementation of CRs (EF)	EF1,EF2,EF3,EF4,EF5,EF6,EF7,EF8, EF9,EF10,EF11,EF12,EF13,EF14,EF15, EF16,EF17	.653
7.	Impact Indicators of CR(IR)	IR1,IR2,IR3,IR4,IR5,IR6,IR7,IR8,IR9	.885
8.	Graduate relevance of TVET curricula (GR)	GR1,GR2,GR3,GR4,GR5,GR6	.868
9.	Employer relevance of TVET curricular (ER)	ER1,ER2,ER3,ER4,ER5,ER6	.844

Table 5-19 Items and Cronbach coefficient alpha for all constructs regarding the impact of TVET curricula reforms

Table 5.19 shows each items in the construct and the construct's Cronbach's coefficient alpha. The Cronbach's alpha result for construct 2, 4, 5 & 6 were considered as relatively low alpha. However, these loadings are on the acceptable level for comparison purposes in this study since they are > 0.6 (Chin 1998, p.295). As a consequence, these four constructs were accepted in addition to the rest five constructs to continue for further analysis. Hence, each item made an appreciable contribution to that scale's internal consistency reliability.

Scale name	Cronbach Coefficient	Scale Mean	SD	Minim Statistics	Maxim Statist	Skewn ess	Kurtosis
Intervention (CI)	.843	28.76	8.773	3.209	3.900	-.368	-.879
Curriculum Development (CD)	.673	22.86	6.804	2.331	4.092	.520	.666
Nature of Reform (NR)	.840	13.35	5.555	3.017	3.536	.286	-.827
Causes of Reform (FR)	.698	43.71	7.910	3.045	4.571	.019	-.288
Internal Factors (IF)	.607	37.42	8.278	2.377	3.726	-.265.	-.580
External Factors (EF)	.653	55.92	11.532	2.597	3.673	.328	-.166
Indicators of Reform (IR)	.885	31.37	10.722	3.171	3.814	.174	-1.216
Graduate Relevance (GR)	.868	22.06	8.757	2.993	3.412	068	-.874
Employer Relevance (ER)	.844	20.59	7.890	3.221	3.819	.134	-.759

Table 5-20 Descriptive statistics for the scales

Normality test of the scales

A t-test is used to test whether there is statistical mean values difference between two groups (instructors and principals) and unlikely to have occurred by chance. The t-test assumes various conditions such as normal distribution, variance, homogeneity or symmetry of the characteristic distribution of the dependent variable. If one or more of the conditions are violated, the use of alternative test procedures is required (Diehl & Staufenbiel, 2001, p. 214). Unequal sample size is also a condition whether the precision of the t-test is affected, if the variances are not equal (Bortz, 2005, p.141).

Skewness and kurtosis tests were conducted for normality for each scale. The parametric inferential testing has as its fundamental premise that the measure must be normally distributed in the population. Table 5.20, shows Skewness and kurtosis statistics for the 9 scales. When the frequency is clustered at the lower end of distribution and the tail points towards the higher or more positive scores, the value of skew is positive and vice versa (Field, 2013, p. 884). Further, according to Cook (2004, p. 24), the approximate value of the 97.5 percentile point of the normal distribution is 1.96. Hence, Skewness provides an indication of the symmetry in the data distribution; hence, all scales have skewness value less than absolute value of |1.96|, showing normal distribution.

Furthermore, among the scales, two scales such as CI & IF show a negative skewness (Polikurtic, kurtosis < 0) scores indicating the shape of the distribution was skewed to the right or positively skewed (leptokurtic, kurtosis > 0). As all other skewness statistics were between absolute values of two |2|, they can be considered as sufficiently closer to a normal distribution for probability estimates to be useful.

Kurtosis, on the other side, indicates whether the data are peaked or flat relative to the normal distribution. A normal distribution will have a kurtosis value of zero (Field 2013, p. 878). Table 5.20 shows that the kurtosis values for the nine scale were within the absolute value of 1.96. The values of kurtosis ranging from -0.116 for External factors influencing effectivity implementation of CRs where the shape of the curve is flatter than normal, to -.879 for Interventions of the CR where the shape of the curve has a higher peak than normal. As noted earlier in this main section, normality of data is an assumption of parametric inferential test of statistical significance, like the t-test and Analysis of Variance.

Hence, the following section displays the analysis of individual items under the scales, such as curricular intervention factors, constituency participation in the curriculum design, nature/extent of curriculum change, impact indicators of CR, graduate relevance indicators and employer relevance indicators. The similarities and differences of the CR implementation between the type of reforms and between the ownership status of institutions were supported by graphs in addition to the tables for each scales.

5.4.3 Curricular intervention factors of TVET courses (Scale 1)

The purpose of this section was to investigate the similarities and differences between the type of reforms, the ownership status of TVET institutions and between the TVET instructors and principals in terms of curricular intervention factors of CRs. As a result, respondents were asked as "How *do you agree/disagree with the following interventions of the TVET curricular review/changes conducted in your area of studies at your institution?"* They replied based on the Likert scale ranging from strongly disagree to strongly agree.

Curricular intervention factors of TVET courses by IBCR and OBCR

Firstly, we test the hypothesis that the IBCR and OBCR were associated with statistically significantly different mean *Curricular intervention factors for CR (scale 1),* an independent samples t-test was performed for eight items. The distributions for normality were sufficient for eight items in the scale 1 such as CI1: *subjects/trades changes* (skew -1.083 & kurtosis ,101), CI2: *contents changes* (skew -,778 & kurtosis -,452),, CI3: *new learning areas/methods* changes (skew -1.298 & kurtosis .685), CI4: *Time allocation changes* (skew -,512 & kurtosis -.922), CI5: *Professional change* (skew -,328 & kurtosis -1.315), CI6: *evaluation system change* (skew -,311 and kurtosis -1.073), CI7: *instructional media change* (skew ,028 & kurtosis -1.304),, and CI8: *Technical or scientific change* (skew -,277 & kurtosis -1.197), This shows all eight items were

satisfied the normal distribution for the purposes of conducting a t-test to compare the IBCR and OBCR (i.e., skewness < | 2.0 | and kurtosis < |9.0|; Schmider, Ziegler, Danay, Beyer, & Bühner, 2010).

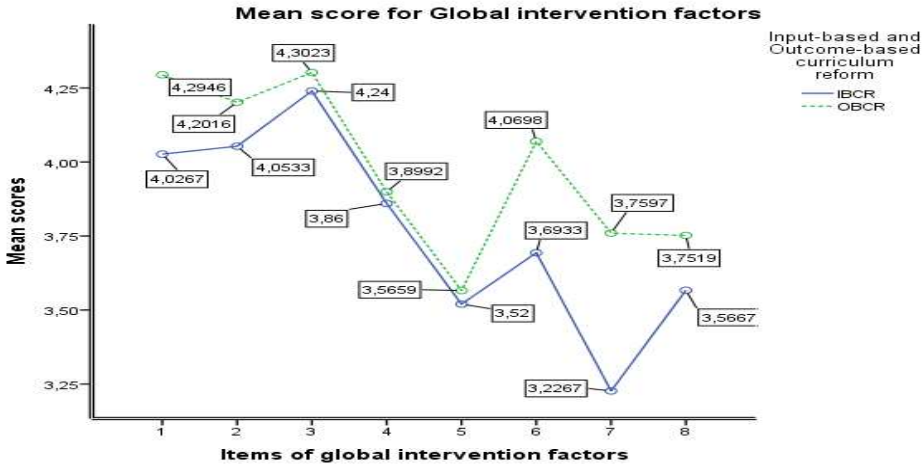
However, among these eight items only one item was significant, hence the assumption of homogeneity of variances for this item was tested and satisfied via Levene's *F* test, *for* CI7: *Curricular reform in terms of instructional media change*, *F*(281) = 8,511, *p* = 0 .004, (Table 5. 21).

				Levene-Test		T-Test			
Items	Reform Program	Mean	SD	F	Sig.	T	df	Sig. (2-tl)	*d*
CI 7: I*nstructional media change*	IBCR	3.23	1.795	8.551	.004	-2.281	281.	.023	.267
	OBCR	3.67	1.481						

Table 5-21 Curricular intervention factors TVET Courses by IBCR & OBCR (t-test)

The t-test shows the association between the IBCR and the OBCR were statistically significant effect for CI 7: *Curricular reform in terms of instructional media change*, *t* (241) = -2,281, *p* = .023, *d* = .267, suggesting that curricular reform in terms of *instructional media change*, higher mean were produced by OBCR (M = 3.67 SD = 1.481, N = 136) than the IBCR (M = 3.23, SD = 1.795, N = 150). Cohen's d was estimated at 0.267, which is a small effect size based on Cohen (1988),

However, the independent sample t-test show not a statistically significant effect for CI 1: *subjects/trades changes t*(279) = -1.427, *p* = .155, *d* = .00 CI 2: *contents changes t*(275) = -.768, *p* = .443, *d* = .000, CI 3: *new learning areas/methods* changes, *t*(283) = -.308, *p* = .758, *d* = .000, CI 4: *Time allocation changes* , *t*(210) = -.276, *p* = .834, *d* = .000, CI5: *Professional change*, *t*(284) = -.611, *p* = .542, *d* = .000, CI 6: *evaluation system change t*(284) = -.549, *p* = .122, *d* = .000, CI 8: *Technical or scientific change t*(283) = -.526, *p* = .599, *d* = .000, suggesting that these 7 items of curricular reform in terms of *curricular interventions factors of the TVET curricular review/changes*, did not shed any further light on the issues of significant difference between the IBCR and OBCR. A line graphical representation of the mean is displayed in Figure 5. 1



NB: CI1: *subjects/trades changes,* CI2: *contents changes,* CI3: *new learning areas/methods* changes, CI4: *Time allocation changes,* CI5: *Professional change,* CI6: *evaluation system change,* CI7: *instructional media change,* CI8: *Technical or scientific change.*

Figure 5-1 Curricular interventions' factors of TVET by types of reforms (t-test)

In summary, the above findings suggest that the CRs implemented in Ethiopia since 2001 have impacted on the curricular intervention factors such as subjects/trades changes, contents changes, new learning areas/methods changes, time allocation changes, professional change, evaluation system change, instructional media change, and technical or scientific change. However, the difference was existed only on instructional media change between IBCR and the OBCR, where the OBCR produced higher mean than the IBCR, with small effect size.

Curricular intervention factors of TVET courses by TVET institutions

Secondly, we test the hypothesis whether there was variation between the ownership status of TVET institutions (public, private and NGO's). The assumption of *normality* was evaluated for each item in the scale 1: *curricular intervention factors of the TVET curricular review/changes* in TVET institutions, prior to conducting the ANOVA and the distributions for normality were sufficient for eight items in the scale 1 (see t-test above)

Among these curricular intervention factors of reform, a total of 3 items were significant, hence the assumption of homogeneity of variances for one item was tenable based on Levene's F test, for CI 8: *Technical or scientific change. F* (2,305) = 3,197, *p* = 0 .255. However, the assumption were not tenable for *CI 1: Subjects/trades changes F* (2,305) = 15,073, *p* < 0 .001 and CI 4: *Time allocation changes, F* (2,298) = 7,865, *p* < 0 .001.

ITEMS	*Types Of institution*	Mean	SD	*df*	*F*	*Sig.*	η^2
CI 1: subjects/ trades changes	Public	3.28	1.980	2	15.073	.000	.090
	Private	4.38	1.253	305			
	NGO	4.58	1.363				
CI 4: Time allocation changes	Public	3.48	1.634	2	7.865	.000	.051
	Private	4.16	1.390	298			
	NGO	3.40	1.785				
CI 8: Technical or scientific change	Public	3.26	1.642	2	3.197	.042	.021
	Private	3.68	1.496	305			
	NGO	4.00	1.572				

Table 5-22 Curricular intervention factors of reform by TVET Institutions (ANOVA)

As can be seen in the Table 5.22 above, the independent between-groups ANOVA produced significant effect for *CI 1: subjects/trades changes* $F_{(2,305)}$ = 15,073, $P < .001$, $\eta^2 = .090$, CI 4: *Time allocation changes* $F_{(2,305)}$ = 7,865, $P = .001$, $\eta^2 = .051$, and *CI 8: Technical or scientific change* $F_{(2,305)}$ = 3,197, $P = .042$, $\eta^2 = .021$. Thus, the null hypothesis of no difference between means was rejected for Items CI 1, CI 4, and CI 8.

However, the actual difference in the mean scores between groups had closer to medium size Partial Eta square for CI 4 (eta^2 = .051), small size for CI 8 (eta^2 = .021) but closer to large Parital Eta square for CI 1 (eta^2 = .090), based on Cohen (1988). Therefore, CI 1 9.0%, and CI 4 5.1%, CI 8 2.1% of the variance in the *curricular intervention factors of CRs* were accounted for by the type of institution.

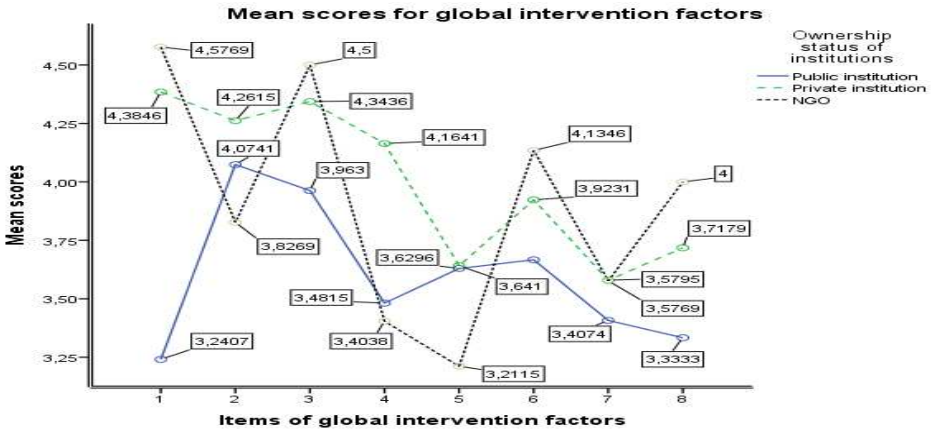
Post hoc comparisons to evaluate pairwise differences among group means were conducted using Tukey HSD. Tests revealed significant pairwise differences between the mean scores of institutions for each item in the scale 1: *curricular intervention factors of CRs.*

Therefore, *CI 1: subjects/trades changes* were lower in Public TVET institutions (M = 3.28, SD = 1. 980, N=57), than Private TVET institutions (M = 4.38, SD = 1.253, N = 199), $p < .001$ or when compare with NGO's TVET institutions (M = 4. 58, SD = 1.363, N = 52), p < .001.

CI 4: *Curricular reform in terms of time allocation changes* were higher in Private TVET institutions (M = 4.16, SD = 1,390, N = 195), than Public TVET institutions (M = .3.48, SD = 1,634, N = 54), p = 010, or when compare with NGO's TVET institutions (M = 3. 40, SD = 1,785, N = 52), p = .004.

CI 8: *Curricular reform in terms of technical scientific changes* were higher in NGO's TVET institutions (M = 4.00, SD = 1.572, N = 52), than Public TVET institutions (M = 3.26, SD = 1.642,

N = 57), *p* = .034. However, comparative with Private TVET institutions was not significant (M = 3.68, SD, = 1.496, N = 199), p = .559. Generally, comparisons indicated that the Scale 1: *Curricular intervention* factors of CRs depend on the type of institutions. A visual depiction of the means and line graph for Scale 2 is presented in Figure 5.2



NB: CI1: *subjects/trades changes,* CI2: *contents changes,* CI3: *new learning areas/methods* changes, CI4: *Time allocation changes,* CI5: *Professional change,* CI6: *evaluation system change,* CI7: *instructional media change,* CI8: *Technical or scientific change.*

Figure 5-2: Curricular intervention factors of CRs by types of institutions (ANOVA)

In general, the above findings highlights that during implementation of the CRs in Ethiopia since 2001 impacted on eight curricular intervention factors. However, the variation among the type of TVET institutions was existed on items such as *subject trade change* (closer to large effect size) *time allocation change*, and *technical and scientific change*, where the NGO's TVET institutions produced higher mean, than public and private TVET institutions with small effect size, but time allocation change was better in private than public and NGO's institutions with small effect size.

Curricular intervention factors of TVET courses by instructors and principals

Thirdly, to test the hypothesis that the *Curricular intervention factors for CR (scale 1)* were associated with statistically significant different mean *between* TVET *Instructors* and *Principals*, an independent samples t-test was performed for eight items. The distributions for normality were sufficient for eight items in the scale 1 (see normality for t-test above)

The t-test for all eight items were significant, however the assumption of homogeneity of variances were tested and not satisfied via Levene's *F* test, *such as: CI 1: subjects/trades changes F(138) = 13,261, p <0 .001, CI 2: contents changes F(135) = 19,908, p = 0 .004, CI 3: new learning areas/methods changes F(108) = 19,908, p = 0 .010, CI 4: Time allocation changes F(111) = 18,550, p < 0 .001, CI 5: Professional change F(129) = 63,036, p < 0 .001, CI 6: evaluation system change F(88) = 5,723, p = 0 .017, CI 7: instructional media change F(92) =*

6,848, p = 0 .009, and CI 8: Technical or scientific change F(97) = 5,259, p = 0 .023, (Table 5. 23).

Items	Reform Program	Mean	SD	Levene-Test F	Levene-Test Sig.	T-Test T	T-Test df	T-Test Sig. (2-tl)	T-Test d
CI 1: Subjects/trades changes	Instructor	4.13	1.588	13.261	.000	-2.618	138	.010	.33
	Principal	4.55	0.899						
CI 2: Contents changes	Instructor	4.06	1.626	19.908	.000	-3.101	135	.002	.38
	Principal	4.56	0.938						
CI 3: New learning areas/methods changes	Instructor	4.23	1.316	19.908	.010	-2.496	108	.014	.33
	Principal	4.60	0.915						
I 4: Time allocation changes	Instructor	3.74	1.582	18.550	.000	-5.101	111	.000	.67
	Principal	4.65	1.092						
I 5: Professional change	Instructor	3.41	1.744	63.036	.000	-5.936	129	.000	.74
	Principal	4.47	1.052						
CI 6: evaluation system change	Instructor	3.80	1.500	5.723	.017	-2.022	88	.046	.29
	Principal	4.20	1.297						
CI 7: Instructional media change	Instructor	3.32	1.663	6.848	.009	-5.230	92	.000	.73
	Principal	4.42	1.357						
CI 8: Technical or scientific change.	Instructor	3.85	1.548	5.259	.023	5.769	97	.000	.79
	Principal	2.76	1.201						

Table 5-23 Curricular intervention factors by instructors and principals (t-test)

As can be seen from the table above, the t-test shows the association between the TVET instructors and the principals were statistically significant effect for *CI 1: subjects/trades changes t(138) = -2,618, p = 0 .010, d =* .33, suggesting that curricular reform in terms of *subjects/trades changes* were higher mean for principals (M = 4.55, SD = .899, N = 55) than the Instructors (M = 4.13, SD = 1.588, N = 253) Cohen's d was estimated at 0.33, which is a small effect size based on Cohen's (1988),

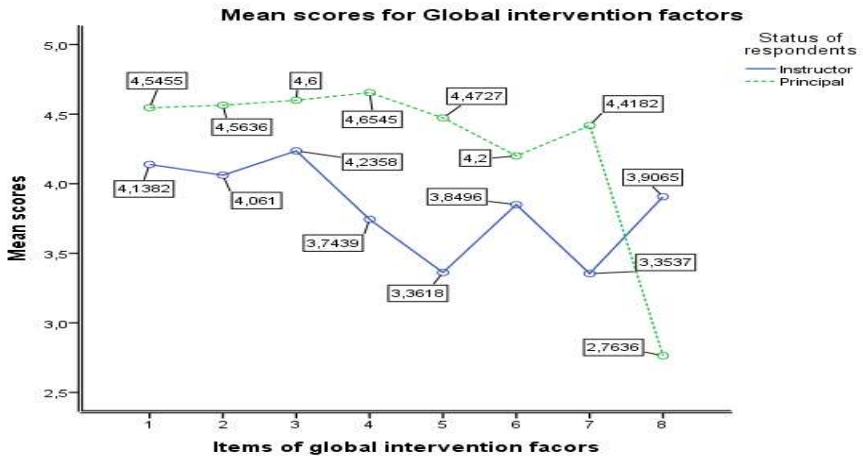
For CI 2: contents changes t (135) = -3,101, p = 0 .002, d = .38, *suggesting* that curricular reform in terms of *contents changes were* the higher mean for principals (M = 4.56, SD = .938, N = 55) than the Instructors (M = 4.06, SD = 1.626, N = 253) Cohen's d was estimated at 0.38, a small effect size. *For CI 3: new learning areas/methods changes t(108) = 19,908, p = 0 .010, d = .33,* suggesting that curricular reform in terms of *new learning areas/methods changes* were higher mean for Principals (M = 4.60 SD = .915, N = 55) than Instructors (M = 4.23, SD = 1.316, N = 253) Cohen's d was estimated at 0.33, a small effect size.

For CI 4: Time allocation changes, t (111) = -5,101, p < 0 .001, d = .67, suggesting that curricular reform in terms of *Time allocation changes, were* the higher mean for Principals (M = 4.65 SD = 1.092, N = 55) than Instructors (M = 3.47, SD = 1.582, N = 246) Cohen's d was estimated at 0.67, which is a medium effect size. *For CI 5: Professional change t (129) = -5,936, p < 0 .001, d =* .74, suggesting that curricular reform in terms of*: Professional change* were the higher mean

for Principals (M = 4.47 SD = 1.052, N = 55) than Instructors (M = 3.41, SD = 1.744, N = 249) Cohen's d was estimated, a medium effect size, 0.74.

For CI 6: evaluation system change t (88) = -2,022, p = 0 .046, d = .29, suggesting that curricular reform in terms of *evaluation system change* were the higher mean for principals (M = 4.20 SD = 1.297, N = 155) than instructors (M = 3.80, SD = 1.500, N = 150) Cohen's d was estimated a small effect size, 0.29. *For CI 7: instructional media change t (92) = -5,230, p < 0 .001, d = .73,* suggesting that curricular reform in terms of *instructional media change* were the higher mean for Principals (M = 4.42 SD = 1.357, N = 55) than instructors (M = 3.32, SD = 1.663, N = 253) Cohen's d was estimated at 0.73, a medium effect size.

Finally, for CI 8: Technical or scientific change t (97) = 5,769, p < 0 .001, d = .79, suggesting that curricular reform in terms of *Technical or scientific change* were the higher mean for instructors (M = 3.85 SD = 1.548, N = 253) than principals (M = 2.76, SD = 1.201, N = 55) Cohen's d was estimated at 0.79, which is a medium effect size (Cohen 1988). A line graphical representation of the mean is displayed in Figure 5. 3.



NB: CI1: *subjects/trades changes,* CI2: *contents changes,* CI3: *new learning areas/methods* changes, CI4: *Time allocation changes,* CI5: *Professional change,* CI6: *evaluation system change,* CI7: *instructional media change,* CI8: *Technical or scientific change.*

Figure 5-3: Curricular intervention factors of CRs by status of respondents (t-test)

Generally**,** the above findings highlight the perceptual similarities and differences between TVET instructors and principals of the impact of the implemented CRs on curricular intervention factors in Ethiopia since 2001. However, the variation on all eight intervention factors such as subjects/trades changes, contents changes, new learning areas/methods changes, Time allocation changes, Professional change, evaluation system change, instructional media change, and Technical or scientific change, where principals produced higher mean than instructors except technical scientific change with small and medium effect size.

5.4.4 **Constituency participation in TVET curriculum development (Scale 2)**

The purpose of this section was to investigate the impact of the CR on the constituency participation in the design of TVET curriculum. Hence, comparison of scale 2 was conducted between IBCR & OBCR (t-test) and among types of TVET institutions (Public, Private and NGO' institutions) (ANOVA). For each comparison identified, effect sizes were computed to measure the strength of the relationship between two variables. The difference in-group means per group standard deviation was employed as a convenient index to measure effect size (Cohen's d, 1988). Graphs which illustrate mean scales scores for each comparison have also been provided as these graphs further illustration of differences in perceptions of respondents.

We asked the teachers and principals of TVET institutions to indicate the degree to which constituencies actually participated in the process of curriculum development. The question raised was "Review *of the curriculum in my area of study at my institution was conducted with the participation of:"* Respondents were replied based on Likert scale from strongly disagree to strongly agree.

Constituency participation in TVET curriculum development by reform programs (IBCR & OBCR)

Firstly, we test the hypothesis that the IBCR and OBCR were associated with statistically significant different mean *Constituency participation in the process of curriculum development (scale 2)*; an independent samples t-test was performed for seven items. The distributions for normality were sufficient for seven items in the scale 2 such as *CD 1: TVET teachers* (skew -,035 & kurtosis -1.363), *CD 2: Employers* (skew .907 & kurtosis -.123), *CD 3: TVET Students* (skew 396 & kurtosis -,897), *CD 4: Community/Families* (skew 1,002 & kurtosis -.151), *CD 5: TVET College Administrators* (skew -,321 & kurtosis -1.179), *CD 6: TVET curriculum experts* (skew -.553 & kurtosis -.909), and *CD 7: Independent Consultants* (skew .237 & kurtosis -1.331). This shows all seven items were satisfied the normal distribution for the purposes of conducting a t-test to compare the IBCR and OBCR (i.e., skewness < | 2.0 | and kurtosis < |9.0|; Schmider, et.al, 2010).

Furthermore, the assumption of homogeneity of variances was tested and satisfied via Levene's *F* test, for CD 4: Community/Families $F(284) = 1{,}016$, $p = 0\ .314$, CD 2: Employers $F(284) = .091$, $p = 0\ .763$,CD 7: Independent Consultants $F(284) = 2{,}942$, $p = 0\ .088$,CD 6: TVET curriculum experts $F(284) = ,668$, $p = 0\ .414$, *However, the assumption were not satisfied for* CD 1: TVET

teachers $F(278) = 9{,}491$, $p = 0\ .002$, CD 5: TVET College Administrators $F(281) = 12{,}127$, $p = 0\ .001$, *and* CD 3: TVET Students $F(276) = 5{,}288$, $p = 0\ .022$, (Table 5. 24).

				Levene-Test		T-Test			
Items	Reform Program	Mean	SD	F	Sig.	T	df	Sig. (2-tl)	d
CD 1: TVET teachers	IBCR	2.99	1.882	9.491	.002	-6.735	284	.000	.803
	OBCR	4.35	1.483						
CD 3: TVET students	IBCR	2.93	1.540	5.288	.022	-3.835	284	.000	.453
	OBCR	3.65	1.639						
CD 5: TVET college administrator	IBCR	3.51	1.812	12.127	.001	-3.132	284	.002	.373
	OBCR	4.13	1.495						
CD 6: TVET curriculum experts/specialists	IBCR	4.42	1.593	.668	.414	2.982	255	.003	.371
	OBCR	3.80	1.749						

Table 5-24 Constituency participation in TVET curriculum development by IBCR & OBCR (t-test)

The t-test shows for *CD 1: TVET teachers*, the association between the IBCR and the OBCR were statistically significant effect, t (278) = -6,813, $p < .001$, $d = .803$, suggesting that TVET teachers were more involved in the curriculum development during OBCR (M = 4.35 SD = 1.483) than the IBCR (M = 2.99, SD = 1.882) Cohen's d was estimated at 0.803, which is a large effect size based on Cohen (1988).

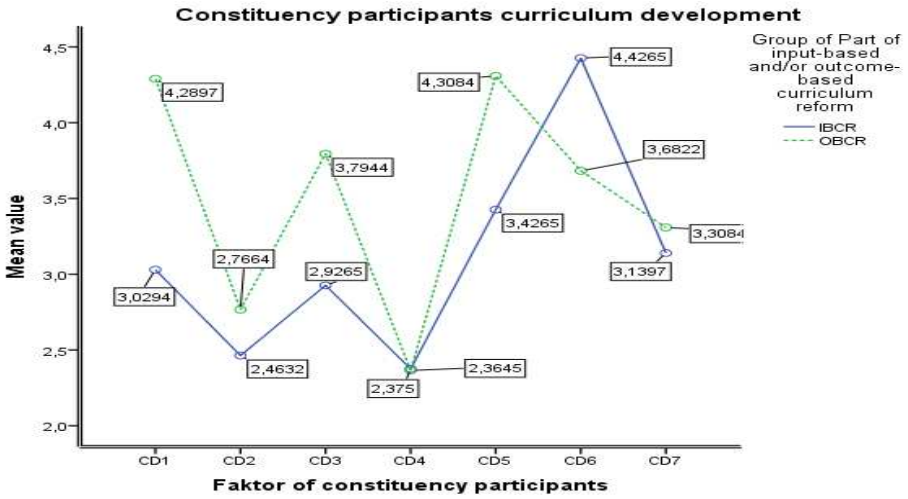
The t-test also shows for *CD 3: TVET students*, statistically significant difference between IBCR and OBCR t (276) = 3,823, $p < .001$, $d = .453$ suggesting that TVET students were more involved in the process of curriculum development during the OBCR (M = 3.65, SD = 1.639) than the IBCR (M = 2.93, SD = 1.540). Cohen's d was estimated at closer to a medium effect size, 0.453,

Further, the t-test shows for *CD 5: TVET college administrators*, statistically significant difference between IBCR and OBCR t (281) = -3,162, $p = .002$, d =.373 suggesting that TVET college administrators were more involved in the curriculum development during the OBCR (M = 4.13, SD = 1.495) than the IBCR (M = 3.51, SD = 1.812). Cohen's d was estimated at 0.373, a small effect size.

Finally, the t-test also shows for *CD 6: TVET curriculum experts/specialists*, statistically significant difference between IBCR and OBCR t (255) = 2,982, $p = .003$, $d = .371$, suggesting that TVET curriculum experts were more involved in the curriculum development during the IBCR (M = 4.42, SD = 1.593) than the OBCR (M = 3.80, SD = 1.749). Cohen's d was estimated at 0.371, a small effect size.

However, the independent sample t-test for CD 4: Community/Families t (284) = -, 569, $p = .570$, $d = .00$ *CD* 7: Independent Consultants t (284) = -.920, $p = .358$, $d = .000$, *CD* 2: Employers. t (284)

= ,883, p = .378, d = .000, *show* not a statistically significant effect, suggesting that the participation in the curricular development by CD 4: Community/Families, CD 7: Independent Consultants and CD 2: Employers do not shed any further light on the issues of significant difference between the IBCR and OBCR. A line graphical representation of the mean is displayed in Figure 5.4.



NB: CD1: TVET teachers, CD2: Employers, CD3: TVET Students, CD4: Community/Families, CD5: TVET College Administrators CD6: TVET curriculum experts CD7: Independent Consultants

Figure 5-4: Constituency participation in TVET curriculum development (t-test)

In summary, the above findings suggest that the impact of the CRs implemented in Ethiopia since 2001 has impacted on constituency participation in TVET curriculum development. However, the variation was existed between IBCR and OBCR, on items such as TVET teachers, TVET College Administrators, TVET Students, and TVET curriculum experts where the OBCR produced higher mean than the IBCR, except TVET curriculum experts, with small effect size.

Constituency participation in the TVET curriculum development by TVET institutions

Secondly, we test the hypothesis that there was variation between the ownership status of TVET institutions (public, private, and NGO) in terms of constituency participation in the curriculum design. Accordingly, the assumption of *normality* was evaluated for each item in the scale 2: *"constituency participant in the curriculum development* in TVET institutions prior to conducting the ANOVA, as indicated in the t-test above. Thus, all seven items were satisfied the normal distribution for the purposes of conducting ANOVA to compare the public, private and NGO TVET institutions.

Furthermore, the assumption of homogeneity of variances was tenable based on Levene's F test, for CD 1: TVET teachers F (2,305) = 3,115, p = 0 .110, CD 2: Employers F (2,305) = 1,696, p = 0

.084, CD 4: Community/Families F (2,305) = 1,409, p = 0 .105, However, the assumption were not tenable for CD 5: TVET College Administrators F(2,305) = 4,852, p = 0 .003., *and* CD 3: TVET Students F(2,305) = 3,164, p = 0.001. CD 7: Independent Consultants F (2,267) = .399, p = 0 .002, CD 6: TVET curriculum experts F (2,271) = .107, p = 0 .007.

ITEMS	*Source*	*Mean*	SD	*df*	*F*	*Sig.*	η^2
CD 1: TVET teachers	Public	3.19	1.695	2	3.115	.046	.042
	Private	3.54	1.858	305			
	NGO	4.06	1.809				
CD 3: TVET students	Public	3.61	1.925	2	3.164	.044	.045
	Private	3.20	1.514	305			
	NGO	2.85	1.526				
CD 5: TVET College Administrators	Public	3.68	1.649	2	4.852	.008	.037
	Private	3.67	1.741	305			
	NGO	4.46	1.364				

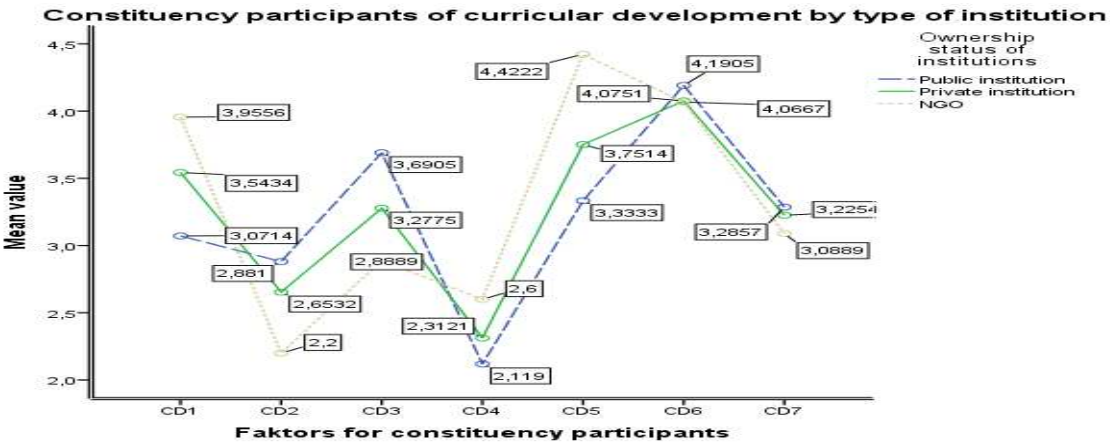
Table 5-25 Constituency participation in TVET curriculum development by TVET Institutions (ANOVA)

As can be seen in the Table 5.25 above, the independent between-groups ANOVA produced for CD 1: TVET teachers, $F_{(2,305)}$ = 3,115, P = .046, η^2 = .042, CD 3: TVET students $F_{(2,305)}$ = 3,164, P = .002, η^2 = .045, and CD 5: TVET College Administrators $F_{(2,305)}$ = 4,852, P = .008, η^2 = .037. Thus, the null hypothesis of no difference between means was rejected for Items CD 1, CD 3, and CD 5. However, the actual difference in the mean scores between groups had all small size Partial Eta square for CD1 (eta$^{\wedge 2}$ = .042), CD 5 (eta$^{\wedge 2}$ = .045) and for CD 3 (eta$^{\wedge 2}$ = .037) (Cohen, 1988). Therefore, CD1 4.2%, and CD 5 4.5% CD3 3.7% of the variance in the CR in terms of constituency participation in the curriculum development were accounted for by the group of TVET institution.

Post hoc comparisons to evaluate pairwise differences among group means were conducted using Tukey HSD. Tests revealed significant pairwise differences between the mean scores of institutions for each item in the scale 2: *Constituency participation in the curriculum development*.

Therefore, CD1: TVET teachers involvement in the curriculum development were higher in NGO's TVET institutions (M = 4.06, SD = 1.809, N = 57), than Public TVET institutions (M = 3.19, SD = 1.695, N=57) p = .037. Comparative with Private TVET institutions (M = 3.54, SD = 1.858, N = 199, p = .419) was not significant. CD 3: TVET students involvement in the curriculum development were lower in NGO's TVET institutions (M = 2. 85, SD = 1,526, N = 52), than Public TVET institutions (M = 3.61, SD = 1.925, N = 57), p = .034. Comparative with Private TVET institutions (M = 4.05, SD = 1.783, N = 56, p = .200) was not significant.

CD 5: TVET College Administrators involvement in curriculum development were higher in NGO's TVET institutions (M = 4.46, SD = 1.364, N = 52), than Public TVET institutions (M = 3.68, SD = 1.649, N = 57), *p* = .041, or when compare to Private TVET institutions (M = 3.67, SD, = 1.741, N = 199), p = .007. Hence, comparisons indicated that the Scale 2: constituency participation in curriculum development depends on the type of institutions. A visual depiction of the means and line graph for Scale 2 is presented in Figure 5.5



NB: CD1: TVET teachers, CD2: Employers, CD3: TVET Students, CD4: Community/Families, CD5: TVET College Administrators, CD6: TVET curriculum experts CD7: Independent Consultants

Figure 5-5: Constituency participation in TVET curriculum development

To sum up, the above findings points out that during implementation of the CRs in Ethiopia since 2001 impacted on seven-constituency participation in TVET curriculum development. Accordingly, the variation was existed among the type of TVET institutions, in terms of TVET teachers, TVET students, and TVET administrators, where the NGO's TVET institutions produced higher mean, than public and private TVET institutions for teachers and administrators, whereas students participation more impacted on private than public and NGO's institutions. However, the effect size for these items was small.

Constituency participation in the TVET curriculum development by instructors and principals

In this scale 2, *constituency participation in TVET curriculum development*, the inferential statistics, the t-tests ($p > 0.05$) on group responses result in no statistically significant mean differences between instructors and principals among all items in the scale. Hence, there is no variation between the implementers and the management groups in terms of constituency participants of TVET curriculum development.

5.4.5 **Nature/Extent of curricular changes (Scale 3)**

This part aims at identifying the similarities and differences between the type of reforms and the type of TVET institutions in terms of the nature/extent of curricular changes conducted due to the implementation of the CRs in Ethiopia. Respondents were asked to what extent the curricula/course of study changed in their field of studies at college level. The question was stated as "*How do you agree/disagree the extent of the curricular review/change conducted between 2001 and 2010 in your area of study at your institution*". Four items such as *NR 1: Continue the curricula with no change, NR 2: Continue the curricula with modification(s), NR 3: Terminate the course of study/program, and NR 4: The Curricula are replaced by a new course* were raised to be evaluated by respondents of TVET institutions.

Extent of curricular review in TVET course of studies by reform programs (IBCR & OBCR)

Firstly, we test the hypothesis to investigate whether there was statistically significantly different mean between IBCR and OBCR in terms of *Extent of curricular changes (scale 3).* As a consequence, the distributions for normality were tested and found to be sufficient for four items in the scale 3, such as *NR1: Continue the curricula with no change,* (.skew 135 & kurtosis -1.308), *NR2: Continue the curricula with modification(s)* (skew-.127 & kurtosis -1.409), *NR 3: Terminate the course of study/program* (skew .136 & kurtosis -1.302), *and NR 4: The Curricula are changed by a new course* (skew .551& kurtosis -.954). This shows all four items satisfied the normal distribution for the purposes of conducting a t-test to compare the IBCR and OBCR (i.e., skewness < | 2.0 | and kurtosis < |9.0|; Schmider, et al., 2010).

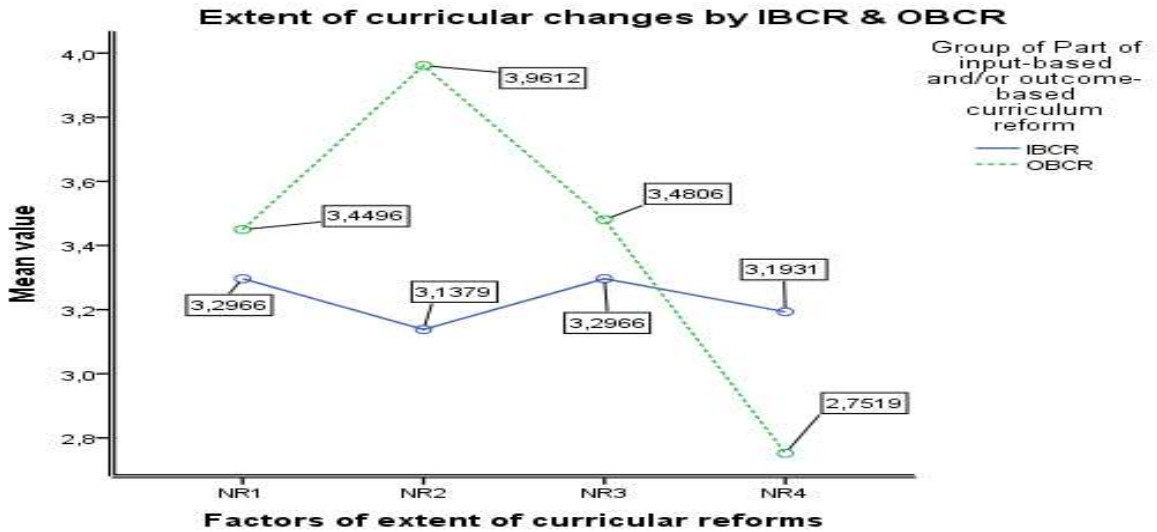
Furthermore, the assumption of homogeneity of variances was tested and satisfied via Levene's *F* test, for *NR 1: No change F* (279) = ,520, *p* = 0 .471, *NR 2: Modification(s), F* (278) = 2,068, *p* = .152, *NR 3: Termination F* (279) = .581, *p* < .446, *However, NR 4: Replacement was not satisfied F* (281) = 5,426, *p* < .021, (Table 5.26).

				Levene-Test		T-Test			
Items	Reform Program	Mean	SD	F	Sig.	T	df	Sig. (2-tl)	d
NR 2:Continue the curricula with modification(s)	IBCR	3.15	1.782	2.068	.152	-3.583	278	.000	.427
	OBCR	3.89	1.686						
NR 4:The Curricula are replaced by a new course	IBCR	3.21	1.691	5.426	.021	2.330	281	.020	.278
	OBCR	2.77	1.471						

Table 5-26 Extent of CRs by IBCR & OBCR (t-test)

The t-test shows for *NR 2: Continue the curricula with modification(s),* the association between the IBCR and the OBCR were statistically significant effect, t (278) = -3,583, p < .001, d =.427, suggesting that the *modification of* curricula were conducted more *during* OBCR (M = 3.89, SD = 1.686) than the IBCR (M = 3.15, SD = 1.782) Cohen's d was estimated at 0.427, closer to a medium effect size. The t-test also shows for *NR 4: The Curricula were replaced by a new course*, statistically significant difference between IBCR and OBCR t (281) = 2,330, p = .020, d =.278 suggesting that the replacement of the curricula by the new courses were more during the IBCR (M = 3.21, SD = 1.691) than the OBCR (M = 2.77, SD = 1.471). Cohen's d was estimated at 0.278, a small effect size.

However, the independent sample t-test for NR 1*: Continue the curricula with no change t* (279) = -.620, p = .536, d = .000, *and NR 3: Terminate the course of study/program,* t(279) = -.768, p = .443, d = .000, show not a statistically significant effect, suggesting that the termination and continuation of courses without change did not impact significantly on the extent of the curricular changes, and therefore do not shed light on the issues of significant difference between the IBCR and OBCR. A line graphical representation of the mean is displayed in Figure 5.6.



NB: *NR1: Continuation of the curricula, NR2: Curricula modification, NR3: Course Termination, NR4: Replacement by a new course*

Figure 5-6: Extent of curricular changes by Reform programs

Generally, the above findings suggest that the CRs implemented in Ethiopia since 2001 have impacted on the nature of the CRs such as Continuation of the curricula, Curricula modification, Course Termination, and Replacement by a new course. However, the difference was existed between IBCR and the OBCR in terms of modification of the curricula and replacement of courses

by a new one, where replacement of courses by a new one was higher mean during IBCR, whereas modification of courses was higher mean during the OBCR, with small effect size for both items.

Extent of curricular changes by TVET institutions

Secondly, we evaluate the hypothesis that there is variation among the ownership status of TVET institutions in terms of the extent of curricular changes. Accordingly, the assumption of *normality* was evaluated for each item in the scale 3:"*Extent of curricular changes conducted in* TVET institutions during the implementation of the CRs, prior to conducting the ANOVA, and determined to be satisfied for four items as can be seen in the Table 5.28. Furthermore, the assumption of homogeneity of variances was satisfied based on Levene's F test, for NR2: Continue the curricula with modification(s) F (2,299) = 7,121, P = .985, NR3: Terminate the course of study/program F (2, 299) = 5,863, P = ,051, NR4: The Curricula are changed by a new course F (2, 303) = 5,304, P = .179. However, homogeneity of variance was not satisfied for NR1: Continue the curricula with no change F (2, 299) = 6,566, P = .048.

ITEMS	*Types of Institution*	*Mean*	SD	*df*	*F*	*Sig.*	η^2
NR 1:Continue the curricula with no change	Public	3.86	1.903	2	6.566	.002	.042
	Private	3.35	1.608	299			
	NGO	2.67	1.705				
NR 2:Continue the curricula with modification(s)	Public	4.05	1.783	2	7.121	.001	.045
	Private	3.53	1.726	299			
	NGO	2.78	1.765				
NR 3:Terminate the course of study/program	Public	3.86	1.903	2	5.863	.003	.037
	Private	3.35	1.608	299			
	NGO	2.73	1.723				
NR 4:The Curricula are replaced by a new course	Public	3.44	1.547	2	5.304	.005	.034
	Private	3.06	1.526	303			
	NGO	2.46	1.798				

Table 5-27 Extent of curricular changes by TVET Institutions (ANOVA)

As can be seen in the Table 5.27 above, the independent between-groups ANOVA produced for NR 1: Continue the curricula with no change, $F_{(2,299)}$ = 6,566, P = .002, η^2 = .042. NR 2: Continue the curricula with modification(s), $F_{(2,299)}$ = 7,121, P = .001, η^2 = .045. NR 3: Terminate the course of study/program, $F_{(2,299)}$ = 5,863, P = .003, η^2 = .037, and NR 4: The Curricula are changed by a new course also produced a statistically significant effect, $F_{(2,303)}$ = 5,304, P = .005, η^2 = .054. Thus, the null hypothesis of no difference between means was rejected for Items NR 1, NR 2, NR 3 and NR 4. However, the actual difference in the mean scores between groups had small size Partial Eta

square for NR 1 (eta^^{2} = ,042), NR 2 (eta^^{2} = ,045) NR 3 (eta^^{2} = ,037) and NR 4 (eta^^{2} = ,054) Therefore, NR 1 4,2%, NR 2, 4,5% NR 3 3.7% and NR 4 5.4% of the variance in the CR in terms of Extent of curricular changes were accounted for by the group of TVET institution.

Post hoc comparisons were conducted to evaluate pairwise differences among group means, using Tukey HSD test since equal variances were tenable for NR 2, NR 3 and NR 4 but unequal variance for NR 1. Tests revealed significant pairwise differences between the mean scores of institutions for each item in the scale 3: *Extent of curricular changes* during the implementation of CRs.

Therefore, NR 1: Continue the curricula with no change was lower in NGO's TVET institutions (M = 2.67, SD = 1.705, N = 48), than Private TVET institutions (M = 3.35, SD = 1.608, N = 197), *p* = .032 or when compare to Public TVET institutions (M = 3.86, SD = 1.903, N=57) *p* = .001.

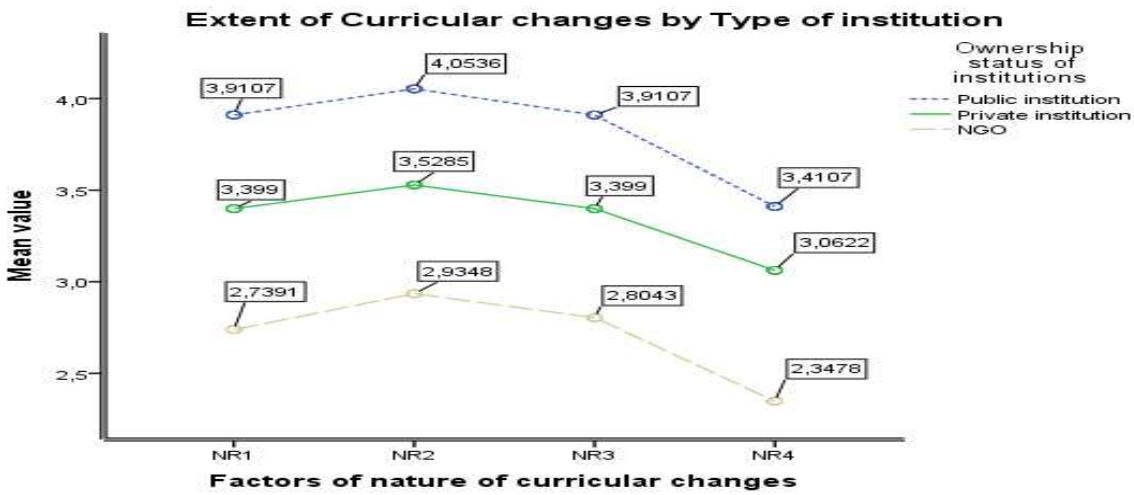
NR 2: Continue the curricula with modification(s) was lower in NGO's TVET institutions (M = 2.78, SD = 1.765, N=50), than Private TVET institutions (M = 3.53, SD = 1.726, N = 196), *p* = .019 or when compare to Public TVET institutions (M = 4.05, SD = 1.783, N = 56), *p* = .001

NR3: Terminate the course of study/program higher Extent of curricular changes were conducted in Public TVET institutions, (M = 3.86, SD = 1.903, N = 57) than NGO's TVET institutions (M = 2.73, SD = 1.723, N = 48), *p* = .002. The other groups were not statistically significant.

NR4: The Curricula are replaced by a new course was lower in NGO's TVET institutions (M = 2.46, SD = 1.798, N = 52), than Private TVET institutions (M = 3.06, SD = 1.526, N = 197), p = .043 or when compare to Public TVET institutions (M = 3.44, SD = 1.547, N = 57), *p* = .004.

Hence, comparisons indicated that the Extent of curricular changes during implementation of CRs depends on the type of institutions. A visual depiction of the means and line graph for Extent of curricular changes during CRs is presented in Figure 5.7

.



NB: *NR1: Continuation of the curricula, NR2: Curricula modification, NR3: Course Termination, NR4: Replacement by a new course*

Figure 5-7: Extent of curricular designs by type of institutions

In general, the above findings depict that the implemented CRs in Ethiopia since 2001 was impacted on the nature of curricular designs, However, the variation among the type of TVET institutions was existed on items such as continuation of the curricula, curricula modification, course termination, and replacement by a new course, where the public TVET institutions produced higher mean, than private and NGO's TVET institutions with small effect size.

Extent of curricular review in TVET course of studies by instructors and principals

The t-test ($p > 0.05$) on group responses in terms of *extent of curricular reviews* (scale 3) results in no statistically significant mean differences between instructors and principals for all items in the scale. This suggests that the status of respondents have no shade any light on the difference between instructors and principals in terms of the extent of curricular review for all items in scale 3.

5.4.6 Causes/factors of TVET curricular reforms (Scale 4)

Factor analysis

The purpose of this part is to explore the factor analysis for the causes of CRs in Ethiopia since 2001. According to Hair et al. (2006), there are some rules to drop off the items in factor analysis such as eigenvalue less than 1.0, factors with only one item in them, items without loading factors, items with similar or near loadings to more than one factor, and items with item communality greater than 0.4. (Hair et al. 2006, p. 125). On the other hand, Explanatory Factor Analysis (EFA) is used to ensure that the manifest variables are loaded on their intended construct and items loading on other factors are eliminated from further consideration.

An exploratory factor analysis is used to determine the number of common indicators influencing a set of measures and the strength of the relationship between each factor and each observed measure in this study. The method of principal component analysis with varimax rotation to evaluate the unidimensionality of the latent variables is used in EFA. Here intended construct and items loading on other factors are eliminated from further consideration. The remaining items are then used to estimate in structural equation models (Decoster & Hall 1998, p. 3).

The protocol adopted here for factor analysis was to use default settings initially (Principal Axis Factor - PAF) and to rotate the matrix of loadings to obtain orthogonal (independent) factors (Varimax rotation). The prime goal of factor analysis is to identify simple (items loadings > 0.30 on only one factor) that are interpretable. It assumes that items are factorable (The Kaiser-Meyer-Olkin) measure of sampling adequacy tests whether the partial correlations among variables are small (Field 2013, p.701). Bartlett's test of sphericity tests whether the correlation matrix is an identity matrix, indicating that the factor model is inappropriate). Once clearly defined and interpretable factors had been identified (Factor loadings ≥ 0.10 were illustrated via an included table even though only item loadings > 0.30 were considered relevant to factor loadings), and responses related to these factors were saved in the form of factor scores. Field (2013, p. 870) states that these Bartlett factor scores examine whether a variance-covariance matrix is proportional to an identity matrix and are equivalent to sub-scale or scale scores with means of zero and standard deviations of one (z-scores), and with participants credited with separate scores in relation to each identified factor. Since these factor scores translate the ordinal responses to individual items into standardized z-scores with interval properties, the relationship between responses to these factors and personal/demographic characteristics were probed via multivariate (MANOVA) or Univariate (ANOVA) parametric tests.

Furthermore, where significant main effects and/or interaction effects were observed, the locus of these was determined via non-parametric tests of significance. Usually, Chi-Square contingency tables, Kruskal-Wallis non-parametric analyses of variance tests whether more than two independent groups differ, or it is a non-parametric version of ANOVA (Field 2013, p. 87).

Hence, data (scale 4) were subjected to factor analysis using principal component analysis with Varimax (orthogonal) rotation. Twelve items related to Causes of CRs were examined. Several well-recognized criteria for the factorability of a correlation were used.

Firstly, to evaluate factorial solutions of each construct, reliability test and explanatory factor analysis (EFA) were performed. Any item whose communality load less than 0.3 is dropped out. Hence, the Cronbach's alpha result was α = 0.698 for all 12 items and correlated at least 0.4, suggesting reasonable factorability.

Secondly, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.723, which is above the recommended value of 0.6, and Bartlett's test of sphericity was significant ($X^2(55) = 783{,}740$, $p < .001$). All the diagonals of the anti-image correlation matrix were over 0.4, supporting the inclusion of each item in the factor analysis. This indicates that the data showed there were patterned relationships between the items and there were sufficient for Explanatory factor analysis (EFA). Finally, with the communalities above 0.3 (see Table 5.28), the data provide further confirmation that each item shared some common variance with others. Given these overall indicators, factor analysis was conducted with all 12 items.

Principle components analysis with Varimax (Orthogonal) rotation was used because the primary purpose was to identify and compute composite coping scores for the factors underlying the short version of the NR. The initial Eigenvalues showed that the first factor explained 68% of the variance.

For the final stage, a principal components factor analysis for the 11 items was conducted. Based on the eigenvalue cut-off 1.0, the component matrix yields three factors explaining 28%, 20 % and 10% of the variance respectively. The three-factor solution explained 59% of the variance. The fourth factor was accounted for 8% of the variance; however, this item has no any relation with the other three grouping factors. This eliminates item FR 6 from the group (item FR 6: *Inadequacy of the TVET curriculum to provide employability skill in the job market*). (See Table 28 below)

As can be seen on Table 5.28 below, five items load onto Factor 1. These items are all related to the causes of curricular changes in terms of organizational activities during CRs within the TVET colleges and labeled "*Organizational factors of curricular changes*" (5 items such as FR9: *Influential individuals (Influence of TVET experts), FR10: Academic fashion (Market & industry shift),* FR11: *Academic merit (Need to change trades/courses*), FR5: *Influence of accreditation bodies,* FR6: *Inadequacy of the TVET curriculum to provide employability skill* in the job market, and FR7: *Adaptation of new curriculum (benchmarking)),*

Construct and measurement scale (Scale 1-6)				Final Loadings		
Scale 4:Factors/causes of Curricular Reforms (FR) α= .698	Mean	SD	Communality	Factor 1 Organizational factors	Facto 2 Personal factor	Factor 3 Legal/econ Factors
FR 9: Influential individuals (Influence of TVET experts)	3.08	1.642	.746	**.863**	*-.025*	*-.025*
FR 7: Adaptation of new curriculum (benchmarking)	3.09	1.610	.742	**.861**	*-.002*	*.008*
FR 5: Influence of accreditation bodies (quality assurance)	3.33	1.772	.618	**.783**	*.005*	*-.068*
FR 11: Academic merit (Need to change trades/courses)	3.37	1.478	.584	**.757**	*.021*	*-.099*
FR 10: Academic fashion (Market & industry shift)	3.07	1.562	.334	**.578**	*.013*	*-.024*
FR 4: Staff issues (Change of Professional staff)	3.69	1.437	.637	*-.004*	**.788**	*-.126*
FR 2: Student ability (Dissatisfaction of students with the method of teaching)	4.04	1.422	.619	*.012*	**.785**	*-.044*
FR 8: Employer/industry viewpoint (Influence of employers)	3.76	1.529	.523	*.066*	**.692**	*.199*
FR 3: Student viewpoint (Labor market employment needs)	4.57	1.271	.440	*-.045*	**.606**	*.264*
FR 1: Government policy & regulations	4.47	1.380	.735	*.050*	*-.038*	**.855**
FR 12: Financial pressure (The availability of external funds)	3.84	1.531	.428	*-.232*	*.259*	**.554**
FR 6: Inadequacy of the TVET curriculum to provide employability skill in the job market	4.02	1.429	.626	--	---	---
Eigenvalue				3.106	2.216	1.084
% of Total Variance				28.233	20.146	9.875
Total Variance				58.236%		

Note: factor loadings < .3 are suppressed

Table 5-28 Factor analysis for Factors/causes of CRs

Further, the other four items were loaded onto the second factor. They are related with the students, staffs, employers' activities of the CRs in the TVET colleges. They are labeled as "*Personal factors of curricular changes*". These items are: FR2: *Student ability (Dissatisfaction of students with the method of teaching*), FR3: *Student viewpoint (Labor market employment needs),* FR4: *Staff issues (Change of Professional staff*), and FR8: *Employer/industry viewpoint (Influence of employers).*

The rest two items were loaded onto the third factor. They are related to the financial and the influence of the government during the CRs and labeled as "*legal/economic factors of the curricular changes*". These items are: FR1: Government policy & regulations, and FR12: Financial pressure (The availability of external funds). The item "FR6: *Inadequacy of the TVET curriculum to provide employability skill in the job market*" are related with the qualitative factor, which was assigned on the fourth factor, however it was eliminated due to inappropriate to assign with groups under scale 4. Generally, the data were well suited for parametric statistical analysis.

Causes of CRs - factor solution (n=308)

	M	SD	Rank
Factor1: Organizational factors	3.19	1.611	3
Factor2: Personal factors	4.05	1.415	2
Factor3: Legal/economic factors	4.16	1.456	1
Inadequacy of TVET curriculum to provide employable skill	4.02	1.429	-

Table 5-29 Causes of CRs (Descriptive statistics)

As can be seen from the Table 5.29, the descriptive statistics for the causes of CRs shows that the Factor 3 *Legal/economic factors (M = 4.16. SD = 1,456) produced the higher mean than the* Factor 2 *Personal factors (M = 4.05. SD = 1,415) when compared with the* Factor 1 *Organizational factors (M = 3.19. SD = 1,456),* suggesting that among the causes of CRs *Legal/economic* factors highly enforced the TVET curriculum to be reformed followed by Personal factors and Organizational factors.

Factors influencing CRs (t-test) (Scale 4)

To investigate the hypothesis that there is variation (each group of items) between types of reforms in terms of causes of CRs in Ethiopia, teachers and principals of TVET institutions were asked "*The following factors can be considered as the causes that may influence to reform the curricula conducted between 2001 and 2010. What do you think of these roles?"* Hence, initially, factor analysis (see Table 5.30 above) was performed to determine the three factors that influence CRs such as *Organizational factors*. *Personal factors* and *Legal/Economic factors*. This part compares the two CRs conducted between 2001 - 2005 (IBCR) and 2006 - 2010 (OBCR) regarding causes of CRs.

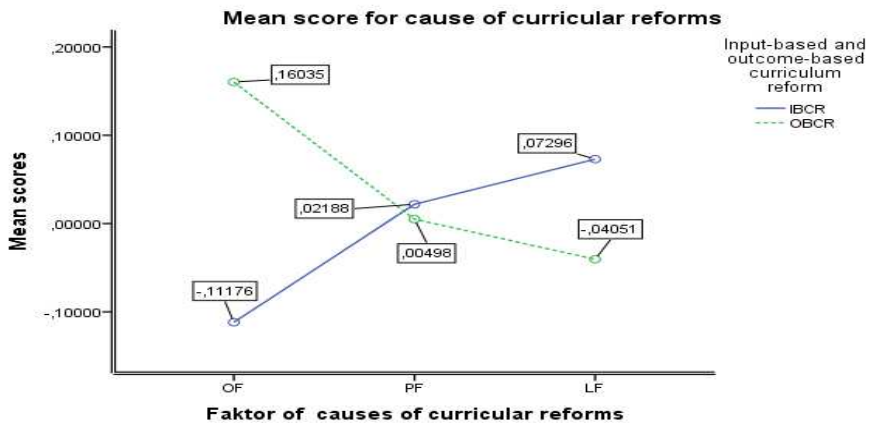
To test, the hypothesis, whether the IBCR and OBCR are statistically significant mean different for the *factors of curricular changes*, an independent samples t-test, for three factors, was performed. The distributions were sufficiently normal for three factors of factors of curricular changes such as Organizational factors of curricular changes (skew = 0.110 & kurtosis = -1.068), Personal factors of curricular changes (skew = -0.042 & kurtosis = -0.642), and Legal/economic factors of curricular changes (skew= -0.351 &kurtosis = -0.344). This shows all three factors satisfied the normal distribution for the purposes of conducting a t-test to compare the IBCR and OBCR (Schmider, et al., 2010).

Furthermore, the assumption of homogeneity of variances was tested and satisfied via Levene's F test, for Organizational factors of curricular changes F (225) = 0.088, p = 0.041. The other factor, Personal factors of curricular changes were satisfied F (225) = 2.491, p = 0.116, but Legal/economic factors of curricular changes were not satisfied F (225) = 12.713, p < .001, However, both factors have no significant t-value to continue for comparison analysis. (See Table 5. 30).

Items	Reform Program	Mean	SD	Levene-Test F	Levene-Test Sig.	T-Test T	T-Test df	T-Test Sig. (2-tl)	T-Test d
F 1:Organizational factors of curricular changes	IBCR	-.112	1.00	.088	.767	-2.054	225	**.041**	.304
	OBCR	.160	.770						
F 2: Personal factors of curricular changes	IBCR	.021	1.048	2.491	.116	.128	225	.898	.000
	OBCR	-.005	.906						
F 3: Legal/Economic factors of curricular changes	IBCR	.073	1.146	12.713	.000	.872	220	.384	.000
	OBCR	-.041	.089						

Table 5-30 Causes/factors influencing CR by IBCR & OBCR (t-test result)

The independent samples t-test was conducted for *Organizational factors* of curricular changes. The t-test shows the association between the IBCR and the OBCR were statistically significant effect, $t(225) = -2{,}054$, $p = .041$, $d = .304$. This Suggests that the null hypothesis was reject for the Organizational factors of curricular changes during the implementation of the OBCR (M = .160, SD = .770) was associated with a statistically significantly larger mean than the IBCR (M = -.112, SD = 1.00). Cohen's d was estimated at .304, which is a small effect based on the guidelines (20 small, .50 Medium, & .80 large) (Cohen 1988). Yet, the independent sample t-test for Personal factors of curricular changes was t (225) = .128, $p = .898$, $d = .000$, and for Legal/economic factors of curricular changes was t (225) = .843, $p = .400$, $d = .000$, which show no statistically significant effect for both items. This suggests that the null hypothesis was accept that there is no significant difference between the IBCR and OBCR on both Personal factors of curricular changes and Legal/economic factors of curricular changes. A line graphical representation of the mean is displayed in Figure 5.8.



NB: OF: Organizational factors, PF: Personal factors, LF: Legal/economic factors
Note: Mean is set to 0 and the standard deviation is set to 1.

Figure 5-8: Causes/factors influencing CR (t-test)

To sum up, the above findings highlights the similarities and differences among the type of reforms that the causes the TVET curricula to be reformed in Ethiopia since 2001. As a result, the variation was existed between IBCR and OBCR, in factors such as Organizational factors, where OBCR

produced higher mean than IBCR with a small effect size. However, the study found no difference existed for Personal factors, and Legal/economic factors.

The organizational, personal and legal/economic factors influencing CR (ANOVA)

The purpose of this section was to investigate the causes of TVET CRs in Ethiopia since 2001. Consequently, we examined the significant difference of the factors among TVET institutions. Initially, the assumption of normality was evaluated, prior to conducting the ANOVA, and found to be satisfied (see t-test above). Furthermore, the assumption of homogeneity of variances was not satisfied for Organizational *factors,* Levene's F test, F (2, 242) = 4,933, P = ,014, and for "*Legal/economic factors,* Levene's F test, F (2, 242) = 8,275, P = .004. However, we continue the analysis since ANOVA in many cases, considered as a robust statistics in which assumptions can be violated with relatively minor effect (Howell, 2010).

Factors	*Types of Institution*	*Mean*	*SD*	*df*	*F*	*Sig.*	η^2
Organizational factors	Public	.207	1.123	2	4.933	008	.039
	Private	.047	.936	242			
	NGO	-.432	1.009				
Legal/Economic factors	Public	-.151	1.016	2	8.275	.000	.064
	Private	.166	.867	242			
	NGO	-.511	1.287				

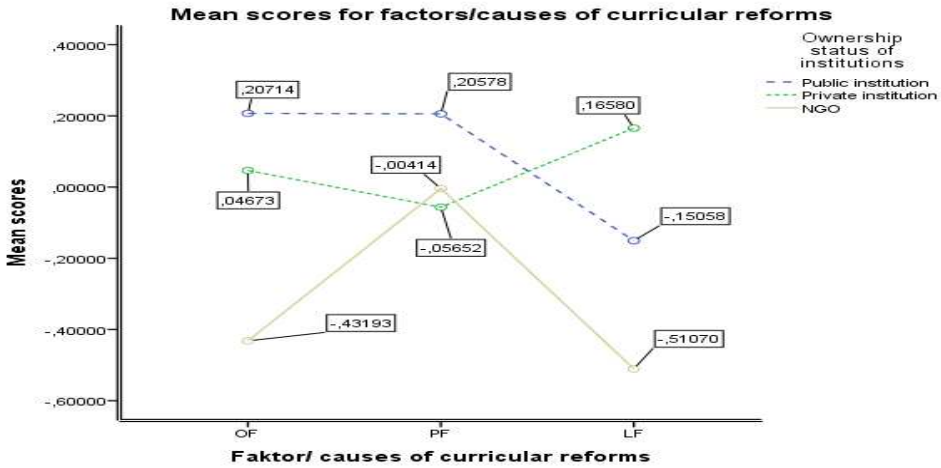
Table 5-31 Causes/factors of curricular changes by TVET Institutions (ANOVA)

Table 5.31 shows, the independent between-groups ANOVA produced a statistically significant effect for *Organizational factors*, $F_{(2,242)}$ = 4,933, P = .008, η^2 = .039, and also for Legal*/economic factors* $F_{(2,242)}$ = 4,933, P = .008, η^2 = .064. Thus, the null hypothesis of no difference between means was rejected for both factors. However, the actual difference in the mean scores between groups had small size Partial Eta square for *Organizational factors* (eta^2 = .039). Moreover, Partial Eta square was medium size for *Legal/economic factors* (eta^2 = .064) (Cohen, 1988). Consequently, for *Organizational factors* 3.9%, and for *Legal/economic factors* 6.4% of the variance in the CR were accounted for by the group of TVET institution.

Post hoc comparisons to evaluate pairwise differences among group means were performed using Tukey HSD test since equal variances were tenable. Tests revealed significant pairwise differences between the mean scores of institutions for the *Organizational factors* and *Legal/economic factors*. Hence, Public TVET institutions produced higher mean (M = .207, SD = 1.123, N = 45), than in Private TVET institutions (M = .047, SD = .936, N =.161) p = .009 or when compare private to NGO's TVET institutions (M = -.432, SD = 1.009, N = 39). p = .019. Further, Legal/economic factors of curricular changes were also produce higher mean by Private TVET institutions

(M = .165, SD = .866, N = 161), than Public TVET institutions (M = -.151, SD = 1.016, N = 161), $p < .001$ or when compare public to NGO's TVET institutions (M = -.511, SD = 1.286, N = 39), $p = .002$.

Conversely, the ANOVA result for the *Personal factors of curricular changes* during the implementation of the CRs was not produced a statistically significant effect, F (2.242) = 1.212, $P = .299$. Thus, the null hypothesis of no difference between means was accepted. It indicates that *Personal factors of curricular changes* was no significantly affected by the type of institution. A visual depiction of the means and a line graph for all factors under scale 6: causes of curricular changes, is presented in Figure 5. 9



NB: OF: Organizational factors, PF: Personal factors, LF: Legal/economic factors
Note: Mean is set to 0 and the standard deviation is set to 1.

Figure 5-9: Causes/factors influencing CRs (NOVA)

Generally, the above finding shows the similarities and differences among Type of TVET institutions regarding causes of TVET CRs in Ethiopia since 2001. As a result, the variation was existed on factors such as Organizational factors where public produced higher mean than private and NGO with small effect size, and for Legal/economic factors, where private institutions produced higher mean than public and NGO's with a medium effect size. However, the study found no difference existed for Personal factors among private, public and NGO' institutions.

Inadequacy of TVET curriculum to provide employable skill in the labor market, by reform programs (IBCR & OBCR)

Item *FR5* was dropped out from scale 4. Because during factor analysis it was not achieved the requirement of simple factor analysis. Hence, an independent samples t-test was conduct individually, for *scale 4-FR5: Inadequacy of TVET curriculum to provide employable skill in the*

labor market, to investigate if there were statistically significant mean difference between the IBCR and OBCR. However, the t-test for scale 4, FR5: *Inadequacy of TVET curriculum to provide employable skill in the labor market* found a non-significate effect, t (280) = .270, p = .788, d = -.000, suggesting that the inadequacy of TVET curriculum to provide employable skill in the labor market is not significantly different between the IBCR and the OBCR.

Inadequacy of TVET curriculum by TVET institutions (ANOVA)

To test the mean difference between the types of TVET institutions, ANOVA was performed for *scale 4, FR5: Inadequacy of TVET curriculum to provide employable skill in the labor market.* The assumption of *normality* was evaluated for FR5: (skew -.004 & kurtosis -1.535), (Schmider, et al., 2010). Furthermore, the assumption of homogeneity of variances was tenable based on Levene's F test for FR5: F (2,300) = 12,079, p = .432.

ITEMS	*Types of institution*	*Mean*	SD	*df*	*F*	*Sig.*	η^2
Scale 4. FR5: *Inadequacy of TVET curriculum to provide employable skill in the labor market*	Public	4.24	1.587	2	12.079	.000	.075
	Private	3.5	1.595	300			
	NGO	2.65	1.866				

Table 5-32 Inadequacy of TVET curriculum by TVET Institutions (ANOVA)

Table 5.32 shows the independent between-groups ANOVA, for scale 4 -FR5: Inadequacy of TVET curriculum to provide employable skill in the labor market, *produced* $F_{(2,300)}$ = 12,079, p = .046, η^2 = .075. However, the actual difference in the mean scores between groups had a medium size Partial Eta square for FR5 (eta^2 = .075). Therefore, 7.5% of the variance of the item in the scale were accounted for by the group of TVET institution.

Post hoc comparisons to evaluate pairwise differences among group means were conducted using Tukey HSD. Tests revealed significant pairwise differences between the mean scores of institutions. As a result, scale 4, FR5: *Inadequacy of TVET curriculum to provide employable skill in the labor market* were produced higher mean in Public TVET institutions (M = 4.24, SD = 1.587, N = 55), than Private TVET institutions (M = 3.5, SD, = 1.595, N = 199) p = .009 or when compare public to NGO's TVET institutions (M = 2.65, SD = 1.866, N = 49), p < .001. Hence, comparisons indicated that this item depend on the type of TVET institutions.

Generally, Inadequacy of TVET curriculum to provide employable skill in the labor market was proved to be one cause of CR with variation on the type of institutions, where public produced higher mean than private and NGO's institutions with medium effect size.

The independent samples t-test was also conducted to identify the differences between instructors and principals. For example, for Organizational factors, Personal factors, Legal/economic factors and inadequacy of TVET curriculum to provide employable skill in the market, which results in statistically non-significant effects, $F_{(1,243)} = -.885$, $p = .377$, $F_{(1,243)} = -.188$, $p = .851$, $F_{(1,65)} = -.319$, $p = .750$, and $F_{(1,306)} = -.365$, $p = .715$, respectively.

Causes of CR by TVET instructors and principals

In this scale 4: *causes of CR*, the t-test ($p > 0.05$) on group responses results in no statistically significant mean differences among all items in the scale between instructors and principals Hence, the hypothesis no difference between instructors and principals is accepted for all items in scale 4.

5.4.7 Internal factors of effective implementation of TVET curricula (Scale 5)

Factor Analysis

The purpose of this section was to identify the impact of the internal factors on the effective implementation of TVET CRs in the Ethiopian context. Question was asked as "*The following internal factors can be considered as hindrance or drivers for the effective implementation of the TVET CRs conducted between 2001 and 2010 in Ethiopia. What do you think of their roles?"* Responses were given based on Likert scale from strongly hindrance to strongly driver. Data were subjected to factor analysis using principal component analysis with Varimax (orthogonal) rotation. Eleven questions related to the role of factors in the effective implementation of TVET curricula during the implementation of the CRs in Ethiopia were examined. Several well-recognized criteria for the factorability of a correlation were used.

Firstly, we conduct reliability test and explanatory factor analysis (EFA) to evaluate factorial solutions of each construct. Any item whose communality load less than 0.3 is dropped out. Hence, the Cronbach's alpha result was $\alpha = 0.607$ for all 11 items and correlated at least .4, suggesting reasonable factorability.

Secondly, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.666, above the recommended value of 0.6, and Bartlett's test of sphericity was significant ($X^2(55) = 496{,}328$,

$p < .001$). All the diagonals of the anti-image correlation matrix were over 0.6, supporting the inclusion of each item in the factor analysis. This indicates that the data showed there were patterned relationships between the items and there were sufficient for Explanatory factor analysis.

Finally, the communalities were all above .4 (see Table 5.33), further confirming that each item shared some common variance with other items. Given these overall indicators, factor analysis was conducted with all eleven items.

Construct and measurement scale (Scale 1-6)				Final Loadings		
Scale 8: Internal factors of effective curriculum Implementation (IF) α = .607	Mean	SD	Commun ality	Factor 1 Physical factors	Factor 2 Personal factors	Factor 3 Temporal factors
IF 5: Organization of modular contents in TVET courses	3.51	1.568	.712	**.837**	*.045*	*.098*
IF 6: Assessment and evaluation process of learning outcomes	3.73	1.661	.614	**.765**	*-.159*	*.062*
IF 4: Application of teaching methods	3.71	2.429	.490	**.696**	*.067*	*-.034*
IF 7: Availability of instructional materials such as computers	3.52	2.386	.437	**.641**	*-.144*	*-.075*
IF 1: Subject area objective set	3.20	2.301	.402	**.625**	*-.103*	*.016*
IF 11: Motivation of Teaching staff	3.41	1.597	.648	*-.288*	**.728**	*-.186*
IF 10: Awareness of teaching staff to TVET	3.69	1.628	.578	*-.072*	**.721**	*-.228*
IF 3: Background & inherent cognitive skill of TVET students	2.38	1.603	.487	*.199*	**.626**	*.237*
IF 2: Professional TVET Teachers' teaching skill & experience	3.48	1.576	.314	*-.117*	.482	*.261*
IF 9: Number of students in a class (class size)	3.64	1.559	.522	*.194*	*-.094*	**.690**
IF 8: Usage of assigned time allocation to TVET courses	3.17	1.463	.458	*-.153*	*.090*	**.653**
Eigenvalue				2.943	1.607	1.112
% of Total Variance				26.754	14.612	10.106
Total Variance				51.472%		

Note: factor loadings < .3 are suppressed

Table 5-33 Internal factors of effective curriculum implementation (Factor analysis)

Principle components analysis with Varimax (Orthogonal) rotation was used because the primary purpose was to identify and compute composite coping scores for the factors underlying the short version of the internal factors for the effective implementation of TVET curricula.

Based on the eigenvalue cut-off 1.0, the component matrix yields three factors explaining 27%, 15% and 10% of the variance respectively. The three-factor solution produced 51% of the variance. (See Table 5.33)

Therefore, five items were loaded onto Factor 1. These items were related to the role of organizational and physical factors of TVET curricula for the implementation of TVET CRs within the TVET colleges. They are labeled "*Organizational/Physical factors*", such as IF 1: Subject area objective set, IF 4: *Application of teaching methods*, IF 5: *Organization of modular contents in*

TVET courses, IF 6: *Assessment and evaluation process of learning outcomes*, and IF 7: *Availability of instructional materials such as computers*. The other four items load on to factor 2. These items were related to the role of personal behavior for the implementation of TVET CRs within the TVET colleges. They are labeled "*Personal factors*". The rest two items were loaded onto Factor 3. These items were related to the role of time and quantity for the implementation of TVET CRs within the TVET colleges and labeled "*Temporal factors*".

Internal factors of CRs factor solution (n=308)

	M	SD	Rank
Factor 1: Physical factors	3.50	2.069	1
Factor 2: Personal factors	3.24	1.601	3
Factor 3: Temporal factors	3.41	1.613	2

Note: M = Mean, SD = Standard deviation

Table 5-34 Internal factors of effective curriculum implementation **(***Descriptive statistics)*

As can be seen from the descriptive statistics for internal factors (Table 5.34) that the *Factor 1,* Physical factors (M = 3.50, SD = 2,069) produced the higher mean than the *Factor 3,* Temporal factors (M = 3.24, SD = 1,601) when compared with the *Factor 2,* Personal factors (M = 3.41, SD = 1,613), *suggesting that among the internal factors,* Physical *factors played the highest role in the effective implementation of the CRs followed by Temporal factors and Personal factors.*

Organizational/physical factors for the effective implementation of TVET curricula

The purpose of this part was to examine the similarities and differences that existed due to the intervention of technological factors on the effective implementation of the CRs among TVET institutions and between curricular reform programs and their interaction effect. The assumption of normality was determined to be satisfied for the "*Organizational/physical factors* "(Skew. = -.434, and kurtosis = -1,009). Furthermore, the assumption of homogeneity of variances was not satisfied based on Levene's *F* test, *F* (5, 200) = 3,277, *P* = ,007. However, we continue the analysis since ANOVA in many cases, considered a robust statistics in which assumptions can be violated with relatively minor effect (Howell, 2010).

As can be seen in the Table 5.35 below, Organizational/physical factors were analyzed with 2x3, (CRs programs X Ownership Status). The independent between-groups factorial ANOVA produced not a statistically significant value for main effect of curricular reform programs, $F_{(1,200)} = .917$, $p = .339$, $\eta^2 = .005$. Thus, the null hypothesis of no difference between means was accepted. The *main effect* was further investigated variation among the ownership status of TVET institutions, Public x

Private x NGO, towards the *Organizational/physical factors* for effective impmementation of the curricula yielded an *F* ratio of $F_{(2,200)}$ = 1,990, p = .306, η^2 = .000.

Source	*SS*	*df*	*MS*	*F*	*Sig.*	η^2
CRs	.907	1	.907	.917	.339	.005
Ownership status	2.352	2	1.176	1.190	.306	.012
CRs * Ownership Status	6.532	2	3.266	3.304	**.039**	.032
Error	197.688	200	.988			
Total	207.526	206				

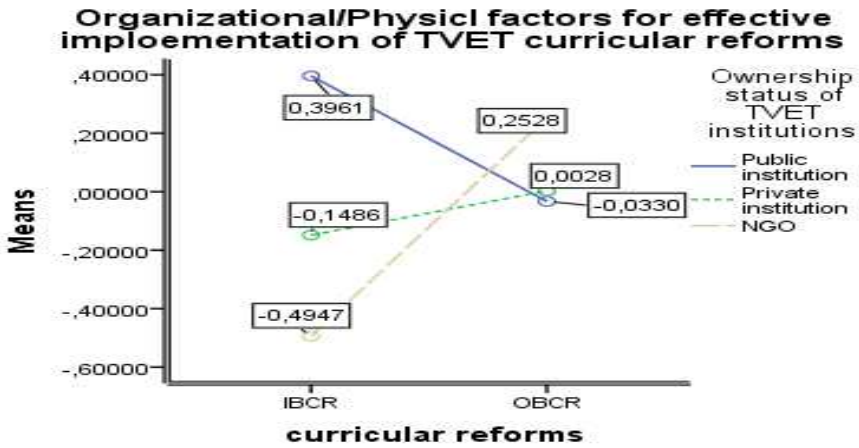
**Interaction effect*

Table 5-35 Organizational/physical factors for the effective implementation of TVET curricula by TVET Institutions & CRs (Factorial ANOVA)

Types of reform	**Public institution**		**Private institution**		**NGO institution**		**Marginal**	
	M	SD	M	SD	M	SD	M	SD
IBCR	.396	.228	-.149	.120	-.495	.241	**-.082**	**.118**
OBCR	-.033	.212	.003	.127	.253	.234	**.074**	**.114**
Marginal	**.182**	**.156**	**-.073**	**.087**	**-.121**	**.168**		

Table 5-36 Organizational/physical factors for the effective implementation of TVET curricula (Descriptive statistics)

The interaction effect for *Organizational/physical factors* for effective implementation of the curricula yielded a significant F ratio, F (2,200) = 3,304, p = .039, η2 = .032, indicating that the null hypothesis of no difference between means was rejected for the interaction. However, Post hoc comparisons yielded no significant pairwise difference for being p > .05. A line graphical representation of the means for the organizational/physical factors for the effective implementation of TVET curricula is presented in Figure 5. 10.



Note: Mean is set to 0 and the standard deviation is set to 1.

Figure 5-10: Organizational/physical factors of TVET curricula

In summary, the above findings highlight that the *Organizational/physical factors* have impacted on the effective implementation of TVET curricula conducted in Ethiopia since 2001. The interaction effect resulted in significant value, indicating that the new entrants and/or avoidance of the ineffective TVET institutions during the OBCR created significant differences on effective implementation due to the intervention of organizational/physical factors, however the result of the post hoc was implicit due to higher p-value. The main effect, however, resulted in no difference between the type of reforms and among the type of intuitions in the effective implementation due to the intervention of the organizational/physical factors.

Personal factors for the effective implementation of TVET curricula

The purpose of this part was to examine the similarities and differences that existed due to the intervention of personal factors on the effective implementation of the CRs among TVET institutions and between curricular reform programs and their interaction effect. The assumption of normality was determined to be satisfied for the "Personal factors of TVET curricula" (Skew. = .124, and kurtosis = -.596). Furthermore, the assumption of homogeneity of variances was not satisfied based on Levene's *F* test, F (5, 200) = 6,392, $P < .000$. However, we continue the analysis (Howell, 2010).

As can be seen in the Table 5.37 below, personal factors for the effective implementation of TVET curricula data were analyzed with 2x3, (CRs programs X Ownership Status). The independent between-groups factorial ANOVA was produced a non-statistically significant main effect for curricular reform programs, $F_{(1,200)} = 2{,}168$, $P = .142$, $\eta^2 = .000$. Thus, the null hypothesis of no difference between means was accepted.

Source	*SS*	*df*	*MS*	*F*	*Sig.*	η^2
CRs	2.088	1	2.088	2.168	.142	.011
Ownership status	11.717	2	5.858	6.083	**.003**	.057
CRs * Ownership Status	.092	2	.046	.048	.953	.000
Error	192.626	200	.963			
Total	206.705	206				

**Interaction effect*

Table 5-37 Personal factors for the effective implementation of TVET curricula by TVET Institutions & CRs (Factorial ANOVA)

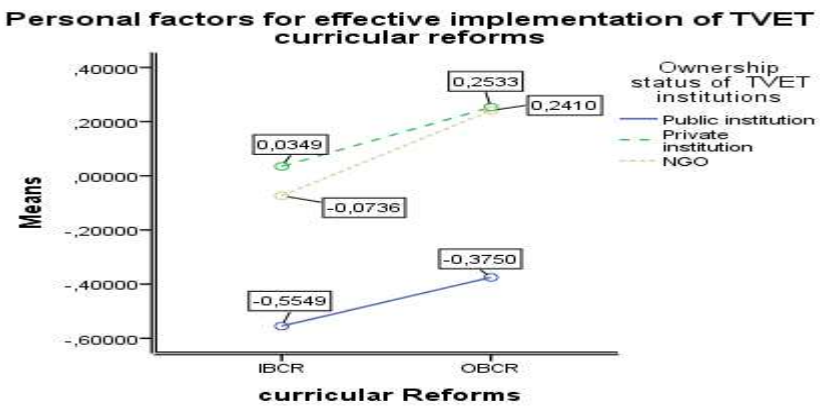
Descriptive statistics

Types of reform	Public institution		Private institution		NGO institution		Marginal	
	M	SD	M	SD	M	SD	M	SD
IBCR	-.555	.225	.035	.118	-.074	.238	**-.198**	**.116**
OBCR	-.375	.209	.253	.126	.241	.231	**.040**	**.112**
Marginal	**-.465**	**.154**	**.144**	**.086**	**.084**	**.166**		

Table 5-38 Personal factors for the effective implementation of TVET curricula (Descriptive statistics)

A 2X3 ANOVA was calcuated and a significant *main effect* was further investigated by testing the simple main effects of the ownership status of TVET institutions, Public x Private x NGO, towards the role of *Personal factors for effective impmementation of the curricula* yielded an *F* ratio of $F_{(2,200)} = 6{,}083$, $p = .003$, $\eta^2 = .057$. Thus, the null hypothesis of no difference between means was rejected. And therefore, 5.7% of the variance for the personal factors for the effective implementation of the TVET curricular was accounted for by the group of TVET institution. As can be seen in Table 5.38, the mean score was significantly lower in Public (M = -.465, SD, = .154, N=41), than in NGO (M = .084, SD = .166, N =130), $p = .043$, or when compare to Private (M = .144, SD = .086 N = 35), $p = .002$ with medium effect size.

The *interaction effect* was investigated the impact of *personal factors* on effective implmentation of the curricula yielded a non-significant *F* ratio, $F_{(2,200)} = .048$, $p = .953$, $\eta^2 = .000$, indicating that the null hypothesis of no difference between means was accepted for the interaction. A line graphical representation of the means for the personal factors for the effective implementation of TVET curricula is presented in Figure 5. 11.



Note: Mean is set to 0 and the standard deviation is set to 1.

Figure 5-11: Personal factors of TVET curricula

In summary, the above findings emphasis on the *Personal factors* have impacted on the effective implementation of TVET CRs with significant variation among the ownership status, where the impact of the *personal factors* on effectiveness was higher in private than public and NGO's institutions, with medium effect size. However, the interaction effect and the main effect for the type of reforms shade no any light on the difference due to the interventions of the personal factors for the effective implementation of the CRs.

Temporal factors for the effective implementation of TVET curricula

The purpose of this part was to examine the similarities and differences that existed due to the intervention of temporal factors on the effective implementation of the CRs among TVET institutions and between curricular reform programs and their interaction effect. The assumption of normality was determined to be satisfied for the "*Temporal factors of TVET curricula*" which were implemented between 2001 and 2010 CRs in TVET institutions (Skew. = .112, and kurtosis = -.248). Furthermore, the assumption of homogeneity of variances was satisfied based on Levene's *F* test, *F* (5, 200) = 1,073, *P* = .377.

Source	*SS*	*df*	*MS*	*F*	*Sig.*	η^2
CRs	1.323	1	1.323	1.390	.240	.007
Ownership status	6.118	2	3.059	3.213	**.042**	.031
CRs * Ownership Status	.149	2	.074	.078	.925	.001
Error	190.401	200	.952			
Total	198.963	206				

**Interaction effect*

Table 5-39 Temporal factors for the effective implementation of TVET curricula by TVET Institutions & CRs (ANOVA)

Descriptive statistics

Types of reform	**Public institution**		**Private institution**		**NGO institution**		**Marginal**	
	M	SD	M	SD	M	SD	M	SD
IBCR	.022	.224	-.048	.117	-.466	.237	**-.164**	**.115**
OBCR	.151	.208	.211	.125	-.287	.230	**.025**	**.111**
Marginal	**.087**	**.153**	**.081**	**.086**	**-.377**	**.165**		

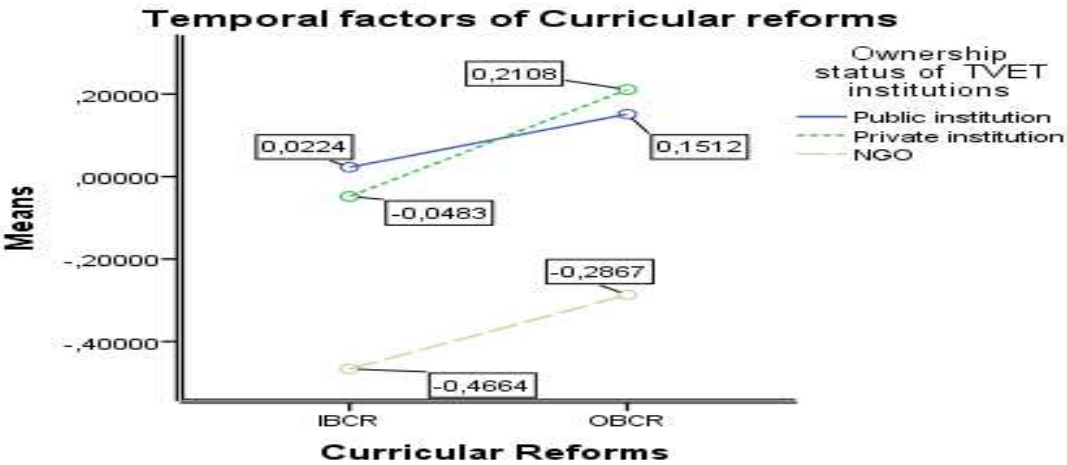
Table 5-40 Temporal factors for the effective implementation of TVET curricula (Descriptive statistics)

Table 5.39 shows, temporal factors for the effective implementation of TVET curricula data were analyzed with 2x3, (CRs programs X Ownership Status), the independent between-groups factorial ANOVA produced not a statistically significant main effect for curricular reform programs, $F_{(1,200)}$

= 1,390, P = .240, η^2 = .001. Thus, the null hypothesis of no difference between means was accepted.

Temporal factors for effective impmementation of the curricula yielded a significant significant F ratio for the *main effect* among the ownership status of TVET institutions, Public x Private x NGO, $F_{(2,200)}$ = 3,213, P = .042, η^2 = .031. Thus, the null hypothesis of no difference between means was rejected. And therefore, 3.1% (small effect size) of the variance for the personal factors for the effective implementation of the TVET curricular was accounted for by the group of TVET institution, where the mean score was significantly higher in private TVET institutions to (M = .081, SD, = .086, N = 41), than in NGO TVET institutions (M = -.377, SD = .165, N = 130), p = .045. However, it was not significant to compare public with public TVET institutions (M = .087, SD = .153 N = 35), p = .098.

The *interaction effect* investigated the role of *Temporal factors* for effective impmementation of the curricula yielded a non-significant F ratio, $F_{(2,200)}$ = .078, P = .925, η^2 = .000, indicating that the null hypothesis of no difference between means was accepted for the interaction. Figure 5.12 displays a line graphical representation of the means for the Temporal factors for the effective implementation of TVET curricula.



Note: Mean is set to 0 and the standard deviation is set to 1.

Figure 5-12: Temporal factors of TVET curricula

In summary, the findings points out that the temporal factors have impacted on the effective implementation of TVET CRs with significant variation among the ownership status, where the impact of the temporal factors on effectiveness was lower in NGO's institutions than private TVET institutions with small effect size. However, the interaction effect and the main effect for the type of

reforms shade no any light on the difference due to the interventions of the temporal factors for the effective implementation of the CRs.

Internal factors by instructors and principals (t-test)

In this scale 5 (Internal factors), the inferential statistics shows there are no statistically significant mean differences between instructors and principals for 10 items by running t-test ($p > .05$) on group responses in terms of internal factors of effective implementation. However, Item 4: Application of teaching methods to TVET was significant. Thus, the result of the t-test shows, $t(81) = -2.165$, $p = 0.033$, $d = 0.32$, suggesting that application of teaching methodology for effective implementation of the curriculum was more supported by principals ($M = 4.29$, $SD = 2.323$, $N = 55$) than instructors ($M = 3.54$, $SD = 2.409$, $N=253$) Cohen's d was estimated at 0.32 which is a small effect size based on Cohn's (1988). Hence, the null hypothesis is rejected only for items 4 in scale 5.

The independent samples t-test ($p > 0.05$) was also conducted to identify the differences between instructors and principals in terms of group factors. For example, Organizational/Physical factors, Personal factors, and Temporal factors, which results in statistically non-significant effects, $F_{(1,221)} = -.509$, $p = .611$, $F_{(1,221)} = .145$, $p = .885$, and $F_{(1,221)} = -.645$, $p = .519$, respectively, suggesting that the null hypothesis is accepted for the three group factors.

5.4.8 External factors of effective implementation of TVET curricula (Scale 6)

Factor Analysis

The purpose of this part was to examine the impact of the external factors on effective implementation of the CRs in Ethiopia. Hence, a question was asked as *"The following external factors can be considered as hindrance or drivers for the effective implementation of the TVET CRs conducted between 2001 and 2010 in Ethiopia. What do you think of their roles?"* Responses were given based on Likert scale from strongly hindrance to strongly driver.

Data was subjected to factor analysis using principal component analysis with Varimax (orthogonal) rotation. Seventeen items related to the role of external factors on the effective implementation of TVET curricula during the implementation of the CRs in Ethiopia were examined. Several well-recognized criteria for the factorability of a correlation were used.

Firstly, we conduct reliability test and explanatory factor analysis (EFA) to evaluate factorial solutions of each construct. Any item whose communality load less than 0.3 is dropped out. Hence, the Cronbach's alpha result was 0.653 for all 17 items and correlated at least 0.4, suggesting reasonable factorability.

Secondly, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.709, above the recommended value of 0.6, and Bartlett's test of sphericity was significant ($X^2(91) = 1107{,}794$, $p < .001$). The diagonals of the anti-image correlation matrix were all over 0.6, supporting the inclusion of each item in the factor analysis. This indicates that the data showed there were patterned relationships between the items and there were sufficient for Explanatory factor analysis (EFA).

Construct and measurement scale 1-6 (Scale 1-6)				Final Loadings			
External factors of TVET curriculum implementation (EF) α = .653	Mean	SD	Communality	Factor 1 Legal/political	Factor 2 Social/cultural	Factor 3 Technology	Factor4 Finance
EF 2: TVET Policy practice	3.47	1.723	.796	**.889**	*.013*	*-056*	.041
EF 3: National labor market influence on TVET	3.28	1.704	.810	**.888**	*.119*	*.080*	-.021
EF 5: Adaption of external curriculum (Bench mark)	3.63	1.591	.749	**.859**	*.107*	*.014*	-.004
EF 4: External relation to develop TVET	3.13	1.598	.738	**.844**	*.161*	*.009*	.001
EF 10: Cultural appropriateness to TVET	3.47	1.617	.776	*.222*	**.848**	*.054*	*.071*
EF 12: Employers need to TVET graduates	3.00	1.597	.702	*.065*	**.816**	*-.042*	*.174*
EF 11: Social Attitude to TVET	3.39	1.496	.520	*-.033*	**.710**	*.117*	*-.034*
EF 9: Family influence on TVET	3.61	1.464	.527	*.154*	**.707**	*-.017*	*-.052*
EF 16: Network & linkage system to develop TVET	3.32	2.368	.584	*-.015*	.089	**.757**	*-.048*
EF 17: External technical support to develop TVET	3.41	2.263	.547	*-.033*	*-.019*	**.703**	*.228*
EF 13: Accessibility of ICT in TVET colleges	2.93	1.978	.532	*.074*	.029	**.682**	*-.245*
EF 8: Foreign financial aid to TVET Donors)	3.60	1.609	.588	*.221*	*-.221*	*.222*	**.664**
EF 6: Salary of TVET instructors	2.58	1.627	.497	*.160*	*-.027*	*.232*	**-.646**
EF 7: Budget allocation to TVET	3.62	1.692	.451	*.014*	*.272*	*-.006*	**.614**
EF 1: TVET Administrative practice	3.04	1.620	.535	-	-	-	-
EF 14: Research development	3.14	2.008	.378	-	-	-	-
EF 15: Globalization	3.62	1.602	.452	-	-	-	-
Eigenvalue				3.602	2.198	1.666	1.353
% of Total Variance				25.725	15.701	11.901	9.662
Total Variance				63.085%			

Note: factor loadings < .3 are suppressed

Table 5-41 External factors of TVET curricula (Factor analysis)

Thirdly, the communalities were all above 0.4 (see Table 5.41), further confirming that each item shared some common variance with other items. Given these overall indicators, factor analysis was

performed with all the seventeen items.Fourthly, principle components analysis with Varimax (Orthogonal) rotation was used to identify and compute composite coping scores for the factors underlying the short version of the external factors influencing the effective implementation of TVET curricula. Hence, three items have been eliminated because they did not contribute to a simple factor structure. They failed to meet minimum criteria of having a primary factor loading of 0.4 or above and no cross loading above 0.3 of any factor. For instance, item EF 14: "*Research development practice*" had a factor loading between 0.3 and 0.4, item1: "*TVET administrative practice*" had a similar factor loading between 0.3 and 0.6 and item15: "*Globalization influence on TVET*" had also loading between 0.3 and 0.4.

Finally, a principal component factor analysis for the 14 of 17 items was conducted based on the eigenvalue cut-off 1.0. The component matrix yields four factors explaining 26%, 16%, 12% and 10% of the variance respectively. The four-factor solution produced 63% of the variance. (See table 5.41)

Therefore, four items load onto Factor 1.These items are related to the role of legal and political factors for the implementation of TVET CRs. They are labeled "*Legal/political factors*" (such as EF 2: TVET Policy practice, EF 3: *National labor market influence on TVET,* EF 4: *External relation to develop TVET*, and EF 5: *Adaptation of external curriculum (Benchmarking)*).

The next four items load onto factor 2. These items are related to the social and cultural role for the implementation of TVET CRs. They are labeled "*Social/cultural factors*". The factors are EF 9: Employers need to TVET graduates, EF 12: Family influence on TVET, EF 13: Cultural appropriateness to TVET, and EF 14: *Social Attitude to TVET*.

Another 3 items load onto Factor 3. These three items all related to technological roles for the implementation of TVET CRs within the TVET colleges and labeled "*Technological factors*". These are EF 15: *Accessibility of ICT* in TVET colleges, EF 16: *Network & linkage system to develop TVET,* and EF 17: *External technical support to develop TVET*.

The last group was made up of three items related to financial factors for the implementation of CRs and labeled "Financial factors". This fourth factor contains such as EF 6: *Salary of TVET instructors*, EF 7: *Budget allocation to TVET*, and EF 8: *Foreign financial aid to TVET (Donors).*

External factors of CRs factor solution (n=308)

Items	M	SD	Rank
Factor 1: Legal/political factors	3.38	1.654	1
Factor 2: Social/cultural factors	3.37	1.544	2
Factor 3: Technological factors	3.22	2.203	4
Factor 4: Financial factors	3.27	1.643	3
EF 1: TVET administrative practice	3.04	1.620	-
EF 14: Research development	3.14	2.008	-
EF 15: Globalization	3.62	1.602	-

Note: EF-External factor M= Mean SD= standard deviation

Table 5-42 External factors of CRs (Descriptive statistics)

As can be seen from the Table 5.42, the descriptive statistics shows the external factors and individual items dropped out from the factor analysis. Hence, the *Factor 1, Legal/political factors* produced higher mean (M =3.38, SD = 1,654) than *Factor 2, Social/cultural factors* (M = 3.37, SD = 1,544) when compared with the *Factor 3, Financial factors* (M = 3.27, SD = 1,643) or when compared with Factor 4, *Technological factors* (M = 3.22. SD = 2,203), *suggesting that among the external factors, Legal/political factors impacted the highest role on the effective implementation of the CRs followed by Social/cultural factors and Financial factors.*

Legal/political factors for the effective implementation of TVET curricula

The purpose of this part was to examine the similarities and differences that existed due to the intervention of Legal/political factors on the effective implementation of the CRs among TVET institutions and between curricular reform programs and their interaction effect. The assumption of normality was determined to be satisfied for the "*Legal/political factors of TVET curricula*" which were implemented between 2001 and 2010 CRs at college level (Skew. = .281, and kurtosis = -1.033). Furthermore, the assumption of homogeneity of variances was satisfied based on Levene's *F* test, *F* (5, 197) = .932, *P* = .461.

Source	*SS*	*df*	*MS*	*F*	*Sig.*	η^2
CRs	.015	1	.015	.015	.903	.000
Ownership status	6.425	2	3.213	3.245	**.041**	.032
CRs * Ownership Status	.222	2	.111	.112	.894	.001
Error	195.061	197	.990			
Total	202.343	203				

**Interaction effect*

Table 5-43 Legal/political factors of TVET curricula by TVET Institutions & CRs (Factorial ANOVA)

Descriptive statistics

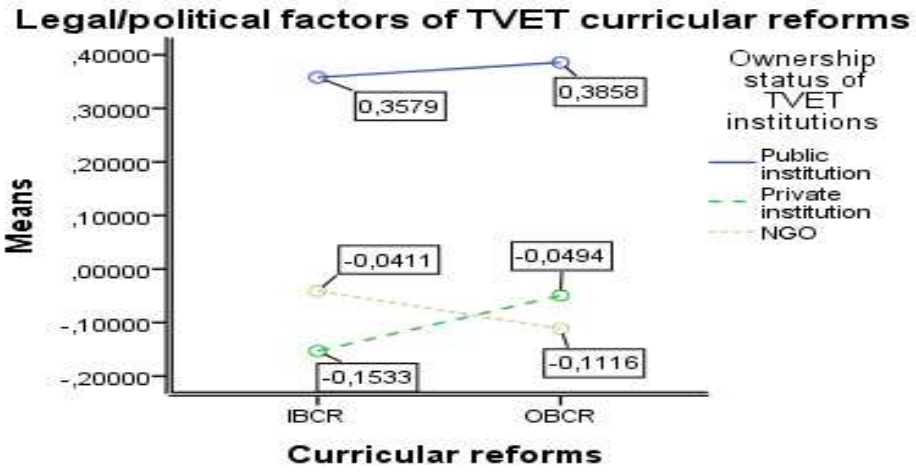
Reforms	*Public institution*		*Private institution*		*NGO institution*		*Marginal*	
	M	SD	M	SD	M	SD	M	SD
IBCR	.358	.257	-.153	.116	-.041	.223	**.054**	**.120**
OBCR	.386	.212	-.049	.132	-.112	.249	**.075**	**.118**
Marginal	**.372**	**.167**	**-.101**	**.088**	**-.076**	**.167**		

Table 5-44 Legal/political factors of TVET curricula (Descriptive statistics)

The legal/political factors for the effective implementation of TVET curricula data (Table 5.43) were analyzed with 2x3, (CRs programs X Ownership Status), the independent between-groups factorial ANOVA produced not a statistically significant main effect for curricular reform programs, $F_{(1,197)}$ = .015, P = .903, η^2 = .000. Thus, the null hypothesis of no difference between means was accepted.

The *main effect* was further investigated by testing the effects of the ownership status of TVET institutions, Public x Private x NGO, towards the role of *Legal/political factors for effective impmementation of TVET curricula* yielded a significant F ratio of $F_{(2,197)}$ = 3,245, P = .041, η^2 = .032. Thus, the null hypothesis of no difference between means was rejected. And therefore, 3.2% (small effect size) of the variance for the legal/political factors for the effective implementation of the TVET curricular was accounted for by the group of TVET institution.

As can be seen in Table 5.44, the mean score was significantly higher in public TVET institutions to (M = .372, SD = .167, N=37), than in private TVET institutions (M = -.101, SD = .088, N=130), p = .027, However, it was not significant to compare with NGO TVET institutions (M = - .076, SD = .167 N=36), p = .136. The *interaction effect*, on the other hand, investigated the role of *Legal/political factors* for effective impmementation of TVET curricula that yielded a non-significant F ratio, $F_{(2,197)}$ = .112, P = .894, η^2 = .000, indicating that the null hypothesis of no difference between means was accepted for the interaction. A line graphical representation of the means for the legal/political factors for the effective implementation of TVET curricula is presented in Figure 5. 13.



Note: Mean is set to 0 and the standard deviation is set to 1.

Figure 5-13: Legal/political factors of TVET curricula

In summary, the findings points out that the Legal/political factors have impacted on the effective implementation of TVET CRs with significant variation among the ownership status, where the legal/political factors have impacted more on public institutions than private TVET institutions with small effect size. However, the interaction effect and the main effect for the type of reforms shade no any light on the difference due to the interventions of the Legal/political factors for the effective implementation of the CRs.

Social/cultural factors for the effective implementation of TVET curricula

The purpose of this part was to examine the similarities and differences that existed due to the intervention of social/cultural factors on the effective implementation of the CRs among TVET institutions and between curricular reform programs and their interaction effect. The assumption of normality was determined to be satisfied for the "*Social/cultural factors of TVET curricula*" which were implemented between 2001 and 2010 CRs in TVET institutions (Skew. = .273, and kurtosis = -.622). Furthermore, the assumption of homogeneity of variances was not satisfied based on Levene's *F* test, *F* (5, 197) = 5,956, *P* = .000. However, we continue the analysis (Howell, 2010).

Source	*SS*	*df*	*MS*	*F*	*Sig.*	η^2
Types of CRs	.887	1	.887	.906	.342	.005
Ownership status	10.443	2	5.222	5.333	*.006*	.051
CRs * Ownership Status	.475	2	.237	.242	.785	.002
Error	192.873	197	.979			
Total	205.162	203				

Table 5-45 Social/cultural factors of TVET curricula by TVET Institutions & CRs (Factorial ANOVA)

Descriptive statistics

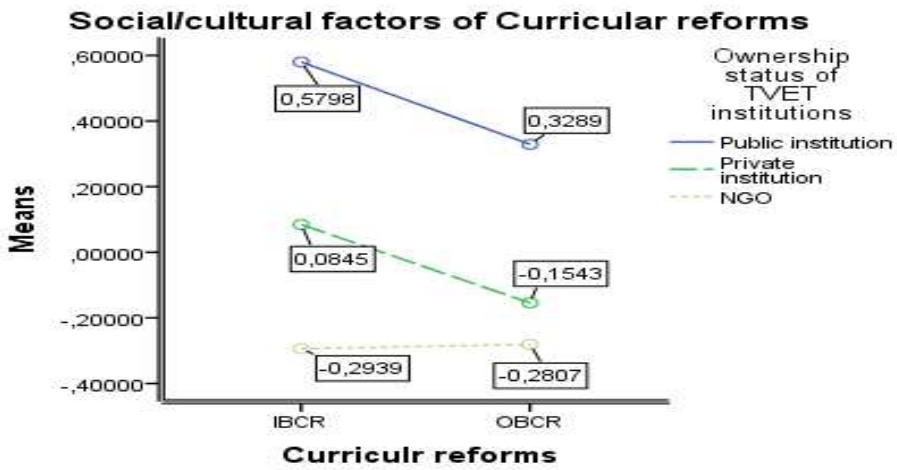
Reforms	*Public institution*		*Private institution*		*NGO institution*		*Marginal*	
	M	SD	M	SD	M	SD	M	SD
IBCR	.580	.255	.084	.116	-.294	.221	**.123**	**.119**
OBCR	.329	.211	-.049	-.154	-.281	.247	**-.035**	**.117**
Marginal	**.454**	**.166**	**-.035**	**.087**	**-.287**	**.166**		

Table 5-46 Social/cultural factors of TVET curricula (Descriptive statistics)

As can be seen on the Table 5.45 above, Social/cultural factors for the effective implementation of TVET curricula data were analyzed with 2x3, (CRs programs X Ownership Status), the independent between-groups factorial ANOVA produced not a statistically significant main effect for curricular reform programs, $F_{(1,197)} = .906$, $p = .342$, $\eta^2 = .000$. Thus, the null hypothesis of no difference between means was accepted.

The *main effect* was also investigated variation among the ownership status of TVET institutions, Public x Private x NGO, towards the role of *Social/cultural factors* for effective impmementation of TVET curricula yielded a significant *F* ratio of $F_{(2,197)} = 5{,}333$, $p = .006$, $\eta^2 = .051$. Thus, the null hypothesis of no difference between means was rejected. And therefore, 5.1% (medium effect size) of the variance for the *Social/cultural factors* for the effective implementation of the TVET curricular was accounted for by the group of TVET institution. As can be seen in Table 5.46, the mean score was significantly higher in public TVET institutions to (M = .454, SD = .166, N = 37), than in private TVET institutions (M = -.035, SD = .087, N = 130), $p = .041$, or when compare public with NGO TVET institutions (M = - .287, SD = .166 N = 36), $p = .006$.

The *interaction effect* for the role of *Social/cultural factors* for effective impmementation of TVET curricula yielded a non-significant *F* ratio, $F_{(2,197)} = .242$, $p = .785$, $\eta^2 = .000$, indicating that the null hypothesis of no difference between means was accepted for the interaction. Figure 5. 14 displays a line graphical representation of the means for the *Social/cultural factors* for the effective implementation of TVET curricula.



Note: Mean is set to 0 and the standard deviation is set to 1.

Figure 5-14: Social/cultural factors of TVET curricula

Generally, the social/cultural factors have impacted on the effective implementation of CRs with significant variation among the ownership status of TVET institutions, where these factors have influenced more on public than private and NGO's institutions for effective implementation of the CRs with medium effect size. However, the impact of the social/ cultural factors on effectiveness has created no difference between the IBCR and the OBCR, in addition to the interaction effect.

Technological factors for the effective implementation of TVET curricula

The purpose of this part was to examine the similarities and differences that existed due to the intervention of technological factors on the effective implementation of the CRs among TVET institutions and between curricular reform programs and their interaction effect. The assumption of normality was determined to be satisfied for the "*Technological factors of TVET curricula*" in TVET institutions (Skew. = .061, and kurtosis = -1.156). Furthermore, the assumption of homogeneity of variances was satisfied based on Levene's *F* test, F (5, 197) = 1.774, p = .120.

Source	*SS*	*df*	*MS*	*F*	*Sig.*	η^2
Types of CRs	34.786	1	34.786	43.891	**.000**	.182
Ownership status	.118	2	.059	.075	.928	.001
CRs * Ownership Status	.852	2	.426	.538	.585	.005
Error	156.136	197	.793			
Total	203.144	203				

**Interaction effect.*

Table 5-47 Technological factors of TVET curricula by TVET Institutions & CRs (Factorial ANOVA)

Descriptive statistics

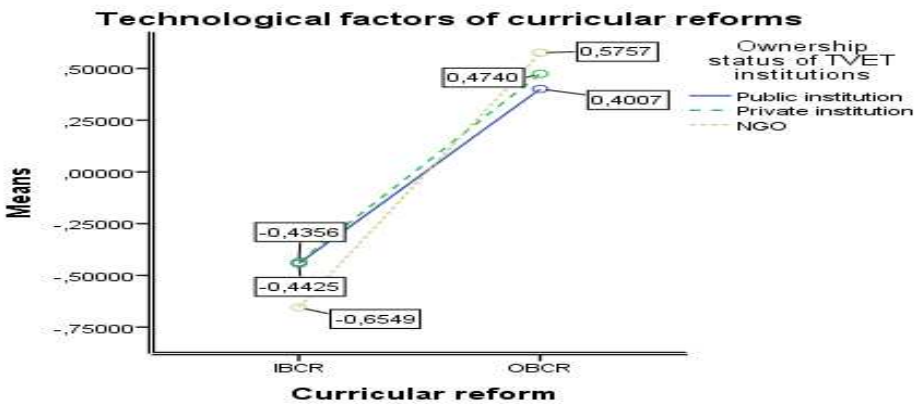
Reforms	*Public institution*		*Private institution*		*NGO institution*		*Marginal*	
	M	SD	M	SD	M	SD	M	SD
IBCR	-.443	.230	-.436	-.655	.199	.221	**-.511**	**.107**
OBCR	.401	.190	.474	.118	.576	.223	**.483**	**.105**
Marginal	**-.021**	**.149**	**.019**	**.079**	**-.040**	**.149**		

Table 5-48 Technological factors of TVET curricula (Descriptive statistics)

The *technological factors* for the effective implementation of TVET curricula data were analyzed with 2x3, (CRs programs X Ownership Status) (Table 5.47). The independent between-groups factorial ANOVA produced a statistically significant main effect for curricular reform programs, $F_{(1,197)} = 43{,}891$, $P < .000$, $\eta^2 = .182$, where OBCR produced higher mean (M = .483, SD = .105, N = 37), than IBCR (M = -.511, SD = .107, N = 130) (Table 5.48). Thus, the null hypothesis of no difference between means was rejected. As a consequence, the group of curricular reform programs accounted for 18.2% (large effect size) of the variance for the effective implementation of the TVET curricular due to the interventions of Technological factors.

The *main effect* was further investigated that the ownership status of TVET institutions, (Public x Private x NGO), the impact of *Technological factors* on effective impmementation of TVET curricula yielded a non-significant *F* ratio of $F_{(2,197)} = .075$, $P = .928$, $\eta^2 = .000$. Thus, the null hypothesis of no difference between means was accepted.

The *interaction effect* was also investigated that the role of *Technological factors* for effective impmementation of TVET curricula yielded a non-significant *F* ratio, $F_{(2,197)} = .538$, $P = .585$, $\eta^2 = .000$, indicating that the null hypothesis of no difference between means was accepted. A line graphical representation of the means for *technological factors* for the effective implementation of TVET curricula is presented in Figure 5. 15.



Note: Mean is set to 0 and the standard deviation is set to 1.

Figure 5-15: Technological factors of TVET curricula

To sum up, the *Technological factors* have impacted on the effective implementation of TVET CRs with significant variation between the IBCR and the OBCR, where the impact of the technological factors on effectiveness was higher during OBCR than IBCR with large effect size. However, the impact of the *technological factors* on effectiveness has created no difference among the ownership status of TVET institutions, in addition to the interaction effect.

Financial factors for the effective implementation of TVET curricula

This part intended to examine the similarities and differences that existed due to the intervention of *financial factors* on the effective implementation of the CRs among TVET institutions and between curricular reform programs and their interaction effect. The assumption of normality was determined to be satisfied for the "*Financial factors* "(Skew. = -.167, and kurtosis = -.223). Furthermore, the assumption of homogeneity of variances was satisfied based on Levene's *F* test, *F* (5, 197) = 2,191, *p* = .057.

Source	*SS*	*df*	*MS*	*F*	*Sig.*	η^2
Types of CRs	.003	1	.003	.003	.958	.000
Ownership status	6.308	2	3.154	3.334	**.038**	.033
CRs * Ownership Status	1.097	2	.549	.580	.561	.006
Error	186.341	197	.946			
Total	194.074	203				

**Interaction effect*

Table 5-49 Financial factors of TVET curricula by TVET Institutions & CRs (Factorial ANOVA)

Descriptive statistics

Reforms	*Public institution*		*Private institution*		*NGO institution*		*Marginal*	
	M	SD	M	SD	M	SD	M	SD
IBCR	.365	.251	-.004	.114	-.020	.217	**.114**	**.117**
OBCR	.383	.207	-.188	.129	.173	.243	**.123**	**.115**
Marginal	**.374**	**.163**	**-.096**	**.086**	**.077**	**.163**		

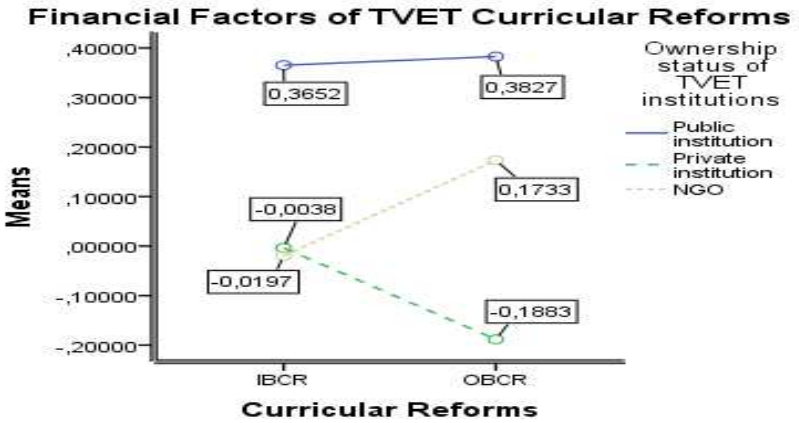
Table 5-50 Financial factors of TVET curricula (Descriptive statistics)

Table 5.49 displays the result of the *financial factors* for the effective implementation of TVET curricula. Data were analyzed with 2x3, (CRs programs X Ownership Status). The independent between-groups factorial ANOVA produced not a statistically significant *main effect* for curricular reform programs, $F_{(1,197)} = .003$, $p = .958$, $\eta^2 = .000$. Thus, the null hypothesis of no difference between means was accepted.

The *main effect* was further investigated by testing the simple main effects of the ownership status of TVET institutions, Public x Private x NGO. As a result, the impact of *Financial factors* on effective impmementation of TVET curricula yielded a significant *F* ratio of $F_{(2,197)}$ = 3,334, p = .038, η^2 = .033. Thus, the null hypothesis of no difference between means was rejected. And therefore, small effect of 3.3% of the variance for the *Financial factors* was accounted for by the group of TVET institution.

As can be seen in Table 5.50, the mean score was significantly higher in public TVET institutions to (M = .374, SD = .163, N = 37), than in private TVET institutions (M = -.096, SD = .086, N = 130), p = .037, However, it was not significant to compare with NGO TVET institutions (M = - .077, SD = .163 N = 36), p = 364.

However, the *interaction effect* investigated that the impact of *Financial factors on* effective impmementation of TVET curricula yielded a non-significant *F* ratio, $F_{(2,197)}$ = .580, P = .561, η^2 = .000, indicating that the null hypothesis of no difference between means was accepted for the interaction. Figure 5.16 displays a line graphical representation of the means for the *financial factors* for the effective implementation of TVET curricula.



Note: Mean is set to 0 and the standard deviation is set to 1.

Figure 5-16: Financial factors of TVET curricula

In summary, the *financial factors* have impacted on the effective implementation of CRs with significant variation among the ownership status of TVET institutions, where these factors have influenced more on public than private institutions with small effect size. However, the impact of the *financial factors* on effectiveness has created no difference between the IBCR and the OBCR, in addition to the interaction effect.

Administrative, research and globalization: external factors (t-test): Dropped out items from scale 9-External factors

To test the hypothesis that the IBCR and OBCR were associated with statistically significantly different mean *of different items*, an independent samples t-test was performed for three different items dropped out from factor analysis for being not meeting the requirements. These are, scale *9 EF1: TVET administrative practice in the implementation of TVET CRs, EF13: Research development practice in the implementation of TVET CRs and EF 16: Globalization influence on the implementation of TVET CRs.*

Between these two items were significant such as Scale 9-EF1: *TVET administrative practice* and Scale 9-EF15: *Globalization influence on TVET*. Hence, the distributions for normality were sufficient for two items Scale 9-EF1: TVET administrative practice (skew.170 & kurtosis -1.468), and Scale 9-EF15: Globalization influence on TVET (skew-.156 & kurtosis -1.092) (Schmider, et al., 2010). Furthermore, the assumption of homogeneity of variances was tested and satisfied via Levene's *F* test, for Scale 9-EF1: TVET administrative practice *F* (282) = ,754, *p* = 0 .386, and Scale 9-EF15: Globalization influence on TVET *F* (214) = 2,071, *p* = 0 .152. (Table 5.58).

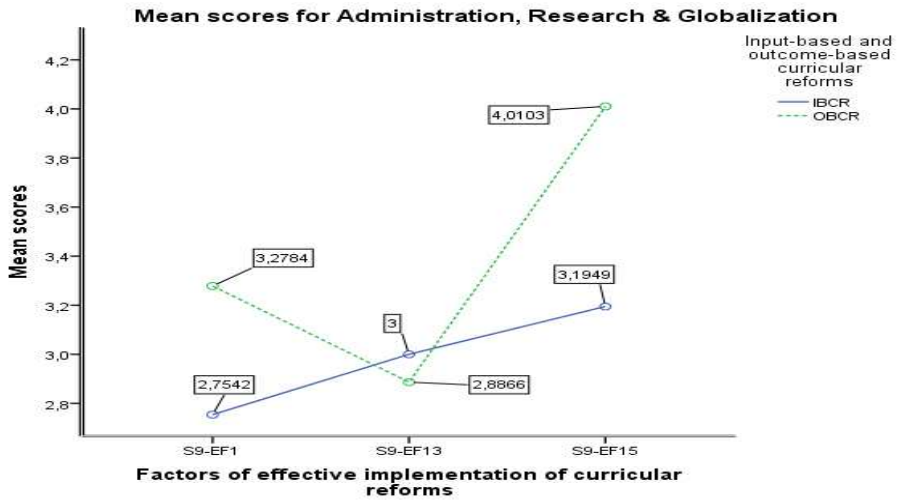
				Levene-Test		T-Test			
Items	Reform Program	Mean	SD	F	Sig.	T	df	Sig. (2-tl)	d
Scale 9-EF 1: TVET administrative practice	IBCR	-2.78	1.688	.754	.386	-2.494	282	.013	.307
	OBCR	3.27	1.496						
Scale 9-EF 15: Globalization influence on TVET	IBCR	4.01	1.496	2.071	.152	-3.955	214	.000	.540
	OBCR	3.18	1.577						

Table 5-51 TVET Administration & Globalization by IBCR & OBCR (t-test)

The t-test shows, Scale 9-EF 1: *TVET administrative practice*, a statistically significant difference between IBCR and OBCR *t*(281) = 2,330, *p* = .020, *d* = .307, suggesting that the TVET administration practice were higher mean during the implementation of the OBCR (M = -3.27, SD = 1.603) than the IBCR (M = -2.78, SD = 1.688). Cohen's d was estimated at, 0.307, which is a small effect size based on Cohen's (1988).

The t-test also shows for Scale 9-EF 15: *Globalization influence* on TVET, statistically significant difference between IBCR and OBCR *t*(281) = 2,330, *p* = .020, *d* = .540, suggesting that globalization influence on TVET has higher mean during the implementation of the IBCR (M = .401, SD = 1.496) than the OBCR (M = 3.18, SD = 1.577). Cohen's d was estimated at, 0.540, which is a medium effect size based on Cohen's (1988).

However, the independent sample t-test for Scale 9-EF 13: *Research development practice in the implementation of TVET CRs* $t(284) = -2{,}494$, $p = .281$, $d = -.000$, suggesting that the *research development practice for effective implementation of TVET CRs* produced no significant difference between the IBCR and OBCR. A line graph for the means is displayed in Figure 5.17.



NB: *S9-EF1: TVET administrative practice, S9-EF13: Globalization influence on TVET, S9-EF15: research development practice*

Figure 5-17: Administrative, research & globalization factors of TVET curricula reforms

In summary, the *Administrative, research development & globalization factors* have impacted on the effective implementation of TVET CRs with significant variation between the types of CRs, where administrative factor has impacted more on OBCR than IBCR with small effect size whereas, the impact of the *globalization* has impacted more on IBCR than OBCR with medium effect size. However, *research development practice* has created no difference on effectiveness between the IBCR and the OBCR.

Administrative, research and globalization: external factors (ANOVA)

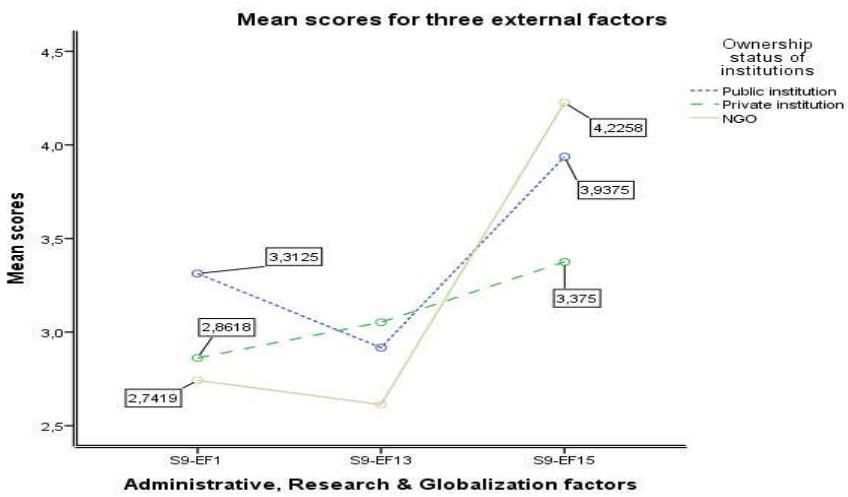
To test the mean difference between the types of TVET institutions, ANOVA was performed for three different items, which was dropped out of the group of factors for being not meeting the minimum requirements. These are: *Scale 9 EF 1: TVET administrative practice, EF 13: Research development practice and EF 16: Globalization influence on the implementation of TVET CRs.* Hence, the assumption of *normality* was evaluated and found significant for Scale 9-EF15: Globalization influence on TVET (skew-.156 & kurtosis -1.092) (Schmider, et al., 2010). Furthermore, the assumption of homogeneity of variances was not tenable based on Levene's F test, for Globalization F (2,229) = 4,510, p = 0 .016.

ITEMS	*Types of institution*	*Mean*	SD	*df*	*F*	*Sig.*	η^2
Scale 9-EF 15: Globalization influence on TVET	Public	3.94	1.405	2	4.510	.012	.038
	Private	3.38	1.530	229			
	NGO	4.13	1.897	231			

Table 5-52 Globalization influence on curriculum by TVET Institutions (ANOVA)

Table 5.52 shows the independent between-groups ANOVA produced for Scale 9-EF 15: Globalization influence on TVET $F_{(2,229)}$ = 4,510, P = .012, η^2 = .038. Thus, the null hypothesis of no difference between means was rejected for Scale 9-EF15 (eta^2 = .038), small effect size (Cohen 1988). Thus, 3.8% of the variance was accounted for by the group of TVET institution.

Post hoc comparisons tests revealed significant pairwise differences between the mean scores of institutions. Consequently, Scale 9-EF 15: Globalization influence on the implementation of TVET CRs has higher mean in NGO's TVET institutions (M = 4.13, SD = 1.897, N = 32), than private TVET institutions (M = 3.38, SD = 1.530, N = 152), p = .038. Comparative with Public TVET institutions (M = 3.94, SD = 1.405, N = 48), p = .258 was not significant. This suggesting that globalization has impacted more on NGO's effective implementation of the CR. A visual depiction of the means and a line graph is displayed in Figure 5.18.



NB: *S9-EF1: TVET administrative practice, S9-EF13: Globalization influence on TVET, S9-EF15: Research development practice*

Figure 5-18: Administrative, Research & Globalization factors (ANOVA)

Generally, *globalization factors* have impacted on the effective implementation of TVET CRs with significant variation between the types of TVET institutions, where globalization impacted mote on NGO's institutions than private institutions with small effect size However, *research development*

practice and administrative practice have created no difference on effectiveness among the type of TVET institutions.

External factors of TVET curricula by instructors and principals

In this scale 6 (External factors), the inferential statistics shows there are no statistically significant differences between instructors and principals for 16 items by running t-test ($p > .05$) on group responses in terms of *external factors of effective implementation*. The t-test ($p > .05$) results in no statistically significant mean differences for 16 items in the scale 6. However, Item 13: *Accessibility of ICT in TVET colleges* was significant. Thus, the result of the t-test shows, $t(107) = -2.640$, $p = .010$, $d = 0.35$, suggesting that the accessibility of ICT appeared to be driver for effective implementation of the curriculum was more supported by instructors (M = 3.13, SD = 2.112, N = 253) than principals (M = 2.49, SD = 1.489, N = 55). Cohen's d was estimated at 0.35, which is a small effect size (Cohn 1988). Hence, the null hypothesis is rejected only for item 13 under scale 6.

The independent samples t-test was also conducted to identify the differences between instructors and principals on a group factors. For example, for *Legal/political* factors, *Social/cultural* factors, *Technological* factors, *Financial* factors, *TVET administrative practice*, *Research development*, and *Globalization*, which results in statistically ($p > 0.05$) non-significant effects, $F_{(1,213)} = -.085$, $p = .954$, $F_{(1,213)} = -1.482$, $p = .140$, $F_{(1,75)} = 1.905$, $p = .061$, and $F_{(1,83)} = -.086$, $p = .923$, $F_{(1,304)} = 1.903$, $p = .493$, $F_{(1,86)} = -.085$, $p = .060$, $F_{(1,230)} = .276$, $p = .783$, respectively, suggesting that the null hypothesis is accepted for all group factors in the external factors.

5.4.9 Impact indicators of TVET CRs (Scale 7)

This part was intended to investigate the hypothesis that there is variation between type of reforms and between type of institutions in terms of impact indicators of the CRs in Ethiopia, which was implemented between 2001 and 2010. As a result, to provide the perception of respondents regarding nine indicators, such as enrollment, graduation, quality, competency, assessment, cost-effectiveness, methodology, and time schedule of the curriculum during CRs, a question was stated as "*TVET CRs in my area of study at my institution have positive impact*:" The comparisons are presented as follows.

Impact indicators of CRs by reform programs (IBCR & OBCR)

In the first place, to test the hypothesis that the IBCR and OBCR were associated with statistically significantly different mean *impact indicators of TVET CRs (scale 7)*, an independent samples t-test was performed for nine items. The distributions for normality were sufficient for nine items in the scale 5. The items are: *IR 1: Access to new programs (Subjects/trades enrollment) in my area of study (2001-2010)* (skew .081 & kurtosis -1.537), *IR 2: Graduation rates in my area of study (2001-2010)* (skew -.086 & kurtosis -1.504), *IR 3: Employability of graduates in my area of study (2001-2010)* (skew .005 & kurtosis -1.496), *IR 4: Quality of education in my area of study (2001-2010)* (skew -.158 & kurtosis -1.408), *IR 5: Creating a competent/skilled workforce (2001-2010)* (skew .166 & kurtosis -1.414), *IR 6: Creating access to trainees for competence assessment (COC)(2001-2010)* (skew .143 & kurtosis -1.572), *IR 7: Cost-effectiveness (2001-2010)* (skew .445 & kurtosis -1.274), *IR 8: New methods of training (2001-2010)* (skew .156 & kurtosis -1.373), and *IR9: Time table /schedule adjustment of course hours(2001-2010)* (Schmider, et.al, 2010).

A total of four items were significant out of nine items, hence, the assumption of homogeneity of variances was tested for four items and satisfied via Levene's *F* test, for *IR 2: Graduation rates* $F(284) = 1{,}824$, $p = 0\ .178$., *IR6: access to competence assessment*, $F(284) = 3{,}674$, $p = 0\ .056$., *IR 7: Cost-effectiveness*, $F(284) = ,002$, $p = 0\ .967$, *IR 9: Time adjustment of course hours*, $F(284) = 2{,}557$, $p = 0\ .312$., (Table 5. 53).

Impact indicators of CRs

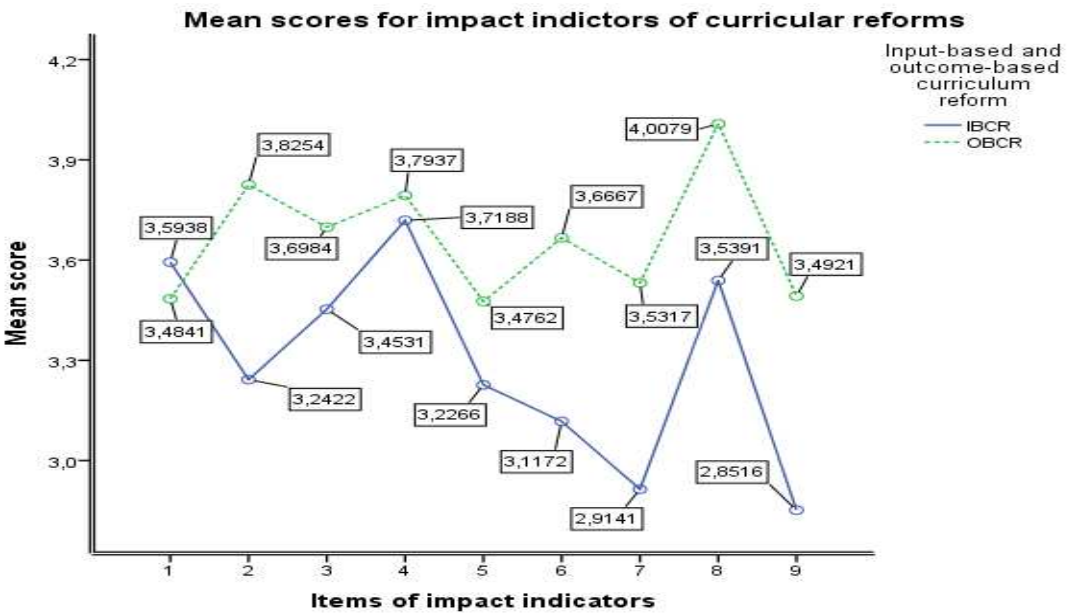
				Levene-Test		T-Test			
Items	Reform Program	Mean	SD	F	Sig.	T	df	Sig. (2-tl)	d
IR 2: Graduation rates	IBCR	3.15	1.762	1.824	.178	-3.569	282	.000	.425
	OBCR	3.87	1.623						
IR 6: access to competency assessment	IBCR	3.23	1.540	3.674	.056	-2.099	283	.037	.252
	OBCR	3.64	1.678						
IR 7: Cost-effectiveness	IBCR	3.01	1.696	.002	.967	-3.182	280	.002	.375
	OBCR	3.63	1.606						
IR 9: Time adjustment of course hours	IBCR	2.87	1.609	2.557	.111	-3.650	275	.000	.445
	OBCR	3.60	1.672						

Table 5-53 Impact indicators of CRs by IBCR & OBCR (t-test)

The *t*-test shows the association between the IBCR and the OBCR were statistically significant effect for IR 2: Graduation rates $t(282) = -3{,}569$, $p < .001$, $d = .425$, IR 6: access to competence assessment $t(283) = -2{,}099$, $p = .037$, $d = .252$, IR 7: Cost-effectiveness $t(280) = -3{,}182$, $p = .002$,

d = .375, *IR 9: Time adjustment of course hours* t(275) = -3,650, p < .001, d = .445, suggesting that *IR 2: Graduation rates was higher during* OBCR (M = 3.87 SD = 1.623, N = 135) than the IBCR (M = 3.15, SD = 1.762, N = 149) Cohen's d was estimated at 0.425, closer to medium effect size. Further, *IR6: creating access to competency assessment* were also the higher during OBCR (M = 3.64 SD = 1.567, N = 136) than the IBCR (M = 3.23 SD = 1.678, N = 149) Cohen's d was estimated at 0.252, a small effect size. Further, for IR7: *Cost-effectiveness* of the reforms were also higher mean during OBCR (M = 3.63 SD = 1.606, N = 134) than the IBCR (M = 3.01 SD = 1.696, N = 149) Cohen's d was estimated at 0.375, a small effect size. Finally, for IR9: *Timetable adjustment of training course hours* also higher mean during OBCR (M = 3.60 SD = 1.672, N = 134) than the IBCR (M = 2.87 SD = 1.609, N = 143) Cohen's d was estimated at 0.445, closer to a medium effect size.

However, the independent sample t-test show not a statistically significant effect for IR1: *t*(278) = .177, *p* = .860, *d* =.00, IR 3: *t*(277) = -,555, *p* = .579, *d* =.00, IR 4: *t*(278) = -.349, *p* = .727, *d* =.00, IR 5: *t*(279) = -.801, *p* = .424, *d* = .00, and IR 8: *t*(282) = -1,687, *p* = .093, *d* =.00, suggesting that these 5 impact indictors of CRs, did not shed any further light on the issues of significant difference between the IBCR and OBCR. A line graphical representation of the mean is displayed in Figure 5. 19.



NB: IR1: Enrollment rate, IR2: Graduation rates, IR3: Employability of graduates, IR4: Quality of education, IR5: Creating a competent/skilled workforce, IR6: competence assessment, IR7: Cost-effectiveness, IR8: New methods of training, IR9: Time table adjustment of course hours

Figure 5-19: Impact indicators of TVET CRs (t-test)

In summary, the above findings suggest that the CRs implemented in Ethiopia since 2001 have impacted on the indicators such as "Enrollment rate, Graduation rates, Employability of graduates, Quality of education, creating a competent/skilled workforce, competence assessment, Cost-effectiveness, New methods of training, and Time table adjustment of course hours". However, the variation was existed between the IBCR and the OBCR, where the OBCR produced higher mean than the IBCR on items such as graduation rate, access to competency assessment, cost effectiveness and time allotment of course hours, but the effect size for these items was small.

Impact indictors of TVET curricula (by types of TVET institutions)

In the second place, the assumption of *normality* was evaluated for each item in the scale 5:"*impact indicators of CRs conducted* during the implementation of the CRs, prior to conduct the ANOVA, and normality was determined to be satisfied for all items in the scale (*See* on the t-test above.)

Eight out of nine items were significant. Hence, the assumption of homogeneity of variances was satisfied based on Levene's F test, for IR *1: Access to enrollment F* (2,298) = 5,531, p = .399, *IR 3: Employability of graduates F* (2, 297) = 6,684, p = .103, However, homogeneity of variance was not satisfied for *IR 2: Graduation rates F* (2, 303) = 3.682, p < .001. *IR 4: Quality of education, F* (2, 299) = 8,846, p = .003. *IR5: Creating a competent/skilled workforce F* (2, 300) = 3,097, P < .001 *IR 7: Cost-effectiveness of training F* (2, 301) = 7,531, P = .006. *IR 8: New methods of training F* (2, 303) = 3,085, p = .009, *IR 9: Timetable adjustment of course hours F* (2, 296) = 4,256, p < .001. However, we continue the analysis since ANOVA in many cases, considered a robust statistics in which assumptions can be violated with relatively minor effect (Howell, 2010).

Table 5.54 below shows the independent between-groups ANOVA produced for *IR 1: Access to enrollment, F* (2,298) = 5,531, p = .004, *IR 2: Graduation rates F* (2, 303) = 3,682, P = .026. *IR 3: Employability of graduates F* (2, 297) = 6,684, p = .001, *IR 4: Quality of education F* (2, 299) = 8,846, p < .001. *IR 5: Creating a competent/skilled workforce F* (2, 300) = 3,097, p = .047 *IR 7: Cost-effectiveness of training F* (2, 301) = 7,531, p = .001. *IR 8: New methods of training F* (2, 303) = 3,085, p = .047, *IR 9: Timetable adjustment of course hours F* (2, 296) = 4,256, p = .015.

ITEMS	*Types of Institution*	*Mean*	SD	*df*	*F*	*Sig.*	η^2
IR 1: Access to enrollment	Public	3.98	1.712	2	5.531	.004	.036
	Private	3.35	1.737	298			
	NGO	4.11	1.797	300			
IR 2: Graduation rates	Public	3.96	1.799	2	3.682	.026	.024
	Private	3.28	1.613	303			
	NGO	4.12	1.955	305			
IR 3: Employability of graduates	Public	3.49	1.872	2	6.684	.001	.043
	Private	3.44	1.519	297			
	NGO	4.33	1.796	299			
IR 4: Quality of education	Public	4.07	1.781	2	8.846	.000	.056
	Private	3.56	1.596	299			
	NGO	4.58	1.372	301			
IR 5: Creating a competent/skilled workforce	Public	3.54	1.774	2	3.097	.047	.020
	Private	3.32	1.618	300			
	NGO	3.94	1.331	302			
IR 7: Cost-effectiveness of training	Public	3.12	1.626	2	7.531	.001	.048
	Private	3.11	1.554	301			
	NGO	4.08	1.874	303			
IR 8: New methods of training	Public	4.11	1.760	2	3.085	.047	.020
	Private	3.71	1.500	303			
	NGO	4.25	1.831	305			
IR 9: Time table adjustment of course hours	Public	3.36	1.612	2	4.256	.015	.028
	Private	3.05	1.564	296			
	NGO	3.80	2.079	298			

Table 5-54 Impact indictors of CRs by TVET Institutions (ANOVA)

Thus, the null hypothesis of no difference between means was rejected for Items IR 1, IR 2, IR 3, IR 4, IR 5, IR 7, IR 8 and IR 9. However, the actual difference in the mean scores between groups had small size Partial Eta square for IR 1 (eta^2 = .036), IR 2 (eta^^{2} = .024), IR 3 (eta^^{2} = .043), IR 5, (eta^^{2} = .020), IR 7, (eta^^{2} = .048), IR 8 (eta^^{2} = .020) and NR 9 (eta^^{2} = .028) but closer to medium size for IR 4 (eta^^{2} = .056). Therefore, IR 1 3,6%, IR 2 2,4% IR 3 4.3%, IR4 2.0%, IR 5 2.0% IR74.8% IR8 2.0%, and IR 9 2.8% of the variance in the CR in terms of impact indicators of CRs were accounted for by the group of TVET institution.

Post hoc comparisons to evaluate pairwise differences among group means were conducted using Tukey HSD test since equal variances were tenable for IR 1, & IR 3 but unequal variance for IR 2, IR 4, IR 5, IR 7, GR8 & GR 9. Tests revealed significant pairwise differences between the mean scores of institutions for each item in the scale 5: *impact indicators of CRs* during the implementation of CRs.

Therefore, *IR 1: Access to enrollment* was lower in Private TVET institutions (M = 3.35, SD = 1.737, N = 197), than Public TVET institutions (M = 3.98, SD = 1.712, N = 57), p = .039 or when compare to NGO's TVET institutions (M = 4.11, SD = 1.797, N = 47). *IR2: Graduation rates* was higher in NGO's TVET institutions (M = 4.12, SD = 1,955, N = 50), than Private TVET

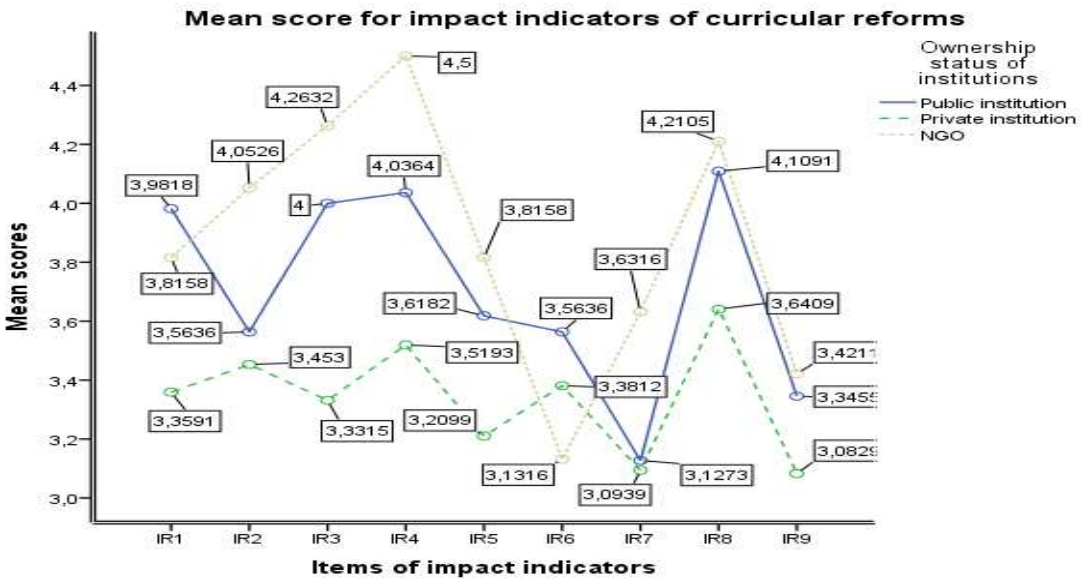
institutions (M = .3.28, SD = 1,613, N = 199), *p* = .019, however post HOC comparison shows comparative with Public TVET institutions was not significant (M = 3.96, SD = 1,799, N = 56).

IR 3: Employability of graduates higher were lower in private TVET institutions, (M = 3.44, SD = 1,519, N = 199) than NGO's TVET institutions (M = 4.33, SD, = 1.796, N = 45), *p* = .003, however post HOC comparison shows comparative with Public TVET institutions was not significant (M = 3.49, SD = 1,872, N = 57). *IR 4: Quality of education* was lower in private TVET institutions, (M = 3.56, SD = 1,596, N = 195) than NGO's TVET institutions (M = 4.58, SD = 1.372, N = 50), *p* = .001, however post HOC comparison shows comparative with Public TVET institutions was not significant (M = 4.07, SD = 1,781, N = 57).

IR 5: Creating a competent/skilled workforce was lower in private TVET institutions, (M = 3.32, SD = 1,618, N = 196) than NGO's TVET institutions (M = 3.94, SD = 1.331, N = 50), *p* = .039, however post HOC comparison shows comparative with Public TVET institutions was not significant (M = 3.54, SD = 1,774, N = 57). *IR 7: Cost-effectiveness of training* was higher in NGO's TVET institutions (M = 4.08, SD = 1.874, N = 51), than Public TVET institutions (M = 3.12, SD = 1.626, N = 57), *p* = .007 or when compare to Private TVET institutions (M = 3.11, SD = 1.554, N = 198), *p* = .001.

IR 8: New methods of training was higher in NGO's TVET institutions (M = 4.25, SD = 1.831, N = 51), than Public TVET institutions (M = 4.11, SD = 1.760, N = 57), *p* = .007 or when compare to Private TVET institutions (M = 3.71, SD = 1.500, N = 198), *p* = .001.

IR 9: Time table adjustment of course hours was lower in private TVET institutions, (M = 3.05, SD = 1,612, N = 192) than NGO's TVET institutions (M = 3.80, SD = 2.079, N = 51), *p* = .013, however post HOC comparison shows comparative with Public TVET institutions was not significant (M = 3.36, SD = 1,612, N = 56). Hence, comparisons indicated that the impact indicators of CRs depend on the type of institutions. A line graphical representation of the means for the impact indicators of TVET curricula is presented in Figure 5.20.



NB: IR1: Enrollment rate, IR2: Graduation rates, IR3: Employability of graduates, IR4: Quality of education, IR5: Creating a competent/skilled workforce, IR6: competence assessment, IR7: Cost-effectiveness, IR8: New methods of training, IR9: Time table adjustment of course hours

Figure 5-20: Impact indicators of TVET CRs (ANOVA)

To sum up, the above findings highlights that the TVET CRs implemented in Ethiopia since 2001 have impacted on eight indicators. As a result, the variation was existed among the type of TVET institutions, in terms of the impact indicators, such as "Enrollment rate, Graduation rates, Employability of graduates, Quality of education, Creating a competent/skilled workforce, Cost-effectiveness, New methods of training, and Timetable adjustment of course hours", where the NGO's TVET institutions produced higher mean, than public and private TVET institutions. However, the effect size for these items was small.

Impact indicators of TVET CRs by instructors and principals

In this scale 7(Impact indicators), the inferential statistics shows there are no statistically significant differences between instructors and principals for 6 items by running t-test ($p > .05$) on group responses in terms of *impact indicators*. The t-test ($p > .05$) results in no statistically significant mean differences for 6 items in the scale 7. However, two items were found to be significant, such as Item 1: *Access the program of study (enrolment rate) and* Item 6: *Creating access to trainees for competence assessment* (COC).

Thus, the result of the t-test shows significant for item 1, $t(299) = 2.850$, $p = .005$, $d = 0.44$, suggesting that the CRs have positive impact on enrolment rate is more supported by instructors (M = 3.72, SD = 1.756, N = 253) than principals (M = 2.98, SD = 1.639, N = 55) Cohen's was estimated at 0.44 which is a small effect size based on Cohn's d (Cohn 1988). Hence, the null

hypothesis is rejected for item 1 in scale 7. And also significant for item 6, $t(305) = -3.665$, $p < .001$, $d = 0.54$, suggesting that the CRs have positive impact on competency assessment is less supported by instructors (M = 3.25, SD = 1.580, N = 253) than principals (M = 4.13, SD = 1.705, N = 55) Cohen's was estimated at 0.54 which is a medium effect size (Cohn 1988). Hence, the null hypothesis is rejected for item 6 in scale 7.

5.4.10 **Graduate relevance of TVET CRs (Scale 8)**

The purpose of this section was to investigate the similarities and difference between type of reforms and type of TVET institutions regarding graduate relevance of the TVET CRs. As a result, a question was stated as "*How do you agree/disagree the effect relevance of the CRs in your area of study regarding TVET graduates*". Respondents were replied based on the Likert scale from strongly disagree to strongly agree.

Graduate relevance of CRs by reform programs (IBCR & OBCR)

Firstly, we test the hypothesis that the IBCR and OBCR were associated with statistically significantly different mean for *graduate relevance of TVET CRs (scale 6)*. An independent samples t-test was performed for six items. The distributions for normality were sufficient for six items in the scale 6. The items are: *GR 1:* (skew .350 & kurtosis -1.253), *GR 2:* (skew -.019 & kurtosis -1.583), *GR 3:* (skew .142 & kurtosis -1.520), GR *4:* (skew -.219 & kurtosis -1.285), GR *5:* (skew .102 & kurtosis -1.548), *GR 6:* (skew .123 & kurtosis -1.378) (Schmider, et al, 2010).

Four items were significant out of nine items, hence, the assumption of homogeneity of variances was tested for four items and satisfied via Levene's *F* test, for *GR 1: F*(284) = ,578, *p* = 0 .448., *and GR 5: F*(284) = ,133, *p* = 0 .715. *However not satisfied for GR 2: F* (278) = 9,885, *p* = 0 .002, *and GR 6: F* (282) = 11,412, *p* = 0 .001, (Table 5. 55).

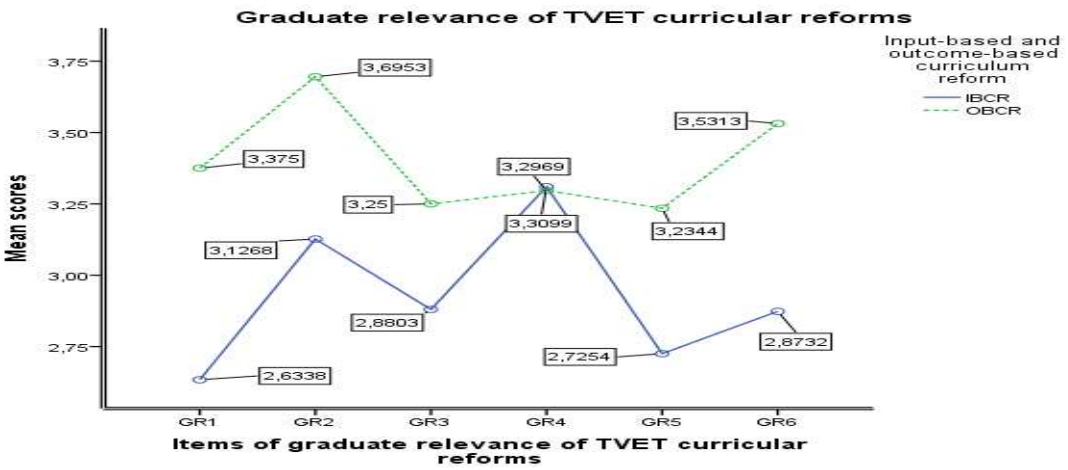
				Levene-Test		T-Test			
Items	Reform Program	Mean	SD	F	Sig.	T	df	Sig. (2-tl)	d
GR 1: Minimized unemployment rate	IBCR	2.56	1.709	.578	.448	-4.199	284	.000	.496
	OBCR	3.38	1.592						
GR 2:Paid employment opportunities	IBCR	3.13	1.938	9.885	.002	-2.499	278	.013	.295
	OBCR	3.66	1.643						
GR 5: Self-employment opportunity	IBCR	2.66	1.665	.133	.715	-2.782	277	.006	.375
	OBCR	3.21	1.683						
GR 6: access to further training	IBCR	2.83	1.696	11.412	.001	-3.814	282	.000	.457
	OBCR	3.55	1.440						

Table 5-55 Graduate relevance of CRs by IBCR & OBCR (t-test)

The t-test shows the association between the IBCR and the OBCR were statistically significant effect for *GR 1: Minimized unemployment rate of TVET graduates* t(484) = -4,199, $p < .001$, $d = .496$, *GR 2: Paid employment opportunities* $t(278) = -2{,}499$, $p = .013$, $d = .295$, *GR 5: Self-employment opportunity* $t(277) = -2{,}782$, $p = .006$, $d = .375$ *GR 6: access to further training* $t(282) = -3{,}814$ $p < .001$, $d = .457$, suggesting that *GR 1: The curricula minimized unemployment rate of TVET graduates* was higher mean during OBCR (M = 3.38, SD = 1.592, N = 136) than the IBCR (M = 2.56, SD = 1.709, N = 150) Cohen's d was estimated at 0.50, medium effect size, and for *GR 2: The curricula provided TVET graduates with paid employment opportunities* were also the higher mean during OBCR (M = 3.66, SD = 1.643, N = 136) than the IBCR (M = 3.13, SD = 1.938, N = 147) Cohen's d was estimated at 0.295, which is a small effect size (Cohen 1988),

Further, for *GR 5: The curricula prepared TVET graduates for self-employment* were also higher mean during OBCR (M = 3.21, SD = 1.683, N = 131) than the IBCR (M = 2.66, SD = 1.665, N = 148) Cohen's d was estimated at 0.375, which is a small effect size based on Cohen's (1988), finally, for *GR6: The curricula provided access for TVET graduates for further training for those already active in the labor market* was also higher mean during OBCR (M = 3.55, SD = 1.440, N = 135) than the IBCR (M = 2.83, SD = 1.696, N = 150) Cohen's d was estimated at 0.457, almost medium effect size.

However, the independent sample t-test show not a statistically significant effect for *GR 3:* $t(284) = 1{,}867$, $p = .063$, $d = .000$, and *GR4:* $t(274) = -{,}177$, $p = .859$, $d = .000$, suggesting that these 2 items of Graduate relevance of TVET CRs, did not shed any further light on the issues of significant difference between the IBCR and OBCR. A line graphical representation of the mean is displayed in Figure 5. 21.



NB: GR1: Minimized unemployment rate of TVET graduates, GR2: Paid employment opportunities, GR3: Access to make the qualification match with the labor market, GR4: Access to quality of jobs found by the TVET graduates GR5: Self-employment opportunity, GR6: access to further training

Figure 5-21: Graduate relevance of TVET CRs (t-test)

Generally, the above findings suggest that the CRs implemented in Ethiopia since 2001 have impacted on the Graduate relevance indicators suggested in this study. As a result, the study found similarities between IBCR and OBCR on items such as Access to make the qualification match with the labor market, and Access to quality of jobs found by the TVET graduates. However, the differences were existed in items, such as Minimized unemployment rate, Paid employment opportunities, Self-employment opportunity and access to further training, where OBCR was produced higher mean than IBCR for these items, with small effect size items but medium size for unemployment minimization.

Graduate relevance of CRs by types of TVET institutions

This section was intended to identify the similarities and differences of graduate relevance between types of TVET institutions. Accordingly, the distributions for normality were tested and found to be sufficient for six items in the scale 6 (See normality for t-test above). The assumption of *homogeneity* was also evaluated for each item in the scale 6: "*Graduate relevance of TVET CRs conducted in* TVET institutions. Five items were significant out of six items, and satisfied via Levene's *F* test, for, *GR 4 F*(2, 295) = 3,064, *P* = ,065, *GR 5, F*(2, 297) = 8,785, *P* = ,843, *and GR 6, F*(2, 297) = 3,398, *P* = ,448. Yet, not satisfied for *GR1: F* (2, 305) = 11,609, *P* < ,001, and *GR 3: F* (2, 305) = 6,236, *P* = ,035, (see Table 5. 56). Yet, we continue the analysis since ANOVA in many cases, considered a robust statistics in which assumptions can be violated with relatively minor effect (Howell, 2010).

Graduate relevance indicators

ITEMS	*Types of Institution*	*Mean*	SD	*df*	*F*	*Sig.*	η^2
GR 1: Minimized unemployment rate of TVET graduates	Public	3.72	1.719	2	11.609	.000	.071
	Private	2.94	1.656	305			
	NGO	2.21	1.446				
GR 3: qualification match with the labor market	Public	3.47	1.919	2	6.235	.002	.039
	Private	2.99	1.555	305			
	NGO	2.37	1.633				
GR 4: Access to quality of jobs found by the TVET graduates	Public	3.77	1.761	2	3.064	.048	.020
	Private	3.26	1.467	295			
	NGO	3.08	1.525				
GR 5: Self-employment opportunity	Public	3.80	1.774	2	8.846	.000	.056
	Private	2.86	1.630	299			
	NGO	2.54	1.611				
GR 6: access to further training	Public	3.59	1.627	2	3.398	.035	.022
	Private	3.20	1.562	304			
	NGO	2.79	1.684				

Table 5-56 Graduate relevance of CRs by TVET institutions (ANOVA)

Table 5.56 above displays, the independent between-groups ANOVA produced for *GR 1: Minimized unemployment rate of TVET graduates*, $F(2,305) = 11,609$, $p < .001$, *GR 3: Access to make the qualification match with the labor market*, $F(2, 305) = 6,235$, $p = .002$, *GR 4: Access to quality of jobs found by the TVET graduates*, $F(2, 305) = 3,064$, $p = .048$, *GR 5: Self-employment opportunity* $F(2. 299) = 8,846$, $p < .001$, *GR 6: Access to further training*, $F(2. 304) = 3,398$, $P = .035$. However, F-value was not significant for *GR 2: The curricula provided TVET graduates with paid employment opportunities* F (2, 302) = ,905, $p = .406$.

Thus, the null hypothesis of no difference between means was rejected for Items GR1, GR 3, GR 4, GR 5, & GR 6. Yet, the actual difference in the mean scores between groups had medium size Partial Eta square for GR 1 (eta^2 = ,071), but small for GR 3 (eta^^{2} = ,039), GR 4 (eta^^{2} = ,020), GR 5 (eta^^{2} = ,056), and GR 6, (eta^^{2} = ,022). Consequently, GR 1 7.1%, GR 3 3.9%, GR 4 2.0%, GR 5 5.6% and GR6 2.2% of the variance in the CR in terms of graduate relevance of CRs were accounted for by the group of TVET institution.

Post hoc comparisons to evaluate pairwise differences among group means were conducted using Tukey HSD test since equal variances were tenable for GR 4, GR 5 and GR 6 but unequal variance for GR 1 and GR 3. Tests revealed significant pairwise differences between the mean scores of institutions for each item in the scale 6: *Graduate relevance of TVET CRs*.

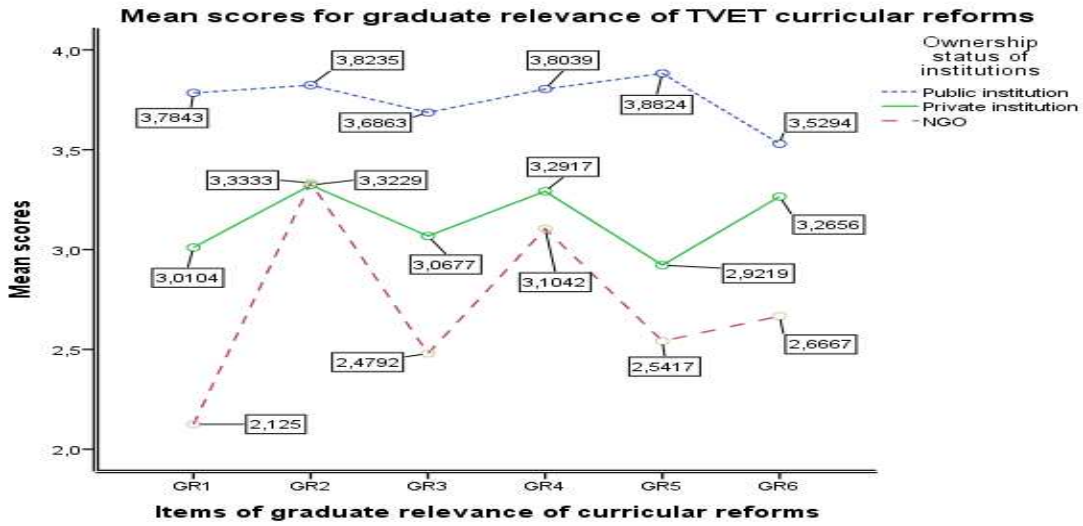
Further, *GR 1: Curricula minimized unemployment rate of TVET graduates* has higher mean in Public (M = 3.72, SD = 1.719, N = 57), than Private (M = 2.94, SD = 1.656, N = 199), $p = .005$ or when compare to NGO (M = 2.21, SD = 1.446, N = 52), $p < .001$. Further, higher mean was also produced in Private institutions when compare with NGO's institutions, $p = .013$.

GR 3: Access to make the qualification match with the labor market has produced lower mean in NGO's TVET institutions (M = 2.37, SD = 1.633, N = 52), than Private TVET institutions (M = 2.99, SD = 1.555, N = 199), $p = .001$ or when compare NGO to Public TVET institutions (M = 3.47, SD = 1.919, N = 57), $p = .038$.

GR 4: Access to quality of jobs found by the TVET graduates, post Hoc comparison shows no significant mean value among three institutions, private, Public and NGO (See Figure 5.11).

GR 5: Self-employment opportunity has produced higher mean in Public (M = 3.80, SD = 1.774, N = 54), than Private (M = 2.86, SD = 1.630, N = 198), $p = .001$ or when compare public to NGO's TVET institutions (M = 2.54, SD = 1.611, N = 48), $p < .001$.

GR 6: Access to further training was lower in NGO (M = 2.79, SD = 1.684, N = 56), than Private (M = 3.71, SD = 1.500, N = 198), p = .001, or when compare to Public (M = 3.59, SD = 1.627, N = 52), p = .007. Hence, comparisons indicated that the graduate relevance of CRs depend on the type of institutions. A line graphical representation of the means for the graduate relevance of TVET curricula is presented in Figure 5.22.



NB: GR1: Minimized unemployment rate of TVET graduates, GR2: Paid employment opportunities, GR3: Access to make the qualification match with the labor market, GR4: Access to quality of jobs found by the TVET graduates GR5: Self-employment opportunity, GR6: access to further training.

Figure 5-22 Graduate relevance of TVET CRs (ANOVA)

To sum up, the above findings highlights that the TVET CRs implemented in Ethiopia since 2001 have impacted on six graduate relevance indicators. As a result, similarity was existed among the type of TVET institutions on item such as Paid employment opportunities. However, the differences were existed in items such as Minimized unemployment rate of TVET graduates, Access to make the qualification match with the labor market, Access to quality of jobs found by the TVET graduates Self-employment opportunity, and access to further training, where the public TVET institutions produced higher mean, than private and NGO's TVET institutions. However, the effect size for these items was small but medium for unemployment minimization.

Graduate relevance of TVET CRs by instructors and principals

In this scale 8 (graduate relevance indicators), the inferential statistics shows there are no statistically significant differences between instructors and principals for 5 items by running t-test ($p > .05$) on group responses in terms of *graduate relevance indicators*. The t-test ($p > .05$) results in no statistically significant mean differences for 5 items in the scale 8. However, one item was found to be significant, such as Item 6: "*access for further training for TVET graduates.*

Thus, the result of the t-test shows significant for item 6, t(88) = 2.147, p = .035, d = 0.30, suggesting that The curricula provided access for further training for TVET graduates is less supported by instructors (M = 3.10, SD = 1.634, N = 252) than principals (M = 3.56, SD = 1.411, N = 55) Cohen's was estimated at 0.30 which is a small effect size (Cohn 1988). Hence, the null hypothesis is rejected for item 6 in scale 8.

5.4.11 **Employer relevance of TVET CRs (Scale 9)**

The purpose of this section was to identify the similarities and differences existed between type of reforms and between types of TVET institutions in terms of employer relevance of the CRs on the eyes of principals and instructors. Respondents of TVET colleges were asked to evaluate whether the employer relevance indicators of CRs were positively impacted. The question stated as "*How do you agree/disagree the effect relevance of the CRs in your area of study to employer industries*". Respondents were replied based on Likert scale from strongly disagree to strongly agree.

Employer relevance of TVET CRs by reform programs (IBCR & OBCR)

To test the hypothesis that the IBCR and OBCR were associated with statistically significantly different mean *employer relevance of TVET CRs (scale 7),* an independent samples t-test was performed for six items. The distributions for normality were sufficient for six items in the scale 7, such as *ER 1: The competency of graduates is appreciated by the employers (2001-2010),* (skew .054 & kurtosis -1.463), *ER 2: TVET graduates are more productive in industries(2001-2010),* (skew -.090 & kurtosis -1.590), *ER 3: Employers are satisfied with the performance of TVET graduates(2001-2010),* (skew .104 & kurtosis -1.576), *ER 4: Improved technology transfer in the industry(2001-2010),* (skew -.238 & kurtosis -1.349), *ER 5: The qualification of TVET graduates match with the industry standards for employment(2001-2010),* (skew .160 & kurtosis -1.399), *ER 6: The curricula responded the human resource needs of employer(2001-2010),* (skew .229 & kurtosis -1.259) (Schmider, et al., 2010).

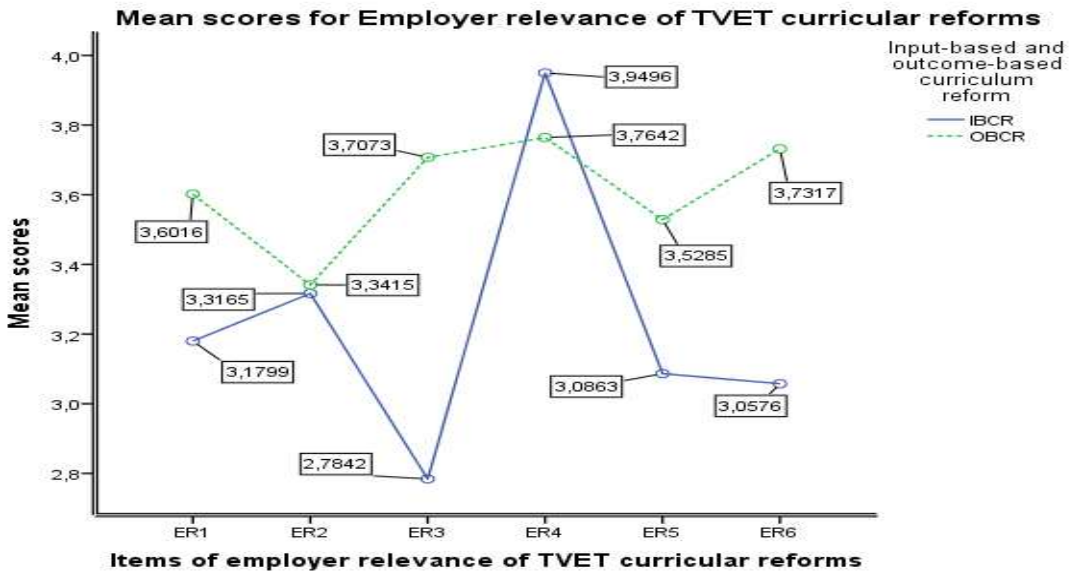
Three items were significant out of nine items, hence the assumption of homogeneity of variances was tested and satisfied via Levene's *F* test, for *ER 3: F*(269) = 2,945, *p* = 0 .087., *ER 5: F*(283) = 1,689 *p* = 0 .195, and *ER 6: F*(280) = 2,836, *p* = 0 .093. (See Table 5 57).

Items	Reform Program	Mean	SD	Levene-Test F	Levene-Test Sig.	T-Test T	T-Test df	T-Test Sig. (2-tl)	T-Test d
ER 3: Employers are satisfied with the performance of TVET graduates	IBCR	2.71	1.810	2.947	.087	-4.569	269	.000	*.556*
	OBCR	3.68	1.672						
ER 5: The qualification of TVET graduates match with the industry standards	IBCR	2.95	1.826	1.689	.195	-2.493	283	.013	*.292*
	OBCR	3.46	1.660						
ER 6: The curricula responded the human resource needs of employer	*IBCR*	*2.66*	*1.600*	*2.836*	*.093*	*-2.848*	*280*	*.005*	*.167*
	OBCR	*2.94*	*1.750*						

Table 5-57 Employer relevance of CRs by IBCR & OBCR (t-test result)

The t-test shows the association between the IBCR and the OBCR were statistically significant effect. For example, *ER 3: Employers are satisfied with the performance of TVET graduates* $t(269) = -4{,}569$, $p < .001$, $d = .556$, *ER 5: The qualification of TVET graduates match with the industry standards* $t(283) = -2{,}493$, $p = .013$, $d = .292$, *ER 6: The curricula responded the human resource needs of employer* $t(280) = -2{,}848$, $p = .005$, $d = .167$. This suggests that *ER 3: Employers are satisfied with the performance of TVET graduates* produced higher mean during OBCR (M = 3.68, SD = 1.672, N = 126) than the IBCR (M = 2.71, SD = 1.810, N = 145) with (0.556), a medium effect size. *ER 5: The qualification of TVET graduates match with the industry standards* produced also the higher mean during OBCR (M = 3.46 SD = 1.660, N = 136) than the IBCR (M = 2.95 SD = 1.826, N = 149) Cohen's d was estimated at 0.292, a small effect size. Finally, *ER 6: The curricula responded the human resource needs of employer* produced also higher mean during OBCR (M = 3.51 SD = 1.750, N = 134) than the IBCR (M = 2.94 SD = 1.600, N = 148) with a small effect size, 0.167.

On the other hand, the independent sample t-test shows not a statistically significant effect for *ER 1:* $t(280) = 1{,}197$, $p = .232$, $d = .00$, *ER 2:* $t(282) = -{,}144$, $p = .885$, $d = .00$, *ER 4:* $t(281) = {,}211$, $p = .491$, $d = .00$, suggesting that these three items of employer relevance, did not shed any further light on the issues of significant difference between the IBCR and OBCR. A line graphical representation of the mean is displayed in Figure 5. 23.



NB: ER1: appreciation of competency, ER2: productivity in industries, ER3: performance of TVET graduates, ER4: Improved technology transfer in the industry ER5: The qualification of TVET graduates match with the industry standards, ER6: The curricula responded the human resource needs of employer

Figure 5-23: Employer relevance of TVET CRs (t-test)

Generally, the above findings suggest that the CRs implemented in Ethiopia since 2001 have impacted on the Employer relevance indicators suggested in this study. As a result, the study found similarities between IBCR and OBCR on items such as appreciation of competency, productivity in industries, improved technology transfer in the industry. However, differences were existed in items, such as performance of TVET graduates, the qualification of TVET graduates match with the industry standards, the curricula responded the human resource needs of employer, where OBCR was produced higher mean than IBCR for these items, with small effect size.

Employer relevance of TVET curricula (ANOVA)

The distributions for normality were sufficient for six items in the scale 9 (see t-test above). The assumption of *homogeneity* was evaluated for each item in the scale 7: "*Employer relevance of TVET CRs conducted in* TVET institutions during the implementation of the CRs. Five items were significant out of six items. Hence, the assumption of homogeneity of variances was tested for five items and satisfied via Levene's *F* test, for *ER2: TVET graduates are more productive in industries* F (2, 302) = 3,188, P = ,195. However, not satisfied for *ER 1:* F (2, 301) = 5,922, P < ,001, *ER 3:* F (2, 289) = 3,780, P = .012. *ER 5:* F (2, 303) = 15,798, P = ,030, *and* ER *6:* F (2, 301) = 8,095, P = .012. Yet, we continue the analysis since ANOVA in many cases, considered a robust statistics in which assumptions can be violated with relatively minor effect (Howell, 2010).

ITEMS	*Types of Institution*	*Mean*	SD	*df*	*F*	*Sig.*	η^2
ER 1: Appreciation of competency	Public	4.11	1.979	2	5.922	.003	.038
	Private	3.18	1.627	301			
	NGO	3.35	2.076				
ER 2: Improvement of productivity In industries	Public	3.39	1.953	2	3.188	.043	.021
	Private	3.29	1.763	302			
	NGO	2.62	1.891				
ER 3: Appreciation of performance of TVET graduates	Public	3.70	1.972	2	3.780	.024	.025
	Private	2.97	1.704	289			
	NGO	3.34	1.880				
ER 5: The qualification of TVET graduates match with the industry standards	Public	4.37	1.848	2	15.798	.000	.094
	Private	2.96	1.605	303			
	NGO	3.00	1.836				
ER 6: The curricula responded the human resource needs of employer	Public	4.02	1.913	2	8.095	.000	.051
	Private	3.01	1.604	301			
	NGO	3.33	1.677				

Table 5-58 Employer relevance of TVET CRs by TVET institutions (ANOVA)

As can be seen in the Table 5.28 above, the independent between-groups ANOVA produced for *ER1: Appreciation of competency by employers, F* (2,301) = 5,922, *p* = .003, *ER 2: Improvement of productivity in industries, F* (2, 302) = 3,188, *p* = .043. *ER 3: Appreciation of performance of TVET graduates, F* (2, 289) = 3,780, *p* = .024, *ER 5: The qualification of TVET graduates match with the industry standards F* (2, 303) = 15,798, *p* < .001. *ER 6: The curricula responded the human resource needs of employer, F* (2, 301) = 8,095, *p* < .001. Conversely, F-value was not significant for *ER 4: Improved technology transfer in the industry F* (2, 301) = 1,836, *p* = .161.

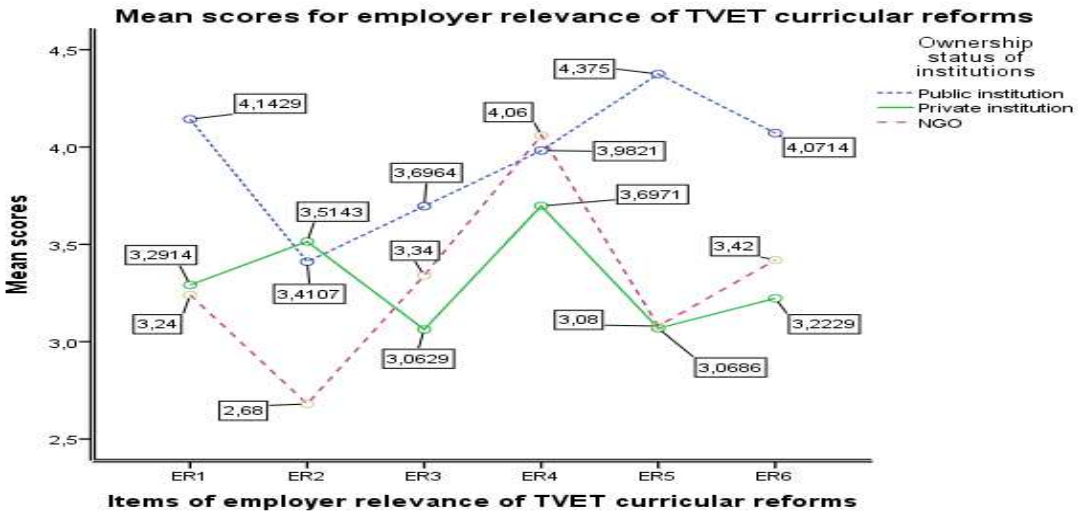
Thus, the null hypothesis of no difference between means was rejected for items ER 1, ER 2, ER 3, ER 5, and ER 6. However, the actual difference in the mean scores between groups had closer to large size Partial Eta square for ER 5 (eta^2 = ,094), but small size for ER 1 (eta^2 = ,038), ER 2 (eta^2 = ,021), ER 3 (eta^2 = ,025), and ER 6, (eta^2 = ,051). Hence, ER 5 9,4%, ER 1 3.8%, ER 2 2.1%, ER 3 2.5% and ER 6 5.1% of the variance in the CR in terms of employer relevance of TVET CRs were accounted for by the group of TVET institution.

Post hoc comparisons to evaluate pairwise differences among group means were conducted using Tukey HSD test since equal variances were tenable for ER2, but unequal variance for ER1, ER3 ER5 and ER6. Tests revealed significant pairwise differences between the mean scores of institutions for each item in the scale 6: *Employer relevance of TVET CRs*.

Therefore, *ER 1: Appreciation of competency by employers* results higher mean in Public TVET institutions (M = 4.11, SD = 1.979, N = 57), than Private TVET institutions (M = 3.18, SD = 1.627, N = 195), p = .002 and ER2*: Improvement of productivity in industries* has lower mean in NGO (M = 2.62, SD = 1.891, N = 57), than Private (M = 3.29, SD = 1.763, N = 196), p = .049.

ER 3: Appreciation for the performance of TVET graduates, produced higher mean in Public (M = 3.70, SD = 1.972, N = 56), than Private (M = 2.97, SD = 1.704, N = 186), p = .023 and *ER 5: The qualification of TVET graduates match with the industry standards* has higher mean in Public (M = 4.37, SD = 1.848, N = 57), than Private (M = 2.96, SD = 1.605, N = 197), $p < .001$ or when compare public to NGO (M = 3.00, SD = 1.836, N = 52), $p < .001$.

ER 6: The curricula responded the human resource needs of employer has lower mean in private (M = 3.01, SD = 1.913, N = 197), than Public (M = 4.02, SD = 1.913, N = 57), $p < .001$. Hence, comparisons indicated that the employer relevance of CRs depend on the type of institutions. A line graphical representation of the means for the graduate relevance of TVET curricula is presented in Figure 5.24.



NB: ER1: appreciation of competency, ER2: productivity in industries, ER3: performance of TVET graduates, ER4: Improved technology transfer in the industry ER5: The qualification of TVET graduates match with the industry standards, ER6: The curricula responded the human resource needs of employer

Figure 5-24: Employer relevance of TVET CRs (ANOVA)

To sum up, the above findings highlights that the TVET CRs implemented in Ethiopia since 2001 have impacted on six employer relevance indicators. As a result, similarity was existed among the type of TVET institutions on item such as improved technology transfer in the industry. However, the differences were existed in items such as appreciation of competency, productivity in industries, performance of TVET graduates, the qualification of TVET graduates match with the industry

standards, and the curricula responded the human resource needs of employer, where the public TVET institutions produced higher mean, than private and NGO's TVET institutions. However, the effect size for these items was small but medium for qualification of TVET gradates match with the industry standards.

Employer relevance of TVET CRs by instructors and principals

In this scale 9 (Employer relevance indicators), the inferential statistics shows there are no statistically significant mean differences between TVET instructors and principals of TVET colleges by running a t-test (p > 05) on group responses in terms of *employer relevance indicators of CRs*, suggesting that no differences among all items in the scale 9. Hence, the null hypothesis is accepted for all items in scale 9.

5.5 *Curriculum design and competency assessment*
(Comparative Empirical Analysis by the characteristics of respondents)

This section reports the comparisons of the scores of the individual items in that were not assigned to scales by the characteristics of the respondents. This empirical analysis evaluates whether any effects applied equally to each independent variables. The 2 individual items that were not included in the scales were Item 1**:** *participation in the design of TVET curriculum**,** and Item 2**:** Taking competency assessments***.*** The subjects of the study were instructors (n = 253) and principals (n = 55) of TVET institutions such as public institutions (17.9%), private institutions (65.3%) and NGO's institutions (16.9%). A Chi-square test, t-test and one-way analysis of variance (ANOVA) was selected as required to evaluate based on the characteristics of the respondents such as *Gender, Work status, Age, Experience, Qualification, and Type of institutions*.

5.5.1 **Participation in the design of TVET curriculum**

A question was raised to investigate whether TVET instructors and principals participated in the design of TVET curriculum (n = 302). The question was stated as "*Have you ever participated in the process of TVET curriculum design?"* They reply 1) No and 2) Yes answers. Hence, this part evaluated whether the participation in the design of TVET curriculum varied across the characteristics of respondents such as *Gender, Work status, type of TVET institutions, qualification, age* of respondents, and *experience* of the respondents.

The participation of curriculum design by TVET Institutions

Chi-square was performed to examine the participation in the design of TVET curriculum varies across the type of TVET institutions (Public TVET institution, Private TVET institution and NGO' TVET institutions).

	Types of TVET institutions				
Answers	Public	Private	NGO	$\chi 2$	φ
Yes	16 (28.6)	77 (46.9)	36 (69.2)	17.923**	.244
No	40 (71.4)	87 (53.1)	26 (30.8)		

*Note. **=p<.005. Percentages appear in parentheses below group frequencies*

Table 5-59 Curriculum design and TVET institutions (Cross tabulation)

For this research question in which the focus was placed on participation in the design of TVET curriculum among Public TVET institution, Private TVET institution and NGO' TVET institutions, the result was statistically significant, $\chi^2(2) = 17{,}923$ p <.001. The effect size for this finding, Cramer's V, was medium, 244 (Cohen, 1988). As can be seen in Table 5.60 the majority NGO were participated in the design of TVET curriculum, 69.2%, compared to only 46.9% of the Private institutions or when compared to Public institutions 28.6%.

The participation of curriculum design by Gender

Chi-square was performed to examine the participation in the design of TVET curriculum varies across gender (males and females). The relationship between these variables was not significant $\chi^2(1) = ,029$ $p = .864$. Thus, the null hypothesis of no differences between values was accepted.

The participation of curriculum design by Work status

To ascertain whether a different was existed between the participation in the design of TVET curriculum and gender (principals & instructors), chi-square was performed. The relationship between these variables was not significant $\chi^2(1) = ,372$ $p = .542$. Thus, the null hypothesis of no differences between values was accepted.

The participation of curriculum design by Qualification

Chi-square was performed to examine the participation in the design of TVET curriculum varies across group of qualification (Diploma, Bachelor Degree, and Master's Degree). The relationship

between these variables was not significant $\chi^2(2) = 1{,}405$ $p = .495$. Thus, the null hypothesis of no differences between values was accepted.

The participation of curriculum design by age

Chi-square was performed to examine the participation in the design of TVET curriculum varies across age group of respondents (18-29, 30-44, and 45-60 years). The relationship between these variables was not significant $\chi^2(2) = ,846$ $p = .655$. Thus, the null hypothesis of no differences between values was accepted.

The participation of curriculum design by experience

Chi-square was performed to examine the participation in the design of TVET curriculum varies across group of experience in TVET colleges ((<5 years, 5-10, 11-20, >20 years). The relationship between these variables was not significant $\chi^2(3) = 1{,}744$ $p = .627$. Thus, the null hypothesis of no differences between values was accepted.

To sum up, the participation in the process of CRs was influenced by the type of institution, where more participants were assigned from the NGO's institutions than the public and private TVET institutions. However, items such as *Gender*, *Work status, qualification*, *age*, and *experience* have *no* light shade on the difference in the participation of the curriculum design.

5.5.2 Competency assessment

This part evaluates whether taking the competency assessment (n=214) varies across the characteristics of respondents such as *Gender*, *Work status*, *Type of TVET institutions*, *Qualification*, *Age* of respondents, and *Experience* of the respondents. The question was stated as "*Have you taken competency assessment?"* They replied 1) 'No' and 2) 'Yes' answers.

Competency assessment and Gender

To ascertain whether a difference was present in taking competency assessment from the center of competency (COC) ('not assessed' or 'assessed') between male and female, a Pearson chi-square was conducted. This statistical procedure was viewed as the optimal statistical procedure to use because frequency data were present for competency assessment and for gender.

Competency Assessment				
	Gender			
Answers	Males	Females	$\chi 2$	φ
No	92	9	8.683**	.168
	(36.5)	(16.1)		
Yes	160	47		
	(63.5)	(83.9)		

*Note. **=p<.005. Percentages appear in parentheses below group frequencies*

Table 5-60 Competency Assessment and Gender (Cross tabulation)

For this research question in which the focus was placed on taking competency assessment between male and females, the result was statistically significant, $\chi^2(1) = 8{,}683$ $p = .003$. The effect size was small, Cramer's V (φ) = .168 (Cohen, 1988). As can be seen in Table 5.61, most of the females were assessed their competency, 83.9%, compared to only 63.5% of the males.

Competency Assessment and Work status

To ascertain whether a difference was present in taking competency assessment from the center of competency (COC) (i.e., Assessed or not assessed) between Instructors and principals, a Pearson chi-square was conducted. This statistical procedure was viewed as the optimal statistical procedure to use because frequency data were present for competency assessment and for work status.

Competency Assessment				
	Work status			
Answers	Instructors	Principals	$\chi 2$	φ
No	91	5	17.067**	.235
	(37.9)	(9.1)		
Yes	149	51		
	(62.1)	(90.9)		

*Note. **=p<.005. Percentages appear in parentheses below group frequencies*

Table 5-61 Competency Assessment and Work status (Cross tabulation)

For this research question in which the focus was placed on taking competency assessment between instructors and principals of TVET colleges was resulted in statistically significant, $\chi 2(1) = 17{,}067$, $p < .001$. The effect size for this finding, Cramer's V (φ), was small, .235 (Cohen, 1988). As can be seen in the Table 5.61, most of the Principals were assessed their competency, 90.9%, compared to 62.1% of the Instructors.

Competency Assessment and Type of Institution

To ascertain whether a difference was present in taking competency assessment from the center of competency (COC) (not assessed or assessed) between Public TVET institution, Private TVET institution and NGO' TVET institutions, a Pearson chi-square was conducted.

Competency Assessment

	Types of TVET institutions				
Answers	Public	Private	NGO	$\chi 2$	φ
No	13	58	30	18.408**	.244
	(22.8)	(29.1)	(57.7)		
Yes	44	141	22		
	(77.2)	(70.9)	(42.3)		

Note. **=p<.005. Percentages appear in parentheses below group frequencies

Table 5-62 Competency Assessment and Work status (Cross tabulation)

For this research question in which the focus was placed on taking competency assessment among Public, private and NGO institutions, the result was statistically significant, $\chi^2(2) = 18{,}408$, $p < .001$. The effect size for this finding, Cramer's V (φ), was medium, .244 (Cohen, 1988). As can be seen in Table 5.62, Most of the public institutions were assessed their competency, 77.2%, when compared to 70.9% of the Private or when compared to NGO's institutions only 42.3%.

Competency assessment by Qualification

To ascertain whether a difference was present in taking competency assessment from the center of competency (COC) (i.e., Assessed or not assessed) between level of qualification (Diploma (n =52), Bachelor degree (n = 199), and Master's degree (n = 57)), a Pearson chi-square was conducted.

Competency Assessment

	Qualification				
Answers	Diploma	Bachelor Degree	Master's Degree	$\chi 2$	φ
No	13	61	27	7.341**	.145
	(25.0)	(30.7)	(47.4)		
Yes	39	138	30		
	(75.0)	(69.3)	(52.6)		

*Note. **=p<.005. Percentages appear in parentheses below group frequencies*

Table 5-63 Competency Assessment and qualification (Cross tabulation)

For this research question in which the focus was placed on taking competency assessment between qualification, the result was statistically significant, $\chi^2(2) = 7{,}341$, $p = .025$. The effect size for this

finding, Cramer's V (φ), was small, .145 (Cohen, 1988). As can be seen in Table 5.63, Most of the Diploma holders were assessed their competency, 75.0%, compared to only 69.3% of Bachelor degree holders or when compared to 52.6% of master's degree holders.

Competency assessment by Age

To ascertain whether a difference was present in taking competency assessment from the center of competency (COC) (i.e., Assessed or not assessed) between age group of respondents (18-29 (n=162), 30-44 (n=80), and 45-60 (n=66)), a Pearson chi-square was conducted.

Competency Assessment by age

	Age of respondents				
Answers	18-29	30-44	45-60	$\chi 2$	φ
No	72	18	22	11.309**	.192
	(44.6)	(22.8)	(32.7)		
Yes	90	62	44		
	(56.5)	(27.5)	(15.9)		

Note. **=p<.005. Percentages appear in parentheses below group frequencies

Table 5-64 Competency Assessment and age (Cross tabulation)

This research question was focused on taking competency assessment between three age groups, the result was statistically significant, $\chi^2(2) = 7{,}341$, $p = .004$. The effect size for this finding, Cramer's V(φ), was closer to medium size, .192 (Cohen, 1988). As can be seen in Table 5.64, Most of the of the age group 18-29 were assessed their competency, 56.5%, compared to 27.5% of the second age group 30-44 or when compared to only 15.9% of the third age group 45-60.

Competency assessment by Experience

To ascertain whether a difference was present in taking competency assessment from the center of competency (COC) (i.e., Assessed or not assessed) between experience of respondents in TVET colleges (< 5years (n = 105), 5-10 years (n = 67), 11-20 years (n = 95) and > 20 years (41), a Pearson chi-square was conducted as follows.

Competency Assessment by Experience

	Experience of respondents					
Answers	<5 years	5-10 years	11-20 years	>20years	$\chi 2$	φ
No	32	8	42	19	22.509**	.270
	(30.5)	(11.9)	(44.2)	(46.3)		
Yes	73	59	53	22		
	(69.5)	(88.1)	(55.8)	(53.7)		

Note. **=p<.005. Percentages appear in parentheses below group frequencies

Table 5-65 Competency assessment and experience (Cross tabulation)

The focus this part was placed on taking competency assessment between four groups of experience, the result was statistically significant, $\chi^2(3) = 22{,}509$, $p < .001$. The effect size for this finding, Cramer's V (φ), was closer to large size, .270 (Cohen, 1988). Most experience group below 5-10 years' were assessed their competency, 88.1% compared to 69.5%, of the second group of experience 5 years or when compared to 55.8% of the third group of experience 11-20 years or when compared to only 53.7% of the last group of experience above 20 years, indicating that higher participation on competency assessment was the experience group below 10 years (Table 5.65).

Generally, the above findings indicated that taking competency assessment was depend on *gender*, *work status*, *type of TVET institutions*, *qualification*, *age*, and *experience* of respondents in the Ethiopian competency assessment system during the level-system of CR.

5.5.3 **Effectiveness of CRs**

Paired sample t-test-for Effectiveness of TVET curriculum

Items	Reform Program	Mean	SD	T-Test			
				T	*df*	Sig. (2-tl)	d
Effectiveness of TVET curricular reforms	IBCR	2. 62	1.667	10.081	269	.000	*.928*
	OBCR	4.23	1.798				

Table 5-66 Effectiveness of TVET curriculum by IBCR & OBCR (Paired sample T-test)

As indicated on the table 5.66, a paired sample t-test shows that there is statistically significant difference existed between the effectiveness of the IBCR and the OBCR. The results of the paired sample t-test were significant, $t(269) = 10{,}081$, $p < .001$, $d = 0.928$, suggesting that better effectiveness of OBCR ($M = 4.23$, $SD = 1.798$, $N = 270$) than IBCR ($M = 2.62$, $SD = 1.667$) Cohen's was estimated at 0.928 which is a large effect size (Cohn 1988).

5.5.4 **SWOT Analysis on the perspectives of instructors and principals**

This study also conducted a SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis for the two curricular reforms (IBCR and OBCR) implemented in Ethiopia since 2001. Open question was designed so that respondents easily replied what were the strengths, weaknesses, opportunities and threats encountered during the process of implementing the IBCR and the OBCR. They were asked to identify the major perceptions of the TVET curriculum reform in terms of the SWOT issues. Different issues were suggested such as: policy, curriculum, instructional facilities, Assessment, quality assurance, employment of graduates and job opportunities. These SWOT suggestions are summarized based on IBCR and OBCR in the following Tables 5.67A and 5.67B.

IBCR

Issues/ Interventions	***Strength***	***Weakness***	***Opportunities***	***Threats***	***Proposed suggestions/ interventions***
Policy	-Supply driven	-Implementation	-Government efforts to develop TVET	-efficiency and effectivity implementation	-Developing research based policy
Curriculum	-Based on experienced countries benchmark -trainers participation in curriculum design	-Development of indigenous curriculum --Inaccurate time allotment of courses -Unstable/sudden change of curriculum -Focus on theory than practice	-Readiness to improve the standards with the involvement of stakeholders -Consistent update of modular contents -Inclusion of ICT in TVET	-Lack of skill/knowledge in developing training material -Reform depends on fund providence -change of curriculum without research	-Increase participation of trainers on training materials development -Create more opportunities for involvement of stakeholders whenever necessary
Facilities, equipment and finance	-Efforts to equip government TVET institutions	-Out dated facilities and equipment & un relatedness in the job area -Insufficient budget allocation	-Government efforts to increase budget -Provision of computers for training	-Budget limitation -Increase cost of materials	-Organize the support of stakeholders -Develop effective cost-sharing system
Training of trainers/ trainees	- Arrangement of summer course to trainers -Familiarity of trainers with the new curriculum -Increasing access to apprenticeship training	-Assignment of unexperienced TVET leaders -Lack of awareness of staff to TVET -Skill gap for new courses of the old staff	-Upgrading trainers -Improving trainers and trainees attitude to TVET	-Lack of competent trainers of trainers -Mobility of competent professionals out of teaching -Awareness gap to accept TVET -Un proportional class size	-Provide short and long-term training of trainers - Organize local and abroad experience sharing visits
Assessment system & assessors	-Efforts to continuous assessment system	-Old assessment system -assess only theoretical part -Grade driven assessment	-Efforts to standardize assessment system	-Lack of transparency -Lack of prober administration -High cost of assessment	-Evaluate and update the assessment system consistently -Development of standardize assessment
Competency skill	-Efforts to shift to competency skill courses	-10+system was only supply driven - Mismatch between competency and job -Unacceptance of TVET graduates for being incompetency	-The effort being made to develop competency skill -Training of trainers for competency skill	- Competency gape of trainers . -Background of trainees	-Provide training of trainers for competency based on market demand -Develop specific competencies
Quality assurance	-Efforts to develop quality standards	- No developed quality assurance system -skill gap of graduates -Lack of quality trainers	-New technology & innovation -Access to new benchmarking	-Outdatedness of unit of competencies - Efforts of the gov't for quality assurance	-Diversify vocationalization -Concentrate on quality development
Employment and job	-Good opportunities of job for competent guarantee -Creating access to self-employment	-10+system graduates are not accepted by employers - No enough job opportunities in the labor market for TVET graduates	-Self-employment or family business jobs -Improved investment policy	-A considerable number of graduates from different training centers -Out datedness of some specialization -Insufficient number of industries	-Facilitate opportunities for self-employment. -Create more job opportunities -Attract investors

Table 5-67A SWOT analysis IBCR

OBCR

Issues/ Interventions	***Strength***	***Weakness***	***Opportunities***	***Threats***	***Proposed suggestions/ interventions***
Policy	-Market oriented	-Implementation	-Government commitment -Employer involvement	-Challenges to effective implementation	-Conducting studies on policy implementation
Curriculum	-Based on occupational standards -Improved trainers & employers participation	-Lack of competency for preparing training materials at the grassroots level - Courses are not designed effectively -Inconsistent change of curriculum -Inaccurate time allotment of courses	-Readiness to improve the occupational standards with the involvement of stakeholders. -Consistent update of modular contents -curriculum based on industry need	-Lack of skill/knowledge in developing training material -Reform depends on fund providence -Change of curriculum without conducting researches	-Providing training to trainers on training materials development -Create more opportunities for involvement of stakeholders whenever necessary
Facilities, equipment and finance	-Well equipment of government TVET institutions -Increased budget to TVET	-Outdated facilities and equipment -Un relatedness in the job area -Budget allocation	-Government willingness to increase budget	-Budget limitation -Increase number of trainees	-Develop a system to use indigenous resources -Improve effective cost sharing system
Training of trainers/ trainees	-Availability of training institutions -Better access to further training	-Poor encouragement of staff -Skill gap of trainers -Awareness gap of staff to TVET	-Recognition of trainers in competencies -Update based on technology	-Lack of competent trainers of trainers -Un stability of competent professionals	-Provide consistence on job training - Organize local and abroad experience sharing visits -Provide incentives
Assessment system & assessors	-Availability of assessment system & centers -Employer involvement	-Limited involvement of graduates for competency assessment -Invariability of assessors	-Plenty of room for certification for both trainees and trainers -Specialization on a specific area -Assessment based on the standards	-Lack of transparency -Lack of proper administration -High cost of assessment	-Evaluate and update the system consistently -Involve professionals with practical experience
Competency skill	- Efforts are being made to produce skilled labor force based on market need	- Mismatch between competency and job -Not providing training based on employer need	The development of specific competencies based on quality framework	-Awareness gap to accept TVET graduates by employers -Out datedness of unit of competencies	-create continuous awareness to stakeholders -Provide training based on market demand
Quality assurance	-Competency based training -The development of occupational standard -Outcome oriented assessment	- Quality gap in competency of trainees -Skill gap of graduates -Lack of quality training	-Opportunity for unit of competency specialization -New technology & innovation - Efforts of the government to transfer new technologies -Improved innovations	- Low consideration for quality assurance -Low quality of TVET training centers -Discharge of English language & math's from hard skill courses	-Diversify specialization -Concentrate on quality development based on occupational standards
Employment and job	-The opportunities for paid employment jobs -More construction in the country -Availability of cobblestone job -Access to borrowing money for Self-employment	-Unacceptance of TVET graduates for being incompetency -Level I, II and III are not accepted by employers - Inadequate job opportunities in the labor market	-Self-employment, micro enterprises and family business jobs -Job opportunity for certified graduates -Construction of medium & large scale industries -The effort being made to attract local and external investors	-The unstable development of the economic sector -A considerable number of graduates from different training centers -Outdatedness of some specialization -Insufficient number of industries	-Create more job opportunities -Attract investors -Facilitate opportunities for self-employment - Prioritize the informal sector - Concentrate on micro and small scale enterprises

Table 5-68B SWOT analysis OBCR

5.6 *SUMMARY*

This section has reported on the exploration stage of this study from the perspectives of instructors and principals of TVET colleges. This conclusion intends in response to the basic questions and hypothesis. In line with the question identified in the chapter five, the data collection, analysis and interpretation during this stage of the study focused on the issues of interventions of CRs, organization and implementation of curriculum, factors influencing CRs, assessment, certification, impact indicators of CRs and SWOT analysis. In summary, each scale/items was supported by a table indicating the similarities and differences between work status of respondents, between type of reforms and among type of institutions. The exploration stage has identified the following findings:

CURRICULAR INTERVENTION FACTORS OF CRS

It was identified in the frequency analysis section 5.2, which highlights the curricular intervention factors of CRs implemented in the Ethiopian context since 2001. From the perspectives of the TVET instructors and principals, the reforms have impacted on the curricular intervention factors. The findings reported in the order of significance. For example, the *Method of instruction* was supported by more than three fourth of the respondents, followed by *contents change* supported by more than two third and then another high change of intervention factors reported for *time allotment change*, *evaluation/assessment change*, *technological change* and *subject change*. Respondents rather reported less support for *professional change* and *instructional media change.*

The inferential statistical analysis explored further on the significance difference on these issues between IBCR and OBCR in section 5.4.3 and among public, private and NGO's institutions in addition to inferential analysis conducted between TVET instructors and principals. The summarized result of similarities and differences regarding the curricular intervention factors is displayed in the following Table 5.68.

Scale/Items	Instructors	Principals	IBCR	OBCR	Public	Private	NGO
Interventions factors			**Means**				
Subject	4.13	4.55	x	x	3.28	4.38	4.58
Content	4.06	4.56	x	x	x	x	x
Methodology	4.23	4.60	x	x	x	x	x
Time allocation	3.74	4.65	x	x	3.48	4.16	3.40
Professional	3.41	4.47	x	x	x	x	x
Evaluation/Assessment	3.80	4.20	x	x	x	x	x
Instructional media	3.32	4.42	3.23	3.67	x	x	x
Technological	3.85	2.76	x	x	3.26	3.68	4.00

Note: x – No significant difference

Table 5-69 Curricular intervention factors: Summary

Firstly, the t-test result shows that there was statistically significant mean difference between TVET instructors and principals on all intervention factors, where principals produced higher mean than instructors small effect size for *content change, new learning area/method change, time allotment change, evaluation/assessment change,* and s*ubject/trade change* but had closer to large effect size for *Professional change, instructional media change, and Technical/ scientific change,* (see Table 5.23). *In short, principals perceived higher change of curricular intervention factors that have impacted by the CRs implemented in TVET colleges in Ethiopia*.

Secondly, the t-test found a significant difference for curricular intervention factor such as *instructional media change,* where OBCR produced higher mean than IBCR with small effect size. *The findings highlight that there were similarities in the change of these curricular intervention factors in both CRs. However, the instructional media change was higher during OBCR.*

Thirdly, ANOVA results in significant difference for *subject/trade change,* where NGO's produced higher mean than private or when compare to public institutions with closer to large partial Eta square effect size. ANOVA also results in significant result for *time allocation change on course of studies,* where private produced higher mean than public or when compared with NGO's institutions, with small partial Eta square effect size. Yet, ANOVA yielded a significant value for *Technology/scientific change,* where NGO's institutions produced higher mean than public institutions, with small effect size*. Generally, in the Ethiopian case, the impact of the CRs on curricular intervention factors such as subjects, time allotment and technological changes depend on the type of TVET institutions.*

CONSTITUENCY PARTICIPATION IN TVET CURRICULUM DEVELOPMENT

Descriptive statistics on section 5. 3 shows the degree to which different constituencies actually participated in the process of TVET curriculum development. The constituencies were assumed Professional *TVET teachers, representatives of community/family, selected group of students, employer representatives, TVET college administrators, independent consultants and TVET curriculum experts.* As a result, more than half of the respondents reported for *TVET college administrators and TVET curriculum experts* followed by average input from TVET *teachers/instructors and independent consultants*. However, less involvement were reported by less than one third of respondents for *students, community/families, and employers*. *To sum up, the CRs impacted on the constituency participation of TVET curriculum development in Ethiopia. However,*

it seems higher involvement have been made by TVET administrators and TVET experts followed by TVET instructors and consultants.

The inferential statistical analysis explored further the significance difference on these issues between IBCR and OBCR in section 5.4 and between public, private and NGO's institutions in section. The summarized result of similarities and differences regarding the constituencies' participation is displayed in the following table 5.69.

Scale/Items	***Instructors***	***Principals***	***IBCR***	***OBCR***	***Public***	***Private***	***NGO***
Constituencies	Means						
Teachers/instructors	x	x	2.99	4.35	3.19	3.54	4.06
Administrators	x	x	2.93	3.65	3.61	3.20	2.85
Students	x	x	3.51	4.13	3.68	x	4.46
Community/Family	x	x	x	x	x	x	x
Employer	x	x	x	x	x	x	x
Consultants	x	x	x	x	x	x	x
TVET experts	x	x	4.42	3.80	x	x	x

Note: x– No significant difference

Table 5-70 Constituency participation: Summary

Firstly, inferential analysis shows no perceptual difference existed between TVET instructors and principals regarding constituency participation; as none of them was significant.

Secondly, the t-test (Table 5.24) resulted in statistically significant mean difference between the IBCR and the OBCR for *TVET teacher*, where the OBCR produced the higher mean than the IBCR with a large effect size. *TVET student* involvement was another significant item where OBCR produced higher mean than IBCR with closer to medium effect size. Further, *TVET college administrators* were also significant where OBCR produced larger mean than IBCR with small effect size. Lastly, *TVET curriculum experts/specialists* also significantly varied between types of reforms, where IBCR produced higher mean than OBCR, with small effect size. However, *community/family, independent consultants*, and *employers* that have not produced significant mean difference between IBCR and OBCR. *In support to the above findings, during OBCR higher involvement of constituencies in the curriculum development were made by TVET teachers, (with large effect size), Students, & administrators; however, TVET curriculum experts/specialists were highly involved in the process of curriculum development during the IBCR.*

Thirdly, an analysis was conducted between types of TVET institutions. Accordingly, the results of ANOVA were found to be statistically significant for *TVET teachers*, where NGO's institutions

produced higher mean than public TVET institutions but partial Eta square effect size was small. Significant difference was also identified for *TVET students' involvement*, where Public TVET institutions produced higher mean than NGO's TVET institutions, with almost medium effect size. Likewise, the involvement of *TVET college administrators* also significantly varied from college to college, for example, NGO's institution produced higher mean than public TVET institutions or when compared with private TVET institutions, however effect size was small. (See Table 5.25). *As a whole, the CRs implemented in Ethiopia have impacted on the constituency participation in the curriculum development depend on the type of institutions, where high involvement of college administrators and teachers were from NGO's institutions, whereas students were highly involved from the public TVET institutions.*

NATURE/EXTENT OF CURRICULA REVIEW IN TVET COURSE OF STUDIES

Descriptive statistics on section 5.3 shows the *extent CRs impacted on the nature of contents reviewed in TVET course of studies.* The constraints were: *continuation of the curricula with no change, continuation of the curricula with modifications, termination of the course of studies, and replacement of the course of study by the new one.* Frequencies reported that *modification of the curricula* highly supported by more than *two third* of the respondents and almost one third of respondents to *replacement of course of studies, termination of course of study, and no change of contents in the curricula successively. In general, the above findings suggest that the nature of adapted curricula were changed to the extent of highly modification with some replacement and termination of courses.*

The inferential statistical analysis further discovered the significance difference on the nature of curriculum change between IBCR and OBCR in section 5.4.5 and among public, private and NGO's institutions. The summarized result of similarities and differences regarding the nature/extent of curriculum change is displayed in the following table, 5.70.

Scale/Items	***Instructors***	***Principals***	***IBCR***	***OBCR***	***Public***	***Private***	***NGO***
Nature of curriculum			Means				
No change	x	x	x	x	3.86	3.35	2.67
Modification	x	x	3.15	3.89	4.05	3.53	2.78
Termination	x	x	x	x	3.86	x	2.73
Replacement	x	x	3.21	2.77	3.44	3.06	2.46

Note: x – No significant difference

Table 5-71 Nature/extent of curriculum change: Summary

Firstly, inferential analysis was conducted between TVET instructors and principals on the nature of curriculum change. Accordingly, the results of t-test shows non-significant perceptual variation between TVET instructors and principals for all items of the *nature of the curricula review. Generally, TVET instructors and principals have no perceptual difference on the nature of TVET curricular changes.*

Secondly, the t-test (Table 5.26) resulted in statistically significant mean difference between the IBCR and the OBCR for *continuation of the curricula with modifications,* where the OBCR produced the higher mean than the IBCR but the effect size was closer to medium size. In addition to this, the curricula *replacement of the course of study by the new one* was also statistically significant, where the IBCR produced higher mean than the OBCR but the effect size were small. *In view of the above finding, the impact of the curricular reform on the nature of contents reviewed in TVET course of studies was depend on the CRs, for example, during OBCR the benchmarking continued with modification, whereas during IBCR the nature of the curricula was replaced by the new course of studies.*

Thirdly, the results of ANOVA (see Table 5.27) shows all items were found to be statistically significant, for example, *continue the curricula with no change,* where NGO's institutions produced lower mean than private TVET institutions or when compared with public institutions but partial Eta square effect size was small. Significant difference was also identified for *continue the curricula with modifications,* where Public TVET institutions produced higher mean than private TVET institutions or when compared with NGO's TVET institutions, with small effect size. The other significant difference was also identified for *termination of the course of studies,* where public TVET institutions produced higher mean than NGO's TVET institutions, however Partial Eta square effect size was small. Lastly, the curricula *replaced by the new course of study* also significantly varied from institution to institution, for example, NGO's institution produced lower mean than private TVET institutions or when compared with public TVET institutions, however Partial Eta square effect size was small. *Based on the forgone findings, one can suggest that the impacts of the CRs on the nature of the benchmarking depend on the type of institutions. Therefore, in the public institution courses were continued with no change, with modification of contents in the subject and with replacement by a new course, whereas NGO's institutions' nature of changes was less than public and private institutions.*

CAUSES OF TVET CRS

Descriptive statistics on section 5.3 shows the factors that *cause the TVET curricula to reform in Ethiopia.* The intended factors were ***Organizational factors*** *(influence of accreditation bodies, Benchmarking, Influential individuals, Academic fashion and Academic merit),* ***Personal factors*** *(Student ability, student viewpoint, staff issues, and Employer industry viewpoint) and* ***legal/economic factor*** *(Government policy regulations, and financial pressure) in addition to inadequacy of TVET curriculum to provide employable skill in the labor market.*

The descriptive statistics shows that more than three fourth of respondents reported *Government policy & regulation and Student viewpoint (Labor market employment needs)* were reported as the main causes of CRs. As a second rank, more than two-third respondents reported, for dissatisfaction of with the methodology (*Student ability) and financial pressure.* As a third rank more than one half of respondents reported for *Staff issues (Change of Professional staff), Employer/industry viewpoint (Influence of employers)* and *Academic merit (Need to change trades/courses).* but less was reported for *Academic fashion (Market & industry shift), Inadequacy of TVET curriculum to provide employable skill in the labor market, Influential individuals (Influence of TVET experts), Influence of accreditation bodies (Quality assurance)* and *Need to Change by a new benchmark as* the causes for the TVET CRs conducted between 2001 and 2010. *Generally, the above findings implies that all these factors could influence the curricula to be changed, specially, change of government policies and labor market employment need were the main influential factors of TVET reforms in Ethiopia.*

The inferential statistical analysis further discovered the significant difference on the causes of curriculum change between IBCR and OBCR and between public, private and NGO's institutions in section 5.4.6. The summarized result of similarities and differences regarding the causes of curriculum change is displayed in the following table, 5.71.

Scale/Items	***Instructors***	***Principals***	***IBCR***	***OBCR***	***Public***	***Private***	***NGO***
Causes of reform	Means						
Organizational factors	x	x	-.112	.160	.207	.047	.-432
Personal factors	x	x	x	x	x	x	x
Legal/economic	x	x	x	x	-.151	.166	-.511
Inadequacy of curriculum	x	x	x	x	4.24	3.50	2.65

Note: x – No significant difference

Table 5-72 Causes of TVET CRs: Summary

Firstly, inferential analysis was conducted between TVET instructors and principals on the causes of curriculum change. Consequently, the result of t-test shows non-significant variation between

TVET instructors and principals for all items of the causes of the curricula reform. *As a whole, it is possible to say that no perceptual difference was existed between TVET instructors and principals in terms of the causes TVET curriculum change.*

Secondly, the t-test (see Table 5.30) resulted in statistically significant mean difference between the IBCR and the OBCR for ***Organizational factors of CRs***, where the OBCR produced the higher mean than the IBCR but the effect size was small. However, it was not significant for ***Personal factors of CRs*** and ***legal/economic factor CRs***. Further, the factor *"Inadequacy of TVET curriculum to provide employable skill in the labor market"* was also not significant. *The above findings denotes that organizational factors such as influence of accreditation bodies, Benchmarking, influential individuals, Academic fashion and Academic merit were the main causes of OBCR than IBCR.*

Thirdly, the results of ANOVA (see Table 5.31) shows ***Organizational factors of CRs*** were found to be statistically significant, where public institutions produced higher mean than private TVET institutions or when compared with NGO's institutions but effect size was small. Significant difference was also identified for ***legal/economic factor CRs***, where private TVET institutions produced higher mean than Public TVET institutions or when compared with NGO's TVET institutions, however effect size was medium. The other significant difference was also identified for *"Inadequacy of TVET curriculum to provide employable skill in the labor market"*, where public TVET institutions produced higher mean than Private TVET institutions or when compared with NGO's TVET institutions with medium effect size. *As a whole, one can understand from the above findings that the causes of CRs perceived differently among TVET institutions. For example, private institutions indicated as the main causes for legal/economic factors, whereas public institution respondents indicated organizational factors as well as Inadequacy of TVET curriculum to provide employable skill in the labor market as the main causes for the CRs in the Ethiopian context.*

INTERNAL FACTORS INFLUENCING EFFECTIVE IMPLEMENTATION OF TVET CRS

Descriptive statistics on section 5.3 shows the *internal factors* that influence the effective implementation of TVET CRs in Ethiopia since 2001. The intended factors were physical ***factors*** (*Subject area objective set, Application of teaching methods, Organization of modular contents in TVET courses, Assessment and evaluation process of learning outcomes, and Availability of instructional materials such as computers).* ***Personal factors*** *(Professional TVET Teachers'*

teaching skill & experience, Awareness of teaching staff to TVET, Motivation of Teaching staff, and Background & inherent cognitive skill of TVET students) and ***Temporal factors*** *(Usage of assigned time allocation to TVET courses and Number of students in a class (class size))*

The descriptive statistics shows that three factors, such as *Assessment/evaluation, modular contents* and *class size* are the most drivers to effective implementation of the CRs in Ethiopia as reported by 60-64% of respondents. As a second rank, four factors were reported by 52-59% of respondents, such as *instructional materials, Awareness of teaching staff to TVET, Teachers' teaching skill & experience and methodology.* The last rank was reported by 31-49% of respondents for *time allocation, Motivation and cognitive skill of students as* drivers to the effective implementation of the TVET CRs conducted between 2001 and 2010. *According to the findings, Assessment/evaluation system was the highest driving factor (as reported by 64% of respondents) for the effective implementation of the CRs, whereas the least driver was the background inherent cognitive skill of students (as reported by 31% respondents). In general, all internal factors seem to a certain extent driving effect on implementation; however, this result may vary between IBCR & OBCR.*

The inferential statistical analysis further discovered the significance difference on the Internal factors influencing effective implementation of TVET CRs between Instructors and principals, between IBCR and OBCR and among public, private and NGO's institutions (see section 5.4.7). The summarized result of similarities and differences regarding the internal factors influencing effective implementation of TVET CRs is displayed in the following table, 5.72.

Scale/Items	***Instructors***	***Principals***	***IBCR***	***OBCR***	***Public***	***Private***	***NGO***
Internal Factors			Means				
Physical factors	x	x	x	x	x	x	x
Personal factors	x	x	x	x	-.465	.144	.084
Temporal factors	x	x	x	x	x	.081	-.377

Note: x– No significant difference

Table 5-73 Internal factors influencing effective implementation of TVET CRs: Summary

Firstly, inferential analysis was conducted between TVET instructors and principals on the internal factors influencing effective implementation of TVET CRs. Hence, the result of t-test shows not statistically significant variation between TVET instructors and principals for physical, personal and temporal factors. However, individually only *Application of teaching methods* was statistically significant, where principals produced higher mean than instructors with small effect size. *This implies that no perceptual difference was existed between instructors and principals on factors influencing effective implementation of TVET CRs except application of methodology.*

Secondly, the Factorial ANOVA (see Table 5.35) yielded for ***Organizational/physical factors of CRs*** non-statistically significant mean difference between the reform programs (IBCR and the OBCR) and also for ownership status (public, private and NGO's TVET institutions), yet, the interaction effect (Reform program X Ownership status) resulted in statistically significant. However, post hoc comparison yielded no significant pairwise differences.

Thirdly, factorial ANOVA yielded a significant F-ratio for ***Personal factors of CRs*** between ownership status (public, private & NGO's institutions), where public institution produced lower mean than NGO's institution or when compared with private institution with medium effect size. However, no significant F-ratio for the reform programs (IBCR & OBCR) and for interaction effect (Ownership status X reform programs).

Furthermore, Factorial ANOVA also yielded a significant F-ratio for ***temporal factors of CRs***, between ownership status (public, private & NGO's institutions), where private institution produced lower mean than NGO's institution with small effect size. However, no significant result for reform programs (IBCR & OBCR) and for interaction effect (Ownership status X reform programs). *Generally, the above findings suggest that among the internal factors, Physical factors have played the highest role in the effective implementation of TVET CRs in Ethiopia followed by temporal factors and personal factors with variation among Type of TVET institutions.*

EXTERNAL FACTORS INFLUENCING EFFECTIVE IMPLEMENTATION OF TVET CRS

Descriptive statistics on section 5.3 shows the *external factors* that *influence the effective implementation of TVET CRs in Ethiopia since 2001*. The intended factors were: ***Legal/political factors*** (*TVET Policy practice, National labor market influence on TVET, External relation to develop TVET, and Adaption of external curriculum (Benchmarking) [administrative practice]).* ***Social /cultural factors*** *(Employers need to TVET graduates, Family influence on TVET, Cultural appropriateness to TVET, and Social Attitude to TVET) and* ***Technological factors*** *(Accessibility of ICT in TVET colleges, Network & linkage system to develop TVET, and: External technical support to develop TVET, [Globalization and research development])* ***Financial Factors*** *(Salary of TVET instructors, Budget allocation to TVET, and: Foreign financial aid to TVET (Donors))*

Hence, the descriptive statistics displays that *Benchmarking* scores the highest but *salary of instructors* has the lowest score. Almost two third of respondents reported to *Benchmarking* as a driver to effective implementation of the CRs in Ethiopia. As a second rank, more than half of respondents (50-58%) reported for *External technical support, Budget allocation, Globalization,*

Family influence, and Social Attitude supported as drivers to effective implementation. The third rank (44-49%) reported as a driver to *financial aid, TVET Policy practice, Cultural appropriateness, Network & linkage system, Administrative practice, National labor market influence,* and *External technical support*. The last rank was reported by 31-38% of respondents for *Accessibility of ICT, Employers need, research development and instructors' Salary* as drivers to the effective implementation of the TVET CRs conducted between 2001 and 2010. *From the findings above, one can understand among external factors benchmarking highly drives to the effective implementation, whereas salary of instructors seems to have hindrance role that may need attention from the government. Here, external factors have to a certain extent influenced the effective implementation of the curricula reforms in Ethiopia.*

The inferential statistical analysis further discovered a significant difference on the External factors influencing effective implementation of TVET CRs between instructors and principals, between IBCR and OBCR and between public, private and NGO's institutions in section 5.4.8. The summarized result of similarities and differences regarding the external factors influencing effective implementation of TVET CRs is displayed in the following table, 5.73.

Scale/Items	***Instructors***	***Principals***	***IBCR***	***OBCR***	***Public***	***Private***	***NGO***
External factors	Means						
Legal/political factors	x	x	x	x	.372	-.101	x
Social/cultural factors	x	x	x	x	.454	-.035	-.287
Technological factors	x	x	-.511	.483	x	x	x
Financial factors	x	x	x	x	.374	-.096	x
Administrative practice	x	x	-2.78	3.27	x	x	x
Research development	x	x	x	x	x	x	x
Globalization	x	x	4.01	3.18	x	3.38	4.13

Note: x – No significant difference

Table 5-74 External factors influencing effective implementation of TVET CRs: Summary

Firstly, inferential analysis was conducted on individual items between TVET instructors and principals on the internal factors influencing effective implementation of TVET CRs. Thus, the results of t-test shows statistically significant variation between TVET instructors and principals for *Accessibility of ICT,* where instructors produced higher mean than principals with small effect size. However, *the t-test produced* non-significant variation between TVET instructors and principals for the rest 16 items of the *external factors.*

Secondly, the Factorial ANOVA (see Table 5.43) yielded for ***Legal/political factors of CRs*** statistically significant F-ratio for ownership status (public, private and NGO's TVET institutions), where Public TVET institutions produced higher mean than private TVET institutions but effect

size was small. However, Factorial ANOVA yielded non-statistically significant mean difference between the reform programs (IBCR and the OBCR) and also for the interaction effect (Reform program X Ownership status).

Thirdly, factorial ANOVA (see Table 5.45) yielded a significant F-ratio for ***Social/cultural factors of CRs*** between ownership status (public, private & NGO's institutions), where public institution produced higher mean than private institution or when compared with NGO's institution with medium partial Eta square effect size. However, no significant F-ratio produced for the reform programs (IBCR & OBCR) and for interaction effect (Ownership status X reform programs).

Fourthly, ANOVA (see Table 5.47) also yielded a significant F-ratio for ***technological factors of CRs***, *between* reform programs (IBCR & OBCR), where OBCR produced higher mean than IBCR with large partial Eta square effect size. However, no significant F-ratio produced for the *ownership* status (public, private & NGO's institutions) and for the interaction effect (Ownership status X reform programs).

Finally, the Factorial ANOVA (see Table 5.51) yielded for ***Financial factors of CRs*** statistically significant F-ratio among ownership status (public, private and NGO's TVET institutions, where Public TVET institutions produced higher mean than private TVET institutions but partial Eta square was small. However, Factorial ANOVA yielded non-statistically significant F-ratio between the reform programs (IBCR and the OBCR) and also for the interaction effect (Reform program X Ownership status).

During the process of Factor analysis three individual items were dropped out from the scale, such as *administrative practice*, *research development* and *globalization*. Hence, a t-test resulted in significant value for TVET administrative practice, where OBCR produced higher mean than IBCR for the effective implementation of the CRs but effect size was small. Furthermore, a t-test resulted in significant value for the *Globalization* influence to TVET curriculum, where IBCR produced higher mean than OBCR for effective implementation of the CRs in Ethiopia with medium effect size, however non-significant result yielded for *research development*.

Here the ANOVA also calculated for those items and found significant for *globalization* influence on TVET curriculum, where NGO's TVET institutions produced higher mean than private TVET institutions but partial Eta square effect size was small. However, ANOVA yields no significant value for factors such as TVET *administrative practice* and *research development*, suggesting that no significant influence shade light on the difference among the ownership status for the effective

implementation of the CRs in Ethiopia. *In general, from the above findings one can conclude that among the external factors, legal/political factors have played the highest role on the effective implementation of the CRs in Ethiopia followed by social/cultural factors and financial factors in addition to globalization, research development and administrative practice.*

IMPACT INDICATORS OF CRS

Descriptive statistics on section 5.3 shows the *impact indicators* of TVET CRs. The indicators were, *Access to the program of study (enrolment rate), Graduation rates, Employability of graduates, Quality of training, Creating a competent/skilled workforce, Creating access to trainees for competency assessment (COC), Cost-effectiveness, New methods of training, and Time table/schedule adjustment.*

The descriptive statistics displays that highest impact of the CRs leaned towards *quality of training (61%)* but *cost effectiveness* (40%) was the least indicator that impacted by the reforms. Almost two third of respondents reported to *quality of training* as a positive indicator of the TVET CRs in Ethiopia since 2001. Yet, from 51-59% reported that the CRs have impacted positively to, *"Enrolmen*t *rate, Employability of graduates, New methods of training, and Creating a competent/skilled workforce"*. As a third rank, from 40-49% of respondents reported as a positive impact of the CRs to *"Graduation rates, Creating access to trainees for competency assessment, and Time table/schedule adjustment" successively. In summary, the above findings suggest that the CRs have impacted positively on all nine impact indicators mentioned above.*

The inferential statistical analysis further discovered a significant difference regarding impact indicators of TVET CRs between TVET instructors and principals, between IBCR and OBCR and among public, private and NGO's institutions (see section 5.4.9). The summarized result of similarities and differences regarding the impact indicators of TVET CRs is displayed in the following table, 5.74.

Firstly, t-test shows statistically significant variation between TVET instructors and principals for "*Enrollment rate" and "Access to competency assessment"* where instructors produced higher mean than principals with small and medium effect size, respectively. However, *the t-test produced* a non-significant variation between TVET instructors and principals for the rest 7 *impact indicators. This finding suggests that the perception of TVET instructors on the positive impact of the CRs on enrolment rate and assessment system was higher than TVET principals.*

Scale/Items	*Instructors*	*Principals*	*IBCR*	*OBCR*	*Public*	*Private*	*NGO*
Impact indicators	Means						
Enrolment rate	3.72	2.98	x	x	3.98	3.35	4.11
Graduation rate	x	x	3.15	3.87	x	3.28	4.12
Employment	x	x	x	x	x	3.44	4.33
Quality assurance	x	x	x	x	x	3.56	4.58
Competency/skill	x	x	x	x	x	3.32	3.94
Assessment	3.25	4.13	3.23	3.64	x	x	x
Cost effectiveness	x	x	3.01	3.63	3.12	3.11	4.08
Methodology	x	x	x	x	4.11	3.71	4.25
Time table adjustment	x	x	2.87	3.60	x	3.05	3.80

Note: x– No significant difference

Table 5-75 Impact indicators of CRs: Summary

Secondly, the t-test resulted in statistically significant mean difference between the IBCR and the OBCR for indicators such as *Graduation rates,* and *Time adjustment of course hours (effect size was closer to medium) but Access to competency assessment, Cost effectiveness, effect size was small,* where the OBCR produced the higher mean than the IBCR (see Table 5.53). *This finding suggests that OBCR (Level system) has greater positive impact on graduation, assessment, cost effectiveness and time adjustment of courses than the IBCR (10+system).*

Thirdly, the results of ANOVA (see Table 5.54) were also found to be statistically significant for *Access to enrollment, New methods of training and Cost-effectiveness, where* NGO's TVET institutions produced higher mean than Public TVET institutions or when compared with private TVET institutions. Further, ANOVA found also statistically significant value for *Graduation rates, Employability of graduates, Quality of training, creating a competent/skilled workforce, , and Time table/schedule adjustment,* where NGO's institutions produced higher mean than private TVET institutions, however Partial Eta square effect size was small for all impact indicators except *quality of training* closer to medium effect size. *Based on the above finding, it is possible to conclude that there was variation on the impact of the CRs on the indicators among the type of TVET institutions, where NGO's institutions were more positively perceived on almost all impact indicators than public and private institutions.*

GRADUATE RELEVANCE INDICATORS OF TVET CRS

Descriptive statistics on section 5.3 shows the *Graduate relevance indicators* of TVET CRs implemented in Ethiopia since 2001. The indicators are "*The curricula minimized unemployment rate of TVET graduates, The curricula provided TVET graduates with paid employment opportunity, The curricula provided access to make the qualification of TVET graduates match with*

the labor market, The curricula increased the quality of jobs found by the TVET graduates, The curricula prepared TVET graduates for self-employment, and *The curricula provided access for further training for TVET graduates".*

The descriptive study shows that "*The curricula prepared TVET graduates for self-employment* "reported by more than half of respondents as the first rank of graduate indicators and the least was reported for *"The curricula minimized unemployment rate of TVET graduates"*. Yet, from 44-49% of respondents reported for "T*he curricula provided TVET graduates with paid employment opportunity, The curricula provided access for further training for TVET graduates, The curricula increased the quality of jobs found by the TVET graduates, and The curricula provided access to make the qualification of TVET graduates match with the labor market", suggesting that the CRs implemented in Ethiopia since 2001 have impacted positively on TVET graduates relevance indicators specially on self-employment opportunity, however minimizing unemployment seems lower as perceived by the respondents.*

The inferential statistical analysis further discovered a significant difference on the graduate relevance indicators of TVET CRs between TVET instructors and principals, between IBCR and OBCR and among public, private and NGO's institutions (see section 5.4.10). The summarized result of similarities and differences regarding graduate relevance indicators of TVET CRs is displayed in the following table, 5.75.

Scale/Items	***Instructors***	***Principals***	***IBCR***	***OBCR***	***Public***	***Private***	***NGO***
Graduate relevance	Means						
Unemployment minimization	x	x	2.56	3.38	3.72	2.94	2.21
Paid employment	x	x	3.13	3.66	x	x	x
Access to labor market	x	x	x	x	3.47	2.99	2.37
Quality job opportunity	x	x	x	x	x	x	x
Self-employment	x	x	2.66	3.21	3.80	2.86	2.54
Further training	3.10	3.56	2.83	3.55	3.59	3.20	2.79

Note: x– No significant difference

Table 5-76 Graduate relevance indicators of TVET CRs: Summary

Firstly, the results of t-test shows statistically significant variation between TVET instructors and principals for *"The curricula provided access for further training for TVET graduates"*, where instructors produced higher mean than principals with small effect size. However, *the t-test produced* non-significant variation between TVET instructors and principals for the rest five items of the graduate relevance indicators. *This finding suggests that variation was existed on the work*

status of respondents regarding the opportunity for further training, which was highly perceived by principals than instructors as a positive graduate relevance indicator.

Secondly, the t-test resulted in statistically significant mean difference between the IBCR and the OBCR for indicators such as "*The curricula minimized unemployment rate of TVET graduates, and The curricula provided access for further training with closer medium effect size but for TVET graduates, The curricula provided TVET graduates with paid employment opportunity and The curricula prepared TVET graduates for self-employment* effect size was small, where the OBCR produced the higher mean than the IBCR (see Table 5.55). *From the above findings, one can conclude that the OBCR (Level system) impacted more on TVET graduate relevance indicators than IBCR (10+ systems).*

Thirdly, the results of ANOVA (see Table 5.56) were found to be statistically significant for *the curricula minimized unemployment rate of TVET graduates, the curricula provided access to make the qualification of TVET graduates match with the labor market, the curricula increased the quality of jobs found by the TVET graduates (post hoc shows no difference), the curricula prepared TVET graduates for self-employment* and *the curricula provided access for further training for TVET graduates, where* Public TVET institutions produced higher mean than private TVET institutions or when compared with NGO's TVET institutions, however Partial Eta square effect size was small for all graduate relevance indicators except medium effect size for "M*inimizing unemployment rate". This finding suggests that the CRs impacted on the relevance indicators of TVET graduates were perceived more positively by Public TVET institutions than private and NGO's institutions in Ethiopia.*

EMPLOYER RELEVANCE INDICATORS

Descriptive statistics on section 5.3 shows the *Employer relevance indicators of TVET CRs implemented in Ethiopia since 2001*. The indicators are "*The competency of graduates is appreciated by the employers, TVET graduates are more productive in industries, Employers are satisfied with the performance of TVET graduates, improved technology transfer in the Industries, The qualification of TVET graduates match with the industry standards for employment, and The curricula responded the human resource needs of employers*".

The descriptive study displays that "*Improved technology transfer in the Industries"* reported by more than half of respondents as the first rank of employer indicators and the least was reported for *"The curricula responded the human resource needs of employers"*. Yet, from 45-48% of

respondents reported for *"The qualification of TVET graduates match with the industry standards for employment", "TVET graduates are more productive in industries", "The competency of graduates is appreciated by the employers"* ,and *"Employers are satisfied with the performance of TVET graduates"*, as employer relevance of the CRs implemented in Ethiopia since 2001. *The above findings denote that the CRs have impacted positively on employer relevance indicators specially the improvement of technology transfer, however less for human resource needs.*

The inferential statistical analysis further discovered a significant difference on the graduate relevance indicators of TVET CRs between TVET instructors and principals, between IBCR and OBCR and among public, private and NGO's institutions (see section 5.4.8). The summarized result of similarities and differences regarding employer relevance indicators of TVET CRs is displayed in the following table, 5.76.

Scale/Items	***Instructors***	***Principals***	***IBCR***	***OBCR***	***Public***	***Private***	***NGO***
Employer relevance	Means						
Competency appreciation	x	x	x	x	4.11	3.18	x
Productivity	x	x	x	x	3.39	x	2.62
Performance	x	x	2.71	3.68	3.70	2.97	x
Technology transfer	x	x	x	x	x	x	x
Quality of graduate	x	x	2.98	3.46	4.37	2.96	3.00
Human resource need	x	x	2.66	2.94	4.02	3.01	x

Note: x– No significant difference

Table 5-77 Employer relevance indicators: Summary

Firstly, the result of t-test shows statistically a non-significant difference existed between TVET instructors and principals for all items of employer relevance indicators, *suggesting that no perceptual difference existed between instructors and principals regarding employer relevance indicators*.

Secondly, the t-test resulted in statistically significant mean difference between the IBCR and the OBCR for indicators such as *"Employers are satisfied with the performance of TVET graduates, The qualification of TVET graduates match with the industry standards for employment, and The curricula responded the human resource needs of employers"*, where the OBCR produced the higher mean than the IBCR with small effect size for these items, except medium effect size for "*Employers are satisfied with the performance of TVET graduates"*. (See Table 5.57) *The above findings suggest that OBCR (Level system) outsmarts the IBCR (10+system) in terms of employer relevance indictors.*

Thirdly, the results of ANOVA (see Table 5.58) were found to be statistically significant for the following items such as *"The competency of graduates is appreciated by the employers"*, where Public TVET institutions produced higher mean than private TVET institutions, *"TVET graduates are more productive in industries"*, where private TVET institutions produced higher mean than NGO's TVET institutions, *"Employers are satisfied with the performance of TVET graduates"*, where Public TVET institutions produced higher mean than private TVET institutions, *"The qualification of TVET graduates match with the industry standards for employment"*, where Public TVET institutions produced higher mean than private TVET institutions or when compared with NGO's TVET institutions, and *"The curricula responded the human resource needs of employers"* where Public TVET institutions produced higher mean than private TVET institutions, with small Partial Eta square effect size for all employer relevance indicators, except "*The qualification of TVET graduates match with the industry standards for employment* closer to large effect size ".
As a whole, the findings indicate that public institutions appreciated more of the impact of the CRs on the indicators of employer relevance than private or NGO's institutions.

PARTICIPATION IN THE DESIGN OF TVET CURRICULUM

Descriptive statistics (see section 5.2) shows the *participation in the design of TVET curriculum during the CRs implemented in Ethiopia since 2001*. The descriptive study displays that among respondents 47% were participated in the process of TVET curriculum design. Among these 48% were instructors, whereas 44% were principals. *The findings denote that there was proportional involvement of TVET instructors and principals in the process of TVET curricular design.*

The inferential statistics further revealed whether the participation in the design of TVET curriculum varied across the characteristics of respondents (section 5.5.1) such as *type of TVET institutions*, *Gender*, *Work status*, *qualification*, *age* of respondents, and *experience* of the respondents. Hence, chi-square test yielded a significant value for the type of TVET institutions, where NGO's institution produced higher value than private or when compared with public TVET institutions with almost medium effect size, *suggesting that NGO's instructors and principals were highly participated in the design of TVET curriculum.* However, the chi-square test did not produced s significant values between *Gender*, *Work status*, *qualification*, *age*, and *experience* of respondents. *This finding suggests that there was no any light shade on the perceptual difference of participation on the design of curriculum between the characteristics of respondents except Types of institution wih medium effect siye.*

COMPETENCY ASSESSMENT

Descriptive statistics on section 5.2 shows the taking competency assessment of TVET instructors and principals. Hence, more than two third of respondents have taken the competency assessment and found certified 81% on level IV (previous 10+3 or diploma), suggesting that the majority of respondents were competent in one of their field of study. Hence, the CR (OBCR) has impacted positively on the competency assessment and certification.

Competency Assessment

Age			***Experience***				***Work status***		***Gender***		***Type of institutions***			***Qualification***		
18-29	***30-44***	***>45***	***<5***	***5-10***	***11-20***	***>>20***	***Instructors***	***Principals***	***M***	***F***	***Public***	***Private***	***NGO***	***Diplo***	***Degree***	***Master***
Percentages																
57	28	16	70	88	56	54	62	91	64	84	77	71	42	75	69	53

Table 5-78 competency assessment

The inferential statistics (section 5.5.2), further shown whether taking competency assessment varied across the characteristics of respondents such as type of TVET institutions, Gender, Work status, qualification, age of respondents, and experience of the respondents.

Firstly, the chi-square test yields a significant value between gender differences, where males produced higher value than females' respondents with small effect size, *suggesting that taking competency assessment depends on gender where females are found to be much more than males. This shows that gender bias is an issue in taking competency assessment in the Ethiopian context.*

Secondly, Pearson's chi-square was yielded another significant value between the work status of respondents where principals produced higher value than instructors with small effect size, *suggesting that taking competency assessment depends on the work status that TVET college principals are found to be keener to assess their competencies than TVET instructors.*

Thirdly, chi-square test also generated a significant value for the difference between the type of institution, where public institutions produced higher value than private or when compared with NGO's institutions with medium effect size, *suggesting that taking competency assessment depends on the type of institution that public college instructors and principals were found to be more keener to assess their competencies than private or NGO's institutions.*

Fourthly, qualification was another significant value produced by the chi-square test, where diploma holders produced higher value than bachelor degree holders or when compared with master holders, *suggesting that taking competency assessment depends on the qualification of the TVET college instructors and principals that the lower qualification levels are found to be keener to assessed than the higher qualification levels but the effect size was small.*

Fifthly, age of respondents was also another significant value produced by the chi-square test, where the first group 18-29 years of age produced higher value than the second age group 30-44 or when compared with the third age group 45-60 years old with medium effect size , *suggesting that taking competency assessment depends on the age of respondents, where the younger group were found to be more keener to assess their competency than the older age groups with almost medium effect size.*

Finally, chi-square test also found a significant value for the difference between respondents experience, where the first experience group (below 5 years) assessed more than the second group (5-10 years) or when compared with the third group (11-20) or when compared to the last group of experience (above 20 years), *suggesting that taking competency assessment depends on experience where the more the experience the less taking competency assessment is revealed by respondents of the study with closer large effect size. Generally, taking competency assessment depends on the characteristics of respondents.*

6 TVET GRADUATES PERSPECTIVES ON TVET CR

(Empirical analysis of individual items of TVET graduates' questionnaires: Descriptive statistics)

Introduction

The purpose of this part is to investigate the perception of respondents in terms of relevancy of CRs in the eyes of TVET graduates. These items are: Relevancy of skill/training at TVET colleges, Causes of unemployment, Causes of incompetency, Cooperative/apprenticeship training in industries, Relevancy of competency in the work place, Reasons of no usefulness of skill to the job/business, Competency assessment of graduates, Frequency of taking competency assessment, Reasons for not taking competency assessment, Employment of graduates, Indicators of employment of graduates, Quality indicators of TVET graduates, and Income indicators of TVET graduates. These group of items will be evaluated to identify the similarity and differences by comparing the perceptions of respondents of the TVET institutions (Public, private and NGO) and CRs programs (IBCR &OBCR).

Demographic Data

In addition to questionnaires for TVET instructors and principals' questionnaires were designed and distributed for 200 TVET graduates and collected a total of 131 questionnaires. Hence, TVET graduates were asked to indicate initially their characteristics such as *sex, age, level of graduation, occupational level, the ownership status, types of institutions and* graduation *year*. Accordingly, descriptive statistics was conducted to show their frequencies and percentages on SPSS version 20.

As can be seen from Table 6.1, among these respondents, the numbers of female respondents were small 51 (38.9%) compare to male participants 80 (61.1%). Furthermore, the majority respondents 73 (55.7%) were young less than 25 years old and the second age group 25-35 years were 51 (38.9%), however the third age group (greater than 35 years old) respondents were small 7 (5.3%).

Table 6.1 indicates also the level of TVET graduates almost all 129 (98.5%) reported they are 10+3 (diploma holder). They were also requested to show their occupational level awarded after competency assessment result. Majority 69 (52.7%) respondents, however, were not yet certified, suggesting that they may (failed) or may not have taken competency assessment, however the rest 28 (21.4%) reported as levels IV, and 24 (18.3%) belongs to Level III but only 6 (4.6%) and 4 (3.1%) were level II and level I respectively.

TVET graduates respondents' demographic data

Items	GRADUATES	
	No.	**%**
Sex		
Male	80	61.1
Female	51	38.9
Total	131	100
Age		
<25 years	73	55.7
25-35 years	51	38.9
>35 years	7	5.3
Total	131	100,0
Level of Graduation		
10+3	129	98.5
NA	2	1.5
Total	131	100.0
Occupational level		
Level I	4	3.1
Level II	6	4.6
Level III	24	18.3
Level IV	28	21.4
not yet certified	69	52.7
Total	131	100.0
Types of Institution		
Private Institution	42	32.1
Public Institution	68	51.9
NGO' Institution	21	16.0
Total	131	100.0
Graduation year (IBCR & OBCR)		
IBCR (2001-2005)	51	38.9
OBCR (2006-2010)	80	61.1
Total	131	100.0

Table 6-1 Demographic data of respondents

Further, Table 6.1 shows the type of TVET institutions. Among respondents from TVET institutions 68 (51.9%), 42 (32.1%), 21 (16%) were from public, private and NGO institutions respectively. For graduation year, the majority respondents 80 (61.1.4%) were from 2001-2005 and 51 (38.9%) were graduation group from 2006-2010, indicating that valuable data can be obtained from both groups of graduation for the purpose of comparison.

6.1 *Relevancy of skill/training at TVET colleges*

The purpose of this section was to identify the relevancy of training at TVET colleges. Here six items were assigned to the first group. This group deals with the skill training at TVET colleges. Respondents were asked, "How *do you agree/disagree with the following relevancy of skill training conducted in your area of studies at your institution?* The items are: Item1: *The relevancy of modular contents, Item 2:*

relevancy of classroom training, Item 3: Relevancy of methodology used in the class, Item 4: Relevancy of curriculum, Item 5: Getting adequacy of competency from the college, and Item 6: Helpfulness of the competency for getting job for further training opportunity. Responds were given from strongly disagree to strongly agree in addition to decoded scales for easy comparative analysis the "*Strongly Disagree, Disagree and Mildly Disagree*" as "*Disagree*"(D) the other side "*Mildly Agree, Agree and Strongly Agree as "Agree*"(A). Table 6.2 presents in detail:

Items	Strongly Disagree	Disagree	Mildly Disagree	Mildly Agree	Agree	Strongly Agree	Percentage IBCR		Percentage OBCR	
	%	%	%	%	%	%	D	A	D	A
Item 1: The relevancy of modular contents	17.6	16.0	11.5	30.5	19.1	5.3	63	37	34	66
Item 2: Relevancy of classroom training.	12.2	21.4	12.2	20.6	22.9	9.2	47	53	45	55
Item 3: Relevancy of methodology used in the class	10.7	14.5	6.1	30.5	26.7	11.5	20	80	36	64
Item 4: Relevancy of curriculum for further training opportunity	29.0	19.8	3.1	7.6	16.0	24.4	39	61	60	40
Item 5: Getting adequacy of competency from the college	12.2	6.9	7.6	36.6	26.0	10.7	22	78	30	70
Item 6: Helpfulness of the competency for getting job	10.4	25.0	--	19.8	32.3	12.5	20	80	70	30

NB.A-Agree D-Disagree

Table 6-2 Relevancy of the skill training at colleges

In Group 1, *Relevance of skill training at TVET colleges*, were almost total agreements that the relevancy of the skill training at college level during CRs from 2001 to 2010. Among the six items mentioned above, respondents were disendorsed only one item such as *Item4: relevancy of curriculum for further training opportunity* were not supported by 52% of respondents. The rest 5 items were endorsed by the majority of respondents such as *Item1: The relevancy of modular contents* 55%, *Item 2: relevancy of classroom training*, 54%, *Item 3: relevancy of methodology used in the class* 69%, *Item 5: getting adequacy of competency from the college* 73%, and *Item 6: helpfulness of the competency for getting job* 65%. This indicates that the majority indicators of relevancy of CRs implemented at TVET colleges have supported positively, according to the graduate respondents of this study.

Specifically, responds of all items except *Item 4: Relevancy of curriculum for further training opportunity* 29% strongly disagreed and 24% goes to the other end of the scale, strongly agree. The other five items were inclined to agreement scale. For example, *Item1: The relevancy of modular contents* was mildly agreed *by* 31%, but still about 18% responds were leaned to strongly disagreement. *Item 2: relevancy of classroom training,* 23% were leaned to agreement and 21% inclined to disagreement scale. Further, Item *3: relevancy of methodology* used in the class was

mildly agreed by 31%, with 15% disagreement on the other end. Here, *Item 5: Getting adequacy of competency from the college* was mildly agreed *by* 37% in addition to 26% agreement scale. Finally, *Item 6: helpfulness of the competency for getting job* 32%, Technical scientific change 31% and *evaluation system change* 32% leaned to agreement scale but still there is 25% disagreement on the other end of the scale (Table 6.2). These discrepancy responses warranted further investigation during the inspection stage of the study.

Comparatively, Table 6.2 additionally shows the statistic results of IBCR and OBCR. Hence, the IBCR respondents, however, disendorsed only one item, i.e., *Item1: The relevancy of modular contents* by 63% of the IBCR respondents, whereas the OBCR respondents disendorsed Item *4: relevancy of curriculum for further training opportunity* and *Item 6: Helpfulness of the competency for getting job was similarly disagreed* by 70% each. The rest items were endorsed by both respondents of IBCR & OBCR. For example, *Item 2: relevancy of classroom training were less supported* by 53% of IBCR than 55% of OBCR respondents. *Item 3: relevancy of methodology used in the class* was more supported by 80% of IBCR than 64% of OBCR respondents. Similarly, *Item 5: getting adequacy of competency from the college* was more supported by 78% of IBCR than 70% of OBCR respondents, indicating that there is variation between IBCR and OBCR regarding the issues of relevancy of skill training at TVET colleges.

In this group 1, we identified statistically significant differences between two groups (IBCR & OBCR) by running t-test on group responses in terms *relevancy of skill training at college level*. The t-test shows that Item 1, Item 3, Item 4 and Item 6 have ($p < 0.05$) result in statistically significant mean differences among all items in the group 1. Details are displayed at the next inferential analysis section of this study.

Causes of Unemployment

Respondents were asked additional open-ended questions besides *Item 6: Helpfulness of the competency for getting job,* The question stated was *„If your answer for item 6: My competency that I got from the college was not helpful to get a job", "please specify the reasons"*, Accordingly, the following reasons were summarized, according to consideration of respondents, for not being helpful to get a job (unemployment) in the labor market.

> *"No enough skill and competence, No Job experience, no competence certificate, Graduates have more challenge in the labor market since no enough industries, The government has less consideration for TVET graduates and No job opportunity in the labor market"*

Causes of incompetency

In addition to the competency question above (group 1 Item 5), further open-ended question was raised besides *Item 5: "Getting adequacy of competency from the college"*. The question was stated as *"If your answer is 'I did not get adequate competence from the college', please specify the reasons"*. Accordingly, the responses are summarized according to the major consideration.

> *"No enough materials in my field of study, the materials used in the college were different from the work place, No qualified teacher, excess number of students in a class, no enough practical training, More of theoretical courses & no sufficient time allocated to the courses, Lack of books, no enough library, and untimed reform."*

6.2 *Relevancy of cooperative/apprenticeship training in industries*

This part intends to identify the relevancy of cooperative/apprenticeship training conducted in the industries. These items were assigned in the second group. Respondents were asked, "How *do you agree/disagree with the measure taken to improve skill in your area of studies in the companies?* The Items were: *Item1: Access to Cooperative/ Apprenticeship training, Item2: Adequacy of time for Apprenticeship/cooperative training, Item 3: company training match with college contents, and Item 4: sufficient workshop/Training materials in the company.*

Respondents were replied from strongly disagree to strongly agree in addition to decoded scales for easy comparative analysis the "*Strongly Disagree, Disagree and Mildly Disagree*" as "*Disagree*"(D) the other side "*Mildly Agree, Agree and Strongly Agree as "Agree*"(A). Table 6.3 presents in detail:

Items	Strongly Disagree	Disagree	Mildly Disagree	Mildly Agree	Agree	Strongly Agree	Percentage IBCR		Percentage OBCR	
	%	%	%	%	%	%	D	A	D	A
Item 1: Access to Cooperative/ Apprenticeship training	28.6	29.4	7.1	9.5	16.7	8.7	73	27	60	40
Item 2: adequacy of time for Apprenticeship/ cooperative training	18.3	26.0	1.5	12.2	27.5	14.5	65	35	34	66
Item 3: company training match with college contents	26.4	28.0	3.2	8.0	21.6	12.8	78	22	46	54
Item 4: sufficient workshop/Training materials in the company	28.2	24.4	9.2	9.2	22.9	6.1	69	31	58	42

Table 6-3 Relevancy of cooperative/apprenticeship training

In question group 2, there was almost total disagreements reported regarding "*Relevancy* of cooperative/apprenticeship training. Among the four items mentioned above, respondents were endorsed only one item such as *Item 2: adequacy of time for Apprenticeship/cooperative training*

was supported by 54% of respondents. The majority of respondents (Table 6.3) disendorsed the rest three items. For example, the access to cooperative/apprenticeship 75%, lack workshop materials 62%, mismatch between contents in the college 58% of respondents.

Specifically, responses for most items leaned towards the negative scales, for example, *Item1: Access to Cooperative/Apprenticeship training 29% disagreed, Item 3: company training match with college contents dis agreed by* 28%, but still about 22% responds leaned to the agreement scale. *Item 4: sufficient workshop/Training materials in the company, 2*8% leaned to strongly disagreement but 23% inclined to agreement scale. Whereas, *Item 2: Adequacy of time for apprenticeship/cooperative training* was agreed by 28%, with 26% disagreement on the other end. (Table 6.3). This implies that respondents of graduate relatively agreed on the relevancy of cooperative/apprenticeship training program; however, they found it difficult to get training organizations where cooperative/apprenticeship training takes place. Further, the insufficiency of the workshop materials in the companies can make the training incomplete. The mismatch between the contents in the college and the real practice in the industry found to be varied. These facts create gapes in the training process between colleges and companies.

Comparatively, Table 6.3 additionally shows the statistic results of IBCR and OBCR. Hence, the IBCR respondents disendorsed all items, whereas the OBCR respondents disendorsed Item 1& 4 but endorsed Item 2 & 3. For example, *Item1: Access to Cooperative/Apprenticeship training* was more disendorsed by the IBCR (73%) than the OBCR (60%) respondents. Whereas, *Item 2: Adequacy of time for Apprenticeship/cooperative training* was less endorsed by IBCR (35%) than OBCR (66%) respondents. Similarly, *Item 3: Company-training match with college contents* less endorsed by IBCR (22%) than OBCR (54%) respondents. Finally, *Item 4: Sufficiency of workshop/ Training materials in the company* was disendorsed more by the IBCR (69%) than the OBCR (58%) respondents. The finding suggests that there is better improvement of Cooperative/apprenticeship training during OBCR than IBCR.

In this question group 2, we identified statistically significant differences between two groups (IBCR & OBCR) by running t-test on group responses regarding *Skill training in the training companies*. The t-test results in, for all four items, ($p < 0.05$) statistically significant mean differences between IBCR & OBCR. Further analysis has been given in the next inferential statistics section.

6.3 *Relevancy of competency in the work place*

A question was raised for those employed graduates, to investigate to what extent their skill/competency acquired was found to be applicable to the job or business. The question stated was "*How useful are your skills acquired from the training to your job/business?* The responses were 1. *Very useful, 2. Some use, and 3. No use at all.*

Usefulness of Skill Acquired to the Job/business

	Frequency	%	valid %	IBCR	OBCR
• Very useful (when often or directly used in the job)	57	62.6	62.6	58.3	65.5
• Some use (when seldom or sometimes used in the job)	13	14.3	14.3	16.7	12.7
• No use at all	21	23.1	23.1	25	21.8
Total	91	100	100	100	100
NA	40	30.5			
Total	131	100.0			

Table 6-4 Extent of competency application in the work place

The majority of respondents (63%) replied "*very useful*", i.e., they apply the acquired skill directly in the work place, whereas 14% of respondents replied "*some use*", *i.e.*, they used their acquired skill seldom to the job/business. However, 23% of graduate respondents reported "*no use at all*" (Table 6.4), suggesting that there was mismatch between the skill acquired and the job assigned or the self-employed business they made. The reasons why they could not apply their skills were presented in the next section below.

Reasons of no usefulness of skill to the job/business

Additional question was requested besides the above question (Table 6.4) for those who reported "*No use at all*". The question was stated as "*If your reply is "no use at all" (20%) then what was the reasons for unable to apply the skill in the work place*? The specified responses were 1. *The skills acquired from training/course not needed in actual work, and 2. Occupation is entirely different from training/course completed.*

Reasons of no Usefulness of Skill to the Job/business

	Frequency	Percent	valid %
• Skills acquired from training/course not needed in actual work	6	6.6	28.6
• Occupation is entirely different from training/course completed	15	16.5	71.4
Total	21	23.1	100
System	70	76.9	
Total	131	91	100

Table 6-5 Reasons of no usefulness of skill to the job/business

As table 6.5 depicts that the majority 29% employed graduate respondents reported *Skills acquired from training/course was not needed in actual work, whereas about 71% of respondents were reported the "Occupation is entirely different from training/course completed"*, indicating that the majority of TVET graduate found that their skill were not useful in the work place.

6.4 *Competency assessment of graduates*

The purpose of this section is to evaluate the process of competency assessment of graduates, five consistent questions were raised. The first three question were *"Did you take competency assessment", "are the contents studied at the college related with the contents of the competency assessment?" and "if you take the competency assessment, did you pass?" Replied with- 1. Yes or 2. No answers.* Further, open-ended questions was raised as *"If you failed the assessment, how many times did you take the assessment?"* and the second open-ended question was stated as *„If you did not take the assessment, please specify the reasons"*. The first three questions are displayed on the Table 6.6.

Competency assessment	***Yes***	***No***	***Total***
Taking Competency Assessment	66 (50.4%	**65 (49.6%)**	131 (100%)
Did you pass Competence Assessment?	43 (65.2%	**23 (34.8%)**	66 (100%)
Relatedness of competency Assessment with contents at college	38 (57.6%	**28 (42.4%)**	66 (100%)

Table 6-6 Graduates' competency assessment

Table 6.6 displays, 50.4 % of the graduate respondents has taken competency assessment, whereas 49.6% were not. This implies that almost half of the respondents were not assessed. Among those 66 (50%) graduates who took competency assessment 43 (65%) were passed the assessment, whereas 23 (34.8%) were failed the assessment, suggesting that totally about 67% of graduate were not certified. A question also raised if the contents were related with the assessment, 38 (57.6%) respondents reported the contents were related, whereas 28 (42.4%) were reported the contents of the competence assessment and the contents learned in the college were unrelated. This finding suggests that the contents of the courses offered in different colleges may differ.

6.4.1 **Frequency of taking Competency assessment**

To investigate the frequency of competency assessment taken by TVET graduates, for certification, an open-ended question was raised as *"How many times did you take the competency assessment to be certified? „*The details are summarized on the Table 6.7.

Assessed frequency					
Frequency	Frequency	%	Valid %	Pass	Fail
• Once	15	11.5	23.1	9 (20.9%)	6 (27.3%)
• Twice	41	31.3	63.1	32 (74.4%)	9 (40.9%)
• Thrice	8	6.1	12.3	2 (4.7%)	6 (27.3%)
• Four times	1	.8	1.5	-	1 (4.5%)
Total	65	49.6	100.0	43 (100%)	22 (100%)
Not-assessed	66	50.4			
Total	131	100.0			

Table 6-7 Frequency of taking competency assessment

Table 6.7 shows, the majority 41 (63%) have assessed twice, among these 74% were certified after the second time assessment. However, some few of the graduates 15 (23%) have taken once but still 6 (27%) graduates were failed and are liable to take for the second time so as to be certified. There are also some 8 (12%) who took three or four times to pass and certified in their field of study. From this finding, one can deduce that the majority certified after taking the second assessment. This may need further investigation during inspection stage of this study.

Reasons for not Taking Competency Assessment

Furthermore, to investigate the reasons for not taking assessment to be certified, an open-ended question was raised as *"If you did not take the assessment, please specify the reasons for not taking the assessment"*. The summary of the responses are presented in accordance to high frequencies*:*

> *"The assessment was very difficult to pass and lack of enough competencies, I did not understand why I should take the competency assessment. assessment cost is high, financial shortage, no support from my family, since there is no jobs in the labor market, I do not need to take the assessment, busyness (no time to take the assessment), no enough competence centre, remote exam centres, the competency assessment centre (COC) has no organized system , and the assessment also has a problem."*

From these diversified reasons, one can understand that taking assessment of graduates to be certified can be hindered by such problems.

6.5 *Employment of Graduates*

To investigate regarding employment opportunity after graduation, four questions were raised as "*Did you get job after graduation*", respond as 1) *Yes* and 2) *No*. An open question also raised to indicate the salary/income per month, the responses ranges from 700 to 2,180 Ethiopian Birr (ETB), then it is classified as <=1000, 100-2000 and 2000+. The other open-ended question raised was "*If not yet employed, please specify the reasons"*, Further, it was asked "*How long did it take to get first employment or searching time to get a job?"*, the responses were 1) < 1 year, 2) 1-2 years and 3) >2 years. Another question was also raised to identify to whom they work for, the question stated

as *„Whom do you work for?"* The responses were 1) *Private household*, 2) *Governmen*t, 3) *Self-employed*, 4) *Family business*. Finally, to evaluate the nature of employment question was raised as "*what is the nature of your employment?*" the responses are 1) *Permanent job*, 2) *Part-time job*, 3) *Unpaid family business*, 4) *Self-employed* , & 5) *Short-term/seasonal job*. Table 6.11 shows the details.

Employment of graduates

	Frequency	%	Valid %	Cumulative %
Item 1: Employment after graduation				
• Yes	91	69.5	69.5	69.5
• No	40	30.5	30.5	100
Total	131	100	100	
Item 2: Monthly income /salary (CLASSIFIED)				
• <= 1000 ETB	12	9.2	13.2	13.2
• 1000- 2000 ETB	58	44.3	63.7	76.9
• 2000+ETB	21	16.0	23.1	100
Total	91	69.5	100	
Item 3: Currently employed for:				
• work for private household/establishment/ family operated activity	38	29.0	41.8	41.8
• work for government/government corporations	47	35.9	51.6	93.4
• work for own business or self-employed	6	4.6	6.6	100
Total	91	69.5	100	
Item 4: Nature of employment				
• permanent Job	47	19.2	51.6	51.6
• Part-time Job	37	15.1	40.7	92.3
• Self-employed/business	6	2.4	6.6	98.9
• short-term/seasonal job	1	.4	1.1	100
• Total	91	37.1	100	

Rate: 1€=20ETB (Ethiopian currency)

Table 6-8 Employment of Graduates

Table 6.8 displays that 91(70%) of graduate respondents were employed, whereas 40 (30%) were not, suggesting that the majority has got a chance to be employed. Among these employed graduates, (64%) monthly salary/income were between 1000 and 2000 Ethiopian Birr, whereas 23% of the graduate respondents were paid more than 2000 ETB, but few 13% of graduate respondents were paid less than 1000 ETB, indicating that majority employed graduate salary/income is in the middle earning group. They provided reasons for not employed as: "no job is available and I did not have competency certificate".

Item 3 indicates that the majority 52% employed graduate respondents were worked for *government/government corporations*, whereas *42%* worked for *private household /establishment/ family operated activities.* For" *work for own business" or "self-employed"* were reported by few *(7%) of respondents.* This finding suggests a positive impact that more employment opportunity is

available, for TVET graduates, in the government enterprises. The last item (4) reported the nature of employment that the majority (52%) employed graduates were permanent employees, whereas 41% were employed for part-time job and the other 7% were self-employed. Based on the findings, the CRs have impacted to a certain extent positively to employment of TVET graduates.

6.5.1 Employment indicators of TVET graduates

This part intends to identify the employment of graduates, which assigned on the third group of questions. Respondents were asked, "*How do you agree/disagree with the following indicators regarding job/employment? Item1: Better Job opportunity in the formal sector, Item 2: Better opportunity for paid employment, Item 3: Better Self-employment opportunity, and Item 4: Better Job opportunity in the non-formal sector.*

Respondents were replied from *strongly disagree to strongly agree* in addition to decoded scales for easy comparative analysis between IBCR & OBCR, the "*Strongly Disagree, Disagree and Mildly Disagree*" as "*Disagree*"(D) the other side "*Mildly Agree, Agree and Strongly Agree as "Agree*"(A). Detail presents in Table 6.9.

Items	Strongly Disagree	Disagree	Mildly Disagree	Mildly Agree	Agree	Strongly Agree	Percentage IBCR		OBCR	
	%	%	%	%	%	%	D	A	D	A
Item 1: Better Job opportunity in the formal sector	17.6	30.5	15.3	16.0	10.7	9.9	71	29	59	41
Item 2: Better opportunity for paid employment	18.3	9.2	8.4	24.4	24.4	15.3	35	65	36	64
Item 3: Better Self-employment opportunity	7.4	13.2	6.6	18.2	49.6	5.0	39	61	19	81
Item 4: Better Job opportunity in the non-formal sector	21.1	16.4	3.1	16.4	38.3	4.7	40	60	41	59

Table 6-9 Employment indicators of TVET graduates

In question group 3, *indicators of employment of graduates*, only the item 1 was disendorsed out of four indicators that evaluate the impact of the CRs to employment opportunity since 2001. For example *Item1: Better Job opportunities in the formal sector* were disendorsed by 63% of graduate respondents. The rest three items (Item 2: 64%, Item 3: 73% & Item 4: 59%) were endorsed by the majority of respondents (see table 6.9), suggesting that there are positive indicators of employment.

Specifically, responds of most items leaned towards the positive scales, for example, *Item1: job opportunity in the formal sector 31% disagreed Item 2: opportunity for paid employment agreed by* 24%, but still about 18% responds were leaned towards the negative end of the scale, strongly disagreed. Further, *Item 3: Self-employment opportunity, 50% were* leaned to agreement. Finally,

Item 4: job opportunity in the non-formal sector was agreed by 38%, but still 21% inclined to the negative end of the scale, strongly disagreement. (Table 6.9). However, there are discrepancies responses.

Comparatively, Table 6.9 similarly shows positive statistic results for both IBCR and OBCR, except *employment in the formal sector* (item 1) shows negative responses for both reforms. For example, Item1*: Better Job opportunity in the formal sector was more disendorsed* by IBCR (71%) than the OBCR (59%) respondents. Whereas, *Item 2: Better opportunity for paid employment* was more endorsed by both IBCR (65%) than by OBCR (64%). Similarly, *Item 3: Better Self-employment opportunity was less* endorsed by IBCR (61%) than by OBCR (81%) respondents. *Finally, Item 4: Better Job opportunity in the non-formal sectors* was also endorsed more by the IBCR (60%) than the OBCR (59%) respondents. The finding suggests item 1 & 3 are more supported by OBCR than IBCR but for item 2 & 4 are the opposite is true.

In this group 3, we identified statistically significant differences between two groups (IBCR & OBCR) by running t-test on group responses regarding *indictors of employment of graduates*. The t-test shows that item 1 and item 3 in the group 3 have ($p < 0.05$) result in statistically significant mean differences between IBCR & OBCR. Further analysis has been given in the next inferential statistics section.

6.6 *Quality indicators of TVET graduates*

This section intends to investigate deal with the quality indicators of employed TVET graduates, which was assigned in the fourth Group of questions. Employed graduate respondents (n=91) were asked, "How *do you agree/disagree with the following indicators regarding job/employment? Item1: The quality of job match with the skill level, Item 2: I am satisfied with the quality of my current job, and Item 3: Employers are satisfied with my skill/competence.* Details are presented in Table 6.10.

Items	Strongly Disagree	Disagree	Mildly Disagree	Mildly Agree	Agree	Strongly Agree	Percentage IBCR		Percentage OBCR	
	%	%	%	%	%	%	D	A	D	A
Item 1: The quality of job match with the skill level	17.6	33.0	4.4	13.2	26.4	5.5	53	47	57	43
Item 2: I am satisfied with the quality of my current job	27.5	35.2	4.4	11.0	16.5	5.5	67	33	67	33
Item 3: Employer satisfaction with the skill of graduates	22.7	29.5	3.4	5.7	33.0	5.7	54	46	57	43

Table 6-10 Quality indicators of TVET graduates

In Group 4, the employed graduate respondents disendorsed all three items of *quality indicators.* For example, *Item1: The quality of job match with the skill level* was disendorsed by 55% of respondents. *Item 2: I am satisfied with the quality of my current job* also disendorsed by 67%, and the last item, *Item 3: Employer satisfaction with the skill of graduates* similarly disendorsed by 56% of employed graduate respondents. In general, from the findings, it is possible to say that the quality indicators of employment of graduates impacted negatively.

Comparatively, Table 6.10 similarly shows all three-quality indicators of employed TVET graduates statistic results for both IBCR and OBCR were negative. For example, Item1*: The quality of job match with the skill level was more supported* by the IBCR (47%) than the OBCR (43%), *Item 2: I am satisfied with the quality of my current job* was also similarly endorsed by IBCR (33%) and by OBCR (33%) respondents. Similarly, *Item 3: Employer satisfaction with the skill of graduates was more* endorsed by IBCR (46%) than by OBCR (43%) employed graduate respondents. The finding suggests that in both reforms, the quality indicators of employment of graduates show no big difference between the IBCR and the OBCR responses.

In this question group 4, we identified non-statistically significant differences between two groups (IBCR & OBCR) by running t-test on group responses regarding *quality indicators of employment of graduates*. The t-test shows that all three items in the question group 4 have ($p > 0.05$) result in non-statistically significant mean differences between IBCR & OBCR.

6.7 *Income indicators of TVET graduates*

This section intends to identify the income of graduates with questions assigned under question group 5. Graduate respondents were asked, "How *do you agree/disagree with the following indicators regarding income opportunity of graduate?" Item1: Better Opportunity for Self-employment earnings, Item 2: Better Opportunity for paid employment earnings and the other two items to be responded by employed graduates were Item 3: I am satisfied with the current salary/ income, and Item 4: The salary matches with the job.*

Table 6.11.displays the *Income indicators of TVET graduates* (group 5). For example *Item1: Better Opportunity for Self-employment earnings* were disendorsed by 61% of graduate respondents, whereas *Item 2: Better Opportunity for paid employment earnings* were endorsed by *62*% of graduate respondents

Items	Strongly Disagree	Disagree	Mildly Disagree	Mildly Agree	Agree	Strongly Agree	Percentage IBCR		Percentage OBCR	
	%	%	%	%	%	%	D	A	D	A
Item 1: Better Opportunity for Self-employment earnings	26.7	27.5	6.9	8.4	14.5	16.0	71	29	55	45
Item 2: Better Opportunity for paid employment earnings	21.5	10.0	6.9	16.9	39.2	5.4	38	62	39	61
Employed graduates' response										
Item 3: I am satisfied with the current salary/ income	41.7	16.7	-	11.1	19.4	11.1	67	43	54	46
Item 4: The salary matches with the job	45.0	25.0	2.5	10.0	12.5	5.0	80	20	68	42

Table 6-11 Indicators of income of TVET graduates

On the other hand, two items were responded by those graduates already employed. For example, *Item 3: I am satisfied with the current salary/income* was disendorsed by 58% of employed graduate respondents, similarly, Item *4: The salary matches with the job* was disendorsed by 73% of employed graduate respondents. In general, from the findings, it is possible to deduce that paid employment earning was the better income indicators of TVET graduates.

Comparatively, Table 6.11 shows the difference between IBCR and OBCR regarding four items of *income indicators of graduates*. For example, *Item1: Better Opportunity for Self-employment earnings* were less supported by the IBCR (29%) than the OBCR (45%), *Item 2: Better Opportunity for paid employment earnings* was also less endorsed by IBCR (38%) than by OBCR (39%). On the other hand graduate employed respondents, reported negatively. For example, *Item 3: I am satisfied with the current salary/ income* were more disendorsed by IBCR (67%) than by OBCR (54%) of employed graduate respondents. Similarly, *Item 4: The salary matches with the job* were more disendorsed by the IBCR (80%) than by OBCR (68%) of employed graduate respondents. The finding suggests that small variation has been seen between IBCR and the OBCR respondents regarding the income indicators of TVET graduate employers.

In this group 5, we identified statistically significant differences between two groups (IBCR & OBCR) by running t-test on group responses regarding *quality indicators of employment of graduates*. Further analysis has been given in the next inferential statistics section.

6.8 *Similarities and differences in the implementation of TVET CR: Graduate perspectives*

Comparisons by the types of reform programs and ownership status of TVET institutions: Inferential Statistics

Introduction

This section reports comparisons of the scores of the TVET graduate questionnaire to three different types TVET institutions: *Public*, *Private* and *NGO* TVET institutions (ANOVA). Furthermore, comparative analysis (t-test) also conducted for the two different CRs implemented in Ethiopia in different time periods: The *IBCR* implemented between 2001 and 2005 and the *OBCR* implemented between 2006 and 2010. For the purpose of analysis, related items are divided in to five different groups of questions. The first group of questions deals with the *relevancy of the skill training at TVET Colleg*e, the second group deals with *cooperative/apprenticeship training*, the third group deals with *indicators of employment of graduates*, the fourth group deals with *quality indicators of employment* and the fifth group deals with *indicators of income of TVET graduates*. Furthermore, for each comparison identified effect sizes were computed to measure the strength of the relationship between two variables. For t-test the difference in group means per group standard deviation was employed as a convenient index to measure effect size and for ANOVA Partial Eta square (eta^2) (Cohen's d, 1988). Graphs, which illustrate mean scales scores for each comparison, have also been provided as these graphs further illustration of differences in perceptions of respondents.

6.8.1 Relevancy of the Skill Training at TVET College

Question group one deals with the relevancy of *skill training at TVET colleges.* Respondents were asked, "*How do you agree/disagree with the following relevancy of skill training conducted in your area of studies at your institution?"* The items are *Item 1: The relevancy of modular contents, Item 2: relevancy of classroom training, Item 3: relevancy of methodology used in the class, Item 4: relevancy of curriculum for further training opportunity, Item 5: getting adequacy of competency from the college, and Item 6: helpfulness of the competency for getting job*.

Group1: Relevancy of the Skill Training at TVET College by Reform Programs (IBCR & OBCR)

The distributions for normality were conducted and found sufficient for all 6 items in the first group, such as *Item 1:* (skew -,561 & kurtosis -1.028), *Item 2: (skew -,021 & kurtosis -1.088), Item 3: (skew -,178 & kurtosis -,541), Item 4: (skew ,122 & kurtosis -1.699), Item 5: (skew -,694 & kurtosis -1,315), and Item 6: (skew -,350 & kurtosis -1.314)* (*Schmider, et al., 2010).* The assumption of homogeneity of variances for these four items were tested and satisfied via Levene's *F* test, for Item 1: *F* (129) = 1,256, *p* = .265 *and Item* 4: *F* (129) = ,307, *p* = .581 *but not for,* Item 3: *F* (129) = 5,116, *p* = .025, *and Item 6: F* (90) = 8,409, *p* = 0 .005 (Table 6 15).

Relevancy of the skill training at TVET College (Group 1)

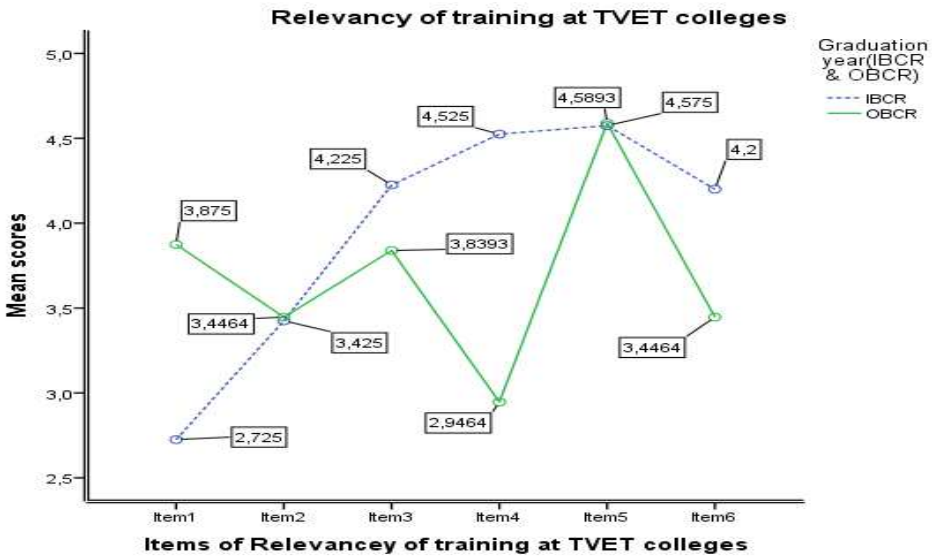
				Levene-Test		T-Test			
Items	Reform Program	Mean	SD	F	Sig.	T	df	Sig. (2-tl)	*d*
Item 1: Modular contents relevance	IBCR	2.61	1.415	1.256	.265	-4.714	129	.000	.843
	OBCR	3.80	1.409						
Item 3: Relevancy of methodology	IBCR	4.24	1.320	5.116	.025	2.518	129	.013	.465
	OBCR	3.56	1.590						
Item 4 : Further training opportunity	IBCR	4.22	1.973	.307	.581	4.090	129	.000	.732
	OBCR	2.80	1.905						
Item 6: Competency for getting job	IBCR	4.20	1.488	8.409	.005	2.301	90	.024	.469
	OBCR	3.45	1.705						

Table 6-12. Relevancy of the skill training at TVET College by IBCR & OBCR (t-test)

The t-test shows the association between the IBCR and the OBCR were statistically significant effect for *Item 1: Modular contents relevance t*(129) = -4,714, *p* < .001, *d* = .843, *Item 3: Relevancy of methodology t*(129) = 2,518, *p* = .013, *d* = .465, *Item 4 : Further training opportunity t*(129) = 4,090, *p* < .001, *d* = .732, and *Item 6: Competency for getting job t*(90) = -2,301, *p* = .024, *d* = .469.

As a result *Item 1: modular contents relevance* was higher mean during OBCR (M = 3.80 SD = 1.409, N = 80) than the IBCR (M = 2.61, SD = 1.415, N = 51), with a large effect size (0.843). Item 3: *Relevancy of methodology* produced lower mean for OBCR (M = 3.56 SD = 1.590, N = 80) than IBCR (M = 4.24, SD = 1.320, N = 51), with almost a medium effect size (0.465). Further *Item 4: Further training opportunity* produced also lower mean OBCR (M = 2.80 SD = 1.905, N = 80) than IBCR (M = 4.22, SD = 1.973, N = 51), with closer to a large effect size (0.732). Finally, for Item 6: Helpfulness of *competency for getting job* produced also lower mean for OBCR (M = 3.45 SD = 1.705, N = 80) than IBCR (M = 4.20, SD = 1.488, N = 51), with almost a medium effect size (0.469).

However, the independent sample t-test show not a statistically significant effect for Item 2: *t*(129) = ,371, *p* = .712, *d* = .000 and *Item 5: t*(129) = ,007, *p* = .249, *d* = .000, suggesting that these items did not shed any further light on the issues of significant difference between the IBCR and OBCR. A line graphical representation of the mean is displayed in Figure 6. 1



NB: Item1: The relevancy of modular contents, Item 2: Relevancy of classroom training, Item 3: Relevancy of methodology, Item 4: Further training opportunity, Item 5: Adequacy of competency, Item 6: Competency for getting job

Figure 6-1 Relevancy of training at TVET colleges

To sum up, the above findings suggest that variation between the type of reforms was existed on items such as, Adequacy of methodology, Further training opportunity (medium effect size) and usefulness of competency for getting job was better during the IBCR than OBCR with small effect size, whereas the relevancy of modular contents was better in OBCR than IBCR with large effect size.

Relevancy of Training at TVET Colleges by TVET Institutions

The distributions for normality were conducted and found sufficient for all 6 items in the first group, (see t-test for normality). Among these *Relevancy of training at TVET colleges*, a total of 4 items were significant, hence the assumption of homogeneity of variances for three items were tenable based on Levene's F test, for *Item1:*, *F*(2,128) = 4,325, *p* = 0 .189. *Item 4: F* (2,128) = 7,515, *p* = 0 .783. *Item 5: F* (2,128) = 5,220, *p* = 0 .642, and for *Item 6: F (2,128)* = 4,331, *p* = ,139.

ITEMS	*Types of institution*	Mean	SD	*df*	*F*	*Sig.*	η^2
Item 1: modular contents relevance	Private	3.88	1.452	2	4.325	.015	.063
	Public	3.03	1.516	128			
	NGO	3.24	1.446				
Item 4 : further training opportunity	Private	2.71	1.865	2	7.515	.001	.105
	Public	3.99	1.958	128			
	NGO	2.57	2.087				
Item 5: adequacy of competency	Private	3.71	1.470	2	5.220	.007	.075
	Public	3.72	1.348	128			
	NGO	4.81	1.537				
Item 6: competency for getting job	Private	3.30	1.664	2	4.331	.016	.085
	Public	3.72	1.591	128			
	NGO	4.75	1.483				

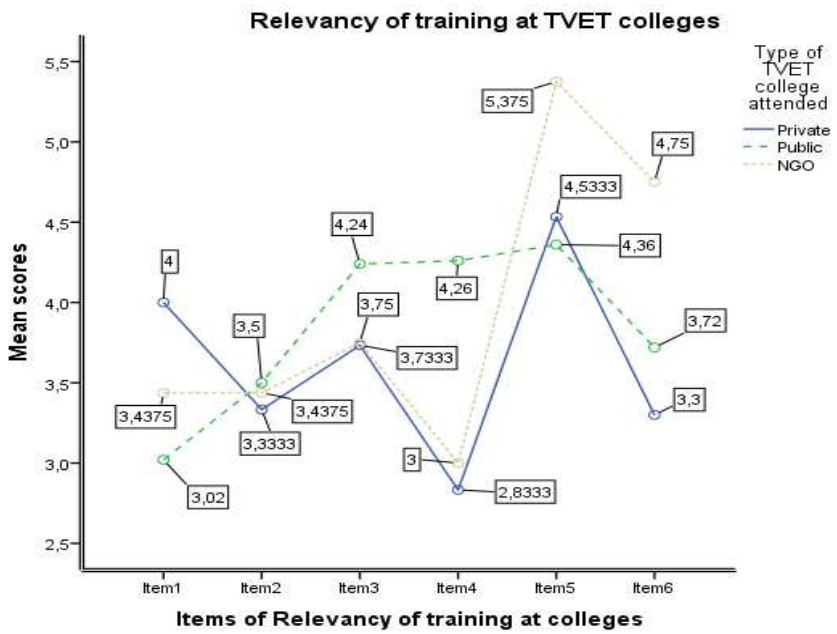
Table 6-13 Relevancy of training at TVET colleges by TVET Institutions (ANOVA)

As can be seen in the Table 6.13 above, the independent between-groups ANOVA produced significant effect for *Item1: F*(2,128) = 4,325, *p* = .015, η^2 = .063, *Item 4: F*(2,128) = 7,515, *p* = .001 η^2 = .105, *Item 5: F*(2,128) = 5,220, *p* = .642, η^2 = .075, *Item 6: F(2,128)* = 4,331, *p* = ,016, , η^2 = .085, Thus, the null hypothesis of no difference between means was rejected for four Items.

Post hoc comparisons to evaluate pairwise differences among group means were conducted using Tukey HSD. Tests revealed significant pairwise differences between the mean scores of institutions for each item of the *Relevancy of training at TVET colleges.*

Therefore, *Item1: Modular contents relevance* were lower in Public TVET institutions than Private TVET institutions with medium effect size (eta$^{\wedge 2}$ = ,063). Here, *Item 4: Further training opportunity* were higher in Public TVET institutions *than* Private TVET institutions or when compare with NGO's TVET institutions with closer to a large effect size (eta$^{\wedge 2}$ = ,105). Further, *Item 5: adequacy of competency* were higher in NGO's TVET institutions than Public TVET institutions. on the other hand, when compared with Private TVET institutions, with medium effect size (eta$^{\wedge 2}$ = ,075).

Finally, Item 6: Helpfulness of the competency for getting job were higher in NGO's TVET institutions than Private TVET institutions with medium effect size (eta$^{\wedge 2}$ = .085). Hence, comparisons indicated that the Relevancy of training at TVET colleges depend on the type of institutions. A visual depiction of the means and line graph is presented in Figure 6.2



NB: Item1: The relevancy of modular contents, Item 2: Relevancy of classroom training, Item 3: Relevancy of methodology, Item 4: Further training opportunity, Item 5: Adequacy of competency, Item 6: Competency for getting job

Figure 6-2: Relevancy of training at TVET colleges (ANOVA)

In general, the above findings suggest that the CRs implemented in Ethiopia since 2001 was impacted on the relevancy of training at TVET colleges, As a result, the variation among the type of TVET institutions was existed on items such as, Adequacy of competency, where the NGO's TVET institutions produced higher mean, than public and private TVET institutions with medium effect size and usefulness of competency for getting job was better in NGO than private (medium effect size), whereas, the relevancy of modular contents was better in private than public institutions with medium effect size. Further training opportunity was more relevant to public than private and NGO's institutions with medium effect size.

6.8.2 Cooperative/Apprenticeship Training: Graduates perspectives

This part (Group 2) deals with the *skill training at the companies*. Respondents were asked, "How *do you agree/disagree with the measure taken to improve skill in your area of studies in the companies?" Item1: Access to Cooperative/ Apprenticeship training, Item2: Adequacy of time for Apprenticeship/cooperative training, Item 3: Company training match with college contents, and Item 4: Sufficient workshop/Training materials in the company.*

Group 2: Cooperative/Apprenticeship Training By Reform Programs (IBCR & OBCR)

To test the hypothesis that the IBCR and OBCR were associated with significantly different mean *Cooperative/Apprenticeship Training (Group 2).* The distributions for normality were sufficient for

four items in the scale 3 such as *Item1:* (.skew .550 & kurtosis -1.154), *Item2:* (skew-.058 & kurtosis -1.580), *Item 3:* (skew .314 & kurtosis -1.515), *and Item 4:* (skew .352 & kurtosis -1,381) (Schmider, et al., 2010). The assumption of homogeneity of variances was tested and satisfied via Levene's *F* test, for *Item2: F* (129) = ,512, *p* = .475, *Item 4: F* (129) = ,141, *p* < .708, *Whereas, Item1: F* (121) = 9,159, *p* = 0 .003, *and Item 3: F* (108) = 12,758, *p* = .001 (Table 6.14).

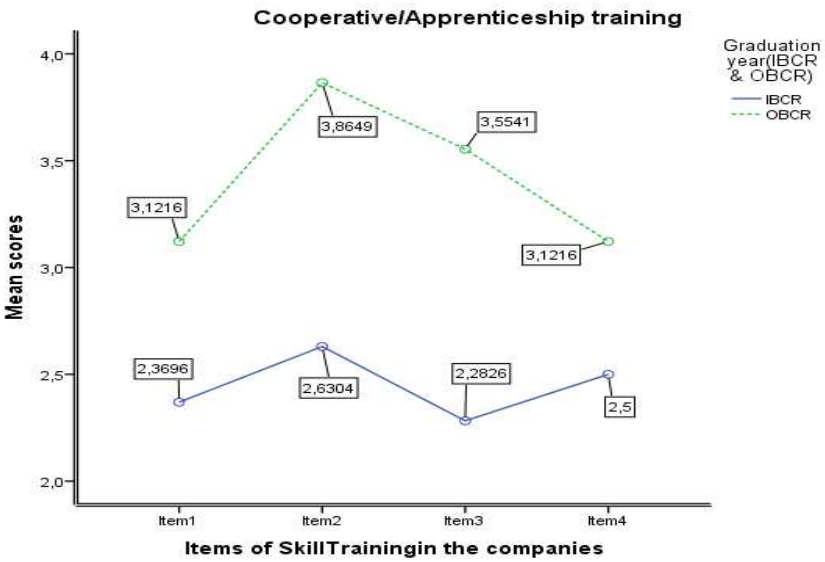
Cooperative/Apprenticeship Training (Group 2)

				Levene-Test		T-Test			
Items	Reform Program	Mean	SD	F	Sig.	T	df	Sig. (2-tl)	d
Item 1: Access to Cooperative/Apprenticeship training	IBCR	2.41	1.458	9.159	.003	-2.356	121	.020	.421
	OBCR	3.11	1.842						
Item 2: Adequacy of time for Apprenticeship/cooperative training	IBCR	2.73	1.767	.512	.475	-4.006	129	.000	.710
	OBCR	3.96	1.695						
Item 3: company training match with college contents	IBCR	2.28	1.544	12.758	.001	-4.108	108	.000	.746
	OBCR	3.56	1.873						
Item 4: sufficient workshop/Training materials in company	IBCR	2.51	1.678	.141	.708	-2.236	129	.027	.403
	OBCR	3.19	1.700						

Table 6-14 Cooperative/Apprenticeship Training (t-test)

The t-test shows the association between the IBCR and the OBCR were statistically significant effect for *Item 1:* t(121) = -2,351, *p* = .020, *d* = .421, *Item 2: t*(129) = -4,006, *p* < .001, *d* = .710, *Item 3: t*(108) = -4,108, *p* < .027, *d* = .746 and *Item 4: t*(129) = -2,236 *p* = .001, *d* = .403.

The comparative analysis shows that *Item 1: Access to Cooperative/Apprenticeship training* was higher mean during OBCR than the IBCR with closer to a medium effect size, 0.421. For *Item 2: Adequacy of time for Apprenticeship/cooperative training* were also the higher mean during OBCR than the IBCR Cohen's d was estimated at 0.710, which is closer to large effect size. Further, for *Item 3: Company training match with college contents* were also higher mean during OBCR than the IBCR with almost a large effect size, 0.746. Finally, for *Item 4: Sufficient workshop/Training materials in company* was also higher mean during OBCR than the IBCR. Cohen's d was estimated at 0.403, which is closer to medium effect size (Cohen 1988). A line graphical representation of the mean is displayed in Figure 6. 3.



NB: Item1: Access to Cooperative/Apprenticeship training, Item2: Adequacy of time for Apprenticeship/cooperative training, Item 3: company training match with college contents, Item 4: sufficient workshop/Training materials in company

Figure 6-3: Cooperative/Apprenticeship Training (t-test)

In summary, this study found that there was variation between the type of reforms in terms of the Cooperative/Apprenticeship Training in industries, for example, *access to Cooperative/Apprenticeship training in industries*, *Adequacy of time for Apprenticeship/cooperative training*, *company training match with college contents* and *availability of sufficient workshop/Training materials in companies*, was better during the implementation of OBCR than the IBCR with small and medium effect size.

Cooperative/Apprenticeship Training by TVET Institutions

To test the hypothesis that there is association between TVET institutions with statistically significantly different mean for *Cooperative/Apprenticeship Training (Group 2)*, ANOVA was performed for four items after checking normality (see normality for t-test above). (Schmider, et al., 2010).

The assumption of homogeneity of variances was tested for all four items and satisfied via Levene's *F* test, for, *Item2: F* (2, 128) = 7,097, *P* = ,297, *Item 3: F* (2, 122) = 3,854, *P* = ,658, However, not satisfied for *Item1: F*(2, 123) = 3,846, *P* = ,006 ., *Item 4: F*(2, 128) = 4,403, *P* = ,003, (Table 6. 15).

ITEMS	*Types of institution*	Mean	SD	*df*	*F*	*Sig.*	η^2
Item 1: Access to Cooperative/Apprenticeship training	Private	2.76	1.635	2	7.097	.001	.103
	Public	2.49	1.512	123			
	NGO	4.11	2.079				
Item 2: Relevancy of Apprenticeship/cooperative training	Private	2.88	1.770	2	3.854	.024	.057
	Public	3.68	1.807	128			
	NGO	4.05	1.717				
Item 3: company training match with college contents	Private	2.88	1.713	2	3.846	.024	.059
	Public	3.48	1.834	122			
	NGO	2.29	1.953				
Item 4: sufficient workshop/Training materials in company	Private	2.64	1.462	2	4.403	.014	.064
	Public	2.79	1.671	128			
	NGO	3.90	2.047				

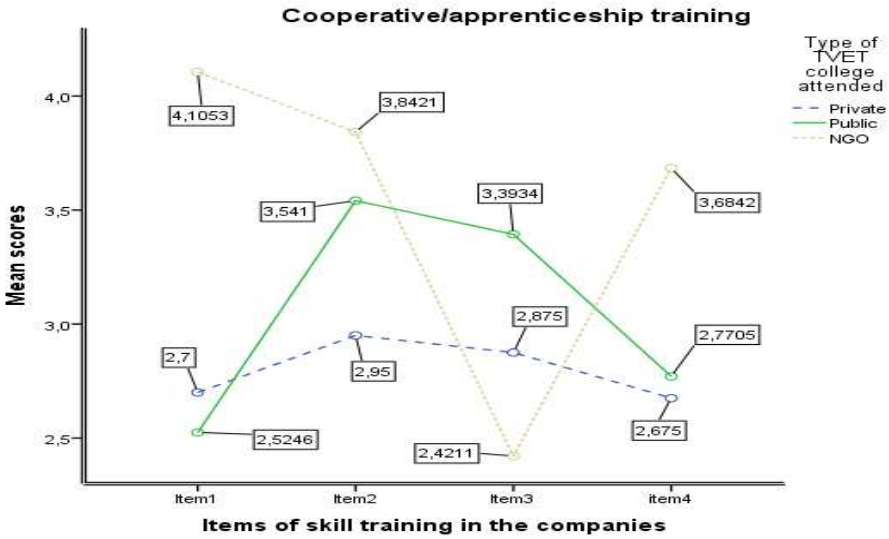
Table 6-15 Cooperative/Apprenticeship Training by TVET institutions (ANOVA)

Table 6.15 displayed that the independent between-groups ANOVA produced significant effect for *Item 1: F* (2,123) = 7,097, *p* = 0 .001, η^2 = .103, *Item 2: F* (2,128) = 3,854, *p* = 0 .024 η^2 = .057, *Item 3: F* (2,122) = 3,846, *p* = 0 .024, η^2 = .059, *Item 4: F (2,128)* = 4,403, *p* = ,014, η2 = .064. Thus, the null hypothesis of no difference between means was rejected for the above four items.

Post hoc comparisons to evaluate pairwise differences among group means were conducted using Tukey HSD. Tests revealed significant pairwise differences between the mean scores of institutions for each item of the *Cooperative/Apprenticeship Training in the companies.*

As a result, the comparison shows for *Item 1: Access to Cooperative/Apprenticeship training* was higher in NGO's TVET institutions than Private TVET institutions or when compared with Public TVET institutions with closer to large effect size (eta$^{\wedge 2}$ = .103). Here, the t-test for *Item 2: Adequacy of time for Apprenticeship/cooperative training* produced higher mean in NGO' TVET institutions than Private TVET institutions, with almost medium effect size (eta$^{\wedge 2}$ = .057). Further, t-test produced for *Item 3: Company training match with college contents* lower mean in NGO's TVET institutions than Public TVET institutions with almost medium effect size (eta$^{\wedge 2}$ = .059).

Finally, the t-test produced for *Item 4: Sufficient workshop/Training materials in company,* higher mean in NGO's TVET institutions than Public TVET institutions or when compare with Private TVET institutions with medium effect size (eta$^{\wedge 2}$ = .064). Hence, comparisons indicated that the Cooperative/Apprenticeship Training in the enterprises depend on the type of institutions. A visual depiction of the means and line graph is presented in Figure 6.4



NB: Item1: Access to Cooperative/Apprenticeship training, Item2: Adequacy of time for Apprenticeship/cooperative training, Item 3: company training match with college contents, Item 4: sufficient workshop/Training materials in company

Figure 6-4: Cooperative/Apprenticeship Training (ANOVA)

In summary, the findings suggest that there was variation among the type of reforms in terms of the Cooperative/Apprenticeship Training in industries, for example, Access to Cooperative/Apprenticeship training in industries, Adequacy of time for Apprenticeship/cooperative training, and availability of sufficient workshop/Training materials in companies, was better in NGO's institutions, however company training match with college contents was better in public TVET institutions with small and medium effect size.

6.8.3 Employment Indicators of TVET Graduates

The purpose of this part (Question Group 3) was to identify the *employment opportunities of TVET graduates*. Respondents were asked, "*How do you agree/disagree with the following indictors regarding job/employment?* The Items are: *Item 1: Better Job opportunity in the formal sector, Item2: Better opportunity for paid employment, Item 3: Better Self-employment opportunity and Item 4: Better employment opportunity in the non-formal sector.*

Group 3: Employment indicators of TVET graduates by Reform programs (IBCR & OBCR)

To test the hypothesis that the IBCR and OBCR were associated with statistically significantly mean different for *Indicators of employment of TVET graduates (Group 3)*, an independent samples t-test was performed for four items. The distributions for normality were sufficient for four items in the group 3 such as *Item1:* (.skew .482 & kurtosis -.904), *Item2:* (skew-.407 & kurtosis -1.103), *Item 3:* (skew -.918 & kurtosis -,385), *and Item 4:* (skew .342 & kurtosis -1,486). (Schmider, et al., 2010). Furthermore, the assumption of homogeneity of variances was tested and satisfied via

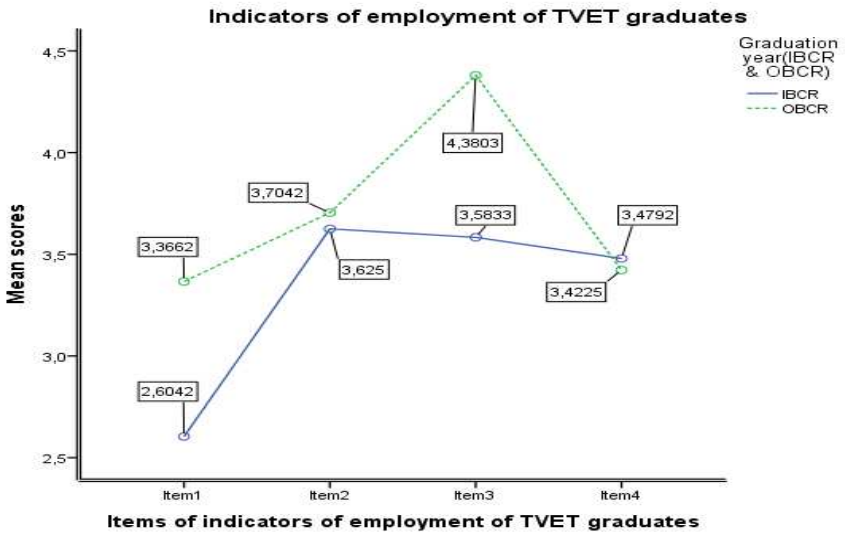
Levene's *F* test, for *Item1: F* (129) = 2,889, *p* = .092, and for *Item 3: F* (119) = 3,471, *p* = .065, (Table 6.16).

Employment of graduates (Group 3)

Items	Reform Program	Mean	SD	Levene-Test F	Levene-Test Sig.	T-Test T	T-Test df	T-Test Sig. (2-tl)	d
Item 1: Better Job opportunity in the formal sector	IBCR	2.61	1.401	2.889	.092	-2.394	129	.018	.438
	OBCR	3.28	1.646						
Item 3: Better Self-employment opportunity	IBCR	3.59	1.457	3.471	.065	-2.999	119	.003	.552
	OBCR	4.35	1.291						

Table 6-16 Employment of TVET graduates

The t-test shows the association between the IBCR and the OBCR were statistically significant effect for *Item 1: t*(129) = -2,394, *p* = .018, *d* = .438, and for *Item 3: t*(119) = -2,999, *p* =.003, *d* = .552. As a result, *Item 1: Better Job opportunity in the formal sector* was higher mean during OBCR than the IBCR with closer to a medium effect size (0.438), and for *Item 3: Better Self-employment opportunity* were also produced higher mean during OBCR) than the IBCR with medium effect size (0.552) (Cohen 1988), Figure 6.5 displays a line graphical representation of the mean.



NB: Item1: Better Job opportunity in the formal sector, Item2: Better opportunity for paid employment, Item 3: Better Self-employment opportunity, Item 4: Better employment opportunity in the non-formal sector

Figure 6-5: Employment of TVET graduates (t-test)

In summary, this study found that there is variation between the type of reforms regarding employment of TVET graduates, for example, Job opportunity in the formal sector and Self-employment opportunity was better during the implementation of OBCR than the IBCR with small and medium effect size respectively.

Employment indicators of TVET graduates by TVET institutions. (Group 3)

To test the hypothesis that there is association among TVET institutions with statistically significantly different mean for *Indicators of employment of TVET graduates (Group 3),* ANOVA was performed for four items. The distributions for normality were sufficient for four items in the question group 3 (see normality for t-test above) (Schmider, et.al, 2010). The assumption of homogeneity of variances was tested and satisfied via Levene's *F* test, for, *Item1: F* (2, 128) = 4,221, *P* = ,401, However, *not satisfied for Item 3: F* (2, 118) = 3,768, *P* = ,022. (Table 6. 17).

ITEMS	*Types of institution*	Mean	SD	*df*	*F*	*Sig.*	η^2
Item 1: Better Job opportunity in the formal sector	Private	3.50	1.596	2	4.221	.017	.062
	Public	2.93	1.558	128			
	NGO	2.33	1.390				
Item 3: Better Self-employment opportunity	Private	4.46	1.120	2	3.768	.026	.061
	Public	3.97	1.437	118			
	NGO	3.45	1.605				

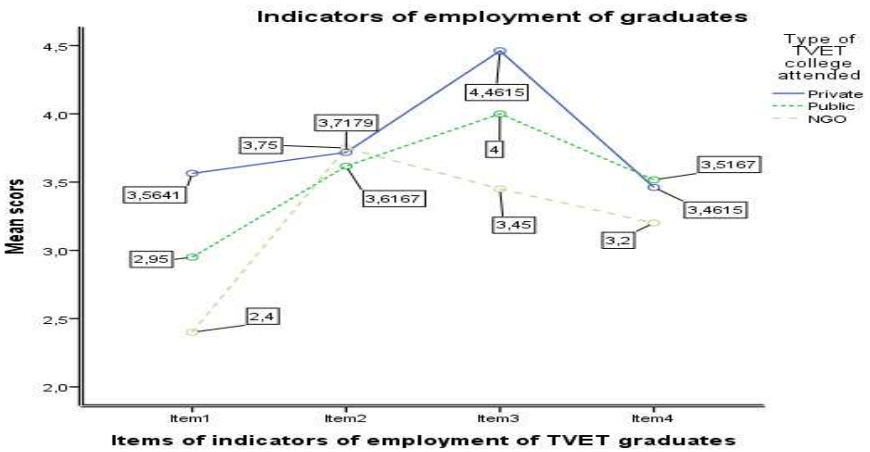
Table 6-17 Employment of TVET graduates by TVET institutions (ANOVA)

As can be seen in the Table 6.17 above, the independent between-groups ANOVA produced significant effect for *Item1: F* (2,128) = 4,221, *p* = 0 .017, η^2 = .062, *Item 3: F* (2,118) = 3,768, p = 0 .026, η^2 = .061. Thus, the null hypothesis of no difference between means was rejected for 2 Items.

However, the actual difference in the mean scores between groups had Partial Eta square for Item1 and also medium for Item 3.

Post hoc comparisons to evaluate pairwise differences among group means were conducted using Tukey HSD. Tests revealed significant pairwise differences between the mean scores of institutions for each item of the *Indicators of employment of TVET graduates.*

Consequently, the t-test produced for *Item1: Better Job opportunity* in the formal sector was lower mean in NGO' TVET institutions than Private TVET institutions with medium size (eta$^{\wedge 2}$ =, 062). Further, the t-test produced for *Item 3: Better Self-employment opportunity* were lower mean in NGO' TVET institutions than Private TVET institutions with medium size (eta$^{\wedge 2}$ = .061). Hence, comparisons indicated that the Indicators of employment of TVET graduates depend on the type of institutions. A visual depiction of the means and line graph is presented in Figure 6.6.



NB: Item1: Better Job opportunity in the formal sector, Item2: Better opportunity for paid employment, Item 3: Better Self-employment opportunity, Item 4: Better employment opportunity in the non-formal sector

Figure 6-6: Employment of TVET graduates by TVET institutions (ANOVA)

Generally, the above findings indicated that variation was existed among the type of institutions regarding employment of TVET graduates, for example, Job opportunity in the formal sector and Self-employment opportunity was better in private institutions than public and NGO's institutions with medium effect size.

6.8.4 Quality Indicators of Employment

Question group 4 deals with the *quality indicators of employment* of graduates. Employed graduate respondents (n=91) were asked, "How *do you agree/disagree with the following indicators regarding job/employment?* Respondents were replied from *strongly disagree to strongly agree.*

The inferential statistics, t-test shows a non-statistically significant different between the IBCR & OBCR for *Item 1: The quality of job match with the skill level* $t(89) = ,890$, $p = .376$, *Item 2: I am satisfied with the quality of my current job* $t(89) = ,220$, $p = .826$,, *and Item 3: Employer are satisfied with my skill/competence* $t(86) = ,028$, $p = .978$, indicating that we accept the null hypothesis that there is no significant different for all items of quality indicators of employment.

6.8.5 Income indicators of TVET graduates

Question group 5 deals with the income/salary indictors of graduates. TVET graduate respondents were asked, "*How do you agree/disagree with the following indicators regarding income opportunity of graduate?* The Items are: *Item1: Better Opportunity for Self-employment earnings, Item 2: Better Opportunity for paid employment earnings* and the other two items to be responded by employed graduates were *Item 3: I am satisfied with the current salary/ income, and Item 4: The salary matches with the job.* Respondents were replied from *strongly disagree to strongly agree.*

Income indicators of TVET graduates by reform programs

Among the income indicators, only Item 1 was found to be statistically significant difference between the IBCR and the OBCR. Hence, the distribution of normality was sufficient for *Item1: Better Opportunity for Self-employment earnings* (Skew, .424 and kurtosis, -1,375) and the assumption of homogeneity of variance for *item 1 was also tested and satisfied via Levene's F test, t(129) = 2,178, p = .115.(Table 6.18)*

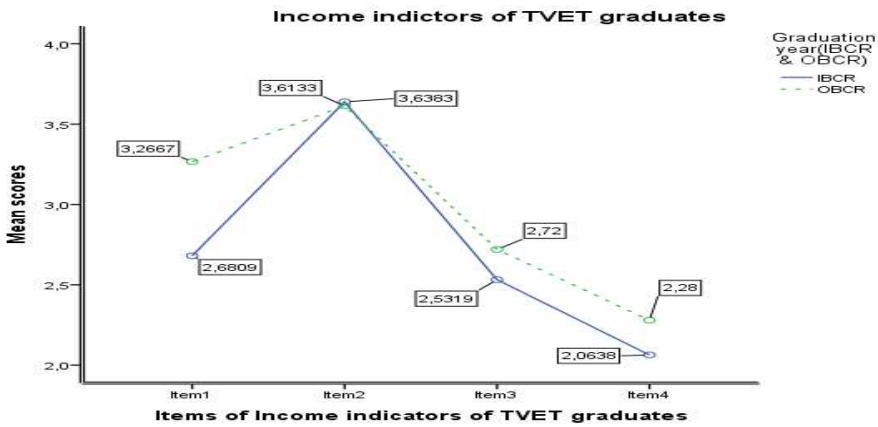
Income indicators of TVET graduates (Group 5)

				Levene-Test		T-Test			
Items	Reform Program	Mean	SD	F	Sig.	T	df	Sig. (2-tl)	d
Item1: Self-employment earnings	IBCR	2.61	1.919	.115	.736	-2.178	129	.031	*.389*
	OBCR	3.33	1.784						

Table 6-18 Income indictors of TVET graduates by Reform programs (t-test)

The t-test shows the association between the IBCR and OBCR was statistically significant effect for *Item 1: Better Opportunity for Self-employment earnings is significant t(129) = 2,178, p = .031, d = .389,* suggesting that self-employment earnings was higher mean during OBCR (M = 3.33, SD = 1.784, N = 129) than the IBCR (M = 2.61, SD = 1.1919, N = 129)., small effect size (.389).

However, the independent sample t-test show not a statistically significant effect for *Item 2: t*(129) = ,294, *p* = .769, *d* =.00, *Item 3: t*(85) = ,332, *p* = 740, *d* = .00, and *Item 4: t*(85) = -,123, *p* = .902, *d* = .00, suggesting that these three income indicators of graduates, did not shed any further light on the issues of significant difference between the IBCR and OBCR. A line graphical representation of the mean is displayed in Figure 6.7.



NB: Item1: Self-employment earnings Item 2: paid employment earnings, Item 3: satisfaction of current salary/ income, Item 4: The salary matches with the job

Figure 6-7: Income indicators of TVET graduates (t-test)

Generally, the above findings indicated that there was variation between the types of reforms regarding income indicators of TVET graduates, only for Self-employment earnings, which was better during OBCR than IBCR with small effect size.

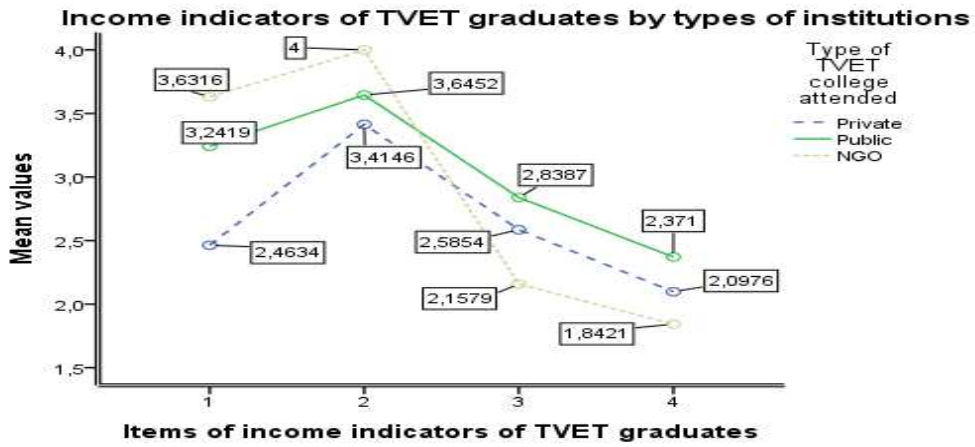
Income indicators of TVET graduates by Types of institutions

Item 1 was found to be statistically significant difference existed among the public, private and NGO's institutions Hence, the distribution of normality was sufficient for *Item1: Better Self-employment earnings* (See t-test above) and the assumption of homogeneity of variance for *Item 1 was also tested and not satisfied via Levene's F test, t(128) = 8,190, p = .000.*

ITEMS	*Types of institution*	Mean	SD	*df*	*F*	*Sig.*	η^2
Item 1: Better Self-employment earnings	Private	2,45	1,468	2	4,476	,013	.065
	Public	3,16	1,905	128			
	NGO	3,86	2,128				

Table 6-19 Employment of TVET graduates by TVET institutions (ANOVA)

The t-test shows statistically significant effect among the types of institutions for *Item 1: Better Opportunity for Self-employment earnings is significant t(128) = 4,476, p = .013, d = .065, where* NGO' institutions produced higher mean than the private institutions with a medium effect size. However, the independent sample t-test show not a statistically significant effect for *Item 2, Item 3,* and *Item 4,* suggesting that these three income indicators of graduates, did not shed any further light on the issues of significant difference among the type of institutions except self-employment earning opportunity. A line graph is displayed in Figure 6. 8.



NB: Item1: Self-employment earnings Item 2: paid employment earnings, Item 3: satisfaction of current salary/ income, Item 4: The salary matches with the job

Figure 6-8: Income indicators of TVET graduates (ANOVA)

Generally, the above findings suggests that variation was existed among the types of institutions regarding income indicators of TVET graduates, only self-employment earnings was better for graduates of NGO's institution than private institutions with medium effect size.

6.8.6 Competency assessment of TVET graduates

This part evaluates whether TVET graduates were taking the Competency assessment (n=131) varies across the CRs *and type of TVET institutions*. The question was stated as "*Have you taken competency assessment?"* They replied 1) 'No' and 2) 'Yes' answers.

Competency assessment graduates by reform programs

To ascertain whether a variation was present in taking competency assessment of TVET graduates from the center of competency (COC) (1. 'Not assessed' or 2. 'Assessed') between IBCR and OBCR graduates, a Pearson chi-square was conducted. Table 6.20 presents in detail.

Competency assessment of TVET graduates

	Graduation Year			
Answers	IBCR	OBCR	$\chi 2$	φ
No	18 (35.3)	47 (58.8)	6.855**	.229
Yes	33 (64.7)	33 (41.2)		

*Note. **=p<.005. Percentages appear in parentheses below group frequencies*

Table 6-20 Competency assessment and reform programs (Cross tabulation)

As can be seen on the Table 6.20, the variation of competency assessment of graduates between IBCR and OBCR was statistically significant, $\chi^2(1) = 6{,}855$, $p = .009$. The effect size for this finding, Cramer's V (φ), was small, .229 (Cohen, 1988). Table 6.19 shows, more graduates of IBCR were assessed their competency, 64.7%, when compared to only 41.2% of the OBCR TVET graduates. However, Pearson's chi-square test produced a non-significant result for competency result get (pass/fail), where $\chi^2(1) = 1{,}668$, $p = .196$.

Competency assessment graduates by Type of institution

To ascertain whether a difference was present in taking competency assessment from the center of competency (COC) (not assessed or assessed) between Public TVET institution, Private TVET institution and NGO' TVET institutions, a Pearson chi-square was conducted.

Competency assessment

	Types of TVET institutions				
Answers	Private	Public	NGO	$\chi 2$	φ
No	19 (45.2)	40 (58.8)	6 (28.6)	6.348**	.220
Yes	23 (54.8)	28 (41.2)	15 (71.4)		

Note. **p < .005. Percentages appear in parentheses below group frequencies

Table 6-21 Work status and competency assessment (Cross tabulation)

This research question focused on the variation of taking competency assessment of TVET graduates among Public, private and NGO institutions, the result was statistically significant, $\chi^2(2) = 6{,}348$, $p = .042$. The effect size for this finding, Cramer's V (φ), was medium, .220 (Cohen, 1988). As can be seen in Table 6.21, more graduates of the NGO's TVET institutions were assessed their competency, 71.4%, than 54.8% graduates of the Private TVET institutions or when compared to only 41.2% graduate of Public TVET institutions. However, Pearson's chi-square test produced a non-significant result for competency result get (pass/fail), where $\chi^2(2) = .291$ $p = .865$.

Competency Assessment by Gender

To ascertain whether a difference was present in the promotion of competency assessment result ('passed or 'failed') between male and female, a Pearson chi-square was conducted. This statistical procedure was viewed as the optimal statistical procedure to use because frequency data were present for competency assessment and for gender.

TVET graduates' Competency Assessment

	Gender			
Answers	Males	Females	$\chi 2$	φ
Passed	32 (86.5)	11 (37.9)	16.882**	.506
Failed	5 (13.5)	18 (62.1)		

*Note. **=p<.005. Percentages appear in parentheses below group frequencies*

Table 6-22 Competency Assessment and Gender (Cross tabulation)

For this research question in which the focus was placed on taking competency assessment of graduates between male and females, the result was statistically significant, $\chi^2(1) = 16{,}882$ $p < .001$. The effect size for this finding, Cramer's V (φ), was large, .506 (Cohen, 1988). As can be seen in Table 6.22, most male graduates were passed their competency assessment, 86.5%, compared to only 37.9% of the female graduates. However, Pearson's chi-square test produced a non-significant

result for taking competency, where $\chi^2(1) = 1{,}403$, $p = .236$. However, the other characteristics of graduate respondents such as age, Pearson's chi square produced a non-significant result.

6.9 *SUMMARY: TVET graduates perspectives*

The exploration stage of this study was intended to describe based on the data collected from TVET college graduates in Addis Ababa, Ethiopia. This conclusion proposes in response to the basic questions and hypothesis. In line with the questions identified in chapter six, the data collection, analysis and interpretation during this stage of the study focused on the issues of relevancy of *skill/training at TVET college level*, *Cooperative/apprenticeship training in industries*, *TVET graduates competency assessment*, *certification*, and *graduate relevance indicators* such as employment, quality, and income of employed TVET graduate. The inferential statistic also concluded on differences between IBCR & OBCR and also among ownership status (public, private and NGO' TVET colleges). In general, the exploration stage of the study identified the following findings:

Graduate relevancy of skill/Training at TVET college level

In the Ethiopian context, training at college level is provided based on 70% practice and 30% theory at the policy level (MOE 2006). Hence, this study considers the relevancy of the skill training in the classroom at TVET colleges and evaluating the following indicators, such as *modular contents, classroom training, methodology used in the class, opportunity of curriculum for further training, getting adequacy of competency from the college, and helpfulness of the competency for getting job*.

The CRs have impacted on the graduate relevancy indicators of skill training at TVET colleges in Ethiopia, in terms of competency, further training, methodology, contents and classroom training

This conclusion was based on the descriptive study presented for graduate relevance indicators of training at TVET colleges. For example, *getting adequacy of competency from the college* reported by about three-fourth of respondents as the first rank of the graduate indicators and the least (48%) was reported for *opportunity of curricula for further training.* Yet, as a second rank *relevancy of methodology used in the class, and helpfulness of the competency for getting job* were reported by 65-69% of the respondents and thirdly, more than half (52-55%) of respondents reported for relevancy of *modular contents, and relevancy of classroom training"*, as graduate relevance of the CRs implemented in Ethiopia since 2001.

Items	*IBCR*	*OBCR*	*Public*	*Private*	*NGO*
Graduate relevance of training at college	**Means**				
The relevancy of modular contents	2.61	3.8	3.03	3.88	x
Relevancy of classroom training.	x	x	x	x	x
Relevancy of methodology used in the class	2.24	3.56	x	x	x
Relevancy of curriculum for further training opportunity	4.22	2.80	3.99	2.71	2/57
Getting adequacy of competency from the college	x	x	3.72	3.71	4.81
Helpfulness of the competency for getting job	4.20	3.45	x	3.30	4.75

Note: x -No significant difference

Table 6-23 Graduate relevancy of skill/Training at TVET college level

The impact of the CRs on the relevance indicators of skill training at TVET colleges (modular contents, Methodology, further education & competency) were found to be varied between type of reforms, where OBCR outsmarted the IBCR in Ethiopia

Based on the inferential statistics, this part intended to identify whether *graduate relevance indicators of the TVET CRs* were significantly varied between the IBCR implemented between 2001 and 2005 and OBCR implemented between the years 2006 and 2010. Hence, the t-test resulted in statistically significant mean difference between the IBCR and the OBCR for indicators such as "relevancy of *methodology used in the class (closer to medium effect size), opportunity of curricula for further training (closer to large size effect) and helpfulness of the competency for getting job (almost medium effect size)"*, where the IBCR produced the higher mean than the OBCR, and also significant for *modular contents (**large** effect size), where OBCR produced higher mean than IBCR*. However, no significant value for *adequacy of skill training* and *helpfulness of the competency for getting job*. (See Table 6.12).

The impact of the CRs on graduate relevance indicators of skill training at TVET colleges (contents, further training, and adequacy of competency vs job) were found to be varied between types of TVET institutions in Ethiopia (Public, private and NGO's institutions)

This part was intended to investigate whether *Graduate relevance indicators of the TVET CRs implemented in Ethiopia since 2001* varied among the ownership status of TVET institutions such as public, private and NGO's institutions. Consequently, the results of ANOVA (Table 5.13) were found to be statistically significant for *relevancy of modular contents,* where private institutions produced higher mean than public institutions. Also significant for *opportunity of curricula for further training,* where public institutions produced higher mean than private or when compared with NGO's institutions with closer to large effect size and significant for *getting adequacy of competency from the college, where* NGO's TVET institutions produced higher mean than private

TVET institutions, *helpfulness of the competency for getting job* were higher in NGO's TVET institutions than Private TVET institutions, however Partial Eta square effect size was medium for the rest three graduate relevance indicators.

Relevancy of cooperative/Apprenticeship training

This study also considers the relevancy of the practical skill training in the industries as *apprenticeship or cooperative training* by evaluating the following indicators, such as *Access to Cooperative/Apprenticeship training, adequacy of time for Apprenticeship/ cooperative training, company-training match with college contents, and sufficient workshop/Training materials in the company.*

The CRs have impacted on the graduate relevancy of skill training in industry (adequacy of time, contents, workshop materials, access to training) in Ethiopia

The descriptive study shows that *adequacy of time for Apprenticeship/ cooperative training* reported by more than half of respondents as the first rank among the indicators of training in industries and the least rank (35%) was reported that there was *Access to cooperative/apprenticeship training.* Yet, as the next rank the contents of the *company training matches with college contents (almost half of respondents),* and finally almost one third of respondents reported there was *sufficient workshop/Training materials in the company,* indicating that the CRs implemented in Ethiopia since 2001 have impacted on the relevancy of industrial training to TVET graduates.

Items	***IBCR***	***OBCR***	***Public***	***Private***	***NGO***
Graduate relevance of cooperative/apprenticeship training			**Means**		
Access to cooperative/apprenticeship training	2.41	3.11	2.49	2.76	4.11
Adequacy of time for cooperative /apprenticeship training	2.73	3.96	x	2.88	4.05
Company training match with college contents	2.28	3.56	3.48	x	2.29
Sufficient workshop/training materials in the company	2.51	3.19	2.79	2.64	3.90

Note: x- No significant difference

Table 6-24 Relevancy of cooperative/apprenticeship training

The impact of the TVET CRs on the graduate relevance indicators of cooperative/apprenticeship training in industries, in terms of access to training, contents, workshop materials and sufficient time, were found to be significantly varied between types of reforms, where OBCR outsmarted IBCR.

This part was intended to identify whether graduate *relevance indicators of cooperative/apprentices hip training in industries* were significantly varied between the IBCR and OBCR. Hence, the t-test resulted in statistically significant mean difference between the IBCR and the OBCR for the indicators such as "*Access to cooperative/apprenticeship training* ***(closer to medium effect size)****, adequacy of time for Apprenticeship/ cooperative training* ***(closer to large effect size)****, company training match with college contents* ***(closer to large effect size)****, and sufficient workshop/training materials in the company* ***(almost medium effect size)****.",* where the OBCR produced the higher mean than the IBCR. (See Table 6.16).

The impact of the TVET CRs on the graduate relevance indicators of cooperative/apprenticeship training, in terms of access to training, contents, workshop materials and sufficient time, were found to be significantly varied among ownership status of TVET institutions, where NGO's outsmarted public and private institutions.

This part was intended to investigate whether *relevance indicators of cooperative/apprenticeship training of the TVET CRs implemented in Ethiopia since 2001* varied among the ownership status of TVET institutions such as Public, private and NGO's institutions. Consequently, the results of ANOVA (Table 6.17) were found to be statistically significant for *Access to Cooperative/Apprenticeship training,* where NGO's institutions produced higher mean than private or when compared with public institutions ***(closer to large effect size)***. ANOVA *a*lso yielded significant value for *"Adequacy of time for Apprenticeship/cooperative training,* where NGO's institutions produced higher mean than private institutions ***(closer to medium effect size)***. Further, *company-training match with college contents was also significant,* where NGO's TVET institutions produced lower mean than public TVET institutions ***(almost medium effect size)***. Finally, ANOVA also produced significant for "*sufficient workshop/Training materials in the company" where* NGO's institutions produced higher mean than public or when compared with private institutions ***(medium effect size)****.*

TVET graduates' competency/skill in the workplace

The competency of TVET graduates was found to be relevant to the workplace/job.

This study also tries to identify the relevancy of the competency of graduate to the workplace/job. This question was answered by those graduates already employed. The descriptive statistics (see Table 6.5) shows that almost two-third of employees reported as they could apply their competency directly in the workplace. Whereas 14% used their competency rarely in the workplace/job but almost one-fourth of respondents replied that they could not use their competency in the work place

for the reason that they are employed in occupation different from their field of study as reported by 83% of employees who could not use their competency in the workplace. Hence, the study found that *competency of TVET graduates was relevant to the workplace.*

Employment indicators of TVET graduates

This study found 70% of respondents were employed with monthly salary 700 to 2,180 ETB (Ethiopian currency) and half of them were working in government corporations permanently.

This study also considers the relevancy of the CRs on employment opportunity of TVET graduates by evaluating the following indicators, such as "*Better job opportunity in the formal sector, Better opportunity for paid employment, Better Self-employment opportunity, and Better Job opportunity in the non-formal sector"*.

The CRs implemented in Ethiopia have impacted better on self-employment opportunity followed by paid employment and job opportunity in the non-formal sector.

The descriptive statistics shows that *Better Self-employment opportunity* reported by about three-fourth of respondents as the first rank of the employment of graduate indicators and the least (below half of respondents) was reported for *Better Job opportunity in the formal sector*. Yet, as the next rank *Better opportunity for paid employment (two-third of respondents),* and finally above half of respondents reported for *Better Job opportunity in the non-formal sector,* as graduate relevance of the CRs implemented in Ethiopia since 2001.

Items	***IBCR***	***OBCR***	***Public***	***Private***	***NGO***
Employment indicators of TVET graduates			**Means**		
Item1: Better Job opportunity in the formal sector	2.61	3.28	X	3.50	2.33
Item 2: Better opportunity for paid employment	x	x	X	x	X
Item 3: Better Self-employment opportunity	3.59	4.35	X	4.46	3.45
Item 4: Better Job opportunity in the non-formal sector	x	x	X	x	x

Note: x – No significant difference

Table 6-25 Employment indicators of TVET graduates

The CRs implemented in Ethiopia have impacted on better opportunities for self-employment and paid employment in the formal sector for graduates of OBCR than IBCR.

This study was intended to identify whether *Graduate relevance indicators of the TVET CRs (in terms of employment of TVET graduates) were* significantly varied between the IBCR implemented between 2001 and 2005 and OBCR implemented between the years 2006 and 2010. Hence, the t-test resulted in statistically significant mean difference between the IBCR and the OBCR for

employment of TVET graduates indicators such as "*Job opportunity in the formal sector (closer to medium effect size), Self-employment opportunity (medium effect size)",* where the OBCR produced the higher mean than the IBCR. (See Table 6.16).

The impact of the CRs on the opportunities for self-employment and paid employment in the formal sector were found to be varied between the types of institutions, where graduates of private institutions have got better opportunity than NGO's institutions.

This study was *also* intended to investigate whether *employment indicators of TVET graduates* in Ethiopia were varied among the ownership status of TVET institutions such as Public, private and NGO's institutions. Consequently, the results of ANOVA (Table 6.17) were found to be statistically significant for *Job opportunity in the formal sector,* where NGO's institutions produced lower mean than private *(medium effect size).* ANOVA *a*lso yielded significant value for *"Self-employment opportunity,* where NGO's institutions produced lower mean than private institutions *(medium effect size),* indicating that graduates of Private institutions found better opportunity of self-employment and paid employment in the formal sector.

Quality indicators of TVET graduates

This study also considers the relevancy of the CRs on quality indicators of TVET graduates such as "*The quality of job match with the skill level, I am satisfied with the quality of my current job, and Employer satisfaction with the skill of graduates"*

Majority of TVET graduate employees did not satisfy with the quality of the job.

The descriptive statistics shows that more than half of respondents reported, "*The quality of my job did not match with the level of my competency/skill"*. Further, more than half of the respondents were reported as "*My employer did not satisfy with my competency/skill.* Finally, only *two-third of respondents* reported as "*I am not satisfied with the quality of my current job"*. The above findings suggest that there is a gap in terms of quality indicators of employed TVET graduates such as quality of job, job satisfaction and employer satisfaction.

Items	***IBCR***	***OBCR***	***Public***	***Private***	***NGO***
Quality indicators of TVET graduates	**Means**				
Item1: The quality of job match with the skill level	x	x	x	x	x
Item 2: I am satisfied with the quality of my current job	x	x	x	x	x
Item 3: Employer satisfaction with the skill of graduates	x	x	x	x	x

Note: x – No significant difference

Table 6-26 Quality indicators of TVET graduates

No difference existed between IBCR and OBCR and also among public, private and NGO's institutions regarding quality indicators of TVET graduates

The inferential statistics confirms a non-significant results for the difference between IBCR & OBCR, and also non-significant difference among the type of TVET institutions (private, public and NGO's Institutions) for all three indicators of quality of employed TVET graduates, such as "*The quality of job match with the skill level, I am satisfied with the quality of my current job, and Employer satisfaction with the skill of graduates,* suggesting that the impact of the CRs on quality indicators of TVET graduates have created no significant difference between the reform programs and the type of institutions.

Income indicators of TVET Graduates

This study considers the impact of the CRs on income of TVET graduates by evaluating the following indicators, such as "*Opportunity for Self-employment earnings and opportunity for paid employment earnings"* Further, items to be replied by employed graduates were *" I am satisfied with the current salary/income and my salary matches with the job"*.

Better opportunity of earnings for paid employment than self-employment

The descriptive statistics shows that about two-third of respondents reported "no b*etter Opportunity for Self-employment earnings"*, whereas about two-third of the respondents were reported as "*Better Opportunity for paid employment earning,* suggesting that two-third of TVET graduates reported on better earnings from self-employment, however paid employment earnings was better.

Majority of respondents were not satisfied with their monthly earnings and job

Furthermore, two-third of respondents reported, "*I am not satisfied with the current salary/ income* and similarly two-third reported, "*My salary did not match with the job assigned"*. This finding implies that majority of respondents were not satisfied with their monthly earnings and there was mismatch between earnings and the job assigned.

Items	***IBCR***	***OBCR***	***Public***	***Private***	***NGO***
Income indicators of TVET Graduates	**Means**				
Item1: Better Opportunity for Self-employment earnings	2.61	3.33	x	2.45	3.86
Item 2: Better Opportunity for paid employment earnings	x	x	x	x	x
Item 3: I am satisfied with the current salary/ income	x	x	x	x	x
Item 4: The salary matches with the job	x	x	x	x	x

Note: x– No significant difference

Table 6-27 Income indicators of TVET Graduates

The CRs have impacted on opportunities for self-employment earnings of TVET graduates were found to be varied between types of reforms, where OBCR graduates earn better than IBCR

This study was also intended to identify whether the impact of the CRs *on income of TVET graduates graduate were* significantly varied between the IBCR implemented between 2001 and 2005 and OBCR implemented between the years 2006 and 2010. Hence, the t-test resulted in statistically significant mean difference between the IBCR and the OBCR for *income of TVET graduates'* indicator such as "*Better Opportunity for Self-employment earnings* where the OBCR produced the higher mean than the IBCR, but the effect size was small (See Table 6.18).

The CRs have impacted on better opportunities for self-employment earnings of TVET graduates were found to be varied between types of institutions, where NGO's institution graduates earn better than private institutions

This study was also intended to identify whether the impact of the CRs impacted on income of TVET graduates. Hence, the t-test resulted in significant variation among types of TVET institutions for *self-employment earnings,* where NGO's institutions produced higher value than Private institutions with medium effect size.

Competency assessment of TVET graduates

The CRs implemented in Ethiopia have impacted on competency assessment and certification of TVET graduates.

Competency assessment is a new phenomenon in Ethiopia that started with the launching of the OBCR; however, not only the OBCR graduates but also the IBCR graduates are obliged to assess their competency so as to integrate with the new system of evaluation and certification. Hence, the descriptive statistics, in this study, identified *half* of the respondents have taken competency assessment and *two third* of them have passed the assessment and certified, however 42% indicated that the contents of the assessment were different from the contents what the students learned at the college. This could be an indication for the cause of failure in the assessment to some of the 10+system graduates (IBCR).

Graduates of IBCR outsmarted graduates of OBCR in taken competency assessment

As indicated earlier "Competency assessment" is a basis for job and/or to continue further studies in Ethiopia (MOE, 2008). The inferential statistics, Pearson's chi-square test, identified significance deference between IBCR & OBCR on the number of graduates sat for competency assessment,

where IBCR produced higher mean than OBCR with small effect size, suggesting that more 10+-system graduates are enrolled for the assessment. (See Table 6.19).

Items	*Male*	*Female*	*IBCR*	*OBCR*	*Public*	*Private*	*NGO*
Competency assessment of TVET graduates							
Taking competency assessment of TVET	*x*	*x*	65%	41%	41%	55%	71%
Results of competency assessment (pass)	*87%*	*38%*	*x*	*x*	*x*	*x*	*x*

Note: x – No significant difference

Table 6-28 Quality indicators of TVET graduates

The number of graduates from public TVET institutions was found to be lowest in taking competency assessment

The chi-square taste also identified significant difference on the *number of competency assessed graduates* among the type of TVET institutions, where higher results were produced by *NGO's* TVET institutions than *Private* or when compared to *public* TVET institutions with almost medium effect size, indicating that government TVET institutions' graduates were lower in assessing their competency (See Table 6.20).

Less female graduates have passed the competency assessment than male graduates

The chi-square taste further identified significant gender difference on the promotion (pass/fail) of competency assessed graduates between males and females, where more male graduates produced pass result than female graduates with a large effect size, suggesting that less female graduates passed the competency assessment according to the report of graduate respondents (see Table 6.21).

This study also found that frequency of taking competence assessment of TVET graduates were at least twice according to the report of two-third of the respondents. This implies that there is a gap between the competency assessment and the competency of graduates.

7 EMPLOYERS PERSPECTIVES ON TVET CR

(Empirical analysis of individual items of employer's questionnaires: Descriptive statistics)

7.1 *Introduction*

The purpose of this part is to investigate the perception of TVET CRs in the eyes of employers in terms of Participation in the design of TVET curriculum development, Roles in the design of TVET curriculum, Major reasons for not participation in the process of designing curriculum, Provision of apprenticeship/cooperative training, Employer involvement, Quality assurance indicators in industries, and Employer Relevance indicators of CR.

Demographic Data

In addition to questionnaires for TVET instructors, principals and TVET graduates, questionnaires were designed and distributed for 165 *Company employers* and collected a total of 110 questionnaires. Hence, Employers were asked to indicate initially their characteristics such as *sex, age, qualification, and work experience.* Accordingly, descriptive statistics was conducted to show their frequencies and percentages on SPSS version 20.

Employer respondents' demographic data

Items	Employers	
	No.	%
Sex		
Male	68	61.8
Female	42	38.2
Total	110	100
Age		
<25 years	30	27.3
25-35 years	49	44.5
>35 years	31	28.2
Total	110	100.0
Qualification		
Diploma	57	51.8
Bachelor Degree	46	41.8
Master's Degree	7	6.4
Total	110	100.0
Experience		
Below 5 years	28	25.5
5 - 10 years	38	34.5
11-20 years	26	23.6
Above 20 years	18	16.4
Total	110	100.0

Table 7-1 Demographic data of employer respondents

As can be seen from Table 7.1, among these employer respondents, the numbers of female respondents were relatively small 42 (38.2%) compare to male participants 68 (61.8%). Furthermore, the majority respondents 49 (44.5%) were less than 25 - 35 years old and the second age group < 35 years were 30 (27.3%), however the third age group (greater than 35 years old) respondents were 31 (28.2%), indicating that proportional number of respondents from three different groups provided sufficient data for the study under go.

Table 7.1 indicates also the employers respondents more than half 57 (51.8%) were diploma holder. The other group of respondents were 46 (41.8%) bachelor degree holders and only 7 (6.4%) were master's degree holder. This indicates that more participants are from diploma and bachelor degree holders. Regarding their work experience in the companies reported by the majority 38 (34.5%) were 5-10 years, service year below 5 were 28 (25.5%) and other group of respondents were 11-20 years 26 (23.6%), lastly, the long year experience above 20 years were 18 (16.4%) respondents, suggesting that about 75% of respondents have more than 5 years of experience in the companies which may provide valuable response for this study.

7.2 *Employer participation in the design of TVET curriculum*

The purpose of this section was to identify the participation Employers (n = 110), in addition to Principals (n = 55) and TVET instructors (n = 253). Respondents were requested as *"Have you ever participated in the design of TVET curriculum?* Responses were 1. 'Yes' 2. 'No'.

Design of TVET curriculum	*No*	*Yes*	*Total*
I was participated in the design of TVET curriculum			
Instructors	**52%**	**48%**	
Principals	**56%**	**44%**	
Employers	**84%**	16%	
Total	**251(61)**	161(39%)	412(100%)

Table 7-2 Participation in the design of TVET CRs

Table 7.2 shows the *Participation of* instructors, principals and employers *in the process of designing TVET curriculum,* at approximately 61% of respondents were not participated in the design of the curriculum, whereas 39% have been participated,. This finding gives an indication that there is an involvement of stakeholders in the design of TVET curriculum.

Comparatively, 48% of instructors, 44% of principals and only 16% of employers were participated in the process of designing TVET curriculum. This finding gives an area of interest that there were

participation of employers even though less than both instructors and principals. Further question was raised below for further investigation of their main roles in the process of designing the curriculum.

In this item 1, we identified statistically significant differences between three groups, (instructors, employer and principals), by running cross tabulation on group responses in terms *of curriculum design*. The chi-square test ($p < 0.05$) result in statistically significant mean differences. Further analysis was conducted in the next inferential statistic section. (See Table 7.9)

7.2.1 **Employers' roles in the design of TVET curriculum**

In addition to the above, question was raised for those who participated (n=161) in the design of TVET curriculum as *"If you participated in the design of TVET curriculum, then what was your main role?"* Answers: 1. No role, 2. Modification, 3. Change, 4. Design a new curriculum (see Table 7.3).

				Total	
Roles of Participants	Employers	Instructors	Principals	Frequency	%
1.No role to change the curriculum contents	**40%**	**58%**	**58%**	**88**	56.4
2.Has power to modify the curriculum contents	47%	22%	29%	40	25.6
3.Has power to change the curriculum contents	13%	14%	8%	20	12.8
4.Others-has power to design a new curriculum	0	6%	4%	8	5.1
Total				156	96.5
No reply				5	3.5
Total				161	100

Table 7-3 Roles in the design of TVET curriculum

As can be seen on Table 7.3, the majority 88 of 156 (56%) have no any role to change the curriculum contents, even though about 26% and 13% of participants have got a chance to *modify* and *change* the curriculum contents respectively. The finding shows that about more than half of the employers have roles to modify, change or design a new curriculum.

Comparatively, 58% on each instructors and principles in addition to 40% employers had *no any active role* during the process of designing the curriculum, whereas employers 47% were highly participated in the *modification* of the curricular contents than principals 29% and instructors 22%. The *power to change or replace by* another modular contents were more played by 14% instructors than 11% of employers or 8% of principals. However, *designing a new* curriculum was none of employers' role but it was played by instructors (6%) and principals (4%). Generally, the chi-square test resulted in a non-significant value.

Major reasons for not participation in the process of designing curriculum

Contrastingly, question was raised for those 159 (53%) respondents (see Table 5.94) who have no chance to participate in the designing of TVET curriculum**,** item 5: *What was the reason/s for not participating in the design of TVET curriculum?* Hence, similar responses were suggested from 126 among 159 non-participant respondents according to high frequency.

> *I did not get a chance to participate in the design of TVET curriculum, Unfortunately I was not in a position to participate in the design of the TVET curriculum, Because the curriculum was reformed or designed by the industry professionals or trainer or agency, I did not have good experience and knowledge to design a curriculum, Because I am not interested to participate in a curriculum since it is a direct copy from other sources of internet, Since the participants are randomly selected I did not get a chance, and Since the Ethiopian occupational standard and the curriculum were designed by the known body, the trainers would expect only to arrange what is already designed.*

Among the reasons specified above, more than half of employers indicated that they *did not get a chance* or invited to participate in the design of TVET curriculum, Since the Ethiopian occupational standard and the curriculum are designed by the known body, the industry professionals or trainers.

7.3 *Apprenticeship/cooperative training: Employer perspectives*

Question group 2 deals with the skill training in industries. Graduates and employer respondents were asked, *"How do you agree/disagree regarding skill training in the companies?"* The Items are: *Item1: Access to Cooperative/ Apprenticeship training, Item2: company-training match with college contents, and Item 3: sufficient workshop/Training materials in the company, Item 4: Adequacy of time for Apprenticeship/ cooperative training,* Table 7.7 presents in detail:

Items	Strongly Disagree	Disagree	Mildly Disagree	Mildly Agree	Agree	Strongly Agree	Percentage			
							Graduate		Employer	
Item Group 2-Training	%	%	%	%	%	%	D	A	D	A
Item 1: Access to Cooperative/ Apprenticeship training	21.0	32.2	14.2	15.0	12.9	4.7	65	35	70	30
Item 2: company training match with college contents	30.8	27.4	6.8	11.5	15.8	7.7	58	42	73	27
Item 3: sufficient workshop/Training materials in the company	39.4	25.7	5.8	10.4	13.7	5.0	62	38	82	18
Item 4: Adequacy of time for Apprenticeship/ cooperative training	12.4	19.9	6.2	19.1	31.5	10.8	46	54	30	70

NB.A-Agree D-Disagree

Table 7-4 Apprenticeship/cooperative training

In question group 2, Access to *Skill training in the companies*, were almost total disagreements that the cooperative/apprenticeship training at the companies during CRs from 2001 to 2010. Among the

four items mentioned above, respondents were endorsed only one item, i.e., *Item 4: Adequacy of time for apprenticeship/cooperative training* was supported by 63% of respondents. The rest three items were disendorsed by the majority of respondents such as Item1*: Access to apprenticeship/cooperative training by* 67%, *Item 3: Company training match with college contents* by 65%, *Item 3: Sufficient workshop/training materials in the company by* 71%, This finding indicates that the apprenticeship/cooperative training in the companies lack workshop materials, shortage of companies, mismatch between contents in the college & training in companies.

Specifically, responds of most items leaned towards the negative scales, for example, *Item1: Access to apprenticeship/cooperative training 32% disagreed plus 21% strongly disagreement, Item 2: company training match with college contents* 28% of the responses goes to the negative end of the scale, strongly disagree plus 27% disagree but still about 16% responds were leaned to agreement scale. *Item 3: sufficient workshop/Training materials in the company, 39% were* leaned to strongly disagreement plus 27% disagreement but 14% inclined to agreement scale. Whereas, *Item 4: Adequacy of time for apprenticeship/cooperative training was* agreed by 31%, with 19% disagreement on the other negative side. This finding implies that respondents of graduate relatively agreed on the adequacy of time for apprenticeship/cooperative training; however, they found it difficult to get training organizations where cooperative/apprenticeship training takes place. Further, the insufficiency of the workshop materials in the industries makes the training incomplete and the contents in the college and the practice in the industry found to be varied that creates gapes in the training process between colleges and companies.

Comparatively, Table 7.6 shows the statistic results of TVET graduates and employers. Hence, both the TVET graduate and employer respondents were agreed on Item 4, whereas, majority disendorsed the other three items. For example, Item 4: *Adequacy of time for apprenticeship/cooperative training less agreed by* 54% of graduates than 70% of employers. However, *Item1: Access to apprenticeship/cooperative training was more supported by* 35% of graduates than 30% of employers. The other Item *2: Company-training match with college contents* was also more supported by 42% of graduates than 27% of employers. Finally, *Item 3: Sufficiency of workshop/Training materials in the company* were also more supported by 48% graduates than by 18% of employer respondents. This finding suggests that there is variation between employer and TVET graduates regarding the issues of cooperative/apprenticeship training in the industries.

In this question group 2, we identified statistically significant differences between two groups (TVET graduates & employers) by running t-test on group responses regarding *Skill training in the*

training companies. The t-test shows that 3 items in the group 2 have ($p < 0.05$) result in statistically significant mean differences between TVET graduates & employers, whereas Item 1 was not statistically significant. Further analysis has been given in the next inferential statistics section.

7.3.1 Provision of apprenticeship/cooperative training in industries

Employers were asked whether they would provide apprenticeship or cooperative training in their industries. The question was stated as "Do you Provide apprenticeship or cooperative training?" They replied, 1. 'Yes' or 2. 'No'.

Provision of Apprenticeship/cooperative training

Answers	Frequency	%	Valid %	Cumulative %
Yes	100	40.8	90.9	90.9
No	10	4.1	9.1	100.0
Total	110	44.9	100.0	

Table 7-5 Provision of apprenticeship/cooperative training in the industries

Table 7.4 shows, the majority (91%) of employer respondents were organizing apprenticeship or cooperative training in their industries. This finding indicates that industries have taken an initiation to admit apprentices for the practical training even though the available industries could not accommodate all the trainees.

7.4 *Employer involvement to the effectiveness of TVET curriculum*

The purpose of this part was to investigate the way of employer involvement to improve TVET curriculum, respondents were asked, "*In what ways does your enterprise interact with TVET institutions to improve TVET curriculum?* The items are: *Item1: in Advisory board, Item2 in internship, Item 3: in visits to work sites, Item4: in sponsoring programs or tutoring, Item 5: in reviewing student work, and Item 6: in setting curriculum or skill standards.*

Respondents were replied from strongly disagree to strongly agree in addition to decoded scales for easy comparative analysis the "*Strongly Disagree, Disagree and Mildly Disagree*" as "*Disagree*"(D) the other side "*Mildly Agree, Agree and Strongly Agree as "Agree*"(A). Table 7. 6 presents in detail:

Items	Strongly Disagree	Disagree	Mildly Disagree	Mildly Agree	Agree	Strongly Agree	Percentage			
							Employers		Principals	
Group 1: Involvement	%	%	%	%	%	%	D	A	D	A
Item 1**:** Employers involvement in Advisory board	40.5	34.0	7.8	13.7	3.98	-	85	15	77	23
Item 2; Employers involvement in internship	13.5	31.3	13.5	13.5	20.2	8.0	65	35	46	54
Item 3: Employers involvement in visits to work sites	16.7	38.3	9.3	15.4	17.9	2.5	72	28	49	51
Item 4: Employers involvement in sponsoring programs or tutoring	28.2	29.4	14.1	14.7	11.0	2.5	79	21	57	43
Item 5**:** Employers involvement in reviewing student work	27.6	31.9	12.3	16.6	8.0	3.7	76	24	64	36
Item 6: Employers involvement in setting curriculum or skill standards	43.6	25.5	10.3	12.1	5.5	3.0	92	8	55	45

NB.A-Agree D-Disagree,

Table 7-6 Employer involvement

As mentioned in the Table 7.5, there was a total of disendorsement of employers' involvement to improve TVET curriculum, for example, *Item 1: Advisory board* 82%, *Item 2; internship 58%, Item 3: visits to work sites 64%, Item 4: sponsoring programs or tutoring 72%, Item 5: reviewing student work 72%, and Item 6: setting curriculum or skill standards 79%* of respondents disendorsed the engagement of employers in the process of improving TVET curriculum in cooperation with TVET colleges.

Specifically, responds of all items were inclined to disagreement scale. For example, *Item 1: Advisory board* about 41% leaned towards the negative end of the scale, *strongly disagreement* plus 34% *disagreement*. *Item 2; internship* 31% of respondents disagreed but yet 20% reported that they involve in apprenticeship or cooperative training. *Item 3: visits to work sites 38%* leaned also to *disagreement scale,* but 18% of respondents were still agreed. *Item4: sponsoring programs or tutoring 29%* inclined to disagreement scale plus 28% to strongly disagreement but still 15% reported that they were involved in tutoring or sponsoring programs. *Item 5: reviewing student work 32%* disagreed plus 28% strongly disagreed. Lastly, *Item 6: setting curriculum or skill standards* 43% of respondents leaned towards the negative end of the scale, *strongly disagreed* plus 26% disagreement. The finding suggests that there were some indicators of involvements of employers to improve TVET curriculum in cooperation with TVET colleges.

Comparatively, Table 7.6 additionally shows the statistic results of employers and principals. Hence, the majority of employers, however, disendorsed all interventions, whereas principals supported item 2 & 3. For example, *Item 2; internship* were more supported by 54% principals than 35% of employers, and *Item 3: visits to work sites* were also more supported by 51% of the

principal respondents than 28% of employers, the rest involvements were disendorsed by both respondents, such as *Item1: Advisory board* were more disendorsed by employers (85%) than by principals (77%). The other item, *Item 4: sponsoring programs or tutoring were also more disendorsed by employers (79%) than principals (57%). Yet, Item 5: reviewing student work were more disendorsed by 76% than principals (64%). Finally, Item 6: setting curriculum or skill standards were disendorsed more by employers (92*%) than by principals (55%), suggesting that there is discrepancies between the responses of employers and principals but majority employers disendorsed the involvements.

In this question group 1, we identified statistically significant differences between two groups, the employer and principals, by running t-test (p < 001) on group responses in terms *of employer involvement to improve TVET curriculum*. The t-tests ($p < 0.05$) result in statistically significant mean differences among all items in the group except item 4 & 5. This data suggest that there is a difference between the policy and the practice in the companies. Further analysis was conducted in the next inferential statistic section.

7.5 ***Employment of TVET graduates***

This question group 3 intends to identify the perception of employers regarding employment of graduates in the industries. They were asked, "How *do you agree/disagree with the following factors regarding current employment of TVET graduates in your industry?* The items were, Item1*: Better paid employment opportunity (n=234), Item2: Full-time employment opportunity (n=110), Item 3: Requirement of Competency certificate for employment (n=110), and Item 4: The company satisfaction with the skill of TVET graduates employees (n=198).* Table 7.8 presents in detail:

Items	Strongly Disagree	Disagree	Mildly Disagree	Mildly Agree	Agree	Strongly Agree	Percentage Graduates		Percentage Employers	
Group 3: Employment	%	%	%	%	%	%	D	A	D	A
Item 1: Better paid employment opportunity.	19.7	13.9	10.1	18.9	32.8	4.6	38	62	50	50
Item 2: Full-time employment opportunity.	9.1	25.5	17.3	20.9	21.8	5.5	-		-	
Item 3:Requirement of Competency certificate for employment	17.3	29.1	14.5	18.2	10.9	10.0	-		-	
Item 4: The company satisfaction with the skill of TVET graduate employees.	23.6	23.6	6.3	14.3	27.0	5.1	52	48	53	47

NB.A-Agree D-Disagree

Table 7-7 Employment of TVET graduates

In question group 3, *Employment of TVET graduates* were almost total disagreements that the current employment of TVET graduates, such as *Item 1: Better-paid employment opportunity in the enterprises* was supported by 56% of employers. The majority of respondents disendorsed the rest three items. For example, Item 2: *Full-time employment opportunity* by 52%, *Item 3: Requirement of competency certificate for employment* was also disendorsed by 61% of employers, and finally, *Item 4: The company satisfaction with the skill of TVET graduate* by 53%. These findings indicate that the employment opportunity in the companies is more or less existed even though there is less opportunity in majority of industries.

Specifically, responds of items leaned towards the negative and positive scales, for example, *Item1: Better paid employment opportunity in the enterprises* 25% agreed but 18% goes to the strongly disagreed scale, *Item 2: Full-time employment opportunity was disagreed by* 26% of the responses but still about 22% responds were leaned to agreement scale. *Item 3: Requirement of competency certificate for employment*, 29% were leaned to disagreement but 18% inclined to mildly agreement scale. Whereas, *Item 4: The company satisfaction with the skill of TVET graduate* was mildly agreed by 24%, but 23% leaned to the other negative end, strongly disagreement. From these responses, one can understand that the employment opportunities of TVET graduates may depend on the employers' attitude to TVET graduates.

Comparatively, Table 7.7 shows additional statistic results for two items to compare between TVET graduates and employers. Hence, *Item1: Better paid employment opportunity in the enterprises* was more supported by 62% of TVET Graduate than 50% of Employer respondents, whereas, *Item 4: The company satisfaction with the skill of TVET graduate* was less disendorsed *by* 52% of Graduates than 53% of Employers. This finding suggests that there was variation between employer and TVET graduates regarding the issues of paid employment opportunity and satisfaction of employers with the competency of employed TVET graduates.

In this Group 3, we identified not statistically significant differences between two groups (TVET graduates & employers) by running t-test on group responses regarding *paid employment opportunity and employer satisfaction of graduates' competency*. The t-test shows for Item 1 and Item 4 in the question group 3 have ($p > 0.05$) result in non-statistically significant mean differences between TVET graduates & employers.

7.6 *Quality assurance indicators in industries*

Question group 4 intends to identify the quality assurance indicators in the perception of employers. They were asked, *"How do you agree/disagree with the following factors regarding quality to skill and job?"* The Items are: *Item1: Qualification level of TVET graduates match with standards of the enterprises, Item 2: The graduation quality of the job match with the level of skill it requires in industry, Item 3: Salary of TVET graduate employees match with the job (n=196), Item 4: Availability of certified or experienced trainers in the company and Item 5: Company upgrades the skill of graduates through workshop after employment.* Table 7.8 presents in detail:

Items	Strongly Disagree	Disagree	Mildly Disagree	Mildly Agree	Agree	Strongly Agree	Percentage Graduates	Percentage Employers
Group 4-quality assurance indicators	%	%	%	%	%	%	D A	D A
Item 1: Qualification level of TVET graduates match with standards of the enterprises.	12.7	11.8	21.8	18.2	25.5	10.0	-	-
Item 2: Quality of the job match with the level of skill it requires in industry.	11.1	28.7	15.7	22.2	22.2	-	-	-
Item 3: Salary/income of TVET graduate employees match with the job.	23.0	29.1	8.7	27.6	10.7	1.0	79 21	45 55
Item 4: Certified/ experienced trainers in the company employees.	10.0	20.0	22.7	21.8	25.5	-	-	-
Item 5: company upgrades the skill of graduates through workshop after employment.	22.7	33.6	8.2	13.6	17.3	4.5	-	-

NB.A-Agree D-Disagree

Table 7-8 Quality assurance indicators in industries

In question group 4, *Quality assurance indicators in the industries,* one item was supported, i.e. *Item1: Qualification level of TVET graduates match with standards of the enterprises* were supported by 54% of employers. The rest four items were disendorsed by majority respondents, for example, *Item 2: Quality of the job that the graduates obtained matches with the level of skill/standard it requires in industry* 56%, *Item 3: Salary of TVET graduate employees match with the job by* 61% of employers, *Item 4: Certified/experienced trainers in the company* 53%, and *Item 5*: *Company upgrades the skill of graduates through workshop after employment* was also disendorsed by 64% of respondents. This finding suggests that the qualification level and industry standard seems reasonable according to employer respondents, whereas indicators such as the quality of trainer, salary of graduates, quality of the job and upgrading skill of graduates were less supportive which may create gaps for better quality.

Specifically, responds of items leaned towards the negative and positive scales, for example, *Item1: Qualification level of TVET graduates match with standards of the enterprises agreed by 26% but 22% goes to the mildly disagreed scale, Item 2: Quality of the job that the graduates obtained matches with the level of skill it requires in industry was disagreed by* 29% but still about 22% responds were leaned to agreement scale, *Item 3: Salary of TVET graduate employees match with the job 29*% disagreement plus 23% *were* leaned towards strongly disagreement but 28% inclined to mildly agreement scale. Further, *Item 4: Certified/experienced trainers in the company employees* was agreed by 26%, but 23% leaned to mildly disagreement. Finally, Item 5: *Company upgrades the skill of graduates through workshop after employment* was disagreed by 34% but about 17% agreed with the upgrading TVET graduate employees. This suggests that employers differ in their response to the quality of graduate employees.

Comparatively, shows additional statistic results for one item to compare between TVET graduates and employers. Hence, *Item 3: Salary of TVET graduate employees match with the job* was more supported by 55% of Employer, whereas the majority (79%) of TVET graduates' respondents reported negatively. The above finding suggests that there is variation between employer and TVET graduates regarding the issues of salary paid to TVET graduate employees.

The inferential statistics identified significant differences between two groups (TVET graduates & employers) by running t-test on group responses regarding *Item 3: Salary of TVET graduate employees match with the job*. The t-test shows that Item 3 resulted in statistically significant mean differences ($p < 0.05$) between TVET graduates & employers. Further analysis has been given in the next inferential statistics section.

7.7 *Employer Relevance indicators of CR*

This question group five deals with the "*Employer relevance indicators of TVET CR"*. Employer respondents were asked, "How *do you agree/disagree with the following relevance indicators of curriculum?* The Items were: *Item1: satisfy human resource needs to the demand of the industry, Item 2: Improved quality of production in your enterprise, Item 3: CR increased the quality of employable skill in industry, and Item 4: Curricula improved technology transfer.* Table 7.10 presents in detail:

Items	Strongly Disagree	Disagree	Mildly Disagree	Mildly Agree	Agree	Strongly Agree
Group 5-Employer relevance indicators	%	%	%	%	%	%
Item 1: satisfy human resource needs to the demand of the industry	9.5	18.1	20.0	16.2	23.8	12.4
Item 2: Improved quality of production in the enterprise.	7.8	9.7	19.4	46.6	14.6	1.9
Item 3: Increased quality of employable skill in industry	26.4	25.5	9.1	18.2	20.9	-
Item 4: Curricula improved technology transfer.	8.2	14.5	15.5	23.6	38.2	-

Table 7-9 Employer relevance indicators of CR

Table 7.9 displays that all items were supported except *Item 3: The curricula increased the quality of employable skill in industry*, disendorsed by 61% of employers, whereas the majority of respondents endorsed the rest three items. For example, Item1*: the curricula satisfied the human resource needs to the demand of the industry* was endorsed by 52% of employers. *Item 2: The curricula improved quality of production in your enterprise, also* endorsed by 63%, and Item *4: The curricula improved technology transfer* was also endorsed by 62% of employer respondents. This finding suggests that except the quality of employable skill, such items as productivity, human resource needs and technology transfer were reported as positive indicators of relevancy of the curricula.

Specifically, responds of items regarding Employer *Relevance indicators of curriculum* leaned towards the negative and positive scales, for example, *Item1: The curricula satisfy human resource needs to the demand of the industry was agreed by 24% but 20% goes to the mildly disagreed scale, Item 2: The curricula improved quality of production in your enterprise, was mildly agreed by* 47% of the responses but still about 19% responds were leaned to mildly disagreement scale. *Item 3: The curricula increased the quality of employable skill in industry, 26% were* leaned to strongly disagreement plus another 26% disagreement but still 21% inclined to agreement scale and no strongly agreement was indicated. Finally, *Item 4: Curricula improved technology transfer* was agreed by 38%, plus 24% mildly agreed but 16% mildly disagreement plus 15% leaned to disagreement with no strongly agreement response. This suggests that more than half responses regarding the indicators of relevancy of the CR leaned towards abstention scales (mildly agreement and mildly disagreement).

7.8 *Similarities and differences in the implementation of TVET CR: Employer perspectives*

Comparisons of individual items by TVET graduates, principals and employers: Inferential statistics

Introduction

This section reports comparison of similar questions raised to instructors, principals, employers, and/or graduates as necessary. For the purpose of analysis, related items were divided into five different groups. For example, Question group 1. Employer involvement to develop TVET curriculum compares between employers and principals (t-test). Furthermore, question group 2: Cooperative/apprenticeship training in industries comparative analysis also conducted between TVET graduates and employers (t-test). Here, question group 3: Employment of TVET graduates also analyzed comparatively between TVET graduates and employers (t-test). Question group 4: Quality assessment in industries also analyzed by comparing between TVET graduates and employers (t-test). Finally, comparison was conducted for individual item, i.e. Curriculum development, between instructors, principals and employers (Chai square). Furthermore, for each comparison identified effect sizes were computed to measure the strength of the relationship between two variables. For t-test, the difference in the group means and per group standard deviation was employed as a convenient index to measure effect size (Cohen's d, 1988). Graphs that illustrate mean scales scores for each comparison have been also provided, as these graphs further illustration of differences in perceptions of respondents.

7.8.1 Participation of curriculum design by Employers, instructors and principals

Chi-square was performed to examine the participation of stakeholders in the design of TVET curriculum which may vary across the respondents of Employers (n = 110), Principals (n = 55) and TVET instructors (n = 253) were requested whether they participated in the design of TVET curriculum. The question stated as "*Have you ever participated in the design of TVET curriculum?* Responses were 1. 'Yes' 2. 'No'

Participation in the design of TVET curriculum

	Respondents				
Answers	Employer	Instructors	Principals	$\chi 2$	φ
Yes	17 (15.5)	120 (48.6)	24 (43.6)	35.639	.294
No	93 (84.5)	127 (51.4)	31 (56.4)		

*Note. **=p<.005. Percentages appear in parentheses below group frequencies*

Table 7-10 Participation in curriculum design by employers, instructors and principals (Cross tabulation)

This question was focused on the participation of stakeholders in the process of TVET curriculum design. The comparative analysis was conducted among employers, instructors and principals which results in statistically significant, $\chi^2(2) = 35{,}639$, $p < .001$. The effect size for this finding, Cramer's V (φ), was medium, .294 (Cohen, 1988). As can be seen in Table 7.13, Majority of the instructors and principals were highly participated in the process of curriculum design, 48.6%, and 43.6%, respectively when compared with employer respondents only 15.5%. This finding suggests that employers were the list participant in the curriculum development, however there is involvement on the side of employers.

7.8.2 **Roles of the curriculum designers by Employers, instructors and principals**

Chi-square was performed to examine the roles in the design of TVET curriculum which may vary across the respondents of Employers (n = 15), Principals (n = 117) and TVET instructors (n = 24) were requested whether they participated in the design of TVET curriculum. The question was stated as *" If you participated in the design of TVET curriculum, then what was your main role?"* Responses were 1. 'No role to change the curriculum subjects/trades/and or contents, 2. 'Has power to modify the curriculum contents, 3. Has power to change the curriculum subjects/trades and 4. Others-has power to design a new curriculum. The relationship between these variables was not significant $\chi^2(2) = 5{,}454$ $p = .487$. Thus, the null hypothesis of no differences between means was accepted.

7.8.3 **Employer involvement to the effectiveness of TVET curriculum**

Question group one deals with *Employer involvement.* This question was asked for principals' and employers' respondents. The question was stated as "*In what ways does your enterprise interact with TVET institutions to improve TVET curriculum?* The Items were: *Item1: in Advisory board, Item 2: in internship, Item 3: in visits to work sites, Item4: in sponsoring programs or tutoring, Item 5: in reviewing student work, and Item 6: in setting curriculum or skill standards.* Respondents were replied from strongly disagree to strongly agree.

Among these four items were significant, such as Item: 1, Item 2, Item 3 and Item 6. Hence, the distributions for normality were sufficient for four items, such as *Item1:* (skew.970 & kurtosis -.128), *Item 2:* (skew.272 & kurtosis -1.222), *Item 3:* (skew .445 & kurtosis -1.101), Item 6: (skew-1.064 & kurtosis .174) (Schmider, et al., 2010). Furthermore, the assumption of homogeneity of variances was tested and satisfied via Levene's *F* test, for *Item2: F* (161) = 0.41, $p = .839$, and Item

*3: F (*160) = .965, *p* = .327, whereas not satisfied for Item1: *F* (151) = 4,901, *p* = .028, *and Item 6: F* (163) = 23,608, *p* < .001 (Table 7. 11).

Employer involvement

Items	Respondents	Mean	SD	Levene-Test F	Levene-Test Sig.	T-Test T	T-Test *df*	T-Test Sig. (2-tl)	d
Item 1: Employers involvement in Advisory board.	Employers	1.91	1.063	4.901	.028	-2.311	151	.022	.380
	Principals	2.37	1.341						
Item 2; Employers involvement in internship	Employers	2.98	1.583	.041	.839	-2.473	161	.014	.420
	Principals	3.62	1.497						
Item 3: Employers involvement in visits to work sites.	Employers	2.57	1.367	.965	.327	-3.794	160	.000	.620
	Principals	3.45	1.476						
Item 6: Employers involvement in setting curriculum or skill standards.	Employers	1.75	1.077	23.608	.000	-6.319	163	.000	.980
	Principals	3.07	1.574						

Table 7-11 Employer involvement by Principals & employers (t-test)

Table 7.10 displays that the t-test results in a statistically significant difference between principals and employers for Item1: *Employers involvement in Advisory board*. As a result, it was supported more by principals than employers with a small effect size (0.38). For *Item 2: Employers involvement in internship* was supported more by principals than employers with closer to medium effect size (0.42). Further, the t-test produced a statistically significant difference *for Item 3: Employers involvement in visits to work sites*. As a result it was supported more by principals than employers, with a medium effect size, 0.62. Finally, the t-test for *Item 6: Employers involvement in setting curriculum or skill standards* produced a statistically significant difference between principals and employers. As a result, it was supported more by principals than employers Cohen's d was estimated at, 0.98, a large effect size. However, the independent sample t-test results in a non-significant value for Item *4: t*(161) = -1.571, *p* = .118 and *Item 5: t*(161) = -1.855, *p* = .065. A line graphical representation of the mean is displayed in Figure 7.1.

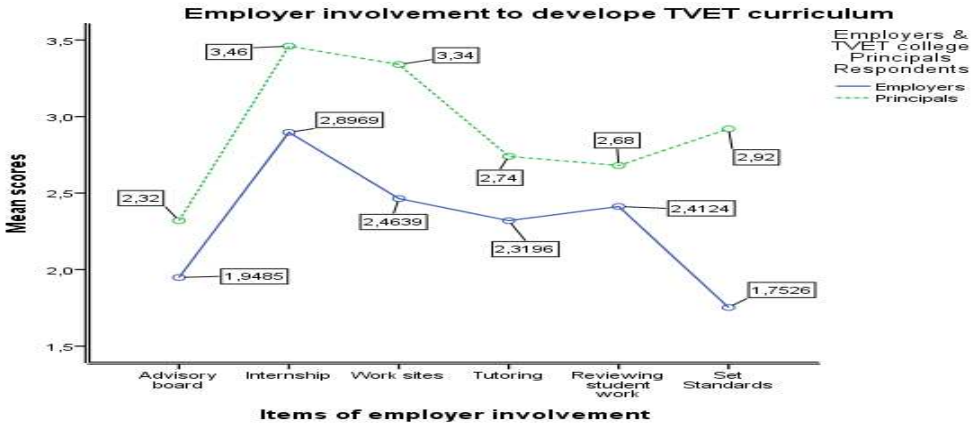


Figure 7-1: Employer involvement to develop TVET curriculum

To sum up, this study found that there is variation between employers and principals regarding Employer involvement to develop TVET curriculum, for example, Employers involvement in Advisory board (small effect size), in internship (medium effect size), in visits to work sites (medium effect size) and in setting curriculum or skill standards (large effect size), where principals supported the involvements more than employers.

7.8.4 Cooperative/apprenticeship training in industries: Employer perspectives

Question group 2 deals with the skill training in the industries. Graduates and employers respondents were asked, "How *do you agree/disagree regarding skill training in the companies?* The Items were: *Item1: Access to Cooperative/ Apprenticeship training, Item 2:* Relevancy of *Apprenticeship/cooperative training, Item 3: company training match with college contents, and Item 4: sufficient workshop/Training materials in the company.* Table 7.11 presents in detail:

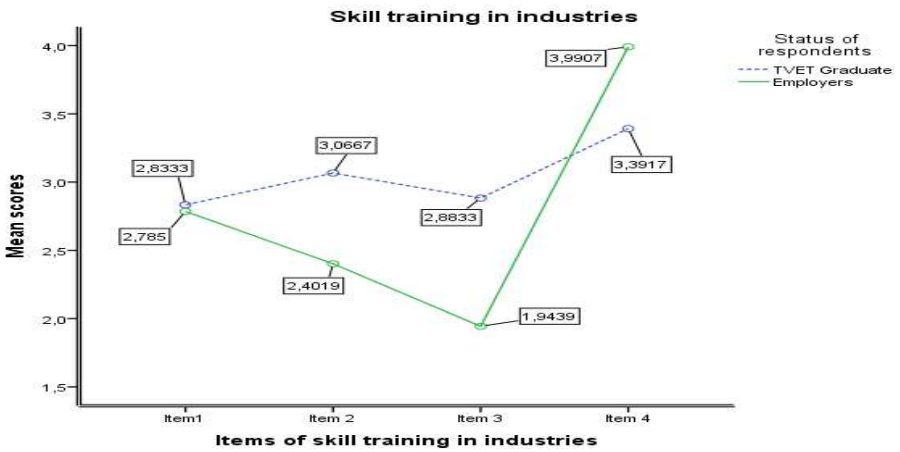
The assumption of normality was satisfied for these items (see normality test for t-test above) (Schmider, et al, 2010). Furthermore, the assumption of homogeneity of variances was tested and not satisfied via Levene's *F* test, for all three items, such as *Item 2: F*(228) = 27,420, $p < .001$, and *F(*238) = 24,490, $p < .001$, and for *Item 4: F*(234) = 47,469, $p < .001$, (Table 7.11).

Skill training in the industries

				Levene-Test		T-Test			
Items	Respondents	Mean	SD	F	Sig.	T	*df*	Sig. (2-tl)	*d*
Item 2: company training match with college contents	Graduates	3.09	1.858	27.420	.000	3.131	228	.002	.410
	Employers	2.41	1.435						
Item 3: sufficient workshop/Training materials in the company	Graduates	2.92	1.717	24.490	.000	4.881	238	.000	.540
	Employers	1.95	1.364						
Item 4: adequacy of time for Apprenticeship/ cooperative *training*	Graduates	3.48	1.820	47.469	.000	-2.333	234	.020	.300
	Employers	3.95	1.323						

Table 7-12 Skill training in industries by graduates & employers (t-test)

Table 7.11 displays that the t-test results in a statistically significant difference between graduates and employers for *Item 2: Company-training match with college contents* were supported more by TVET graduates than employers, with a small effect size, 0.41. For *Item 3*: *Sufficient workshop/Training materials in the company* was supported more by TVET graduates than employers with a medium effect size, 0.54. Further, for *Item 4: Adequacy of time for Apprenticeship/cooperative* was supported more by Employers than TVET graduates, with a small effect size (0.30). However, the independent sample t-test for Item1 *Access to Cooperative/ Apprenticeship training* creates no difference between the TVET graduates and employers. A line graphical representation of the mean is displayed in Figure 7.2.



NB: *Item1: Access to Cooperative/ Apprenticeship training,* Item *2: Company training match with college contents, Item 3: Sufficient workshop/Training materials in the company Item4: Adequacy of time for Apprenticeship/cooperative training,*

Figure 7-2: Skill training in the industries

Generally, this study found that there is variation between graduates and employers regarding Skill training in the industries, for example, company training match with college contents, sufficient workshop/training materials in the company, where graduates supported the skill training in industries more than employers, whereas adequacy of time for apprenticeship/cooperative training was supported more by employers than TVET graduates with small and medium effect size.

7.8.5 Employment of TVET graduates by TVET graduates and employers

Question group 3 deals with the skill training in the industries. Employer and TVET graduate respondents were asked, "How *do you agree/disagree with the following factors regarding current employment in your industry?"*

The Items are: *Item1: Better paid employment opportunity (n=234), and Item 4: Employer satisfaction with the skill of TVET graduates employees (n=198).* However, the t-test resulted in a non-significant value for Item2*: Full-time employment opportunity* $t(236) = 1{,}406$, $p = .161$, $d = .00$ and *Employer satisfaction with the skill of TVET graduates employees* $t(195) = ,265$, $p = .792$, $d = .00$, suggesting that the no difference existed between TVET graduates and employers.

7.8.6 Quality assurance indicators in industries

Question group 4 deals with the quality of skills and job in the industries. TVET graduates and Employer respondents were asked, "How *do you agree/disagree with the following indicators regarding quality to skill and job?* Hence, only one item was asked for both respondents, Item *3: Salary of TVET graduate employees match with the job (n = 196).* Table 7.12 presents in detail:

Hence, the distribution for normality was tested and found sufficient for *Item 3: Salary of TVET graduate employees match with the job,* (skew.235 & kurtosis -1.231). Furthermore, the assumption of homogeneity of variances was tested and satisfied via Levene's F test, for *Item 3: Salary of TVET graduate employees match with the job,* F (194) = 2,903, p = 0 .090.

Salary of TVET graduates vs Job

				Levene-Test		T-Test			
Items	Respondents	Mean	SD	F	Sig.	T	*df*	Sig. (2-tl)	*d*
Item 3: Salary of TVET graduate employees match with the job.	Graduates	2.19	1.255	2.903	.090	-5.878	194	.000	.840
	Employers	3.28	1.326						

Table 7-13: Salary of TVET graduates versus Quality of the job by graduates & employers (t-test)

The t-test shows for *3: Salary of TVET graduate employees match with the job,* a statistically significant difference between graduates and employers $t(194) = -5{,}878$, $p < .001$, $d = .84$, suggesting that the Salary of TVET graduate employees match with the job were less supported by TVET graduates (M = 2,19, SD = 1.255) than employers (M = 3,28, SD = 1.326). Cohen's d was estimated at, 0.84, which is a large effect size (Cohen 1988). Generally, the finding shows that there was mismatch between the salary and the quality of the job assigned by employers, large effect size.

7.9 *SUMMARY: Employer Perspectives*

This part reports the exploration stage of this study based on the perspective of employers. Hence, data were collected from the employer industries in Addis Ababa, Ethiopia. This conclusion intends in response to the basic questions and hypothesis in chapter four. In line with the questions identified in chapter seven, the data collection, analysis and interpretation during this stage of the study focused on the issues of *curriculum development, roles in the design of TVET curriculum, cooperative/apprenticeship training in industries, employer involvement in the colleges, graduate relevance indicators such as employment, quality, and employer relevance of the CRs.* The inferential statistic also concluded on differences between statuses of respondents (employer with instructors and principals and/or graduates) as necessary. In general, the exploration stage of the study identified the following findings based on employer perspectives:

Participation in the curriculum development

Employers were found to be involved in the process of designing TVET curriculum, however minimum participation

As indicated in the Ethiopian policy, TVET curriculum is the responsibility of TVET institutions (MOE, 2008), whereas employers involvement is in providing occupational standard for the

curriculum. This study requested the involvement of employers in designing TVET curriculum. The exploration stage of this study found from the descriptive statistics that there was less (16%) involvement of employers when compared with the instructors and principals of TVET colleges. However, they have great role in modifying the curriculum contents during curriculum design when compare with principals and instructors, however not statistically significantly different between employer, instructors and principals. The major reason for not participating in the design of curriculum was for being not having a chance to involve in the curriculum, according to the respondents.

Items	***Instructors***	***Principals***	***employers***
Participation in the curriculum development	***49%***	***44%***	16%.

Table 7-14 Participation in the TVET curriculum development

The inferential statistics also found a significant difference upon the participation in the design of TVET curriculum, between Employers, TVET instructors and principals of TVET colleges, where instructors produced higher result than the principals or when compared with the employers, but the effect size was closer to medium size.

Roles in the process of designing TVET curriculum

No different roles were existed among instructors, principals and employers in the process of TVET curriculum design

Further question was raised for those who participated in the design of TVET curriculum as *"If you participated in the design of TVET curriculum, then what was your main role?"* Roles (see Table 7.15).

Items	***Instructors***	***Principals***	***Employers***
Roles in designing curriculum		***Means***	
1.No role to change the curriculum contents	x	x	x
2.Has power to modify the curriculum contents	x	x	x
3.Has power to change the curriculum contents	x	x	x
4.Others-has power to design a new curriculum	x	x	x

Note: -X– No significant difference

Table 7-15 Roles in designing curriculum

The inferential statistics resulted in no significant difference among instructors, principals and employers in their specific roles, either to change, modify or designing a new curriculum.

Apprenticeship/cooperative training: Employer perspectives

Inconsistency responses existed between employers and graduates in terms of providing apprenticeship/cooperative training in industries

For the success of effective TVET system, apprenticeship/cooperative training plays a significant role in addition to minimizing the mismatch between supply and demand in the labor market. As reported by TVET graduates' only one-third respondents indicate there was access to apprenticeship/cooperative training in the industries. However, 91% employer reported that they provided apprenticeship/cooperative training in their enterprises, however according graduates' report, there was shortage of access to get place for apprenticeship/cooperative training. Therefore, there are inconsistent reports between employers and TVET graduates.

Employer involvement to the effectiveness of TVET curriculum

This study also considers the way of employers' involvement to the effectiveness of TVET curriculum. The indicators are: "*Employers involvement in advisory board, in internship (apprenticeship/cooperative), in visits to work sites, in sponsoring programs or tutoring, in reviewing student work and in setting curriculum or skill standards"*

The involvement of employers to the effectiveness of TVET curriculum was found to be in internship (apprenticeship/cooperative training)

The descriptive study shows that *Employers involvement in internship (cooperative/apprenticeship).* Hear is reported by more than one-third of respondents as the first place and the least (below one fifths of respondents) was reported for *Employers involvement in setting curriculum or skill standards.* As the second place *visiting to work sites* and the third place reported by almost one fourth of respondents to *"Advisory board, reviewing student work* and *sponsoring programs or tutoring"*.

Items	***Principals***	***Employers***
Employer involvement	***Means***	
Item1: Advisory board	*2.37*	1.91
Item2; Internship	3.62	2.98
Item 3: Visits to work sites	3.45	2.57
Item4: Sponsoring programs or tutoring	x	x
Item 5: Involvement in reviewing student work	x	x
Item 6: Setting curriculum or skill standards	*3.07*	*1.75*

Note: - x – No significant difference

Table 7-16 Employer involvement to effective TVET curriculum

There are inconsistency responses regarding the way of employer involvement to the effectiveness of TVET curriculum between employers and principals

The inferential statistics also provide the difference between the response of employers and principals of the TVET colleges. Hence, the t-test shows statistically significant mean difference for *Employers involvement in Advisory board* ***(closer to medium effect size)***, *Employers involvement in internship* ***(small effect size)***, *Employers involvement in visits to work sites* ***(medium effect size)***, *and: Employers involvement in setting curriculum or skill standards* ***(large effect size)****"* , where TVET principals produced higher mean than employers. In general, from the findings, it is possible to say that there are inconsistency responses between employers and TVET principals.

Cooperative/apprenticeship training

This study also evaluates the Cooperative/Apprenticeship training in the industries in the view of the employers in terms of "*Access to cooperative/apprenticeship training, company-training match with college contents, sufficient workshop/Training materials in the company, and adequacy of time for apprenticeship/ cooperative training"*

The apprenticeship/cooperative training in industries seems lack of sufficient workshop materials, the mismatch between contents in the TVET colleges and industries, and no enough access to get training providing organizations

The descriptive study shows that "*Adequacy of time for apprenticeship/cooperative training"* reported by almost two-third of respondents as the positive support to training in industries, however more than 71% of respondents was reported for "*no sufficient workshop/training materials in the company"*. Yet, 65% reported "*company training does not match with college contents"* and finally 67% reported "no enough *access to cooperative/apprenticeship training in industries"*, suggesting that there is a gap between training in TVET colleges and in industries.

Items	***Graduates***	***Employers***
Apprenticeship/cooperative training	***Means***	
Item 1: Access to Apprenticeship/cooperative training	x	x
Item 2: Company training match with college contents	*3.09*	2.41
Item 3: Sufficient workshop/Training materials in the company	2.92	1.95
Item 4: Adequacy of time for Apprenticeship/ cooperative training	3.48	3.98

Note: x – No significant difference

Table 7-17 Apprenticeship/cooperative training

There are inconsistency responses regarding Apprenticeship/cooperative training between employers and TVET graduates

The inferential statistics also provided differences between the responses of employers and TVET graduates. Hence, the t-test shows statistically significant mean difference for *company training match with college contents* ***(closer to medium effect size),*** where TVET graduates produced higher mean than employers, *and sufficient workshop/training materials in the company* ***(medium effect size),*** where TVET graduates produced higher mean than employers, *but for Adequacy of time for Apprenticeship/ cooperative training"* ***(small effect size)"***, where employers produced higher mean than TVET graduates. In general, from the findings, it is possible to say that there are inconsistency responses between employers and TVET principals.

Quality assurance indicators

This study also considers the quality assurance indicators of TVET graduates in the perception of employers in industries. The following indicators are evaluated, such as: "*Qualification level of TVET graduates match with standards of the enterprises, TVET graduates' quality of job match with the level of skill it requires in industry, Salary of TVET graduates' employees match with the job, availability of certified or experienced trainers in the company, and company upgrades the skill of graduates through workshop after employment."*

Quality indicators, such as quality of trainer, salary of graduates, quality of the job and upgrading skill of graduates found to be underestimated

The descriptive study shows the quality assurance indicators of TVET graduates employed in industries. Hence, the "*Qualification level of TVET graduates match with standards in the enterprises"* supported by more than one-half of respondents as the first place of the quality indicators and the least (one third of respondents) was reported for "*company upgrades the skill of graduates through workshop after employment."* Yet, as the second place the "*availability of certified or experienced trainers in the company", (*below one-half of respondents*)*, and as the third place, "*TVET graduates' quality of job match with the level of skill it requires in industry", and "Salary of TVET graduates' employees match with the job"*, were supported by 44% and 39% of employer respondents respectively. This finding suggests that the qualification level and industry standard seems reasonable according to employer respondents, whereas indicators, such as the quality of trainer, salary of graduates, quality of the job and upgrading skill of graduates found to be underestimated, which may create a gap for better quality.

Items	*Graduates*	*employers*
Quality assurance indicators	**Means**	
Salary/income of TVET graduate employees matches with the quality of the	2.19	3.28

Table 7-18 Quality assurance indicators

There is perceptual difference between graduates and employers in terms of the gap between the paid salary of TVET graduates and the assigned job by the employers.

The inferential statistic intended to investigate whether there is variation between the perception of TVET graduates and employers in terms of *the Salary of TVET graduates' employees match with the job assigned by the employers.* Consequently, the t-test results in statistically significant difference, where employer produced higher mean than TVET graduates with **large** effect size. This indicates that employers supported there is a gap between the paid salary for TVET graduates and the quality of the assigned job by employers.

Employer relevance indicators

This study tries to look on 4 employer relevance indicators to investigate the impact of the CRs on employer. The items are: "*satisfy human resource needs to the demand of the industry, improved quality of production in your enterprise, the curricula* increased *the quality of employable skill in industry, and Curricula improved technology transfer."*

The improvement of quality of production, technology transfer and human resource needs to industry found to be employer relevance indicators.

The descriptive study shows the employer relevance indicators of the TVET CRs in Ethiopia. Hence, the *improved quality of production in your enterprise* supported by almost two-third of respondents as the first rank of the employer relevance indicators and the least (more than one-third of respondents) was reported for *"the curricula* increased *the quality of employable skill in industry"* Yet, as the second rank the *Curricula improved technology transfer, also supported by almost two-third or respondents TVET graduates' quality of job match with the level of skill it requires in industry, finally, the curricula reforms satisfy human resource needs to the demand of the industry* supported by one-half of respondents., indicating that the improvements of quality of production, technology transfer and human resource needs to industry found to be employer relevance indicators.

8 TVET OFFICIALS PERSPECTIVES ON TVET CR

Display and interpretation of interview data (INSPECTION STAGE (1))

8.1 *Introduction*

This part intends to investigate the CRs from the eyes of TVET officials (Heads, deans, and directors) using interview data. It frames the research problem concerning the impact of the CRs in the vocational education of Ethiopia. It also provides a comprehensive picture of the impact of the CRs implemented in the TVET colleges of Ethiopia between 2001 and 2010.

Denzin & Lincoln, (2000), indicate that the field of qualitative research is broad and not only "crosscuts disciplines, fields, and subject matters" (p. 2), but also utilizes a myriad of means to collect data. Further, Creswell (2007) asserts that while there are several kinds of data, all data falls into four basic categories, "observations, interviews, documents, and audiovisual materials" (p. 129). This inspection section of the study bases on two parts, namely the interviews (inspection stage 1) and document data (inspection stage 2) analysis.

In order to achieve this purpose, a two stage investigative process was undertaken. The results from the first stage, the exploration stages, are presented in Chapters 5-7. A number of unresolved issues related to *interventions* of CR, *organization and implementation*, *effect relevance* of CR, *causes* of CR, *impact* of CRs and other related issues were requested and collected from ministry officials, TVET agents and experts. These issues are displayed and interpreted in the second stage of this study, the inspection stage, chapter 8. This chapter is structured around the presentation of these interview data organized similar responses from different sources. Consequently, section 8.1 introduction; section 8.2 intervention of curricula reforms; section 8.3 organization and implementation of the CRs; section 8.4 factors influencing CR; section 8.5 effect relevance of the CRs; section 8.6 Assessment and certification; section 8.7 SWOT Analysis of CRs; and section 8.8 Document analysis.

8.2 *Interventions of CR*

As described in Chapter III, one of the major challenges for curriculum improvement is creating balance and consistency between the various interventions of a curriculum (Walker 1990). This is also identified in the Ethiopian TVET curriculum development process. Hence, the exploration stage of this study identified a basic discrepancy. The inferential statistical analysis of the questionnaire data found significant difference between the IBCR and OBCR implementation in

addition to the variation of the interventions among the type of institutions where the reforms are implemented. With these issues in mind, the inspection stage of this study sought answers to the following questions:

How do you explain TVET curriculum and the major policy changes accompanying the TVET CR since 2001? In terms of input based training (10+ systems) and outcome-based training (level-system) (for example, Ministry policy guidelines, Quality framework (ETQF), standards, strategies and evaluation system, etc.)

Would you please identify the major issues/interventions of the TVET curricula adapted in the policy during the year 2001 to 2005 and 2006 to 2010 (Addressed in ESDP II & III)? In terms of Professional change, Structural change, Technical change (new media), Content, Method, Organizational and Institutional change and Reform Network change,

Which countries' TVET System are benchmarked or adapted? And why? When are these benchmarks developed and implemented in the country? Are they effective/match with the socio economy and cultural situation in the country?

Would you please tell me the TVET financing strategy in Ethiopia? What are the major sources of finance and material for the implementation of the TVET reforms? How was it allocated to each public TVET Institutions?

In line with these questions, data collection, analysis and interpretations during inspection stage of the study clarified issues around curriculum changes.

8.2.1 **Curriculum issues accompanying the TVET curriculum**

Interviews during the inspection stage focused in the first instance on the Curriculum policy issues in the Ethiopian TVET system. The philosophical concept of the policy explained in relation to a problem solving approach. The ministry official in charge of TVET policy issue indicated as:

> *Generally there is one key phrase in the policy "Problem solving" "The Ethiopian education and training policy will be problem solving". This is the important word in the policy. Therefore, if you aim at producing problem solving generation, then the next question will be which education structure leads to create problem-solving people in the country (I1P1T4).*

In addition, the director explained in relation to the Ethiopian education structure as formal, informal and non-formal training based on the reform programs, which was the 10+ system (IBCR),

conducted between 2001 to 2005 and the other reform was the level system (OBCR), conducted after 2005. The director elaborated it as follows:

> *These [Ethiopian education structure] are more of non-formal and informal trainings programs. What we say formal is a training program which starts from grade 10 up to BSc level. In this middle level training system there was reform programs. For example, from 1998 to 2001 . . . I mean 2001 to 2005 there was 10+1/2/3. The focus of this reform was input-based, that means, you will design curriculum that needs for training, the basic issue here is curriculum. You will organize curriculum, facility and determine the time span. That is what . . . you see generally is, as inputs . . . it was generally time bound. (I1P1T14)*

The vice director further added regarding the 10+system as it was simply content based and time bound system as compared to the level system:

> *Generally, the previous 10+system was simply content based and the subjects are given in terms of time very widely, whereas the current level system is more of specific and aimed at the qualification area, of skill and knowledge, on a specific field of study. Therefore, the time allocation is completely different from the 10+system, which was yearly, time bound. Similarly, the method also changed from more of theory to more practical works. The level graduate must able to show the required skill by doing something in the working area. (I2P15T1)*

The meaning of TVET curriculum differs between the IBCR and the OBCR. In the Ethiopian context, the former is considered as input system of training and the latter is occupational standard based system. The vice director defines the outcome-based TVET curriculum as:

> *Any way TVET curriculum is a plan of action, which starts from occupational standard and finalized by competence assessment. If the graduates/trainees are not meet the standards set by the industries, then the TVET institutions delivered not based on the standards. Therefore, we say that the system is failed. On the other hand, if the graduates are competent enough by the assessment, then we can say that our system has no problem. (I2P1T1)*

The process of TVET curriculum design in the current outcome-based system differs from that of the input base system. The outcome-based system is started from the industry as an occupational standard and finalized on the assessment system. Regarding the process, the vice-director points out as:

> *The occupational standard is set by the principal sector organizations, and we say the industry. The industry decided/describe what type of profession they need. We receive the occupational standard as an educational sector/agent. We couldn`t improve or change or use the occupational standard in other way, we interpreted based on the specification of the industry's occupational standard, into the curriculum, module, or to necessary training delivery method, then we provide training. The training will be given based on the schedule. After completion of the training, we provide the trainees for assessment so that the professional from industry or institution approves whether the training is provided based on the occupational standard . . . but curriculum here is simply one part in the middle of the process. (I2P1T7).*

8.2.2 **Interventions in the TVET curriculum**

In this study, we found discrepancies in the first exploration stage between the response of TVET instructors and principals in terms of the curricular intervention factors, i.e. instructors supported the change of the interventions except the instructional media change, whereas principals disendorsed all the factors. As noted previously in Section 5.4.1, generally, the higher responses go to agreement scale except instructional media.

In the inspection stage of this study, we found no more gaps between the interview with the officials responsible for curriculum and the reality of the respondents from the questionnaire of TVET teachers. However, gaps were found between the responses of TVET college principals and TVET officials. For example, in terms of instructional media change. The vice director indicates that the medium of instruction for some hard skill courses was changed to local language:

> *The current level system is not changed from zero. However, the previous 10+ system creates a ground for the level system. Therefore, there are many changes, but the medium of instruction is not yet changed. However, language is one problem of trainees; hence we are tying now to change the medium of instruction of some courses but not internationally needed skill courses, especially short courses into local language for example, into Amharic[The Ethiopian official language](I2P2T1).*

In terms of subject/content change, the college dean presents in such a way that the soft skills like English language and Mathematics are banned form the hard skill training:

> *One thing that I always regret is that there has been content, that the TVET institutions are authorized only to give skill training. That is the hard skill training. It simply means skills that are used such as for constructions, mechanics and engineering and so on. The soft skill training like language [English] and other related things [courses] . . . mathematics are quite… banned. All learning materials and medium of instruction are in English including the internet and the emails but when languages such as English are banned from the curriculum, the actual learning that can take place is always jeopardized. This is my view. It is a clear gap in the curriculum. (I4P19T1)*

Regarding professional change, skill gap training for teachers and leaders is provided since the rapidly changing technologies make the yesterday's choice obsolete. The vice director states:

> *We organize training to improve the skill gap of the TVET teachers & leaders. However, it is not easy within short time to cover the whole professional knowledge, skill and attitude of TVET leaders. Thus, we all leaders in the TVET have taken short workshops, one to two months training. For example, experts from Philippines and Germany provide workshops regarding how to manage, how to implement the new system, and the Japan experts also regarding kaizen. (I2P2T8)*

The director of the TVET agent further states the change of profession for teachers as:

> *Teachers for example, are trained in the summer programs. Training has been organized so as to fill the skill gap of instructors, trainers and leaders of the TVET institutions. We bulled many TVET institutions in the country you can consider it as institutional change. (I1P6T1)*

In contrast, a college dean indicated that there is a gap in the professionalization process. He stated:

> *There is a policy gap as to how this professional person can pursue his career. . . . For example if you have a level 4 diploma in human resource then that is it, you have finished, you have done. You have to have another means of taking your career higher… In other words, it means there is a policy gap as to how this professional person can pursue his career. . . . However, now what I see in this country is that, the curricula are designed for the benefit of the political consumptions. It does not actually answer what is lacking as a skill, what is required for the companies, and what it takes to make a career through this curriculum. So you can see in my college for example, that a student may be training in one system but after he finishes he would like to pursue his career. However, there is a gape. (I4P7T2)*

Regarding method and content change, the inferential statistics (5.4.1) shows significant difference between TVET instructors and college principals. The college dean asserts:

> *There are defiantly positive changes as well. . . Despite the shortcomings from the inputs, the material inputs, the educational inputs, thanks to some dedicated institutions, colleges, and TVET institutions. Students are made to be served better and acquired better skills, so I do not think all TVET colleges are at the best service they can deliver because of the differences in their background and the material provision. (I4P10T3)*

The method of teaching is changed to computerized courses according to the dean of the college "*OH. May be change to some computerized courses or something like that,*" He added further in terms of time allotment change "*Hamm. Yeah, there are time allotment changes. The question was, "is the time properly allocated to the capacity of trainees"? You see, it all depends on the background of the students*"

8.2.3 **Benchmarking of TVET curriculum**

Another intervention in the curriculum change was benchmarking. Interview was conducted to see which countries of TVET curriculum has been implemented in Ethiopia. Different experts forward related ideas. For example, the director states "*countries will be selected based on their better experience and excellency" (I1P8T1)* but the dean of the college indicates, "*I am afraid I cannot exactly put my finger on the benchmark*" *(I4P11T1)* because the benchmarking was from different countries depends on better experience. The vice director responsible for curriculum asserts as:

> *The reference for 10+1/2/3 system was taken from Germany. Whereas the level system is based on my knowledge, even the German also came to the level system. I think Australia is the main benchmark because they adjust themselves by learning from Germany. In another way, the Philippines also learned from Australia, and thus, currently the Philippines TVET system is internationally accepted. (I2P3T1)*

Further added by the director that the benchmarking is more than these depending on the courses adopted*:*

Mostly our benchmark is Australia, but it depends on the field of study/trade. We take also from Germany . . . England, Canada based on the field of study, for example, on the airline field, we take from Canada and United Kingdom, but mostly we take from Australia. Maritime, for example, is taken from Philippines. (I1P7T1)

On the other hand, the dean of the college indicates that the benchmarks are implemented on one another without exhaustively seen and evaluate the impact of the previous benchmark:

Because once again we started with Germens and shifted to Philippines, and then there was an attempt to go to the Chinese system as well. And now Australia is on the way. Well one[curriculum] should exactly serves this country is yet researched, yet to be found out form the objective evidences on the ground. I fail to understand why we make such things so promptly, so abruptly. I cannot see a result until a system has put in place then to practice for a while and evaluated. (I4P11T2)

In another interview conducted with the ex-dean of the college, it indicates that there are lots of shortcomings even the curriculum was taken from Australia:

As the new curriculum is not well developed, there are some gray areas and training institutions are providing training by compiling information of the curriculum from internet and other sources themselves. However, internet accessing is often a problem and search for resources if limited in quality extent. The curriculum is taken from Australia and it is difficult to surf it from the internet. So, many teachers have difficulties in this regard. Therefore, several complaints had been heard. (I6P24T6)

8.2.4 **Financing strategy of TVET curriculum**

Finance is the most important part of intervention, which plays a big role for the effective implementation of TVET curriculum. Question was raised during interview regarding the financial source/strategy for TVET in Ethiopia. Vice director of the TVET agent states:

TVET finance is one of the big challenges. I want to raise the cooperative training because it is related with the financing strategy. With the launching of level system a cooperative training substituted apprenticeship training, i.e., a practice for some months in the industries in order to practice what the trainee learned in the institution. Whereas, the cooperative training [Organizations] expect to support the finance of TVET. TVET is more expensive here, because more practical time is allotted than theory in the level system. The level system is more expensive than the 10+ system. Because starting from level one each unit of competence must produce sellable products in the institution, so there is a need of many materials and equipment. That is why it is not easy to cover the cost with the existing financial status. (I2P4T1)

The financial source comes from different sources, such as the industry, the institution, the government and other external sources:

To compensate the finance shortage, we need cooperation from the industry and industrial trainer. The logic is the trained skill facilitates the development of industries. Therefore, it minimizes the finance shortage. This is one of the financial sources. Actually, it is not 100% a solution; it has its own many problems starting from search in industries for training. The government covers the second source of TVET financing. Even though there are TVET institutions, which support themselves by creating production, center as a means of income and producing salable products. Currently, the government is highly committed because they allocate budget to each TVET institutions about 20

million to 30 million Ethiopian birr. Actually, I do not have the detailed financial budget trend to compare the 10+ system and the level system budget. Any way it is highly different. (I2P4T12)

The director of the TVET Agency additionally states the financial donor organizations to finance TVET as:

Yes, there are five donors who support TVET. Nevertheless, the majority support is technical support. Input and material support is almost very few. They will come for technical support. For example, united nation, they will take the financial support for their own purpose, if you see it percentile we will share not more than 10% of the financial source. Therefore, 90% of the financial source is from internal source. It is based on government budget i.e., from the sectors. Industry, education training sector, trainees, training institutions' internal generating income, (They have products to be sold.) Internal limited income. Furthermore, the external donors are Italy, Germany, Korea, and Japan... They have their own objectives. It is more of technical support. Italian corporation, for example, helps for three to four years supplied some machineries, & equipment to Winget TVET College and Tegbaread TVET College. (I1P9T1)

The TVET college dean on the other side shows the financial sources in relation to private institutions and government institutions as:

Our institution [private institution] is financed by student's payment. But generally, finance in the country mainly is relayed on grants, partnership founding's, and I think the government also has significant portion of its budget allocation for education. (I4P12T1)

8.3 *Organization and implementation of curriculum*

Curriculum organization and implementation is not an easy task for the developing countries like Ethiopia where there is no enough material and human resources. Hence, the exploration of this study identified discrepancy responses between instructors and college principals. Significant differences were found in the inferential statistical data between the IBCR and OBCR implementation in addition to differences among the type of institutions where the reforms are implemented. With these issues in mind, the inspection stage of this study sought answers to the following questions:

Would you please tell me how the input based (10+system) and outcome based (level system) curriculum organized for TVET institutions? What are the principal problems you have faced during the organization and implementation process?

Would you please tell me the stakeholders who participated in the decision-making process during the design of the TVET CRs? Were teachers actively involved in the design of TVET curriculum?

How were the several TVET CRs being communicated to the stakeholders? What standards/mechanisms have you adopted in order to enhance a public dialog/awareness since 2001?

8.3.1 Curriculum development process

The central concepts of curriculum design involved such as defining national curriculum standards, defining curriculum outcomes, standard competencies and objectives, contents, and technology (UNESCO 2001). Question was raised during interview regarding process of curriculum organization for the input and outcome based systems? The inspection stage found different responses. As the vice director of TVET agent reports:

> *Curriculum is organized by the trainers/professionals from the institution or colleges. Any training institution [currently] is obliged to design its own curriculum. The ground for the curriculum is the occupational standard. There is standard, for example, to train a metal work professional or welder, the industry provide the specification what type of professional they need for the industry. . . the necessary professional standard is determined by the industry . . . but curriculum is not the duty of the industry. Therefore, the institutions should set the curriculum based on the occupational standard, if not, the curriculum no doubt will fail. The TVET institutions are also evaluated based on their performance assessment/result on the occupational assessment that determines the quality of the curriculum they organize. (I2P5T1)*

Furthermore, the director also indicates the Ethiopian quality framework is the base for curriculum organization, he stressed on:

> *Yes, basically, framework is a ground for the standard, and the standard will be a base for the curriculum. That means, standard are first of all used for curriculum and secondly it also a ground for the assessment . . . . When you set standard, start with sector and . . . you should specify it and then the practice, strategically, based on our capacity, we take initially other countries resource, or standard as a benchmark, Australia has good standards. (I1P12T1)*

8.3.2 Constituency participants of curriculum development

The literature part of this study (Chapter III) justifies that curriculum development is conducted with the participation of different stakeholders, such as administrators, supervisors, teachers, students, board of education, parents, community representatives, college professors and independent consultants (Martin 1986 p. 48). The frequency Table (5.10) displays discrepancy responses of instructors and principals for the constituency participants during the curriculum review. Further, the inferential statistic also shows significant results between IBCR and OBCR in addition to the significant difference among types of TVET institutions. Question was raised during interview regarding curriculum organization for the input and outcome based systems? The inspection stage found different response. As the vice director of TVET agent reports:

Because there is no need voting to design a TVET level curriculum. It is a matter of profession. What knowledge the individual need to design is not a question of agreement, for example, to design a table, the participation of the stakeholders may not change any. For that matter, to participate on it one must be professional. That is the difference between general and TVET curriculum. That is why we said industry is the leader. In the curriculum design, if we participate the trainee, the input of the trainee will be negligence and meaningless. The delivery system for the teaching learning should be determined in the classroom. Therefore, the participation of the stakeholders in the designing of the TVET curriculum is minimal. If participation is necessary in the preparation of the curriculum, we always recommend the industry who prepared the occupational standard. (I2P6T1)

Furthermore, the dean of the college further elaborated that there is no good opportunity to let stakeholders to participate in the design of TVET curriculum:

In principle, yes [participation in curriculum design] but practically not. The curriculum comes directly from the top. It is a copy of a curriculum from outside. Then this must go down directly for implementation. As far as I know, the government plays the main role to do so. The ministry of education has issued different circulars to make the training and co-training but despite that many of the institutions that you need to collaborate with, do not facilitate this CR as it is. The MOE [Ministry of education] simply want to implement in the old way as it is. I think there is misunderstanding between the designers of the TVET curriculum and the implementers. (I4P16T1)

The vice director added that the employers are not sufficiently involved in the design of curriculum:

It is because employers had either no any interest or did not have trust on TVET performance. It was a challenge to create awareness among the employers. Even in the current level system employers are not fully participate in the system. They only provide competency standard. Curriculum is the duty of institutions. In the 10+- system there was no any system to provide course specification and the number of trainees to be trained in the TVET institutions. The opposite is true in the current level system. (I2P19T1)

Furthermore, the COC vice director suggests that the problem is the industries do not open their doors for many reasons:

For the past five years, all we talk about is this issue [curriculum]. Training as been given, there is always panel discussion. The problem is the industries do not open their doors, they raise insurance issue, tax exempted issue, etc. all in all the industries will not open the doors unless there are some benefits from the government. However, the government is not in a position to give such incentives for the industries. These are still challenges. (I5P29T1)

8.3.3 **Implementation process of Curriculum change**

Interview during the inspection stage also focused on implementation of CR. The curriculum is assumed to be reformed every five year. .The question regarding input based and outcome based CRs was first elaborated by addressing the Education Sector Development Program (ESDP), the director states*: "The ESDPs are developed successively, the current ESDP IV is implemented after 2010 and from 2005-2010 was ESDP III, from 2001-2005 was II and before 2001 which was stayed for three years was ESDP I." (I1P13T1)* More specifically the director further elaborates:

After 2005 the 10+system was phased out. Practically, it was phased out at 2007. This is because from 2005 up to 2007 was transition period. Trainees who register on 2005 must continue up to 2007. Right after 2005 a new curriculum is designed that makes the old curriculum to be phased out. Then a level system starts as level 1/2/3/4/5. Basically, this starts at about 2005 but parallel to the other on the pipeline must complete the training. This is natural. It is fact, if you consider it natural. Therefore, on 2007 the 10+ system was completely phased out. (I1P13T1)

In consideration of this process, questions were raised regarding the challenges or problems during implementation. For example, the dean of a college indicates the bottlenecks of the curriculum change as:

One major bottleneck was that this curriculum change comes before being the old curriculum exhaustively implemented. It was not very well advocated. So there was a resistance and behind the resistance, _ _ of course, there is always resistance for not allowing the old to go. Yet without making proper changing on the mental setting of the instructors and the stakeholders, you cannot start a new mode of training, it has its own problems. Because people need to be trained in order to train, need to be changed in order to accept changes. However, you cannot abruptly tell them to change overnight. (I4P5T1)

The vice director also presented the problems faced during the implementation of the CR in two main points:

We can see it in two ways. In the first place, there are some people thinking always in the old general education system who have negative stand/attitude of the TVET system. They do not totally accept the TVET system whether they listen or read about TVET, especially those who were dealing in the old general curriculum system. Secondly, we did not promote awareness adequately. The basic and logic of TVET are not integrated in to the society. (I2P7T1)

Further question was also raised if there was resistance and by whom, "*yes, especially by those leaders of private TVET institutions . . . because as I told you earlier they do not want to accept the system". (I2P7T9).* The other problem indicated by the director was the working culture of the society". *If you see the working culture, the majorities do not like the hard skill job but they like soft skill." (I1P14T5).* The other problem indicated by the dean of the college was definite period of time for the implementation of the changing curriculum*: ". . . a definite period of time must be given". (I4P13T9).* He stressed also on the infrastructural problem as*:*

Another thing you can see is that, infrastructure. There are large numbers of TVET colleges, institutions working at a time but the proper preparation in terms of the curriculum design and advocacy and dissemination, in terms of the training of the persons, in terms of availing the necessary training materials was not functional. In other words, many of the TVT institutions were simply structurally pleasant but operationally hollow. (I4P13T13)

Moreover, all interviewee almost agreed on the gap of awareness creation about the importance of the TVET curriculum to the learners and the society as a whole. This mental setting of the CRs stated by the vise director as:

Actually, there is a gap in promoting awareness. As my personal opinion, there is no enough awareness given to the society and the trainees. Even those who are leader of the TVET institutions

always resist the reform. As I told you, especially the private sector or wing do not accept or aware of it. (I2P8T1)

In contrast, the director states that there was an effort in creating awareness to the society even there are some challenges:

Yes, we have promoted awareness; one of our strategies is creating awareness among the society. We have a general plan with the TVET sectors from start to finishing. That means standard preparation to curriculum, assessment and up to employment, we have two years general schedule, we also plan to revise every two years. Specially, we have a general plan with the instructors. Therefore, our first strategy is providing orientation and updates the society. Some people who have access in the package are oriented and understood it, but not all, because it needs consistent orientation. (I1P15T1)

The other problem, even a challenge for instructors, was the background of TVET trainees. Regarding this, the dean of the college showed it as:

In addition to this, the back ground of the TVET trainees are so difficult to decide and bring them to the right way. In addition, one major problem relative to this is for trainers. It is a big problem for the trainer to bring the trainees to the same level from different background. This is because due to the absence of the proper inputs. If we did not have the books, training materials, enough computers and the training equipment, how dear can you transfer any skill? It is a problem. In addition, this is one of the major problems that encountered the instructors. (I4P14T7)

However, he stated further the challenges encountered for not promoting proper mental setting to the society in relation to the media:

For the society, we made an effort to create an awareness using Journalists and Medias. However, some journalists frequently present the old system in the media instead of presenting the actual situation of TVET. For the future, the government identified a systematically organized civil society such as the young forum, and the female forum, which are assumed as a part of the society. (I1P16T1).

Further question was asked to the vice director whether they used the media to promote the TVET CR. He stated as:

No, there is no TVET media. We have already set a program for the next week to discuss about the strategy with media professionals. The media itself has no any awareness about TVET. That is also another resistance. The media promote directly what the nonprofessional has the wrong attitude towards TVET. They even promote against TVET system. This is a danger consequence in promoting TVET awareness. (I2P9T1).

Further, he added the recent experience what has happened during an interview in the Ethiopian television program:

Last week I had an interview on the face-to-face television program, the challenging questions raised by the interviewer were really shocking, even the responses were considered negatively. For this reason, there was dialog on this interview that the interviewer promotes to the public negative attitude towards TVET. Actually, media freedom should be respected in the country. But the misunderstanding of the TVET strategy is a big challenge. It is serious case. Although, the federal government plans to

create awareness using media sector about TVET, the media promotes not more than news about the number of graduates and simple events about TVET. It is meaningless. They do not even promote the other countries good TVET experience to the audience. They did not have interest to know even about the TVET strategy itself. However, we did not make an effort to promote awareness among the society. (I2P9T5).

Similarly, the gap in the mind setting is indicated by the dean of the college that it is a long time problem, which is not yet solved:

The proper advocacy has not taken place. Therefore, much of the resistance comes from the lack of awareness. It had been remain a problem for a long time that is not yet alleviated. Even though the proper training has been taken place, without acceptance of the system, proper implementation is not expected. Currently, even the old teachers had been competitive to deliver better. However, because it was not advocated, familiarized, and not cascaded down to the ground. Therefore, there has been yet a problem. (I4P15T1).

We can understand from these contexts there is lack of partnership among the sectors to alleviate the attitude of the society regarding TVET. Question was raised whether the challenges were overcome, the answer by the director was:

We have made an effort but generally, there is a problem of misunderstanding on TVET change. This is a challenge for the implementation. However, the challenge is now better than the last three years. Furthermore, what we see as challenge rather is mind-setting problem in the trainer and society. What I tell you TVET is not accepted by the society, the trainees, and the sectors in as much as we expect. The society did not own, even the sectors themselves accepts by force. For example, to set the standard, the sectors accepted it only the last two three years, before that they said, "It did not concern us". Therefore, the big challenge to implement the TVET programs is the mind setting. (I2P10T1).

As a consequence a question was raised to know the reason why the old (10+system) could not continue, the vice director shows it as;

It is a good question. This is because of gap of awareness starting from our leaders and the TVET institutions' leaders. The previous 10+1/2/3 system starts from 2001 to 2006. Until the new strategy was started, the 10+ system was implemented. The starting of 0ur countries TVET system is step by step a developing phase. Therefore, it must be appreciated, because TVET starts from chalk and talk system to the 10+ system and it also launched in the country where TVET was a degraded and hatred by the society, (I1P17T1)

Further question was added to identify whether the 10+system was failed, he further added:

I consider it, not as a failure but as a success, which might progress to the next system. Therefore, in the 10+system there was no occupational standard. As if the institutions know, what the industry needs, everything was controlled by the TVET delivery institutions, and there was no participation of the industry because TVET institutions provide employable skilled graduates to the industry. Firstly, you can get your certificate if you get 50%. Secondly, it was limited to time bound, it was not focused on quality, 10+1 means if you stay in the institutions for one year, whether the training is enough or not, you will get 10+1-certificate. Similarly, if you stay two years after 10th grade in the institution you will get 10+2 certificate. The same is true for 10+3. In relation to this, there were different

problems in the institutions. The trainees' mentality was only to get a certificate by staying the limited time bound. It creates a certificate mentality. It was not focused on quality-based training. In contrast, practical training and establishment of many institutions were some progress of the system. (I2P11T1)

8.4 *Factors influencing CR*

The literature shows ten factors were identified that could drive curriculum change (Gruba et.al 2004). Moreover, seven key factors affecting CR implementation (Maja 2012). The frequency (Table 5.13 & 5.14) and the inferential statistics also show a significant difference between IBCR and OBCR in addition to the type of TVET institutions in terms of the factors influencing CR. During the inspection stage of this study, questions were raised to investigate the causes and effective implementation factors of CR as follows:

Would you please tell me the reasons that influence the reform of TVET curriculum since 2001 that motivated the input based CRs and that initiate the establishment of a TVET system based on outcomes rather than curricula (concept of competences).

Would you please identify the factors (internal/external) that influence the effectivity implementation of a TVET curriculum based on outcomes (level system) and competency (10+ systems) in terms of the Political, Economic, Social, and Technical (PEST) factors?

8.4.1 **Causes of CR**

The literature shows ten factors were identified that drive curriculum change (Gruba et.al 2004). Similarly, the frequency Table 5.12 shows almost all factors in addition to two factors added were supported as a driver of the reform in the Ethiopian context during the exploration stage of this study. The inferential statistics also shows a significant difference between IBCR and OBCR in addition to the type of TVET institutions. During the inspection stage, a question was raised to investigate that forces the curriculum to be reformed. The director showed:

Generally, there are many reasons that may induce a reform such as economy, technology, ICT, policy change and others. Provided these points, the development of a new system and the ineffectiveness of the previous system may force to change. The less quality of the content based or input based, less employment opportunity, lack of assessment system, the time bound system of 10+system and others that force the input based to the outcome based (level system). (I1P19T1)

In addition to this, the causes of the CRs in Ethiopia, as indicted by the dean of the college were:

Well the educational reform was desired for a number of reasons one major reason that I noticed is that the previous curriculum in the country was not producing competitive skilled laborers, competitive and skilled human power. Rather it was producing academic personnel and this was not desired because the government wanted to change the policy of the education of the country to that of

scientific oriented. Many of the skills that today are being enhanced is, said that they'll be the ground roots for tomorrows scientific work and innovations .. . . the intake of any institution. . . to be that 70% of the students should go to science fields and only 30% shall go to the social science fields. . . . Because at the grassroots they [Government] said that, they do not need high-level skilled human power to facilitate things [the economy] but rather low level and middle level skilled human power. . . So market-oriented kind of training is subject to the changes. These are the main things I can think of. (I4P24T1)

8.4.2 **Effective implementation of CR**

The literature shows seven key factors affecting CR implementation (Maja 2012). Similarly, during the exploration stage of this study, the frequency Table 5.13 and 5.14 show the internal and external factors as a driver to or hindrance of the effective implementation in the Ethiopian context respectively. The inferential statistics also show a significant difference between IBCR and OBCR in addition to the types of TVET institutions. During the inspection stage, a question was raised to investigate the factors that drive effective curriculum implementation. The director shows: *"Some factors for the effectivity are the commitment of the government to revise TVET, the huge amount of budget allocation to TVET, the interest of trainee to TVET, and good opportunity of employment." (I1P20T1)* Similarly, the vice director also specified the effective factors as:

Of course, there are many factors. As I told you earlier, the commitment of the government, the budget allocation to colleges, the assessment system, change of societal attitude to TVET and others. . . . The trainer and the society who support this system are the main factors. (I2P17T1)

He added the hindrance factors more on economical*:*

Some people asked why this reform [Level system] is too late. It is because of lack of capacity. It depends on environmental situation and the economy. First, our industries must grow better and better. Secondly, the current horrible situation especially poverty, and backwardness must be improved. These are the major reasons that hinder effectiveness, for me, of the reform. The government target is to minimize poverty. (I2P17T1)

The dean of the college further elaborated, the incompetency of graduates in the labor market, as:

Because many times there have been studies that indicated as many of the TVET graduates are said to be not competent and many of them are liable to take re-exams, wasting additional time so as to be better qualified. . . . This is simply because the training could not be properly delivered in the classroom. Therefore, these are the gaps that influence the effectiveness. (I4P16T1)

Question was asked whether the political factor had impacted on the effective implementation of the curriculum in the Ethiopian context, the dean of the college elaborated as:

Well, any school and any education should definitely follow the political, the politics of the era. This is definite! There is no education outside of the politics so they are… But the problem is that the frequent changes that have taken place have totally majorly affected the whole system . . . . You see the whole politics again indulges in making huge mess in the curriculum system. There is a huge mess in

the training procedures. There is also a huge mess in the training of the trainers and the institutions as well... Now you train form the Philippine ones, then German one and the Chinese the next day the fifth one might come tomorrow, we do not know. (I4P27T1)

Regarding economic factor the dean of the college further added that if we are dependent on foreign donors, there is an impact on the effective implementation of the curriculum as:

Yes, it has impact! So long as The TVET system is dependent on finance that comes from donors or partners, the government has to satisfy their wishes to a certain extent, because the finance always comes with tags. The money that they give you is always tagged. Unless you fulfill certain principles, the money will not be released and in order to satisfy their mission, so you are sometimes obliged indirectly to go out of your way. . . . Because we are dependent on outside funds and outside donations. So long as you are dependent on others and so long as you are not self-sufficient, there is always a negative or red card. (I4P28T1)

Furthermore, asked about influence of technological factor on curriculum implementation. He added:

If it [Technology] were to be pursued properly and interacted with the curriculum properly, that would be the only way that leads to positive effectiveness. And that is the only way that brings curriculum modernization. The trouble is the different pieces that you try to put together from east, west and south are troublesome. You have to have a clear-cut direction; you have to have a clear-cut methodology, a clear-cut strategy to integrate the technological factors to the curriculum. If this is in the right way at the right time, then the curriculum can serve this generation and beyond this generation. So the continuous progress can be accomplished. However, I do not see this for the moment. (I4P30T1)

Finally, the cultural factors impacted on the effective implementation of the TVET curriculum was stated by the dean:

I would say catastrophe, because we do not steak on one better TVET curriculum system. You see, there is always a mix-up of the cultural issues that leave the learner in a question, in a dilemma. In other words, these learners are subject to different cultural interventions from the instructors, materials, and approaches. This results a cultural confusion, because they do not know which one to follow. This again would be a hindrance and make the effectiveness of the curriculum under question. (I4P31T1)

The other problem during implementation to integrate the 10+system to the level system through assessment, the ex-dean of a college stressed on:

This problem[integration] is also related to the issue of assessing old or previous 10+ trainees based on the new curriculum as it is decided that all be assessed in the new level system. Previous 10+system trainees, those who had trainings 2 or 3 years long, do not know the new curriculum. 10+ trainees are enrolled in regular/extension programs in2008, 2009 and 2010. They resist being assessed based on the new curriculum. Although instructed so, the colleges are not working by integrating the past & present units as this result in heavier workloads. I think it is quite difficult for former 10+ trainees to assess on levels I, II, III & IV in sequence, and to take competency assessment at once and become competent. Therefore, there is a need to arrange tutorials to capacitate them. I would say there is a serious problem that impacting assessment here. (I6P24T14)

8.5 *Effect relevance of the CR*

The literature shows that impact is the positive and negative, primary and secondary long term effects produced by an interventions, directly or indirectly, intended or unintended (Badioli 2011). Regarding impact indictors, the frequency Table (5.15) in addition to graduate and employer relevance (Table 5.16 & 5.17) and the inferential statistics also show a significant difference between IBCR and OBCR in addition to the type of TVET institutions in terms of the impact of CR. During the inspection stage of this study, questions were raised to investigate the impact/effect relevance of CR as follows:

Would you please provide me the major indicators regarding the effectivity of the TVET curriculum to graduates of 10+system and level system in terms of Access, Graduation, Employability, Quality and Cost effectivity since 2001?

Would you please tell me the impact of the curricular changes on the graduates and industries and what roles are played by the industry to improve TVET curriculum? Are employers able to participate in the design of the curriculum? If yes, what are the indicators and/or mechanisms to prove this? If no why?

8.5.1 **Impact indictors**

In this instance, the inspection stage of this study found a gap between the officials' vision and the responses from the questionnaire from the TVET colleges. As noted previously, the frequency table (5.15) shows responses almost leaned towards disagreements on all indicators identified, such as access, graduation rates, employability, quality, cost effectiveness, competency assessment, new methodology, and timetable adjustments on the course of studies. During this inspection stage, a gap is identified from the interview with TVET officials responsible for curriculum. The director explained regarding access as:

> *There is an intention to get access to any individuals in all areas of training, because the strategy shows that our training program is inclusive for females, and disabled groups . . . there are efforts to address females, disabled groups in cooperation with interested donors, associations, organizations, there will be much work to create such access . . . for example, on the cobblestone production and working areas, half of them are females. (I1P21T3)*

In terms of employment, the officials reported that there is an opportunity of employment. As the director showed the employment opportunity as:

Since the economy increases parallel to the sectors, then the employment opportunity will be sustainably increased. It is related with sustainable development. If the economy could not increase, it could be beyond our assumption . . . To give you a simple example, the Ethiopian airline created only 800 training areas/trades within the last 50 years operation. However, currently they planned for the next 10 years to increase to 1600 trades. The agricultural sector increases double from 100 kg to 200 kg, industry sector also planned to increase twice as much as before. Similarly, the education sector also increased twice. (I1P22T8)

Similarly, the vice director interpreted the opportunity in two different ways as:

Yes, we can see the employment opportunity into two ways. Firstly, those who train seriously in the 10+ system have the opportunity to get a job. Whereas those who count the years to get only a certificate, they could not get the right job. For example, metal graduates may work as a car driver or guard. It was general training for unspecified employment and not based on organized relationship for self-employment or to be entrepreneur. Generally, when we compare the effectivity of the 10+ system with the current level system, we can conclude that the 10+ system was weak. Provided that some weaknesses of the level system. (I2P12T1)

The director further added that there is a good employment opportunity since currently we train based on the industry needs:

Actually, we train individuals currently, based on the industry request that they need this much competence individuals, the graduates will get the job. Since we will not train what is not requested, but it is based on the industry request on the number and specifications, It is related with efficiency, In the previous 10+ system the number of training and specification was a random activity, but in the outcome-based training system, it is completely different, they will be asked to provide specification based on - - -e.g. Shepherd technology, the industry has the job market. Therefore, the industry will employ them whether they need or not. Currently we start a new railway construction in the country, therefore, we need employees on the operation area, for ticketing, controlling and others - - - we start already the training and after a year, there is the market with no doubt. Therefore, we will not plan the assessment and opportunity at the end but we plan with plus sign, further ahead of it, initially we identify the necessary qualified employee. If strategically, and not due to lack of carefulness, security and some wrong things have been done, the first qualified trainees will have the chance of employment. (I1P25T7)

However, the college dean saw the employment opportunity differently as:

It has to be given ample implementation period so that you can see the impact. For me it is not yet clear whether it is effective or not. Well we have seen some positive changes to a certain extent . . . Since the numbers of annual graduates from different TVET institutions are large in number, the availability of jobs in the market could never be equivalent. And at many times, even the government has told them that at least they can go work on cobblestones. In other words, if there are no other industries that can absorb the graduates, then the only opportunity they can go and work is on cobblestone. This simply implies that not enough enterprises are being created in the country that can absorb the TVET graduates. This is a major gap and many of the graduates are still unemployed. It is not only TVET graduates but also degree graduates, and more. (I4P32T8)

Further, the COC vice director indicated: *"There is no problem concerning finding jobs for qualified, the problem is majority of graduates do not get certified." (I5P22T6)*

In terms of quality assurance, the interviews suggested that it must be based on the standard. As indicated by the director: "*The quality will be assured by providing training against the standard set by the industries. Then the employer will take by assessing/checking the competency of the graduates. This is the main strategy.*" *(I1P23T1)* Further added by the vice director:

> *As I told you earlier, we establish the strategy for the level system. If the level system training is delivered based on the standards set by the industries, the quality will be sustained and there is a good opportunity of employment in the industries, because it is a request from the industries to provide the subject area of training and the number of trainees. - - - . Finally, they will take the competency assessment to be certified. (I2P13T1)*

The other impact indicator asked was the cost effectivity of the training during the reform programs. The director reported that the cost effectiveness comes by making the courses more specific:

> *As I told you earlier, firstly the interest of the industrial sector, then you will decide the required training course, the number of trainee and for what type of job. The education system [the old 10 +system] was not effective. Now a days [level system] we said that in Bee-keeping course one must be trained to be Beekeeper, The argument is in the nursing course, for example, we recommend that s/he must be trained to be a nurse. Nevertheless, the others argued against training to be a nurse is totally different. They argue that they must take additional courses such as biology, human physiology, and sociology and so on. But the strategy indicates that they need only knowledge, skill and attitude for that specific area. Therefore, there is wastage of time for unnecessary knowledge, and principle. It is cost effective if you do not do so . . . The next question is what is the source of finance? The cost of training will be covered by the sector. For example, if the standard is set by the defense sector, then the defense minister will cover the source of finance. Moreover, if the standard is set for the health field of study, the health minister will cover the cost of training. Therefore, the education sector will not cover the whole cost. This is cost effective. (I1P24T1)*

The vice director showed the impact indicators such as graduation, quality and employability are related with one another graduation without quality cannot lead to employment:

> *There is no problem with access and the number of graduates. The question relays on quality assurance. In the previous 10+system, there were many graduates in different field of studies. However, many of them are unemployed. Still there are graduates from TVET Colleges in diploma and degree levels who could not get any jobs. This is because they could not meet the need of the industries and due to lack of quality, they could not tackle the job market. Graduation quality and employability have related with one another, because graduation without quality might not lead to employment. Regarding cost effectivity, the TVET system in general is costly. Within this circle, cost effectiveness is a question. The 10+ system was input based, there was no any cost sharing like what currently in the level system applied, which is shared by the sectors as I told you earlier. (I2P20T1)*

In terms of quality ex-dean of a college (assessor) shows that the quality depends on the competency of the teachers, he said:

> *Currently teachers themselves being graduates of long years, their experience creates gap in providing proper trainings they need to take competency assessment at CoC. So far, out of those who have been assessed more than 50% of the teachers are not yet competent . . . the assessment also lacks*

quality to include all units of competency . . . . It is not possible for these who are assumed to be incompetent instructors to provide competent trainees. (I6P12T6)

8.6 *Assessment and certification*

Regarding competency assessment and certification, group discussion was conducted with two assessors in addition to an interview with the vice director of Center of Competency (CoC) in Addis Ababa, Ethiopia. Hence, the inspection stage of this study searched for answers to the following questions:

What is competency/occupational assessment in the Ethiopian context? Since when is it implemented? What are the preconditions to take the exam? Is it a necessity to get a job?

What is the difference between the previous evaluation/assessment of 10+system by the institutions or colleges and the level system (at present)?

During exploration stage, the study found discrepancy responses between TVET instructors and principals, as can be seen from the frequency Table 5.9 there is significance difference i.e., indicating higher endorsement of instructors than principals. During inspection stage, the vice-director of COC suggests the competency assessment as: *"Occupational competency means standard that can satisfy the industrial needs, it is also something that fulfills the labor market standard."(I5P1T1) . . . it is started in 2006 when the country changed all the trainings to an outcome based training one and these standards put in action starting 2007."(I5P1T6)*

Further, the ex-dean of a college (now assessor) elaborated the occupational assessment difference between the 10+system and the level system as:

> *The previous system [10+system] was based on assessment after all courses are completed. The current one [level system] is different in that it is specific; the few competencies that had to be completed by trainees must be assessed before shifting to the next level. Currently it is more comprehensive and all have to be learned then the trainee is expected to complete and be assessed for each level before going to the next level of competency. If a trainee is accredited for level-1 occupational standard (OS), s/he can hire in the industries. This is competency-based assessment. (I6P2T9)*

One department head of a college further added, "*This means if one is not yet competent for level-1, then he cannot advance to level-2 and should stop in that level, this makes a difference." (I6P4T6)*

For the question "*what are the criteria to take occupational assessment*" the vice director of the COC elaborated as:

> *Anyone who has some skill or knowledge can take the competency assessment . . . For those who come from training centers; since they have been trained they can start form level 1 and continues up to level 5. Whereas for those who come just with working experience but could not even read and write can take level 1 and level 2 as competency assessment and go with a certificate. (I5P3T1)*

The validity of the competency certificate suggested by the COC vice director as it would serve for about three years depending on the change of skill or curriculum: "*The certificate is valid for 3 years, after three years if the person is still on the same job description the certificate will be renewed as it is, therefore, the same certificate will be valid for a total of six years." (I5P6T1)* Further, the ex-dean of a college report showed that there is implementation gap: "*There is no renewal since the beginning. It is now five years old . . . . Principally the standard was for three years." (I5P34T1)* He state further the enrollments point for level 4 is determined by the Ethiopian 10th grade national examination: *" the 10 grads national examination will decide which level they should be enrolled, for instance if their point is greater than 4.3 then they can join level 4. This is the former diploma or 10+3. . . However, level 4 is higher than 10+3." (I5P13T3)*

During inspection stage, the director of the federal TVET agent supported the assessment as one of the interventions in the curriculum stated as:

> *Yes, assessment is another intervention. Assessment is not our [TVET sector] responsibility, we train based on the standards set by the industry, and the industry must check by assessment standards whether the would-be employees competent or not. The TVET colleges/sectors will give the graduate only the completion certificate. The competency certificate is given by the COC [Center of Competency] sector . . . . When you assess an individual, it is not an assessment of curriculum but an assessment of competency standard. It is not a matter of what s/he learned but on which level he is competent. You assesse neither what, nor where or how s/he is learned, to the reverse be assessed which level of competence s/he has. (I1P3T1)*

During interview, additional question was raised whether the content of the assessment is changed regularly at a specific time interval. The director justified the interval change of assessment based on some other African and European countries experience:

> *We call it not test but an assessment. You will be asked to demonstrate your competency. If there is technological change, you can be assessed within two or three years. This is a practiced in England, Australia and . . . South Africa. (I1P5T1)*

We can understand from the statement that any certified from COC (Center of Competency) should be assessed if the technology is changed may be within two or three years of time be it a trainee from formal, informal or non-formal training centers. Finally, the dean of the college shows the change of the curricular changes to be holistic:

If change has to take place there should be a holistic change, you cannot shad one part of your hair and leave the rest, still feel that your hair is done. You have to have clearly manifested, clearly served in terms of material production, provision, in terms of training availability, in terms of reference materials and the like. Therefore, the policy should take care of the actual change from both the human resource and the material resource. (I4P9T5)

A question was raised *to the vice director of the agent "What measure has been taken to integrate the 10+system to level system? Did the 10+ system graduates take some training or examination to integrate to the level system?"* He elaborated as:

Initially, in the 10+ system the trainee would take class exam based on 10+ system then if s/he got at least 50%, a certificate would be awarded. This is because there was no any other system to evaluate/assess the competence of trainees. However, they could be employed in the industries. This is because there were no any more skilled professionals that met the need of the industry. That is why we concluded that we do not have standardized human resource in the country. Generally, the 10+system certified graduates and even employed must compute and integrate into the level system. (I2P14T1)

He also added the challenges in the process of assessment of already employed, the measure taken forced the industrial sector to let their employees assessed:

The challenging question could be . . . in what way the 10+ system graduates should be certified and employed, and in what way should graduates, already employed, be integrated to the new level standard. It may not however be a problem for self-employed graduates. However, we encounter many challenges in different employment sectors. For example, the industry itself are not interested to let assessed its employees based on the level system and they provided many trivial reasons related to payment for assessment. Hence, we have forced the industries to let their employees be assessed based on internationally accepted standards so that their products and services could be standardized . . . . However, they did not come to the line as fast as we plan because of the gap in the awareness level. Generally, we have provided as a solution that every professional even employees in different industrial sectors should be assessed based on the new occupational standard specified in the level system so that they can go back to employment and work based on the standard (I2P14T1)

In terms of cost of competency assessment, the ex-dean of a college (assessor) shows as: "*it can cost between 500 to 1000 birr [Ethiopian currency 25birr = 1€] on average. For the business areas it is 200 birr except for IT and this is 100 birr for the writing or knowledge part and 100 birr for the practical part". (I6P5T1)* COC vice director added that Level 1 & 2 are usually assessed the practical part only: *"Level 1 & 2 usually cost 100 birr since there is no knowledge assessment."* *(I6P19T2)*

The requirements for promotion from one level to another level are described by CoC vice director *as*: *"For the knowledge assessment at least 17% out of 34% is a requirement to pass" (I5P20T1) Furthermore,* as indicated by the ex-dean of a college was:

There are two types of assessment to consider- Theoretical exams and practical exams. In order to be competent one has to score 50% in the theoretical (written) exam- 50+ will be satisfactory. For the

practical assessment however, one has to work out all the units of competency fully. In other words, s/he has to score 100%. (I6P17T1)

The frequency of taking competency assessment due to failures was unlimited as described by the COC vice director: "*There is no limit, one can take even ten times till certified, but the time limit between consecutive assessment is limited from two to three months interval . . .but for instance in Philippines there are only three chances.*" *(I5P21T1)*

The qualification rate is at increasing rate since the beginning in 2007 as reported by COC vice director: *"In 2007 there are only 14% were qualified, that means at the beginning. After that it increases every year from 17% , 19% . . . now it is greater than 65% especially on the lower level many are qualified." (I5P22T11)* The ex-dean (assessor) of a college also similarly added:

Previously it was very low and I do remember it was around 6% - 8% or10%. Then it improved to 12%-14% or 15% and after so many years now, it is raised to 20%-25%. For many competencies, it is 30%, 40%. Actually, the strategy target is 44% of the graduates must be certified by the COC and this is even less than 50%. So, there is still a long way to go. (I6P39T1)

Institutions are expected to qualify at least 40% of its graduates otherwise; it is challenging to stay on the truck. The COC vice director showed: *"The strategy targets for colleges to qualify at least 40%, otherwise they will be closed. That is just for the beginners but for those more than three years at business, the requirement goes up to 60% rate." (I5P27T6)* The department head added*:*

It may vary from field to field . . . some occupations qualify up to 90% to 100%. For example, Theatrical art, construction . . . but narrow for business areas such as accounting marketing, secretarial science, etc. that is why the strategy set an average 40%. (I6P40T1)

Teachers should also be COC certified to stay at work. The department head (assessor) stressed as:

Coming to colleges & institutions, teachers working in TVET must also be COC certified. This has been put in to practice in government colleges since 2011. In private institutions however, there are many who are not assessed or COC certified and without being assessed, they cannot train competent students. Thus as of 2013, the government is making it a point the assessment of teachers is made in private institutions as well. . . (I6P13T7) Generally, the presence of assessment by itself made the students to work more on their studies and establish better understanding. Previously students did not update themselves, they were depending only on getting certificate but now they are working hard. The same is true for the teachers/trainers as well and give due attention on quality work. (I6P28T1)

A question was raised to know who prepared the occupational assessment tools and how. The department head of a college (assessor) elaborated as:

> *There are two way of doing this. There are exam preparations done every year. In 2012 & 2013, exams are prepared twice. If we talk about preparing for Addis Ababa region, 4 different versions of one exam could be prepared just for one level. One version will be administered for certain period and then the other versions will be used . . . . Thus, exams may be prepared twice a year. If the number of students is few, exams are prepared per year. (I6P19T1)*

For the question, "*Is there item bank at the center of competence (COC)?"*, the ex-dean of a college (assessor) stated that exam tools are administered at federal level once for all. He used the following statement: "*The same exam will be administered for students taking at the same period. For example, if students are taking Accounting exam this month, it will be the same exam for all students throughout the nation . . . . "(I6P20T1)* He stresses further as:

> *This is supervised by the Ministry of Education. Exams are prepared at federal level. One version is prepared and sent to regions, as they still do not have the mandate to prepare such exams. However, there is a tendency of preparing exams based on the regional contexts. (I6P21T1)*

Regarding the benchmark for assessment, it is pointed out as the occupational standard, as indicated by the department head (assessor)*: "The benchmark is the Occupational Standard (OS). This is prepared at federal level. We made it OS based by adapting from Germany, Philippines and Australia in different field of studies and aligning it to the Ethiopian context*." *(I6P25T1)*

An interview also conducted with one student from private college nursing graduate in 2007, currently she is working in "*Africa Private Clinic*" about four years paying 1200 Ethiopian currency (≅ 48 €) per month and she indicated that she is from the old curriculum (10+system) but she is obliged to take the competency assessment based on the new curriculum (level system) for this reason she could not pass the competency assessment. She claimed as not fair:

> *Basically, I am from the old curriculum 10+ system but the assessment is based on the new level system. I have the license from the ministry of health but this is not considered in the competency assessment as a competency license. This is not really fair. The dean of Africa health college told us, the government provides a new rule that every graduate must take the competency assessment so that you can continue further education and/or to stay in the current job or position. Why should we oblige to take an assessment with the new curriculum? The curriculum is totally different. When I ask my friends about the course nursing art, it is now divided in to three specific areas that we have not learned before . . . . This Assessment process creates a big problem in the colleges and the employers. I am currently third year degree student. During enrollment, we are asked to provide two years of work experience and license from ministry of health. However, now the college told us to stop the degree program if we did not provide competency assessment certificate. This creates a problem for all employees, because I have forgotten what I have learnt five years ago, even though I have got good result and training. This is also another reason for my failure. If I do not provide the competency assessment certificate, my employer will not renew my job. We are confused with such abrupt change. (I3P9T1)*

8.7 *SWOT analysis on the perspectives of TVET officials*

This study tries to identify the strength, weakness, opportunity and threats of the effective implementation of TVET curriculum. The findings of the SWOT analysis will be an input for policy makers and curriculum developers. During exploration stage of this study, an open-ended question was raised to identify the SWOT analysis. A similar response found in this inspection stage of the study. The following question was raised:

Would you please tell me about the strengths, weaknesses, opportunities & treats, for the effective implementation of the current TVET curriculum?

STRENGTHS

Training based on the request of the industry on selected courses and treads (Director) (I1P26T1)
The job opportunity in the labor market (Director) (I1P26T3)

Change of negative attitude of the society to TVET, the leaders commitment, & creating a big market (Vice director) (I2P21T3)

TVET system is that it has the total support of the government, it has the vested interest of the partners, and it could be Germany or say whatever. (College Dean) (I6P34T1)

WEAKNESSES

They [Owners of private TVET institutions] have the same mentality that they do not indicate how to create a skilled person, their mentality is only how a student graduates from the university. (Vice director) (I2P21T5)

The weakness is that the TVET system is changing from one system to another in a very unprecedented way. There is a very quick change of the curriculum with no more studies and evidences. (College Dean) (I6P35T1)

OPPORTUNITIES

The development of the Ethiopian economy and industry (Director) (I1P26T1)

THREATS

The economy corridor (Director) (I1P26T3)

The mentality of the trainee to get degree and willingness only to be employed as officer are considered as treats. Because of the working culture, which undermine a hard skill job. Working as an officer is considered as a professional or civilized person for them. (Vice director) (I6P25T1)

There are also many people who are abstain and do not respond to the development TVET sector. (Vice director) (I2P21T1)

Ah, there are large amount of students claimed that are unemployed . . . They are very likely to complain to the government and the TVET system. (College dean) (I6P37T1)

8.8 *Display and interpretation of documentary data (INSPECTION STAGE (2))*

Introduction

This part of the study deals with the documentary data analysis which is one of the basic categories of data as asserted by Creswell (2007) there are several kinds of data, all data falls into four basic categories, "observations, interviews, documents, and audiovisual materials" (p. 129). Hence, for further exploration of the current picture of the TVET CRs, documentary data was found to be important for this study. Thus, data were collected from CSA and Federal and A.A. TVET agency, COC, MSE, MOE, Federal Industry Minister, and Federal Finance Bureau in Addis Ababa. The key issues are TVET enrolment in Ethiopia (8.1.1), distribution of Enrolment by Region & TVET centers and instructors (8.8.2), number of public, private and NGOs' TVET institutions by region (8.8.3), government and non-government TVET graduates by region and level (8.8.4), annual TVET graduation rate (8.8.5), competency assessment results based on sectors in Addis Ababa (8.8.6), TVET graduates' competency assessment based on rounds (years) (8.8.7), TVET instructors' competency assessment results based on sectors (8.8.8), TVET instructors' competency assessment results based on Levels & Gender (8.8.9), and budget allocation in Addis Ababa government TVET colleges (8.8.10).

8.8.1 **TVET enrolment in Ethiopia by gender 2002/03-2010/11**

The federal statistics agency organized statistical data concerning TVET enrollment annually. The following data were compiled from different source of study as follows.

Sex	2002/03	2003-04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	Av. Ann. Growth rate
	1995EC	1996EC	1997EC	1998EC	1999EC	2000E.C	2001EC	2002EC	2003EC	
Male	37,377	45,798	51,970	61,415	107,325	119,123	156,910	196,937	119,799	16.4
Fem.	34,785	41,360	54,396	62,142	83,824	110,129	142,591	156,483	171,548	19.1
Total	72,162	87,158	106,336	123,557	191,151	229,252	308,501	353,420	371,347	17.6
%Fem	48.2	47.5	51.2	50.3	43.9	48	46.2	44.3	46.2	

Source: Compiled from Federal Statistics Annual Abstract 2010/11 (MOE 2011) *NB. AV Average Ann-Annual*

Table 8-1TVET Enrolment in Ethiopia by Gender 2004-2011

As displayed in the Table 8.1, during the year 2002/3 the total enrolment for female was 34,785, and has increased to 171,548 in 2010/11. The total average annual increase in enrolment in TVET was 17.6%. The ratio of female enrolment is fluctuated, however increased from 44.3 (2009/10) to 46.2(2010/11) and the average annual enrolment rate for female (19.1) is greater than male (16.4). The finding indicates that there is on gender issues in terms of TVET enrolment.

8.8.2 Distribution of Enrolment by Region & TVET centers and Instructors

There has been seen a substantial changes (2010/11) in number of TVET institutions by region, enrolments, number of teachers and ratio to students. Subsequently, the number of enrolment was increasing at higher rate in Ethiopia. The following table provides the Enrolment in TVET canters by region and number of instructors in each region as of 2010/11.

Region	Total Enrollment	No. TVET Centers	No. of Teachers	Teacher-Student Ratio
Tigray	21,678	35	1148	1:19
Afar	1256	2	12	1:24
Amhara	77,646	92	3016	1:26
OROMIA	145,453	196	4698	1:31
Somali	5360	6	287	1:19
Benshangul Gumuz	1111	4	35	1:32
SNNP	60,051	63	1581	1:38
Gambela	894	2	33	1:27
Harari	2805	6	176	1:16
Addis Ababa city Administration	48,755	78	1667	1:29
Dire Dawa city Administration	6338	12	297	1:21
Total	**371,347**	**505**	**12,990**	**1:29**

Source: MOE, Annual Statistics 2010/11

Table 8-2 Distribution of enrolment by region & city administration

Table 8.2 shows that there has been steady increase in the number of students enrolled in formal TVET training institutions. The total enrolment that was only 72,162 in 2002/03 became 371,347 in 2010/11. The annual average increase was 17.6%. The above table shows the discrepancy in terms of teacher student ratio, the lowest being 1:16 (Harari) and the highest 1:38 (SNNP). This data suggest that there is an increase in the number of enrolments in TVET in the country.

8.8.3 Number of public, private and NGOs‘ TVET institutions by region

The Ethiopian Government has placed a lot of devotion in TVET and as a result of this, a massive expansion is taking place especially in the ownership status of TVET institutions. Moreover, this sub sector is also inviting private organizations for investment in education. Some government sources reported that private TVET providers accounted approximately 30% of all TVET in Ethiopia (CSA, 2007) estimated this.

No	Region	Public	Private	NGO	Total	No.of clusters
1	Oromya	103	125	5	233	18
2	Amhara	58	46	1	105	12
3	SNNPR	20	67	5	92	5
4	Tigray	26	26	3	55	5
5	**Addis Ababa**	**33**	**234**	**20**	**287**	**8**
6	Harari	2	6	-	8	-
7	Somali	5	2	-	7	-
8	Dre Dawa	2	6	-	8	-
9	Afar	4	-	-	4	-
10	Benshangul	2	5	-	7	-
11	Gambela	2	6	-	8	-
Total		257	523	34	814	48

Source: http://de.scribd.com/doc/50191175/Ethiopia-Public-and-Private-TVET-Institutions-final (2012)

Table 8-3 Number of public, private and NGOs‘ TVET institutions by Region

Table 8.3, shows the ownership status of TVET institutions in Ethiopian regions and the number of public (257), private (523) and NGOs‘(34), TVET institution in 2012. Hence, the number of TVET institutions owned by the public, private and NGO sectors was reported to be 388 in 2006/07 (CSA, 2007) increased to 505 in 2010/11 and 814 in 2012 in the regions. This suggests that there is an increment in the number of TVET institutions in Ethiopia.

8.8.4 Government and non-government TVET graduates by region and level

Outcome based CR provides a level system which divides the occupational standard into five levels. Trainees can join the levels based on the cut-off scores determined by the Ministry of education annually. The following two tables provide information regarding the number of graduates under each level in each region as the share of Government (public) and non-government TVET institutions (Private and NGO) in addition to gender difference.

Government

REGION	LEVEL 1		2		3		4		5		Total		
	M	F	M	F	M	F	M	F	M	F	M	F	Total
Tigray	2	19	34	87	569	504	1280	1556	2	17	1887	2183	4070
Afar	0	0	11	5	82	162	42	19	88	38	223	224	447
Amhara	97	149	979	1096	4773	6687	1463	1648	5	0	7302	9580	16882
Oromiya	242	292	1148	935	5152	3073	7751	4973	26	6	14319	9279	23598
Somali	0	0	43	10	174	53	14	10	0	0	231	73	304
Bensh.Gumz	0	0	0	0	0	0	0	0	0	0	0	0	0
SNNP	161	234	593	465	1971	1890	362	117	0	0	3087	2706	5793
Gambella	NA												
Harari	0	0	0	0	0	0	132	147	0	0	132	147	279
Addis Ababa	150	232	472	830	1921	1302	800	981	523	268	3866	3613	7479
Dire Dawa	0	0	0	0	121	58	381	361	0	0	502	419	921
Total	**651**	**907**	**3282**	**3437**	**15000**	**14016**	**11322**	**8489**	**647**	**312**	**30872**	**27161**	**58033**

Source: Educatin statistics Annual Abstract, 2010/11
Note: M-Male. F-Female NA- not available

Table 8-4 Government graduates by region and level

Non-Government

REGION	LEVEL 1		2		3		4		5		Total		
	M	F	M	F	M	F	M	F	M	F	M	F	Total
Tigray	0	0	0	0	476	95	945	1224	13	38	1434	1357	2791
Afar	0	0	0	0	0	0	0	0	0	0	0	0	0
Amhara	51	104	326	590	1925	3301	3923	5100	27	21	6252	9116	15368
Oromiya	24	60	65	156	2512	1335	7462	6588	0	0	10063	8139	18202
Somali	0	0	0	0	0	0	60	27	0	0	60	27	87
Bensh.Gumz	0	0	0	0	65	58	141	137	0	0	206	195	401
SNNP	84	24	87	57	4509	3013	2903	1662	0	0	7583	4756	12339
Gambella	NA												
Harari	0	0	0	0	39	10	355	203	0	0	394	213	607
Addis Ababa	535	1108	308	543	508	1044	2559	2159	111	112	4021	4966	8987
Dire Dawa	0	0	0	0	62	2	386	306	0	0	448	308	756
Total	**694**	**1296**	**786**	**1346**	**9620**	**8763**	**17789**	**16182**	**138**	**133**	**29027**	**27720**	**56747**

Source: Educatin statistics Annual Abstract, 2010/11
Note: M-Male. F-Female NA- not available

Table 8-5 Non-Government TVET graduates by region and level

As can be seen on the Table 8.4 and 8.5, almost 50% of graduates are share of the non-government (private & NGOs) TVET institutions. Among government graduates the majority are from level 3 (29,016), whereas the non-government graduates are from level 4 (33,971). Female graduates are almost half in both types of TVET institutions, suggesting that there is no gender bias at graduation.

8.8.5 Annual TVET graduation rate

The number of annual graduation rate is compiled from Ethiopian Ministry of Education statistics annual abstract, unfortunately, the number of graduates were not compiled before 2010/11. Hence, the analysis was conducted based on three years data.

Ethiopia

Year	**2010/11**	**2011/12**	**2012/13**
Enrollment	371,347	320,225	238,884
Graduation	112,450	140,461	125,738
%Graduation	**30.3%**	**43.9%**	**52.6%**
Female ratio	48.8%	45.1%	46.3%
Addis Ababa			
Enrollment	48,755	29,818	31,186
Graduation	16,466	11,519	11,489
%Graduation	**33.8%**	**38.6%**	**36.8%**
Female ratio	52.1%	50.2%	50.5%

Source: MOE Annual statistics abstract 2013

Table 8-6 Total annual rate of TVET graduates in Ethiopia and Addis Ababa

As can be seen from the Table 8.6 the number of TVET graduates are increasing from 112,450 (2010/11) to 140,461(2011/12) but decreased to 125,738 (2012/13). The total enrolment (Ethiopia) in TVET in the year 2008/09 was 308,501. In the year 2012/13, enrolment has decreased to 238,884. The decline in enrollment might be due to underreporting of data. It is likely that enrolment and institution figures are higher than indicated in this document because there are government and non-government TVET institutions in Harari, Somali, and Benishangul Gumuz, which did not respond to the annual questionnaires. In addition, some TVET centers have been opened in various universities and their enrolment and staff have been reported as part of the higher education, rather than as part of the TVET system (MOE 2013, p. 54). However, the annual rates of graduates were increased from 30.3% in 2010/11 to 52.6% in 2012/13 and female average ratio was 47.7%. Similarly, in Addis Ababa, the annual graduation rate was increased from 33.8% (2010/11) to 36.8% (2012/13) and female annual average ratio was 51%.

8.8.6 Competency assessment results based on sectors in Addis Ababa

These learning outcome achievements were collected from Addis Ababa city administration competency assessment agency (COC) from 2007 to 2013. The data displayed on the following table shows that the number of candidates from different field of studies and those who are competent as well as rate of competency.

TVET graduate
Competency assessment based on sectors in Addis Ababa
2007-2013 (Round 1-8)

Sectors	Total Assessed	Total Competent	Competent Percentage
Automotive	2406	743	30,9%
Business	39917	4899	12,3%
Construction	12852	4258	33,1%
Culture	643	284	44,2%
Electricity/ Electronics	3165	669	21,1%
Health	29361	5826	19,8%
Hotel and Tourism	1633	957	58,6%
ICT	7225	1442	20,0%
Leather Technology	229	71	31,0%
Manufacturing	1656	329	19,9%
Textile and Garment	505	143	28,3%
Agriculture	13	8	61,5%
Total	**99605**	**19629**	**19,7%**

Source: Composed by the author based on data from Addis Ababa COC center

Table 8-7 TVET graduates Competency assessment results based on sectors

Table 8.7 shows that among the candidates who sat for competency assessment (99,605) about 20% found to be certified and recognized at competency center. Further, the data show that in Business field of study there is high enrolment (33,917) for competency assessment but the lowest competency percentage (12%) when compared to agriculture field of study the lowest number of enrollment (13) but the highest competency percentage (62%). Experts also similarly indicated this during interview that the business area was the lowest competency area. This indicates that there is a difference in the effectiveness among the sectors in terms of the number of participants in assessment and the number of proved competent.

8.8.7 TVET graduates' competency assessment based on rounds (years)

As can be seen in the Table 8.8 the participation number of TVET graduates on competency assessment to make them certified is increased from the 1,951 (first round) to 31,381 (seventh round) increased 1608%. However, the increasing rate showed fluctuation. The number of graduates who found competent also increased from 220 (1st round) to 6446 (7th round). The proportion of those who were found competent showed fluctuation but the competency rate showed an increasing trend from 11% (1st round) to 40% (3rd round).

TVET graduate
Competency assessment based on Round (1-8)
Addis Ababa 2007-2013

Round	Total Assessed	Change% of Assessed	Total Competent	Change% of Competent	Competent %
1st Round	1951		220		11,3%
2nd Round	2248	15,2%	373	69,5%	16,6%
3rd Round	3743	66,5%	1342	259,8%	35,9%
4th Round	13375	257,3%	2921	117,7%	21,8%
5th Round	9810	-26,7%	1226	-58,0%	12,5%
6th Round	19474	98,5%	2487	102,9%	12,8%
7th Round	31381	61,1%	6446	159,2%	20,5%
8th Round	17687	-43,6%	4578	-29,0%	25,9%
Total	**99669**		**19593**		**19,7%**

Source: Composed by the author based on data from Addis Ababa COC center
Table 8-8 TVET graduates Competency assessment results based on Assessment Round

This data provides some new evidences about the impact of the CR in the level system of the assessment system in the Ethiopian TVET colleges. First, the aggregate proportion of those who registered for competency assessment have increased largely (1608%). Second, the proportion rate of graduates, who were recognized by the assessment and certification system as competent has increased at 2930% (1st -7th round), even though the rate is fluctuating. Generally, the curriculum reform brought about a change in assessment system, from institutional assessment system in the 10+system to the occupational assessment at the level system. However, a total of only 20% of assessed graduates were found to be competent. A line graph representation of the numbers of assessed and competent of TVET graduates from the 1st round to the 8th round is presented below.

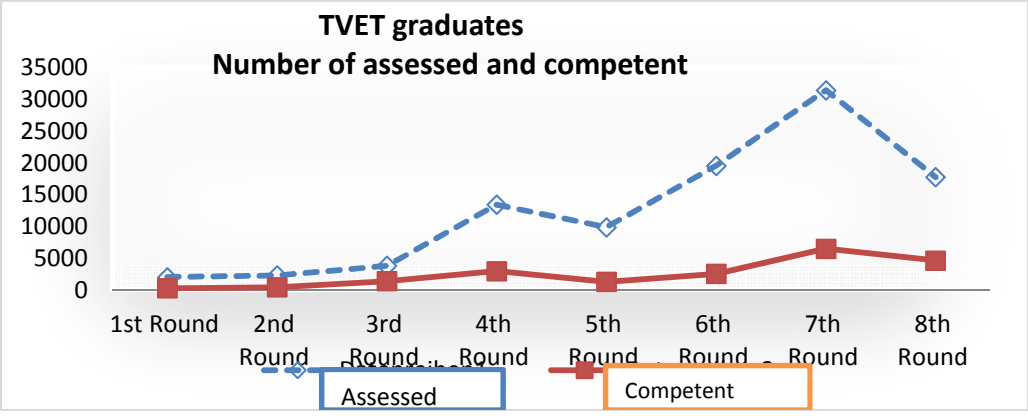


Figure 8-1: Competency assessment results in different time periods/rounds

Generally, the finding suggests that the number of assessed TVET graduates are at increasing rate, especially at the seventh round, however the number of competent seems to be less, even though at an increasing rate.

8.8.8 TVET instructors' competency assessment results based on sectors

Taking competency assessment is based on willingness; however, TVET instructors are obliged to take competency assessment and be competent in the Ethiopian context so that they can also create competent trainees. For this reason, initially TVET instructors of the government colleges have taken competence assessment as indicated in the following Table 8.9.

Trainers competency assessment based on sectors
Addis Ababa 2011/12

Sectors	Total Assessed	Total Competent	Competent %
Construction	260	250	96,2%
Wood & wood products	77	74	96,1%
Automotive	77	74	96,1%
Metal Manufacturing	116	111	95,7%
Electricity/Electronics	145	142	97,9%
Textile & Garment	105	102	97,1%
Leather	17	5	29,4%
Hotel & Tourism	62	56	90,3%
ICT	92	89	96,7%
Municipality service	108	0	0,0%
Culture	22	21	95,5%
Sport	5	0	0,0%
Agriculture	107	5	4,7%
Industrial Laboratory Technology	0	0	0,0%
Health	0	0	0,0%
Business	42	36	85,7%
Transport	0	0	0,0%
Communication (KAB)	76	55	72,4%
Civics	44	37	84,1%
Total	**1355**	**1057**	**78,0%**

Source: Composed based on data from Addis Ababa COC

Table 8-9 TVET instructors Competency assessment results based on sectors

As displayed in the Table 8.9, a total of 1,355 instructors have taken the assessment since 2011 and 78% of assessed instructors were found to be competency updated. Among these instructors, construction sector (260) has the highest participants followed by Electricity (145) and Metal (116) sectors. This result might owe to the current high construction exercises, for example, railway, dames, asphalted roads, buildings in the country. The proportion of those who were found competent showed fluctuation from the lowest rate 4.7% (Agriculture) to 98% (ICT and Electricity). Generally, this data indicates that the new assessment system proved more than ¾ of TVET instructors to be competent in different sectors.

8.8.9 TVET instructors' competency assessment results based on levels & gender

The outcome-based CR in Ethiopia come up with a new assessment system that creates an opportunity to update instructor as competent. Hence, they are awarded one of the three certification levels, if they are found competent in a specific level. The rewards are level C (Diploma holder), level B (Bachelor's degree) and level A (Master's degree).

Teachers competency level based on gender
Addis Ababa 2011/12

Sex		Level C	Level B	Level A	Total
Male					
	Assessed	497	501	47	1045
	Competent	394	370	44	808
	% of competent	**79,3%**	**73,9%**	**93,6%**	**77,3%**
Female					
	Assessed	104	200	2	306
	Competent	94	169	1	264
	% of competent	**90,4%**	**84,5%**	**50,0%**	**86,3%**
Total					
	Assessed	601	701	49	1351
	Competent	488	539	45	1072
	% of competent	**81,2%**	**76,9%**	**91,8%**	**79,3%**

Source: Composed based on data from Addis Ababa COC

Table 8-10 TVET instructors competency assessment results based on levels and gender

As can be seen in the Table 8.10, the majority assessed instructors are on level B, (701) and level 'C', (601) when compared to level 'A', (49). Accordingly, 81% from C level, 77% from 'B' level and 91% from 'A' level are found to be as competent. In terms of gender issue, the number of male candidates are more (1045) than female candidates (306). The majority female lays on level 'B' (200) when compared to level 'A' (2). Hence, 90% are competent from level 'C', 85% are from level 'B' and 50% from level 'A'. Generally, 86% of female and 77% of male are found to be competent. Hence, gender bias is not an issue in terms of competency; nevertheless, the number of female registered for assessment at the higher (A) level is still small.

8.8.10 Budget allocation in Addis Ababa government TVET colleges

Public TVET institutions are basically financed by the government of Ethiopia. The government gives high consideration, since the 1994 education policy reform, to the effective implementation of the TVET curriculum. Therefore, the budget allocations to TVET institutions are found to be annually increasing.

Budget Allocation in Addis Ababa Government TVET colleges
Year 2004-2008

Name of Institution	2004 Budget	2005 Budget	2006 Budget	2007 Budget	2008 Budget
Tegbare'id	8,567,912.00	7,188,756.00	18,431,900.00	22,784,879.00	45,601,444.46
Entoto	10,128,077.00	12,548,599.00	25,801,783.00	32,619,567.60	40,706,566.80
General Winget	11,015,175.00	13,154,791.00	24,276,220.18	27,374,129.00	41,683,349.00
Misraq	5,178,154.00	11,542,163.00	26,340,797.00	33,093,873.00	36,305,997.16
Nifas Silk	5,412,271.00	12,484,500.00	22,105,849.23	36,782,253.00	32,899,363.00
Ethio-China	-	3,391,149.00	16,935,373.00	23,934,828.30	9,819,663.00
Akaki	-	-	12,104,000.00	13,872,182.00	32,817,669.00
Agency	-	-	13,640,528.00	16,762,908.02	32,730,163.98
Total	**40,301,589.00**	**60,309,958.00**	**159,636,450.41**	**207,224,619.92**	**72,564,216.40**
Change %		**49.6%**	**164.7%**	**29.8%**	**31.5%**

Source: Composed based on data from federal finance agency
Note: 1€=20Eth birr

Table 8-11 Financial budget allocation to Government TVET institutions

As can be seen from the Table 8.11, the annual budget increases from about 40 million Ethiopian birr in 2004 to about 207 million birr in 2008 (518% increment) and the highest incremental change has been seen in the year 2006 (165%). Generally, the CR has had positive impact on budget allocation to TVET. For further clarification, a line graph representation of the annual budget allocation to TVET is presented in Figure 8.2 and 8.3.

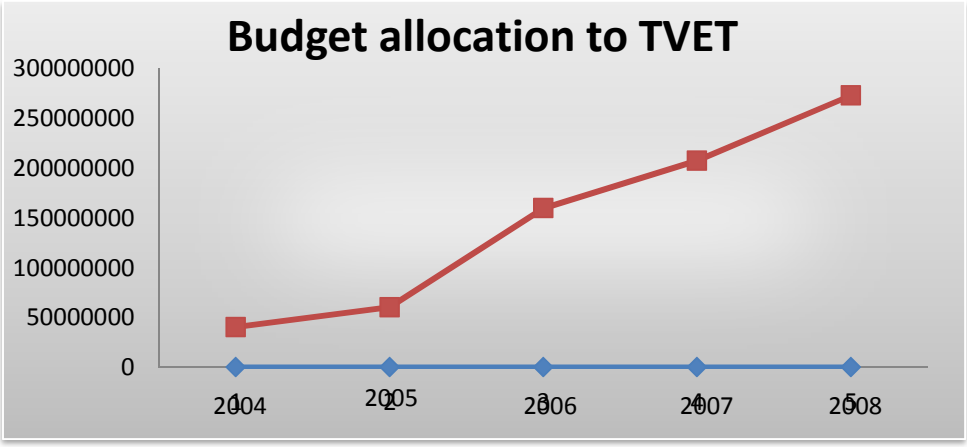


Figure 8-2: Annual budget allocation to government TVET colleges

The above Figure 8.2 displays that there is an increment of budget for TVET colleges every year. This is an indicator that the consideration of the government to TVET sector is increasing.

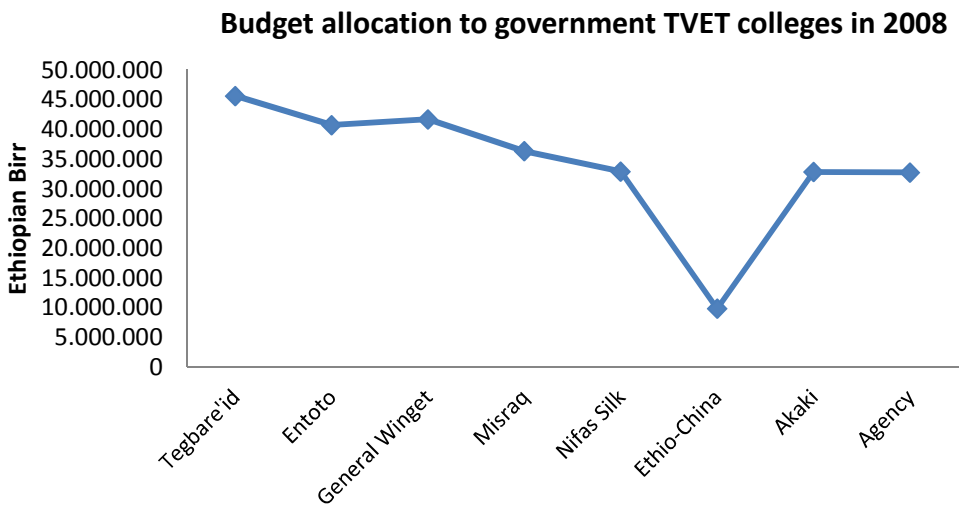


Figure 8-3: Budget allocation to each government TVET colleges in 2008

The above Figure 8.3 displays that the budget allocation to government (public) institutions in Addis Ababa city administration in 2008. As can be seen, the highest budget was assigned for *Tegibare'id* TVET college and the least was to Ethio-china TVET college, suggesting that the budget allocation may depend on their size and activities.

8.9 *SUMMARY:* TVET officials perspectives (Inspection stage)

This part has reported on the inspection stage of this study based on the data collected from interview with director, vice-director, dean of TVET college, department heads, and vice director of assessment as well as documentary data analysis. In line with the questions identified in the chapter five, the data collection, analysis and interpretation during this stage of the study focused on the issues of interventions of CRs, organization and implementation of curriculum, factors influencing CRs, assessment, certification, impact indicators of CRs and SWOT analysis. In summary, the inspection stage of the study identified the following findings:

The CRs have impacted on the curricular intervention factors

Overall, during this inspection stage of the study, the officials responsible for TVET curriculum and policy issues believed on the ground that the IBCR was the basis for the OBCR, however the medium of instruction has been not yet changed, however they are coming into consensus that it is in the process of changing. For example, Amharic language is taken as a medium of instruction for non-international hard skill courses. In terms of subject/content change, the English language and mathematics subjects are banned from the hard skill courses, however, learning materials and medium of instruction is English language as such. Regarding professional change, there is a gap in

the professionalization process; however, efforts are being made to improve the skill gap of TVET instructors and leaders in the summer course programs and workshops organized by experts from Germany and Philippines. Further, the instructional methodology is definitely positively changing despite the shortcomings of material and educational inputs, such as computers. Finally, they agreed on the time allotment changes, however, the time allocation depends on the background of the students, indicating that the gaps existed between modules and the allotted times are still prevailed.

Curriculum organization/development is the responsibility of the TVET institutions, however professional support is provided by the curriculum experts during the process of curriculum development in the colleges

As indicated in chapter III, basically the curriculum is benchmarked from Germany, Australia and Philippines, depending on different fields of study. At the policy level, currently each institution is obliged to design its own curriculum based on the standards developed by the industries in Ethiopia. Hence, the curriculum is organized by the trainers/professionals from TVET colleges. Curriculum is not the duty of the industry, but the industry provides the specifications as to what type of profession they need before the curriculum is developed by the colleges. Provided that, professional support is offered by curriculum experts during the process of developing the standards and the curriculum. As a consequence, the colleges are evaluated based on the success of their curriculum designed to serve students with the necessary competencies.

The CRs have provided an opportunity to employers as a constituency participant of curriculum development

The findings in this study show that the inclusion of employers as a constituency participant of the curriculum development has been taken as a major positive indicator, which has never been existed before in the country. As a consequence, the expert suggested as "*There is no need voting to design a TVET level curriculum, it is a matter of profession, what knowledge the individual need to design is not a question of agreement*" As justified in chapter II, the curriculum development is conducted with the participation of different stakeholders such as administrators, supervisors, teachers, students, board of education, parents, community representatives, college professors and independent consultants. However, the respondents during exploration stage reported more involvement for administrators and TVET experts but there was discrepancy responses between instructors and principals. The role of employers identified in this study is, participation in designing occupational standards for curriculum. Nevertheless, due to lack of awareness, the employers are not yet fully involved in the TVET sector.

Lack of mental setting to TVET found to be the major challenge for the effective implementation of TVET curricular changes in Ethiopia

The TVET curriculum is assumed to be reformed every five years (MOE 2005). After 2005 the 10+ system was phased out, then after the Level-system began to be implemented. As indicated by the officials responsible for TVET curriculum, the major bottlenecks encountered were the implementation of the level system (OBCR) curriculum before being the old curriculum (IBCR) was exhaustively implemented. Consequently, resistance came from the stakeholders not to go away from the old curriculum, especially leaders of private TVET colleges. No effort was conducted to change the mental setting of the instructors and stakeholders, in view of positive attitude only to the old general education system. This creates a negative attitude to TVET system in the country. There was also no proper promotion accompanied from the media to create awareness among the society, especially unacceptance of the TVET system by the sectors. Yet, they are obliged to accept by force. With this in mind, all interviewees came into consensus that awareness was not adequately promoted to the sectors and to the society at large.

The inefficiency of the input based curriculum to provide employable skill was the major cause that influences the curriculum to be changed

The literature shows about ten factors that influence decisions to change the curriculum (Gruba et al., 2004). The TVET officials report shows that the main causes that influence change of the input oriented TVET to outcome oriented TVET in Ethiopia are linked with factors such as economy, technology, ICT, and policy change, especially, the inefficiency of the old curriculum, less quality, lack of proper assessment system, and less employment opportunity of TVET graduates.

Commitment of the government to TVET found as drivers for the effective implementation of the curriculum reform in Ethiopia

This study found that factors such as the economic, political, social/cultural and technological factors are the main factors influencing the implementation of the reforms. Consequently, the rising commitment of the government is the main driver for the effective implementation of the curriculum. As indicated in the financial budget allocation, the budget was in an increasing rate, for example, the annual rate from 2004 to 2008, (see Figure 8.2). This means, the huge amount of budget allocation to TVET (currently up to 500 Million Ethiopian birr), facilitates the effective implementation of the TVET system in the country. Further, the relative change of the societal attitude to TVET, trainers and some sectors who support the system, are considered as positive indicators according to officials responsible for TVET.

Lack of capacity was found to be the main hindrance to implement the reforms effectively

Certainly, in Ethiopian TVET system, the main challenge that hinders the effectiveness of TVET reforms is implementation. In Ethiopia implementation is not an easy task, for the reason that there are no enough resources (human, financial and material). Within this environment, however efforts are made to develop TVET system in the country uninterruptedly.

There are inconsistent responses regarding impact indicators of the CRs.

The study, various gaps were identified between the responses of the inspection stage (Chapter VIII) and the exploration stage (chapter V, VI and VII) of the study. In this case, the gap lays between the officials' vision and the responses from the questionnaires of the TVET colleges. As noted previously, the responses of instructors and principals (see Table 5.15) shows almost the majority responses of indicators leaned towards disagreements, such as access, graduation rates, employability, quality, cost effectiveness, competency assessment, new methodology, and timetable adjustments of the courses. In contrast, TVET officials responded positively.

Access to TVET enrollment was found to be a positive indicator of the CR

The findings shows that TVET instructors and principals (exploration stage) agreed (60%) that there was access to enrolment in different field of study. Similarly, the documentary data (inspection stage) shows that the access to enrollment in TVET courses had an increasing rate (annual rate 17.6%), as displayed in Table 8.1. Generally, the study investigated access to enrollment was found to be positive indicator of the CR.

TVET graduation rate was found to be a positive indicator of the CR

During the exploration stage, more than half of the respondents agreed that the CR had a positive impact on TVET graduation rate. Likewise, the inspection stage of the study displayed on documentary data that the graduation rate was at an increasing rate, for example, from the year 2010/11(30%) to 2012/13 (53%), and female average ratio was 47.7%. Similarly, in Addis Ababa, the annual graduation rate was increased from 33.8% (2010/11) to 36.8% (2012/13) and female annual average ratio in Addis Ababa was 51%. Generally, TVET graduation rate was found to be a positive indicator of the CR.

Inconsistent response was existed on employment opportunity of TVET graduates

As indicated by officials the employment opportunity is increasing in accordance to the growing industries and thereby the economic development of the country. Hence, currently (OBCR) many TVET graduates are employed on the Cobblestone job (half of them are females) and since the training is conducted based on the request of the industry, then there is no doubt on the employment of TVET graduates. Further indicated that in the previous 10+system, those who perform well have got employment; whereas, the rest could not be employed because of inadequacy. Currently, (level system) the problem is not employment but the fact that the majority unemployed graduates did not have competency certificate. On the contrary, the labor market could never be equivalent since the number of TVET graduates are increasing at large and no enough enterprises, which can absorb all TVET, gradates. Unfortunately, there is no statistical data reported by MOE Annual statistical abstract concerning employment of TVET graduates. Generally, the findings show that there existed inconsistency responses regarding employment of TVET graduates.

The new assessment system is found to be a positive indicator of the CR.

The study found more than half of the respondents (exploration stage) agreed that the assessment system is improved, in support of this, the inspection stage also found that the new assessment system (since 2007) made the students to work hard and establish better understanding of the assessment. However, the previous (10+-system) evaluation system was designed only to get certificate of completion. Further, the documentary analysis also demonstrated, for example, in Addis Ababa (Table 8.7), even there was fluctuation; the number of assessed graduates from the start to 2013 was at increasing rate (257% at the 4th round). In summary, the new assessment system is a positive indicator of the CRs.

Quality assurance is found to be a positive indicator of the CR

The exploration stage found that more than 60% of respondents supported for quality assurance. Similarly, during the inspection stage the interviewees show that the qualification rate had increased rate from 14% in 2007 to 65% in 2013, in line with the targeted TVET strategy at 44% of graduates to be certified from TVET colleges. Furthermore, in the document analysis (Table 8.7) shows that the rate of competent graduates is fluctuating, yet an average rate reaches about 20%. Generally, the finding shows that quality assurance is a positively indicator of the CRs in Ethiopia.

PART THREE

RESULTS

9 RESULTS AND DISCUSSION

As discussed in Chapter IV, data collection in this study developed through two research stages of "exploration" and "inspection" (Blumer, 1998, p.40). At the same time, data analysis and interpretation involved an interactive process comprised of a "first, second and third-order interpretation" (Neuman, 2007, p.160) of this data. Following a first and second-order analysis and interpretation of data, this study identifies findings in Chapter V & VI. This chapter presents the third-order interpretation of the findings, as the study addresses the theoretical significance of each finding corresponding to individual research questions and hypotheses with reference to the literature. Implications of the results for theory on reforms, a comprehensive picture of TVET reforms in Ethiopia, is discussed. The concluding chapter also identifies the study's limitations and makes suggestions for future research.

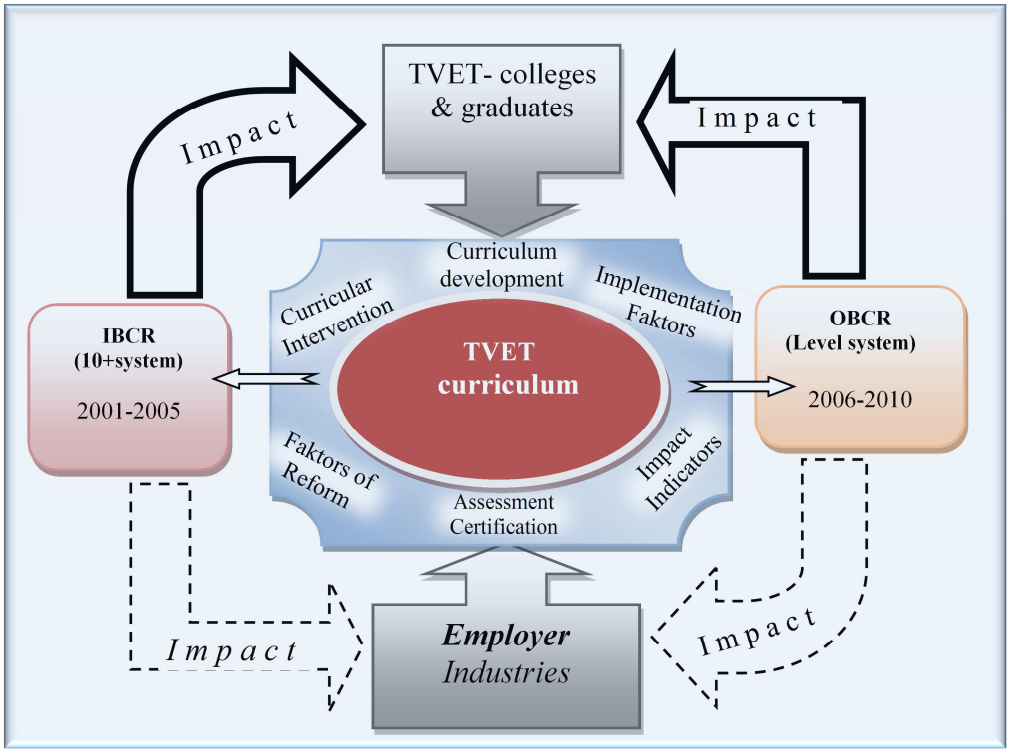
The starting point for the motivation of this research project was the investigation of the impact of TVET CRs implemented in Ethiopia since 2001, specifically, the impact upon the status of TVET graduates and thereby to employer industries. This project is distinctive for several reasons.

- It is the first independent large-scale study of the impact of CR in Ethiopia. Previous studies tended to have a more limited focus and a legitimatory function.
- The study traced the impact of the reforms over ten years ranging from 2001 to 2010. It also covered the reform implemented in three types of institutions, namely Public, private and NGO's TVET institutions (at college level).
- The study compares basically two different time-periods, 2001 to 2005 (namely Input Based CR (IBCR)) and 2006 to 2010 (namely Outcome-Based CR (OBCR)) in Ethiopia. It is therefore both retrospective and multi-level in scope.
- Data collection, analysis and interpretation comprised both qualitative and quantitative methods that provide complementary perspectives on the impact of the CRs.
- The focus on the impact of the CRs allows the study to explore both the intended and unintended consequences. Such as the participation on curriculum design in different characteristics of respondents and the competency assessment of instructors and principals in their characteristics, emerged as critical outcomes of the research.
- The case study outlines at a contextualized experience of reforms implemented in Ethiopia in general and particularly in the case of Addis Ababa city administration (the capital city of

Ethiopia), rather than adopting a more generalized approach, that portrays its findings in terms of numerical descriptors and averages.

9.1 *Validating the conceptual framework*

The intention of this research was primarily to provide a comprehensive picture of the impact of TVET CRs conducted in Ethiopia. It thereby evaluates comparisons of the two reform programs implemented in the country, in addition to differences between types of TVET institutions (public, private and NGO's) and also between TVET instructors and principals. The phenomena described in this research are firmly rooted in the specific social, political and economic context of TVET CRs in Ethiopia. Therefore, this framework encompasses the intervention factors, factors/causes of reforms, implementation factors, curriculum development, assessment and certification and impact indicators were the main issues to be considered in addition to other related issues regarding TVET CR. It is necessary to have knowledge of these issues, in order to appreciate which change forces are operating and why these phenomena occurred. The following framework provides those issues together as a system.



Note: IBCR-Input-based CR, OBCR-Outcome-based CR

Figure 9.1- Framework of the research

Figure 9.1 displayed the framework of the project that exhibits the issues and concepts of the TVET CRs. TVET CRs placed at the center of the framework provided the basis of the curricular reforms

implemented during 2001 and 2005 (IBCR), and the second reform implemented in 2006 and 2010. As a result, the study investigated that TVET CRs have impacted on the relevancy of TVET graduates and thereby employers. This study also investigated important issues of CR in the Ethiopian context, such as curricular intervention factors of curriculum, curriculum development, factors influencing curricular reforms, factors influencing effective implementation of TVET CRs, impact indicators and the TVET assessment system in addition to other relevant factors of CRs implemented in Ethiopia since 2001. Basically, these issues and concepts have generated the shape of the framework of the project. Generally, the main findings are presented as follows:

Firstly, this study found the crucial factors that has influenced the CRs conducted in Ethiopia since 2001.

Secondly, this study found the TVET CRs have impacted upon the curricular intervention factors in the curriculum implemented in Ethiopia since 2001.

Thirdly, the findings show that the TVET CRs have impacted upon the constituencies' participation in the TVET curriculum development in Ethiopia since 2001.

Fourthly, the findings of the study show the influential factors that play a crucial role as a driver to the effective implementation of TVET CRs as internal and external factors of reforms in Ethiopia since 2001. Two reform programs are implemented in the TVET institutions as IBCR (2001-2005) and OBCR (2006-2010). This is locally known as the *10+-system* curriculum and the *Level system* curriculum.

Fifthly, the findings show the CRs have altered the assessment system that plays a crucial role on the quality assurance in Ethiopia.

Finally, the findings show that the CRs have impacted on the status of TVET graduates and thereby employers.

In summary, the framework has widely reflected the comprehensive picture of the impact of the TVET CRs in Ethiopia. Hence, the data collection, analysis and interpretation provided us with the result of the study. Consequently, **about 82% of *the findings of this study show that the impact of the OBCR outsmarts the IBCR***. Specifically, this study discussed in detail the following issues in answering the basic questions and hypotheses and sub-hypotheses about the subjects, such as *interventions of CRs, curriculum development process, nature of curricular review, factors/causes*

influencing CRs, factors influencing effective implementation of CRs (internal/external), impact indicators of CRs, graduate relevancy of CRs, and employer relevance of CRs in addition to competency assessment/ certification, participation in the design of curriculum and employer involvement in the college to improve the TVET curriculum.

The hypothesis

The inferential statistics of this study further investigated the differences between TVET instructors and principals, between types of reforms, between types of TVET institutions in the following 8 basic questions, 8 sub questions, 12 main hypothesis and 43 sub-hypothesis in the coming section.

9.2 *Curricular intervention factors of the TVET curriculum*

Research question 1 is motivated by the viewpoint of the argument for the need to look at the curricular intervention factors of the curriculum changed in the Ethiopian TVET CR context. The factors are mentioned in the definition of the curriculum proposed by Cedefop (2000):

> *The inventory of activities implemented to design, organize and plan an education or training action, including the definition of learning objectives, content, methods (including assessment and material, as well as arrangements for training teachers and trainers. Learning program, by contrast, are an inventory of activities, content and/or methods implemented to achieve education or training objectives (acquiring knowledge, skills and/or competencies), organized in a logical sequence over a specified period of time* (p. 19).

Further, it indicated that the curriculum as a normative document (or a collection of documents) providing the framework for planning, learning experiences and encompasses such factors/interventions (Howell 2009, p. 7). As the overarching goals/ vision of the learner, learning outcomes, learning objectives, disciplines and contents, teaching and learning methods, duration, timetables, place of learning, assessment regulations, entry requirements and progression, qualifications of teachers and trainers, and reference materials (p. 22). As a consequence,

Research question 1.0*: Which curricular intervention factors have been impacted by the reform process since 2001?*

Hypothesis 1.0: *TVET CRs will have positive impact on curricular intervention factors.*

The contextual nature of the TVET curriculum in Ethiopia was benchmarked to fit with the existing experience in the world as "Curricular curriculum" (Atweh & Clarkson, 2002. P. 3). It was adapted from different well-experienced countries like Germany, Australia and the

Philippines. It is believed that these reforms may have impacted on the *curricular intervention factors* during the process of implementing the new curriculum. The intended intervention factors were *subject/trade change, content change, methodology change, time allocation change, professional change, evaluation/assessment change, instructional media change and technical/scientific change.*

The respondents from TVET colleges, the instructors and principals, reported in the order of significance as *Method of instructional change* was supported by more than three quarters of the respondents, followed by *contents change* supported by more than two third. Then another high change of intervention factors was reported for *time allotment changes*, *evaluation/assessment change*, *technological change* and *subject change*. Respondents rather reported less support for *professional change* and *instructional media change.* Furthermore, the inspection stage of this study found the curricular reforms have impacted upon the curricular intervention factors as the officials responsible for TVET curriculum and policy issues believed on the ground that the IBCR was the basis for the OBCR. However, they indicate that the medium of instruction is not yet changed but that a consensus is forming with regard to the process of changing. For example, the *Amharic* language (the Ethiopian official language) is used as a medium of instruction for the hard skill courses.

However, in contrast, a dean of a TVET college complained about the change in terms of subject/content change and that the English language and mathematics subjects are banned from the hard skill courses despite the fact that the learning materials and the medium of instruction are in English. Regarding *professional change*, there is a gap in the professionalization process though efforts are made to improve the skill gap of TVET instructors and leaders in the summer course programs and workshops, organized by experts from Germany and Philippines. Further, the instructional methodology is definitely a positive change despite the shortcomings from material and educational inputs (such as computers). Finally, there are time allotment changes but the allocation depends on the background of the students, though the gaps existed between modules and the allotted times. ***To sum up,*** *the CRs conducted in Ethiopia have positively impacted on the curricular intervention factors highly in terms of Method of instruction change, contents change, time allocation change, evaluation/assessment change, and technological change and also subject/trade changes.*

Research question 1.1: *Are these impact of reforms on curricular intervention factors significantly varied between two groups of respondents (TVET instructors and principals),*

between two reform programs (IBCR and OBCR) and between the ownership status of TVET institutions (Public, private and NGO's institutions)?

Hypothesis 1.1: *There is a perceptual variation between TVET college instructors and principals in terms of changes of curricular intervention factors.*

Hypothesis 1.1 was intended to test the impact of the reforms on the curricular intervention factors conceptual variation between the TVET instructors and principals. This study found that (t-test Table 5.23) there was a statistically significant mean difference on all intervention factors between TVET instructors and principals, such as content changes, new learning areas/methods change, time allotment changes, evaluation/assessment changes, and subject/trade changes (small effect size). Professional changes, instructional media changes, and technical/scientific changes (closer to large effect size), where the higher mean was reported by principals than instructors for all items. ***In General****, this study verified that perceptual difference has been existed between TVET instructors and TVET college principals regarding the curricular intervention factors impacted by the CRs in Ethiopia.*

Hypothesis 1.2: *The impact of the CRs on curricular intervention factors' changes will be significantly varied between the IBCR and the OBCR.*

Hypothesis 1.2 was intended to evaluate whether the curricular intervention factors were varied between the input-base CRs (IBCR) implemented between 2001 and 2005 and the outcome-based CR (OBCR) implemented between the years 2006 and 2010. Hence, this study investigated a statistically significant mean difference between the IBCR and the OBCR for *instructional media change* (see Table 5.22), where OBCR produced the higher mean than the IBCR with small effect size. However, the other seven curricular intervention factors such as *methodology, subject, content, evaluation, professional time allotment, and technological* changes were not statistically significant. ***In summary,*** *in Ethiopia the impact of the CRs on the curricular intervention factors change was found to be varied between reform programs (IBCR & OBCR) in terms of instructional media changes.*

Hypothesis 1.3: *The impact of the CRs on the curricular intervention factors changes will be significantly varied between Public, private and NGO's TVET institutions.*

Hypothesis 1.3 was intended to investigate the impact of the CRs conducted since 2001 on the curricular intervention factors between the ownership status of TVET institutions such as Public, private and NGO's institutions. Likewise, this study found that (ANOVA Table 5.22) these factors were found to be statistically significant for *Subject/trade changes* where NGO's TVET institution produced the higher mean when compared with private TVET institutions or public TVET institutions with almost *large* effect size. *Time*

allocation change was the other significant factor where public TVET institution produced the higher mean when compared with NGO's TVET institutions or private TVET institutions with small effect size partial Eta square. The last significant intervention factor was *Technical/scientific change*, where NGO's TVET institution produced higher mean when compared with public TVET institution with small effect size. The other five curricular intervention factors such as *methodology, content, evaluation, professional and instructional media* change differences between the types of institutions were not significant. *In summary, the CRs conducted in Ethiopia have impacted on the curricular intervention factors found variation among the types of institutions (public, private and NGO's institutions) in terms of subject/trade change, time allocation change and technological changes.*

9.3 *Constituency participation in TVET curriculum development*

Since in the Ethiopian TVET system curriculum development is currently the responsibility of the TVET institutions, investigating the constituency participation is important. The literature indicates that different constituencies actually participated in curriculum development, such as Administrators, supervisors, teachers, students, the board of education, Parents, Community representatives, college professors and independent consultants. The survey in Australian findings indicates that heavy involvement was reported by instructors, professionals and directors of the curriculum. Assistant superintendents and principals also had a great deal of involvement. Community-based constituencies, especially parents, had less input. Students, on the average, had little input, and teacher aides almost none. The finding further indicates that at least two-thirds of the respondents thought that administrators, supervisors, teachers, students, the board of education, parents, and community representatives should be involved in curriculum development (Martin, 1986, p. 48). Similar responses have been investigated from this survey, as indicated in the following results of research questions and hypothesis.

Research question 2.0: *Which constituencies are actively engaged in the process of TVET curriculum development?*

Hypothesis 2.0: ***The CRs will have impact on the degree of involvement of constituencies in the process of curriculum development.***

The intention of the second basic question was to indicate the degree to which different constituencies actually participated in the process of TVET curriculum development. The intended constituencies were *Professional TVET teachers, representatives of community/family, selected groups of students, employer representatives, TVET college administrators, independent consultants and TVET curriculum experts.* As a result, more than half of the respondents reported

for *TVET college administrators and TVET curriculum experts* followed by average input from TVET *teachers/instructors and independent consultants*. However, less involvement was reported by as little as one third of respondents for *students, community/families, and employers*.

Curriculum development is currently the responsibility of the TVET institutions. They are obliged to design their own curriculum based on the Ethiopian occupational framework, and the occupational standards provided by the industries. The inspection stage of this study found, based on the officials responsible for curriculum, that "TVET curriculum is not a question of agreement," hence there is no need of voting to decide on the TVET level occupational curriculum. This may hinder/violate especially the involvement of TVET instructors, ". . . putting teachers in a central role in the curriculum design" (Ornstein & Hunkins, 2004). ***Generally****, the study found that the CRs conducted in Ethiopia have impacted positively on the involvement of constituencies in the process of curriculum development regarding TVET college administrators, TVET curriculum experts/specialists in addition to TVET teachers and independent consultants.*

Research question 2.1: *Are the CR impacted on constituencies' degree of involvement in the curriculum development significantly varied between two groups of respondents (TVET instructors and principals), between two reform programs (IBCR and OBCR) and between ownership status of TVET institutions (Public, private and NGO's institutions)?*

Hypothesis 2.1: *There is perceptual variation between TVET college instructors and principals in terms of degree of involvement of constituencies in the TVET curriculum development.*

Hypothesis 2.1 was intended to investigate if there are variations between TVET instructors and principals in terms of the degree of involvement of constituencies in the TVET curriculum development conducted since 2001. The results of t-test show all constituencies, such as *Professional TVET teachers, representatives of community/family, selected groups of students, employer representatives, TVET college administrators, independent consultants and TVET curriculum experts* were found to be non-statistically significant mean difference between TVET instructors and principals. ***To sum up****, the study found that there is no perceptual difference existed between TVET instructors and principals in terms of the involvement of constituencies, in the process of curriculum development in the Ethiopian context.*

Hypothesis 2.2: T*he CRs impacted on the degree of involvement of constituencies in the curriculum development will be significantly varied between the IBCR and the OBCR.*

Hypothesis 2.2 was intended to evaluate whether the CRs impacted on the degree of involvement of constituencies in the curriculum development were significantly varied between the IBCR implemented between 2001 and 2005, and the OBCR implemented between the years 2006 and 2010. Hence, this study (Table 5.24) investigated a statistically significant mean difference between the IBCR and the OBCR for *TVET instructors,* where the OBCR produced the higher mean than the IBCR with a *large* effect size. *TVET student* involvement was another significant item where OBCR produced higher mean than IBCR with closer to medium effect size. Further, *TVET college administrators* were also significant where OBCR produced larger mean than IBCR with a small effect size. Lastly, *TVET curriculum experts/specialists* also significantly varied, where IBCR produced higher mean than OBCR, but the effect size was small. Non-significant items such as *community/family, independent consultants*, and *employers* have produced a non-significant mean difference between IBCR and OBCR. ***In summary****, in Ethiopia the impact of the CRs on the involvement of constituencies in the process of curriculum development varies between reform programs (IBCR & OBCR) in terms of the involvement of TVET instructors, TVET college principals and TVET curriculum experts/specialists.*

Hypothesis 2.3: T*he CRs impacted on the degree of involvement of constituencies in the curriculum development will be significantly varied between the public, private and NGO's TVET institutions*.

Hypothesis 2.3 was intended to investigate the impact of the CRs conducted since 2001 on the degree of involvement of constituencies in the curriculum development process among the ownership status of TVET institutions such as Public, private and NGO's institutions. Consequently, the study investigated (ANOVA Table 5.25) the factors that were found to be statistically significant for *TVET teachers involvement*, where NGO's institutions produced higher mean than public TVET institutions, but partial Eta square effect size was small. Significant differences were also identified for *TVET students' involvement,* where Public TVET institutions produced higher mean than NGO's TVET institutions, however Partial Eta square effect size was small. Last of all, the involvement of *TVET college administrators* also significantly varied from college to college. For example, NGO's institution produced higher mean than public TVET institutions or when compared with private TVET institutions, however Partial Eta square effect size was small. ***To sum up****, the impact of the CRs conducted in Ethiopia on the involvement of constituencies in the curriculum development was found to be varied between the type of institutions in terms of college administrators, TVET teachers and selected groups of students.*

Participation in curriculum design

Specifically, this study also tried to investigate the participation of instructors and principals in curriculum design and compare by the characteristics of the respondents such as *gender, work status, ownership status of institutions, qualification, age and experience*. As indicated earlier, currently, curriculum design in Ethiopia is the responsibility of TVET institutions, which provide high opportunity to instructors and principals within the institutions.

Hypothesis 2.4: T*he participation of instructors and principals in the curriculum design will be significantly varied between the characteristics of respondents (gender, work status, ownership status of institutions, qualification, age and experience).*

The inferential statistics (Chi-square) of this study shows that the participation of instructors and principals in the process of curriculum design was statistically significant different between the types of institutions, where more participants were assigned from the NGO's institutions than the public and private institutions with almost medium effect size. Whereas the other characteristics such as Gender, work status, qualification, age and experience have no light shade on the difference in the participation of the curriculum design.

9.4 *Nature/extent of curricula review in TVET course of studies*

Research question three is inspired by necessity to investigate to what extent the new benchmarking influences the curriculum changes in the context of the Ethiopian TVET CR. The literature on the nature of curriculum review shows the following broad categories of curriculum change that are investigated. Such as: Introduction of a whole new program or a specialized stream at the specified level, the introduction of a whole new (course-work) program at the specified level, introduction of a new subject, or the deletion of an existing subject, change to or within a first-year or other core subject, and change to or within an elective subject. The study tries to answer the basic questions and hypothesis with sub hypotheses in the following section.

Research question 3.0: *To what extent have the CRs impacted on the nature of the curricula reviewed in TVET course of studies?*

Hypothesis 3.0: ***The CRs will have impact on the extent/nature of contents reviewed in TVET course of studies.***

This third part of the basic question was intended to evaluate the *extent upon which CRs impacted on the nature of contents reviewed, in the TVET course of studies.* The items were: *Continuation of the curricula with no change, continuation of the curricula with modifications, termination of the*

course of studies, and replacement of the course of study by the new one. This study found that more than *two thirds* of the respondents come into consensus to *modification of the curricula* and almost one third of respondents to *replacement of course of studies, termination of course of studies and no change of contents in the curricula sequentially.* ***Generally,*** *the CRs conducted in Ethiopia have impacted on the nature of curricular review with more modification of the curricula followed by replacement, termination and the continuation of curricula with no change.*

Research question 3.1: *Is the impact of the CRs on the nature of curricula reviewed in TVET course of studies significantly varied between two groups of respondents (TVET instructors and principals), between two reform programs (IBCR and OBCR) and among the ownership status of TVET institutions (Public, private and NGO's institutions)?*

Hypothesis 3.1: *The impact of the curricular reform on the nature of contents reviewed in TVET course of studies will be significantly varied between two respondents (TVET instructors and principals),*

Hypothesis 3.1 intended to investigate if there are variations between TVET instructors and principals in terms of the extent of contents reviewed in the TVET course of studies conducted since 2001. Thus, the result shows non-significant variation between TVET instructors and principals for all items of the *nature of the curricula review* such as a continuation of *the curricula with no change, continuation of the curricula with modifications, termination of the course of studies, and the replacement of the course of study by the new one.* ***In summary,*** *the impact of the curricular reform conducted in Ethiopia on the nature of contents review is found to be of no perceptual difference existed between instructors and principals.*

Hypothesis 3.2: *The impact of the curricular reform on the nature of contents reviewed in TVET course of studies will be significantly varied between two reform programs (IBCR and OBCR).*

Hypothesis 3.2 was intended to evaluate whether *The impact of the curricular reform on the nature of contents reviewed in the TVET course of studies* varied significantly between the input-base CRs (IBCR) implemented between 2001 and 2005, and the outcome-based CR (OBCR) implemented between the years 2006 and 2010. Hence, this study (t-test Table 5.26) investigated a statistically significant mean difference between the IBCR and the OBCR for *continuation of the curricula with modifications,* where the OBCR produced the higher mean than the IBCR but the effect size was closer to medium size. In addition to this, the curricula *replacement of the course of study by the new one* was also statistically significant, where the IBCR produced higher mean than the OBCR but the effect size was small. ***In general,*** *the study verified that the impact of the CRs conducted in*

Ethiopia on the nature of curricula was varied between the IBCR and OBCR. For example, during the OBCR the curricula continued with modification, whereas during IBCR the curricula tended to be replaced by the new one.

Hypothesis 3.3: *The impact of the curricular reform on the nature of contents reviewed in the TVET course of studies will be significantly varied among various ownership statuses of TVET institutions (Public, private and NGO).*

Hypothesis 3.3 was intended to investigate the impact of the curricular reform upon the nature of contents reviewed in the TVET course of studies and its variation among the ownership status of TVET institutions such as Public, private and NGO. Consequently, the study results (ANOVA Table 5.27) show all items were found to be statistically significant. For example, "*continuation of the curricula with no change*", where NGO's institutions produced lower mean than private TVET institutions, or when compared with public institutions, effect size was small. Significant difference was also identified for "*continuation of the curricula with modifications*", where Public TVET institutions produced higher mean than private TVET institutions, or when compared with NGO's TVET institutions, the Partial Eta square effect size was small. The other significant difference was also identified for "*termination of the course of studies*", where private TVET institutions produced higher mean than NGO's TVET institutions, but the effect size was small. Lastly, "*replacement of the curricula the by new course of study*" also significantly varied from institution to institution, for example, NGO's institution produced lower mean than private TVET institutions or when compared with public TVET institutions, but the effect size was small. **In summary,** *the study found that the impact of the CRs on the nature of contents of TVET curricular changes in Ethiopia was found to be varied between public, private and NGO's institutions, where modification, replacement of course of studies and no change of contents was applied more in public TVET institutions, whereas termination of courses were conducted more in private TVET institutions in Ethiopia.*

9.5 *Causes of TVET CRs*

The literature on the drivers of curriculum change by Gruba et al., (2004) identified ten significant factors affecting curriculum change in Australia such as: Government policy & regulations, Student ability, Student viewpoint, Staff issues, Influence of accreditation bodies, Employer/industry viewpoint, Influential individuals, Academic fashion, Academic merit and financial pressure. For the purpose of this study, two additional factors were added for further evaluation that were assumed as drivers of curricular changes in the Ethiopian context such as "Adaptation of new

curriculum (benchmarking)" and "Inadequacy of the TVET curriculum to provide employability skill in the job market". Similar responses have been investigated from this study as indicated in the following results of research questions and hypothesis.

Research question 4.0: *Which factors/causes of reforms have substantially enforced the CRs in Ethiopia since 2001?*

Hypothesis 4.0: Factors of reform (*Organizational, personal & legal/economic factors) will substantially enforce the CRs in Ethiopia*.

This fourth part of the basic question was intended to investigate the factors that *cause the TVET curricula to change in Ethiopia.* The intended factors were: ***Organizational factors*** *(influence of accreditation bodies, Benchmarking, influential individuals, Academic fashion and Academic merit),* ***Personal factors*** *(Student ability, student viewpoint, staff issues, and Employer industry viewpoint) and* ***legal/economic factor*** *(Government policy regulations, and financial pressure),* in addition to "*the inadequacy of the TVET curriculum to provide employable skill in the labor market*".

This study found that *Government policy & regulation and Student viewpoint (Labor market employment needs)* were the main causes of CRs as reported by more than three fourths of respondents. In second place, more than two third of respondents reported, the *dissatisfaction of students with the methodology* (*Student ability) and financial pressure.*

In third place, more than half of respondents reported *Staff issues (Change of Professional staff), Employer/industry viewpoint (Influence of employers)* and *Academic merit (Need to change trades/courses) as* the causes for the TVET CRs conducted between 2001 and 2010. More or less *Academic fashion (Market & industry shift), Inadequacy of TVET curriculum to provide employable skill in the labor market, Influential individuals (Influence of TVET experts), Influence of accreditation bodies (Quality assurance)* and *Need to Change by a new benchmark* had roles to influence the CRs in the vocational education of Ethiopia.

Additionally, as the data derived from factor analysis the descriptive statistics (Table 5.29), for the causes of CRs show that the Factor 3, *Legal/economic* factors produced the higher mean rather than the Factor 2, *Personal factors* when compared with the Factor 1, *Organizational* factors, *suggesting that among the causes of CRs Legal/economic factors highly enforced the TVET curriculum to be reformed, followed by Personal and Temporal factors.*

A decision support model that influences TVET CRs

Based on the mean results found from factor analysis, the following supportive model for decision of the CRs in the Ethiopian context is developed.

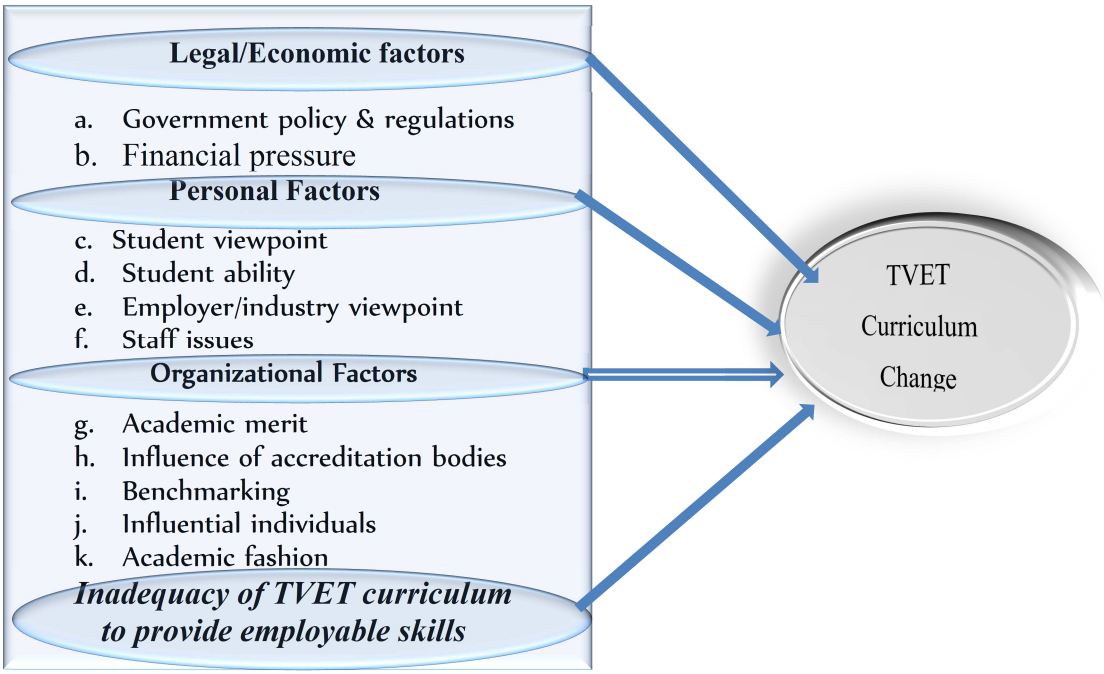


Figure 9-2 : Factors influencing curriculum change

The above model shows the driving factors of reforms from top to bottom, for example, the highest mean (Table 5.29) produced by legal/economic factors followed by personal factors and organizational factors. Individually, it displays from higher to lower mean results under each factor loadings, for instance, government policy, student viewpoint and academic merit were assumed to be the highest influencing factor for the decision of CR. ***In general***, *the model depicts that the main influencers of TVET CRs in Ethiopia were found to be the legal/economic factors, followed by personal factors and organizational factors.* Exceptionally, *inadequacy of TVET curriculum to provide employable skill* to the labor market was substantially influence the decision to curriculum reform in Ethiopia.

Research question 4.1: *Are these causes of the CRs (Organizational, personal & legal/economic factors) significantly varied between two groups of respondents (TVET instructors and principals), between two reform programs (IBCR and OBCR) and among the ownership status of TVET institutions (Public, private and NGO)?*

Hypothesis 4.1: *The factors that cause to reform the TVET curriculum will be significantly varied between two respondents (TVET instructors and principals),*

Hypothesis 4.1 was intended to investigate if there are variations between TVET instructors and principals in terms of *the causes of TVET CRs implemented in Ethiopia since 2001*. Consequently, the results of the t-test shows non-significant variation between TVET instructors and principals for all items of the *causes of the curricula reform,* such as: "*influence of accreditation bodies, Benchmarking, influential individuals, Academic fashion and Academic merit, Student ability, student view point, staff issues, and Employer industry view point, government policy regulations, and financial pressure in addition to in adequacy of TVET curriculum to provide employable skill in the labor market*". ***To sum up,*** *this study found no perceptual variation existed between TVET instructors and principals in terms of the factors influencing the Ethiopian TVET curriculum to change.*

Hypothesis 4.2: *The factors* (*Organizational, personal & legal/economic factors) that cause the TVET curriculum to be reformed will be significantly varied between two reform programs (IBCR and OBCR).*

Hypothesis 4.2 was intended to evaluate whether *the causes of TVET CRs implemented in Ethiopia since 2001* were significantly varied between the input-base CRs (IBCR) implemented between 2001 and 2005 and the outcome-based CR (OBCR) implemented between the years 2006 and 2010. Hence, this study investigated (t-test Table 5.30) a statistically significant mean difference between the IBCR and the OBCR for ***Organizational factors of CRs***, where the OBCR produced higher mean than the IBCR but the effect size was small. However, it was not significant for ***Personal factors of CRs*** and ***legal/economic factor CRs***. Further, the factor "*Inadequacy of TVET curriculum to provide employable skill in the labor market*" was also not significant. ***Generally****, this study statistically proved that the factors that influence the Ethiopian TVET curriculum to change were found to be varied between IBCR and OBCR in terms of Organizational factors.*

Hypothesis 4.3: *The factors* (*Organizational, personal & legal/economic factors) that cause the TVET curriculum to be reformed will be significantly varied among ownership status of TVET institutions (Public, private and NGO)*

Hypothesis 4.3 was intended to investigate whether *the causes of TVET CRs implemented in Ethiopia since 2001* varied among the ownership status of TVET institutions such as Public, private and NGO's institutions. Consequently, this study found that (ANOVA Table 5.31) ***Organizational factors of CRs*** were found to be statistically significant, where public institutions produced higher mean than private TVET institutions, or when compared with NGO's institutions, but the partial Eta square effect size was small. A significant difference was also identified for ***legal/economic factor CRs***, where private TVET institutions produced higher mean than Public TVET institutions, or

when compared with NGO's TVET institutions, though the Partial Eta square effect size was medium. The other significant difference was also identified for *"Inadequacy of TVET curriculum to provide employable skills in the labor market"*, where public TVET institutions produced higher mean than Private TVET institutions, or when compared with NGO's TVET institutions, however the Partial Eta square effect size was medium. ***To sum up,*** *this study statistically proved that various factors could influence decisions to change the Ethiopian TVET curriculum, and found to be varied between different types of TVET institutions, in terms of Organizational factors, legal/economic factors and "Inadequacy of TVET curriculum to provide employable skills in the labor market".*

9.6 *Internal factors influencing effective implementation of TVET CRs*

Literatures identifies factors that influence curriculum implementation. For example, Posner (1995) identified seven areas, called "*frame factors*" that can affect curriculum implementation such as temporal, physical, political-legal , organizational , personal economic and cultural factors. These factors are typically thought of, as inhibitors to implementation, but strong curricular leadership are able to minimize the negative impact of frame factors. In the Ethiopian context, this study tries to investigate the internal factors that influence the effective implementation of CRs in Ethiopia since 2001. The following basic questions, hypotheses and sub hypotheses are proved by this study.

Research question 5.0: *Which internal factors substantially influence the effective implementation of TVET CRs in Ethiopia?*

Hypothesis 5.0: ***Internal* factors of reform (Physical, Personal & Temporal factors) *will substantially influence the effective implementation of TVET CRs in Ethiopia*.**

This fifth part of the basic question was intended to investigate the *internal factors influencing the effective implementation of TVET CRs in Ethiopia.* The intended factors were: ***Physical factors*** (*subject area objective set, application of teaching methods, organization of modular contents in TVET courses, assessment and evaluation process of learning outcomes, and availability of instructional materials such as computers).* ***Personal factors*** *(professional TVET teachers' teaching skills & experiences, awareness of teaching staff to TVET, motivation of teaching staff, and background & inherent cognitive skills of TVET students).* And ***Temporal factors*** *(usage of assigned time allocation to TVET courses and number of students in a class (class size))*

In the first place, this study identified three factors. For example, the *assessment and evaluation process of learning outcomes, organization of modular contents in TVET courses* and *class size* are

found the most important driving factors of effective implementation of the CRs in Ethiopia, as reported by 60-64% of respondents.

In second place, four factors were reported by 52-59% of respondents, such as *availability of instructional materials (such as computers), awareness of teaching staff to TVET, professional TVET teachers' teaching skills & experiences* and *application of teaching methods.*

In the third place, it was reported by 31-49% of respondents for *usage of assigned time allocation to TVET courses, motivation of teaching staff* and *background & inherent cognitive skill of TVET students as* drivers to the effective implementation of the TVET CRs in Ethiopia.

Additionally, descriptive statistics (Table 5.34), shows the factor analysis of internal factors, where *Factor 1:* Physical factors produced a higher mean than *Factor 3:* Temporal factors when compared with *Factor 2:* Personal factors. ***To sum up****, this study shows that among the internal factors, physical factors were found to be played the highest driving role in the effective implementation of the CRs followed by temporal factors and personal factors.*

Research question 5.1: *Are these internal factors (Physical, Personal & Temporal factors) influencing the effective implementation of the TVET CRs significantly varied between two groups of respondents (TVET instructors and principals), between two reform programs (IBCR and OBCR) and among ownership status of TVET institutions (Public, private and NGO's institutions)?*

Hypothesis 5.1: *Internal factors influencing the effective implementation of the TVET CRs will be significantly varied between two groups of respondents (TVET instructors and principals),*

Hypothesis 5.1 was intended to investigate if there are variation between TVET instructors and principals in terms of *the internal factors influencing the effective implementation of the TVET CRs implemented in Ethiopia since 2001.* Consequently, the results of t-test shows statistically significant variation between TVET instructors and principals only for *application of teaching methods, where principals produced higher mean than instructors with small effect size,*

The t-test produced a non-significant variation between TVET instructors and principals, for the rest 10 items of the *internal factors.* For example, *subject area objective set, organization of modular contents in TVET courses, assessment and evaluation process of learning outcomes, availability of instructional materials (such as computers), professional TVET teachers' teaching skill & experience, awareness of teaching staff to TVET, motivation of teaching staff, and*

background & inherent cognitive skill of TVET students, usage of assigned time allocation to TVET courses and number of students in a class (class size). ***Generally,*** *this study identified that no perceptual difference was existed between instructors and principals in terms of internal factors influencing effective implementation of CRs in Ethiopia except one factor, "application of methodology".*

Hypothesis 5.2: *Internal factors (Physical, Personal &Temporal factors) influencing the effective implementation of the TVET CRs will be significantly varied between the two reform programs (IBCR and OBCR), ownership status (public, private, and NGO's institutions), likewise the interaction effect (reform programs X ownership status).*

Hypothesis 5.2 was intended to evaluate whether the i*nternal factors influencing the effective implementation of the TVET CRs implemented in Ethiopia since 2001* were significantly varied between two reform programs (IBCR and OBCR), ownership status (public, private, and NGO) and the interaction effect (Reform programs X Ownership status). Hence, the Factorial ANOVA (Table 5.35) yielded for ***Organizational/physical factors of CRs*** non-statistically significant mean difference between the reform programs (IBCR and the OBCR) and also not significant mean difference between ownership status (public, private and NGO). However, the interaction effect (Reform program X Ownership status) results in statistically significant, yet post hoc comparison yielded no significant pairwise differences.

Furthermore, factorial ANOVA yielded a significant F-ratio for ***Personal factors of CRs*** between ownership status (public, private & NGO), where public institution produced lower mean than NGO's institution or when compared with private institution with medium partial Eta square effect size. There was no significant F-ratio for reform programs (IBCR & OBCR) and for interaction effect (Ownership status X reform programs).

Factorial ANOVA also yielded a significant F-ratio for ***temporal factors of CRs****, between ownership* status (public, private & NGO), where private institution produced lower mean than NGO's institution with small partial Eta square effect size. Yet, no significant result for reform programs (IBCR & OBCR) and for interaction effect (Ownership status X reform programs). ***In summary,*** *this study has proved that among internal factors influencing effective implementation of CRs in Ethiopia, in terms of organizational/physical factors of reform no significant variation existed between reform programs (IBCR & OBCR). Here, also no variation existed between ownership status of institutions (public, private and NGO's) but variation existed between interaction effect (Reform program X Ownership status), whereas in terms of personal factors as*

well as temporal factors of CR variation was existed between Ownership status of institutions (public, private & NGO's). No variation was seen between reform programs (IBCR & OBCR) and the interaction effect (Reform program X Ownership status).

9.7 *External factors influencing effective implementation of TVET CRs*

Literature indicates that the factors influencing implementation of curriculum changes, for example, Mâţă (2012, p. 216) presents a holistic overview upon factors affecting the implementation of curriculum involved in the curriculum change. They are cultural, economic, political, organizational, psychological, pedagogical, legal, and technological, in addition to the "frame factors" (Posner 1995). This study also tries to investigate the external factors that influence the effective implementation of CRs in the Ethiopian context since 2001. The following basic questions, hypotheses and sub hypotheses are proved by this study.

Research question 6.0: *Which external factors substantially influence the effective implementation of TVET CRs?*

Hypothesis 6.0: ***External factors of reform (Legal/political, Social/cultural, Technological and Financial factors) will substantially influence the effective implementation of TVET CRs in Ethiopia***.

This sixth part of the basic question was intended to investigate the *external factors that influence the effective implementation of TVET CRs in Ethiopia.* The selected factors were: ***Legal/political factors*** (*TVET Policy practice, national labor market influence on TVET, external relation to develop TVET, and adaption of the external curriculum (benchmarking) [administrative practice]).* ***Social /cultural factors*** *(employers need to TVET graduates, family influence on TVET, cultural appropriateness to TVET, and social attitude to TVET).* ***Technological factors*** *(accessibility of ICT in TVET colleges, network & linkage system to develop TVET, and external technical support to develop TVET, [globalization and research development]).* ***Financial Factors*** *(salary of TVET instructors, budget allocation to TVET, and foreign financial aid to TVET (donors)).*

This study found that among the influential factors for the effective implementation of CRs in Ethiopia, *Benchmarking* has the highest role of driving effective implementation but the *salary of instructors* has the lowest role. Almost two thirds of respondents reported to *benchmarking* as a driver to effective implementation of the CRs in Ethiopia. More than half of respondents (50-58%) reported in second place the *External technical support to develop TVET, budget allocation to TVET, globalization, family influence on TVET, and social attitude to TVET supported as drivers to effective implementation.*

In the third place, (44-49%) viewed at *foreign financial aid to TVET (Donors), TVET Policy practice, Cultural appropriateness to TVET, Network & linkage system to develop TVET, Administrative practice, National labor market influence on TVET,* and *External technical support to develop TVET as important driving factors*.

As the last place was reported by 31-38% of respondents. This includes *accessibility of ICT in TVET colleges, employers' need of TVET graduates, research development and salary of TVET instructors as* motivation for the effective implementation of the TVET CRs conducted between 2001 and 2010.

The descriptive statistics (Table 5.42) displays the external factors and individual items dropped out from the factor analysis. Hence, the *Factor 1: Legal/political factors* produced higher mean than *Factor 2: Social/cultural factors* when compared with the *Factor 3: Financial factors* or when compared with Factor 4: *Technological factors*. ***To sum up,*** *this study indicated that among the external factors, legal/political factors have found to be played the highest driving role in the effective implementation of the CRs followed by Social/cultural factors, and Financial factors in addition to Technological factors. Individually, administrative practice, research development and globalization also played a role.*

Research question 6.1: *Are the external factors influencing effective implementation of the TVET CRs significantly varied between two groups of respondents (TVET instructors and principals), between two reform programs (IBCR and OBCR) and among ownership status of TVET institutions (Public, private and NGO's institutions)?*

Hypothesis 6.1: *External factors influencing the effective implementation of the TVET CRs will be significantly varied between two groups of respondents (TVET instructors and principals),*

Hypothesis 6.1 was intended to investigate if there are variation between TVET instructors and principals in terms of *the external factors influencing the effective implementation of the TVET CRs implemented in Ethiopia since 2001*. Consequently, the results of t-test shows statistically significant variation between TVET instructors and principals for *Accessibility of ICT,* where instructors produced higher mean than principals with small effect size.

The t-test produced non-significant variations between TVET instructors and principals for the last 16 items of the *external factors.* For example, *TVET policy practice, national labor market influence on TVET, external relations to develop TVET, and adaption of external curriculum*

(Benchmarking),[administrative practice], the *employers need of TVET graduates, family influence on TVET, cultural appropriateness to TVET, and social Attitude to TVET, Network & linkage system to develop TVET, and external technical support to develop TVET, globalization and research development, salary of TVET instructors, budget allocation to TVET, and foreign financial aid to TVET (donors).* ***In general,*** *this study proved that there were no perceptual variation existed between TVET instructors and principals in terms of external factors influencing effective implementation of TVET CRs in Ethiopia, except accessibility of ICT that shows significant*.

Hypothesis 6.2: *External factors (legal/political, social/cultural, technological and financial factors) influencing the effective implementation of the TVET CRs will be significantly varied between the two reform programs (IBCR and OBCR), ownership status (public, private, and NGO's institutions), likewise the interaction effect (reform programs* **X** *ownership status).*

Hypothesis 6.2 was intended to evaluate whether the ex*ternal factors influencing the effective implementation of the TVET CRs implemented in Ethiopia since 2001* were significantly varied between two reform programs (IBCR and OBCR), ownership status (public, private, and NGO's institutions) and the interaction effect (Reform programs X Ownership status).. Hence, the Factorial ANOVA (Table 5.43) yielded for ***Legal/political factors of CRs*** statistically significant F-ratio for ownership status (public, private and NGO), where Public produced higher mean than private but the partial Eta square was small. However, Factorial ANOVA resulted in a non-statistically significant mean difference between the types of reforms (IBCR and the OBCR) and for the interaction effect (Reform types X Ownership status).

Furthermore, factorial ANOVA (Table 5.45) resulted in a significant F-ratio for ***Social/cultural factors of CRs*** between ownership status (public, private & NGO's institutions), where public institution produced higher mean than private institutions, or when compared with NGO's institutions with medium partial Eta square effect size. But no significant F-ratio produced for the types of reform (IBCR & OBCR) and for interaction effect (Ownership status X reform types).

Factorial ANOVA (Table 5.47) also produced a significant F-ratio for ***technological factors of CRs***, between reform programs (IBCR & OBCR), where OBCR produced higher mean than IBCR with large partial Eta square effect size. However, no significant F-ratio produced for *ownership* status (public, private & NGO's institutions) and for interaction effect (Ownership status X reform programs).

Finally, the Factorial ANOVA (Table 5.49) yielded for ***Financial factors of CRs*** statistically significant F-ratio among ownership status (public, private and NGO), where public produced higher mean than private but effect size was small. Here, Factorial ANOVA yielded non-statistically significant F-ratio between the reform programs (IBCR and the OBCR) and also for the interaction effect (Reform program X Ownership status).

During the process of factor analysis, three individual items were dropped out from the scale, such as *administrative practic*e, *research development* and *globalization*. Hence, a t-test resulted in significant value for TVET *administrative practice*, where OBCR produced higher mean than IBCR for the effective implementation of CRs but the effect size was small. Furthermore, a t-test found a significant value for the *Globalizatio*n influence to TVET curriculum, where IBCR produced higher mean than OBCR for effective implementation of the CRs in Ethiopia with medium effect size, though non-significant result generated for *research development*.

Here the ANOVA also calculated and found a significant value for *globalization* influence on the TVET curriculum, where NGO produced higher mean than private but partial Eta square effect size was small. The ANOVA, however did no yield significant value for TVET *administrative practice* and *research development* factors, suggesting no significant influence demonstrates on the difference among the ownership status for the effective implementation of the CRs in Ethiopia.

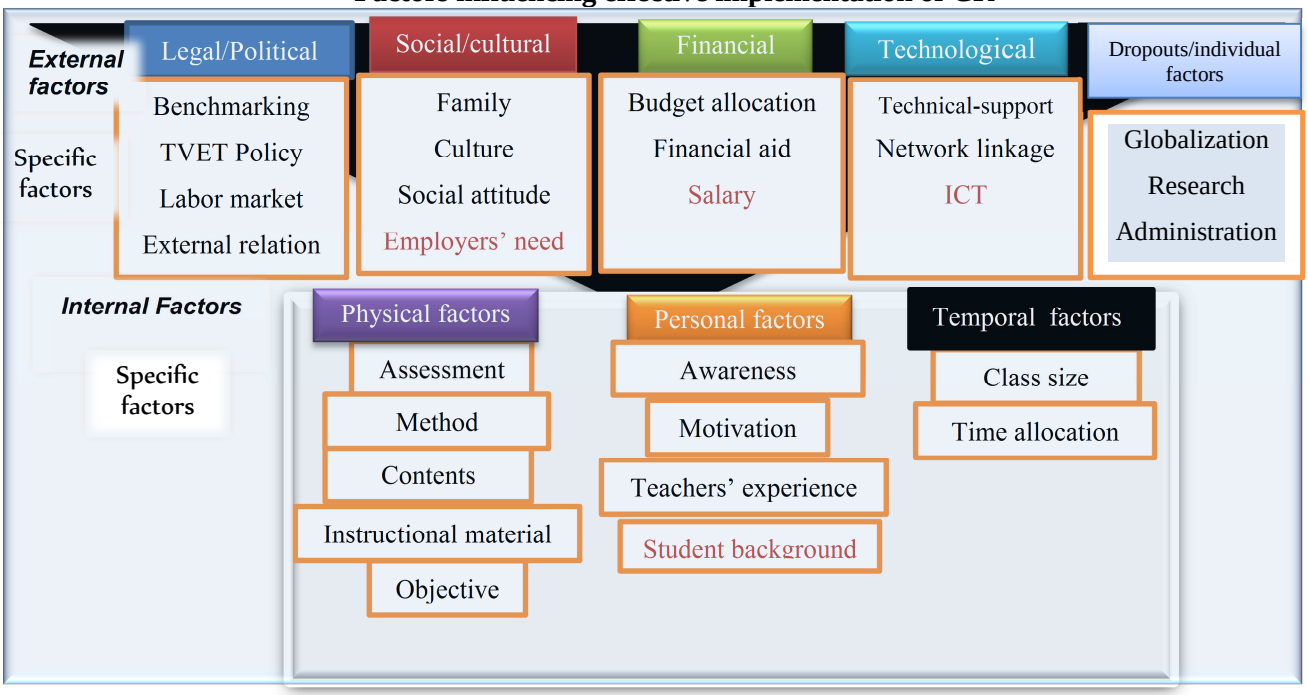
To sum up*, this study found that the external factors influencing effective implementation of CRs in Ethiopia were legal/political, social/cultural, and financial factors of CR. Here variation was existed between Ownership status of institutions (public, private & NGO), yet variation existed neither between reform programs (IBCR & OBCR) nor between the interaction effect (Reform program X Ownership status). On the other hand, in terms of technological factors, variation was existed between Reform programs (IBCR & OBCR) but variation was existed neither between Ownership status of institutions (public, private & NGO's) nor between the interaction effect (Reform program X Ownership status). Individually, administrative practice and globalization influence were found to be varied between IBCR and OBCR but not for research development. Further difference existed among public, private and NGO for globalization but not for administrative practice and research development for the effective implementation of TVET CRs.*

9.7.1 **Model supporting factors influencing effective implementation of CR**

This study recommends a new model (Figure 9.3), that within the context of factors influencing effective implementation of CR. A modified model developed from Bransch (2005 p. 44) in this

study on Figure 3.8 offered an appropriate starting point for the model development in this study. This model was developed based on the mean results (mean > 3.0 as a driver) that may influence the effective implementation of CRs in the Ethiopian TVET context from the perspectives of instructors and principals of the TVET colleges in Addis Ababa. The findings of the study from factor analysis (Table 5.33 and 5.41) and the inferential statistics provided a basis to revise the model as presented below.

Factors influencing effective implementation of CR



Source: Modified from Branisch (2005, p. 44)

Figure 9-3: Factors influencing effective implementation of CR

In summary, the model explores the context of factors influencing the effective implementation of TVET CRs conducted in Ethiopia in two different period since 2001, i.e., 2001 to 2005 as 10+system (IBCR) and 2006 to 2010 as Level system (OBCR). Based on the findings, the highest drivers for implementation are placed at the top of each factor loadings in the model, for example, *benchmarking, family influence, budget and technical support, assessment, awareness and class size*. In contrast, *salary of staff, the availability of ICT, employers need to TVET graduates* and *students background* were reported as hindrances to effective implementation of TVET curriculum in Ethiopia.

9.8 *Impact indicators of CRs*

The literature on the impact of CR provided six indicators to evaluate the impact of TVET on the nine European countries such as access, graduation, employability, quality of education, cost

effectiveness and mobility (Cedfop 2010). In this research in addition to these indicators additional four indicators were include such as: creating a competent/skilled workforce, creating access to trainees for competency assessment, new methods of training, and time table/schedule adjustment to evaluate the impact indicators of CRs implemented in Ethiopia since 2001. The following basic questions, hypotheses and sub hypotheses are proved by this study.

Research question 7.0: *Which of the key indicators have been impacted by the CRs in Ethiopia since 2001?*

This seventh part of the basic question was intended to evaluate the *impact indicators of TVET CRs implemented in Ethiopia since 2001*. The indicators were: *Access the program of study (enrolment rate), graduation rates, employability, quality training, creating a competent/ skilled workforce, creating access to trainees for competency assessment, cost-effectiveness, new methods of training, and time table/schedule adjustment.*

Hypothesis 7.0: The TVET CRs will have positive affect on the estimated impact indicators of the implemented curricula.

This study found that the highest positive impact of the CRs leaned towards *quality of training* but *cost effectiveness* was the least indicator that impacted by the reforms. Almost two thirds of respondents reported to *quality of training* as a positive indicator of the TVET CRs in Ethiopia since 2001. Yet, from 51-59% reported that the CRs have impacted positively to, *"Enrolmen*t *rate, Employability of graduates, New methods of training, and Creating a competent/skilled workforce"*. As a third rank, from 40-49% of respondents reported as a positive impact of the CRs to *"Graduation rates, Creating access to trainees for competency assessment, and Time table/schedule adjustment" successively.* ***In summary****, this study proved that the CRs implemented in Ethiopia since 2001 have impacted positively on the estimated indicators such as enrollment, graduation rate*, quality, employment, methodology, time schedule and competency.

Research question 7.1: *Are these impact indicators of the TVET CRs significantly varied between two groups of respondents (TVET instructors and principals), between two reform programs (IBCR and OBCR) and among ownership status of TVET institutions (Public, private and NGO's institutions)?*

Hypothesis 7.1: *Impact indicators of the TVET CRs will be significantly varied between two groups of respondents (TVET instructors and principals),*

Hypothesis 7.1 was intended to investigate if there were variations between TVET instructors and principals in terms of *impact indicators* of the TVET CRs implemented in Ethiopia since 2001.

Consequently, the results of t-test shows statistically significant variation between TVET instructors and principals for "*Enrollment rate"*, where instructors produced higher mean than principals with small effect size. Further, the t-test yielded a significant value for "*Access to competency assessment"*, where instructors produced higher mean than principals with medium effect size.

However, *the t-test produced* non-significant variation between TVET instructors and principals for the rest 7 items of the *impact indicators,* such as: *Graduation rates in my area of study, employability of graduates, quality of training, creating a competent/ skilled workforce, cost-effectiveness, new methods of training, and time table/schedule adjustment.* ***To sum up,*** *this study shows that the impact indicators of the TVET CRs were found to be conceptually varied between TVET instructors and principals, in terms of "Access to competency assessment" and "Enrollment rate"*

Hypothesis 7.2: *Impact indicators of the TVET CRs will be significantly varied between two reform programs (IBCR and OBCR).*

Hypothesis 7.2 was intended to identify whether *Impact indicators of the TVET CRs* were significantly varied between the IBCR implemented between 2001 and 2005 and OBCR implemented between the years 2006 and 2010. Hence, the t-test resulted in statistically significant mean difference between the IBCR and the OBCR for indicators such as *graduation rates* and *time adjustment of course hours had almost medium effect sise,* but *access to competency assessment* and *cost effectiveness had small effect size, ,* where the OBCR produced the higher mean than the IBCR (see Table 5.53). ***To sum up,*** *this study shows that the impact indicators of the TVET CRs were found to be varied between IBCR and OBCR, in terms of "graduation rates, access to competency assessment, cost effectiveness, and time adjustment of course hours".*

Hypothesis 7.3: *Impact indicators of the TVET CRs will be significantly varied among three ownership status (public, private and NGO's TVET institutions).*

Hypothesis 7.3 was intended to investigate whether *Impact indicators of the TVET CRs implemented in Ethiopia since 2001* varied among the ownership status of TVET institutions such as Public, private and NGO's institutions. Consequently, the results of ANOVA (Table 5.54) were found to be statistically significant for *Access to enrollment, and Cost-effectiveness, where* NGO's TVET institutions produced higher mean than Public TVET institutions or when compared with private TVET institutions. Further, ANOVA found also statistically significant value for *Quality of training (almost medium effect size) for Graduation rates, Employability of graduates, creating a competent/skilled workforce, New methods of training, and Time table/schedule adjustment (small*

effect size), where NGO's institutions produced higher mean than private TVET institutions. ***To sum up,*** *the findings of the study shows that the impact indicators of the TVET CRs were found to be varied between public, private and NGO's TVET institutions, in terms of "access to enrollment, and cost-effectiveness, graduation rates, employability of graduates, quality of training, creating a competent/skilled workforce, new methods of training, and time table/schedule adjustment".*

9.9 *Graduate relevance indicators of TVET CRs*

In literature, different authors suggest the relevance indicators to graduates and employer. For example, according to OECD DAC (2008) the impact of a curriculum depends on the design of a specific intervention, such as: *changes in the income of employee, improving competency of individuals, changing the status of graduate employees and industry, increasing productivity, change the attitude of society towards TVET, changing equity, access, efficiency and accountability, an improved living standard for employees or a lower rate of unemployment*. In this study the graduate relevance indicators of TVET CRs in the Ethiopian context encompasses such indicators as unemployment, paid employment, qualification level, quality of job, self-employment and further education. The following basic questions, hypotheses and sub hypotheses are proved by this study.

Research question 8.0: *Which graduate relevance indicators have been significantly impacted by the TVET CRs in Ethiopia?*

This eighth part of the basic question intended to identify the *graduate relevance indicators of TVET CRs implemented in Ethiopia since 2001*. The indicators are "*The curricula minimized unemployment rate of TVET graduates, the curricula provided TVET graduates with paid employment opportunity, the curricula provided access to make the qualification of TVET graduates match with the labor market, the curricula increased the quality of jobs found by the TVET graduates, the curricula prepared TVET graduates for self-employment,* and *the curricula provided access for further training for TVET graduates".*

Hypothesis 8.0: The TVET CRs will have positive impact on the estimated graduate relevance indicators.

This study investigated the impact of the CRs in Ethiopia that have impacted on "*The curricula prepared TVET graduates for self-employment*" reported by more than half of respondents as the first choice of graduate indicators, the least was reported for "*The curricula minimized unemployment rate of TVET graduates".* Yet, 44-49% of respondents reported that "T*he curricula provided TVET graduates with paid employment opportunity, the curricula provided access for*

further training for TVET graduates, the curricula increased the quality of jobs found by the TVET graduates, and the curricula provided access to make the qualification of TVET graduates match with the labor market", as the graduate relevance of the CRs implemented in Ethiopia since 2001. ***To sum up,*** *this study indicated that the CRs implemented in Ethiopia have impacted to a certain extent on the estimated graduate relevance indicators.*

Research question 8.1: *Are these graduate relevance indicators of the CRs significantly varied between two groups of respondents (TVET instructors and principals), between two reform programs (IBCR and OBCR) and among ownership status of TVET institutions (Public, private and NGO's institutions)?*

Hypothesis 8.1: *Graduate relevance indicators of the TVET CRs will be significantly varied between two groups of respondents (TVET instructors and principals),*

Hypothesis 8.1 was intended to investigate if there are variations between TVET instructors and principals in terms of *graduate relevance indicators of the TVET CRs implemented in Ethiopia since 2001*. Consequently, the results of t-test show statistically significant variation between TVET instructors and principals for *"The curricula provided access for further training for TVET graduates"*, where instructors produced higher mean than principals with small effect size.

However, *the t-test produced* non-significant variation between TVET instructors and principals for the other five items of the *graduate relevance indicators*, such as: *The curricula minimized unemployment rate of TVET graduates, the curricula provided TVET graduates with paid employment opportunities, the curricula provided access to make the qualification of TVET graduates match with the labor market, the curricula increased the quality of jobs found by the TVET graduates,* and *the curricula prepared TVET graduates for self-employment"*. ***In summary,*** *this study shows that the CRs implemented in Ethiopia since 2001 impacted on graduate relevance indicators and were found to be conceptually similar between TVET instructors and principals except that "The curricula provided access to further training of TVET graduates"*.

Hypothesis 8.2: *Graduate relevance indicators of the TVET CRs will be significantly varied between two reform programs (IBCR and OBCR).*

Hypothesis 8.2 was intended to identify whether *Graduate relevance indicators of the TVET CRs* were significantly varied between the IBCR and OBCR. Hence, the t-test resulted in statistically significant mean difference between the IBCR and the OBCR for indicators such as "*The curricula minimized the unemployment rate of TVET graduates* and *the curricula provided access for further training for TVET graduates with almost medium effect size, but the curricula provided TVET*

graduates with paid employment opportunity and the curricula prepared TVET graduates for self-employment had small effect size, where the OBCR produced the higher mean than the IBCR (see Table 5.55). ***Generally,*** *this study indicated that the graduate relevance indicators of the TVET CRs implemented in Ethiopia were found to be different between IBCR and OBCR, in terms of "The curricula minimized unemployment rate of TVET graduates, the curricula provided TVET graduates with paid employment opportunity, the curricula prepared TVET graduates for self-employment* and *the curricula provided access for further training for TVET graduates".*

Hypothesis 8.3: *Graduate relevance indicators of the TVET CRs will be significantly varied among ownership status of TVET institutions (Public, private and NGO's institutions).*

Hypothesis 8.3 was intended to investigate whether *Graduate relevance indicators of the TVET CRs implemented in Ethiopia since 2001* varied among the ownership status of TVET institutions such as Public, private and NGO's institutions. Consequently, the results of ANOVA (Table 5.56) were found to be statistically significant for "*The curricula minimized unemployment rate of TVET graduates, the curricula provided access to make the qualification of TVET graduates match with the labor market, the curricula increased the quality of jobs found by the TVET graduates, the curricula prepared TVET graduates for self-employment* and *the curricula provided access for further training for TVET graduates", where* public TVET institutions produced higher mean than private, or when compared with NGO. However, Partial Eta square effect size was small for all graduate relevance indicators, except that medium effect size for *"Minimizing unemployment rate"*.

To sum up, *this study shows that the graduate relevance indicators of the TVET CRs implemented in Ethiopia were found to be varied between TVET institutions (Public, private and NGO), in terms of "The curricula minimized unemployment rate of TVET graduates, the curricula provided access to make the qualification of TVET graduates match with the labor market, the curricula increased the quality of jobs found by the TVET graduates, the curricula prepared TVET graduates for self-employment, and the curricula provided access for further training for TVET graduates".*

9.10 *Employer relevance indicators-Instructors and principals perspectives*

Literatures indicate about employer relevance of a curriculum, for example, according to ILO (2012) states that the assessment of TVET performance from the point of view of quality, it should rely on student, graduate and employer satisfaction ratings (pp. 27-28). This study shows the employer relevance indicators of TVET CRs in the Ethiopian context. It includes such indicators as

competency, productivity, performance skill, technology transfer, qualification and human resource. The following basic questions, hypotheses and sub hypotheses were proved statistically.

Research question 9.0: *Which employer relevance indicators have been impacted by the TVET CRs?*

This ninth part of the basic question was intended to identify the *employer relevance indicators of TVET CRs implemented in Ethiopia since 2001*. The indicators were "*The competency of graduates is appreciated by the employers, TVET graduates are more productive in industries, employers are satisfied with the performance of TVET graduates, improved technology transfer in the Industries, the qualification of TVET graduates match with the industry standards for employment,* and *the curricula responded the human resource needs of employers"*.

Hypothesis 9.0: The TVET CRs will have positive impact on the estimated employer relevance indicators.

This study found that the CRs implemented in Ethiopia since 2001 have impacted on employers in terms of *improved technology transfer in the Industries* reported by more than half of respondents as the first place of employer indicators and the least was reported for "*The curricula responded the human resource needs of employers"*. Yet, from 45-48% of respondents reported for "*The qualification of TVET graduates match with the industry standards for employment, TVET graduates are more productive in industries, the competency of graduates is appreciated by the employers,* and *employers are satisfied with the performance of TVET graduates"*. ***To sum up,*** *this study found that the CRs implemented in Ethiopia have impacted to a certain extent on employer relevance indicators.*

Research question 9.1: *Are these employer relevance indicators of the CRs significantly varied between two groups of respondents (TVET instructors and principals), between two reform programs (IBCR and OBCR) and among ownership status of TVET institutions (Public, private and NGO's institutions)?*

Hypothesis 9.1: *Employer relevance indicators of the TVET CRs will be significantly varied between two groups of respondents (TVET instructors and principals),*

The inferential statistics shows that a t-test resulted in a non-significant difference between TVET instructors and principals for all items of employer relevance indicators. ***To sum up,*** this study shows that the impact of the CRs implemented in Ethiopia since 2001 on all employer relevance indicators were found to be conceptually no variation between TVET instructors and principals.

Hypothesis 9.2: *Employer relevance indicators of the TVET CRs will be significantly varied between the two reform programs (IBCR and OBCR).*

The t-test resulted in statistically significant mean difference between the IBCR and the OBCR for indicators such as "*Employers are satisfied with the performance of TVET graduates, The qualification of TVET graduates match with the industry standards for employment, and The curricula responded the human resource needs of employers"*, where the OBCR produced the higher mean than the IBCR but the effect size was small for all items except medium effect size for "*Employers are satisfied with the performance of TVET graduates"*. (See Table 5.57) ***Generally,*** *this study indicated that the impact of the curricula reforms on employer relevance indicators of the TVET CRs implemented in Ethiopia were found to be varied between IBCR and OBCR.*

Hypothesis 9.3: *Employer relevance indicators of the TVET CRs will be significantly varied among ownership status of TVET institutions (Public, private and NGO's institutions).*

Hypothesis 9.3 was intended to investigate whether the impact of the curricula reforms on *Employer relevance indicators of the TVET CRs implemented in Ethiopia since 2001* varied among the ownership status of TVET institutions such as Public, private and NGO's institutions. Consequently, the results of ANOVA (see Table 5.58) were found to be statistically significant for the following items such as *"The competency of graduates is appreciated by the employers*, where Public TVET institutions produced higher mean than private TVET institutions, *TVET graduates are more productive in industries*, where private TVET institutions produced higher mean than NGO's TVET institutions, *employers are satisfied with the performance of TVET graduates*, where Public TVET institutions produced higher mean than private TVET institutions, *the qualification of TVET graduates match with the industry standards for employment*, where Public TVET institutions produced higher mean than private TVET institutions or when compared with NGO's TVET institutions, and *the curricula responded the human resource needs of employers" where* Public TVET institutions produced higher mean than private TVET institutions, however effect size was small for all employer relevance indicators except "*The qualification of TVET graduates match with the industry standards for employment"with* almost large effect size. ***In summary,*** *this study indicated that the impact of the curricular reforms on employer relevance indicators of the TVET CRs were found to be varied between types of institutions (public, private and NGO).*

Taking competency assessment by the characteristics of respondents

Currently, taking competency assessment in Ethiopia is an obligation for the teaching staff.

This study also tried to investigate whether TVET instructors and principals taking competency assessment and compare by the characteristics of the respondents such as gender, work status, ownership status of institutions, qualification, age and experience.

Hypothesis 10.0: The TVET CRs will have positive impact on Taking competency assessment of instructors and principals

The descriptive statistics (Table 5.6) shows that the majority (67%) of the respondents were reported for being assessed their competency. Whereas 33% were not yet assessed their competency but still active in the teaching learning process, suggesting that the CR has an impact on taking competency assessment of instructors and principals, indicating that the CR has positive impact on taking competency assessment of instructors and principals.

Hypothesis 10.1: *Taking competency assessment of instructors and principals will be significantly varied between the characteristics of respondents (gender, work status, ownership status of institutions, qualification, age and experience).*

Chi-square tests shows taking competency assessment of instructors and principals depend on gender, work status, type of TVET institutions, qualification, age and experience of respondents. For example, significant difference was existed between gender, where females were assessed their competency more than males; there was also significant difference between work status, where principals out smarted instructors; the type of institutions show significant difference where public institutions were assessed more than private and when compared to NGO's; significant difference also existed among qualifications, where diploma holders assessed more than bachelor degree and master's degree holders; the age group also varied with one another, where the young group were more assessed than the old group, and the experience of respondents also matters on the difference, where the higher experience group assessed less than the lower experience groups.

9.11 *Relevancy of CRs: TVET graduates perspectives*

This study further investigated based on the data collected from TVET graduates in addition to what the TVET instructors and principals perceived regarding graduate relevancies impacted by the CRs implemented in Ethiopia since 2001. Hence, this study focused on issues, such as: *"Relevancy of skill/training at TVET colleges, Cooperative/apprenticeship training in industries, TVET graduates competency assessment and certification and graduate relevance indicators such as employment, quality, and income of employed TVET graduate"*. The inferential statistic also identified differences between IBCR & OBCR and also among ownership status (public, private and NGO). In general, the exploration stage of the study identified the following findings:

Hypothesis 11.0: The TVET CRs will have positive impact on the estimated graduate relevance enactors.

Relevancy of skill/training at TVET colleges

The study found that "*getting adequacy of competency from the college*" was reported by about three-fourths of respondents in the first place of the graduate indicators and the last (48%) was reported for *opportunity of curricula for further training.* Yet, in second place relevance of *methodology used in the class, and helpfulness of the competency for getting job* were admitted by 65.69% of the respondents and thirdly, more than half (52-55%) of respondents named "*relevancy* of *modular contents, and relevancy of classroom training"*, as important indicator to graduates in the CRs implemented in Ethiopia since 2001. ***In summary****, this study shows that the CRs have impacted on the relevancy of skill training at TVET colleges (in terms of modular contents, classroom training, methodology, further education, adequacy of competency, and the job much with competence level) in Ethiopia.*

Hypothesis 11.1: *The graduate relevance indicators of the TVET CRs will be significantly varied between two reform programs (IBCR and OBCR).*

This study examine whether *Graduate relevance indicators of the TVET CRs* were significantly varied between the IBCR implemented in Ethiopia since 2001. As a consequence, the t-test resulted in statistically significant mean difference between the IBCR and the OBCR. The items are: "*Relevancy of methodology used in the class* (closer to medium effect size)*, opportunity of curricula for further training (closer to large effect size) and helpfulness of the competency for getting job (*almost medium effect size*)",* where the IBCR produced the higher mean than the OBCR, and also significant for *modular contents (larg**e*** effect size*)*, where OBCR produced higher mean than IBCR. However, no significant value for *adequacy of skill training* and *helpfulness of the competency for getting job*. (See Table 6.12). ***In summary****, this study found that the impact of the CRs on the relevancy of skill training at TVET colleges (modular contents, methodology, further education & competency), were found to be varied between OBCR and IBCR.*

Hypothesis 11.2: *The graduate relevance indicators of the TVET CRs will be significantly varied among ownership status of TVET institutions (Public, private and NGO's institutions).*

Further variation was existed among the ownership status of TVET institutions (Public, private and NGO). Consequently, the results of ANOVA (Table 6.13) found a statistically significant value for *relevancy of modular contents,* where private produced higher mean than public. It also significant

for *opportunity of curricula for further training,* where public institutions produced higher mean than private or when compared with NGO and significant for *getting adequacy of competency from the college,* where NGO produced higher mean than private. Here *helpfulness of the competency for getting job* were higher in NGO than private, however effect size was medium for all three graduate relevance indicators except *opportunity for further training* had closer to large effect size. ***In general****, the findings show that the impact of the CRs on relevancy of skill training at TVET colleges (contents, further training, and adequacy of competency versus job) variation among types of TVET institutions (Public, private and NGO's institutions).*

Relevancy of apprenticeship/cooperative training

This study found that among the relevancy indicators of cooperative/apprenticeship training, *adequacy of time for Apprenticeship/ cooperative training* reported by more than half of respondents as the first rank of the status of training in industries and the least (35% of respondents) was reported for *Access to Cooperative/Apprenticeship training.* This is because of mismatch between the available industries and the apprentice. Yet, as the next rank *company training match with college contents (below half of respondents),* and finally almost one third of respondents reported for *sufficiency of workshop/Training materials in the company"*, ***In general****, this study indicated that the CRs have impacted on the relevancy of skill training in industries (in terms of access to training, contents, workshop materials and sufficiency of time) in Ethiopia.*

Hypothesis 11.3: *The graduate relevance indicators of the TVET CRs in terms of cooperative/apprenticeship training in industries will be significantly varied between two reform programs (IBCR and OBCR).*

The *relevance indicators of cooperative/apprenticeship training in industries were* found significantly varied between the IBCR and OBCR. The t-test results on indicators such as "*Access to apprenticeship/cooperative training* ***(closer to medium effect size)****, adequacy of time for apprenticeship/ cooperative training* ***(almost large effect size)****, company training match with college contents* ***(closer to large effect size)****, and sufficient workshop/Training materials in the company* ***(almost medium effect size)****."*, where the OBCR produced the higher mean than the IBCR. (See Table 6.14). ***In general,*** *this study found that the impact of the TVET CRs on the relevance indicators of cooperative/apprenticeship training in industries (In terms of access to training, contents, workshop materials)) were found to be significantly varied between IBCR and OBCR.*

Hypothesis 11.4: *The graduate relevance indicators of the TVET CRs in terms of cooperative/apprenticeship training in industries will be significantly varied among ownership status of TVET institutions (Public, private and NGO's institutions).*

Variation also existed among the ownership status of TVET institutions (Public, private and NGO). Accordingly, the results of ANOVA (Table 6.15) found a statistically significant value for *access to apprenticeship/ cooperative training,* where NGO produced higher mean than private or when compared with public ***(closer to large effect size)***. ANOVA *a*lso yielded a significant value for *"Adequacy of time for Apprenticeship/cooperative training,* where NGO produced higher mean than private ***(closer to medium effect size)***.

Further, *company training matched with college contents was also significant,* where produced lower mean than public ***(almost medium effect size)***. Finally, it was significant for "*sufficient workshop/Training materials in the company" where* NGO produced higher mean than public or when compared with private ***(medium effect size)***. ***In summary,*** *this study found that the impact of the TVET CRs on the relevance indicators of cooperative/apprenticeship training (In terms of access to training, contents, workshop materials and sufficient time) found to be significantly varied among ownership status of TVET institutions (Public, private and NGO's institutions).*

Competency/skill of TVET graduates' in the workplace

The relevancy of the competency of graduate to the workplace/job was one of the items to be investigated. This question is answered by those graduates already employed. The descriptive statistics (see Table 6.4) shows that almost two-third of employees reported that they could apply their competency directly in the workplace, whereas 14% reported they used their competency rarely in the workplace/job but almost one-fourth of respondents replied that they could not use their competency in the work place because they are employed in occupation different from their field of study, as reported by 83% of employees who could not use their competency in the workplace. ***Generally,*** *the findings suggest that* the *competencies of TVET graduates found to be relevant to the workplace according to the responses of TVET graduates.*

Competency assessment of TVET graduates

The assessment system during content/input based learning system was exam and grade driven, whereas the outcome-based learning system come up with the continuous assessment system (see Spady, 1998, p. 8). In Ethiopia, competency assessment is a new phenomenon that started with the

launching of the OBCR; however, not only the OBCR graduates but also the IBCR graduates were obliged to assess their competency so as to integrate with the new system of evaluation and certification. Hence, the descriptive statistics, in this study, identified *half* of the respondents have taken competency assessment and *two thirds* of them that have passed the assessment and certified however, 42% indicated that the contents of the assessment differ from the contents what the students learned at the college. This is an indication of the contents of assessment designed by the center of competency (COC) was based on level system curriculum in spite of the different 10+system curriculum. ***In general****, the findings show that the CR created an opportunity on taking competency assessment and certification of TVET graduates*.

Hypothesis 11.5: *The graduate relevance indicators of the TVET CRs in terms of competency assessment and certification of TVET graduates will be significantly varied between two reform programs (IBCR and OBCR).*

From the inferential statistics, Pearson's chi-square test identified significance deference on the number of competency-assessed graduates between IBCR & OBCR, where IBCR produced higher results than OBCR with small effect size, suggesting that higher enrollment for assessment was 10+system than level system graduates (see Table 6.20). As indicated earlier, currently in Ethiopia "Competency assessment" is a basis for job and/or to continue further studies. ***Generally****, this study found that more graduates of IBCR have taken competency assessment than graduates of OBCR.*

Hypothesis 11.6: *The graduate relevance indicators of the TVET CRs in terms of competency assessment and certification of TVET graduates will be significantly varied among ownership status of TVET institutions (Public, private and NGO's institutions).*

The chi-square test also identified significant difference on the *number of competency-assessed graduates* among the type of TVET institutions where higher results were produced by *NGO* than *Private*, or when compared to *public* TVET institutions with almost medium effect size (see Table 6.21). ***In summary***, the findings of *this study shows that the number of graduates from government TVET institutions were found to be lower in taking competency assessment*.

Hypothesis 11.7: *The graduate relevance indicators of the TVET CRs in terms of competency assessment and certification of TVET graduates will be significantly varied between gender difference (male and female).*

The chi-square test further identified a significant value for gender difference (between male and female) on the promotion (pass/fail) of competency assessed graduates, where more male graduates

produced pass result than female graduates with a **large effect size** (see Table 6.22). ***In summary**, the findings show gender bias that less female graduates have passed the competency assessment than male graduates according to the report of graduate respondents.*

Further, this study also shows the frequency of taking competence assessment of TVET graduates, which were found to be at least twice to pass the assessment, according to the report of two-third of the graduate respondents. This implies that there is a gap between the competency assessment system and the competency of graduates.

Employment indicators of TVET graduates

This study also considers the relevancy of the CRs on employment opportunity of TVET graduates by evaluating the following indicators, such as "*Better job opportunity in the formal sector, Better opportunity for paid employment, better self-employment opportunity, and better job opportunity in the non-formal sector"*

The descriptive statistics shows that *self-employment opportunity* reported by about three-fourth of respondents as the first rank of the employment of graduate indicators and the least (below half of respondents) was reported for *job opportunity in the formal sector.* Yet, as the next rank *opportunity for paid employment (two-third of respondents),* and finally above half of respondents reported for *job opportunity in the non-formal sector"*, as graduate relevance of the CRs implemented in Ethiopia since 2001. ***In summary**, this study found that the CRs in Ethiopia have impacted highly on self-employment opportunity followed by paid employment and job opportunity in the non-formal sector.*

Hypothesis 11.8: *The graduate relevance indicators of the TVET CRs in terms of employment indicators of TVET graduates will be significantly varied between two reform programs (IBCR and OBCR).*

The inferential statistics identified that the t-test resulted in statistically significant mean difference between the IBCR and the OBCR for *employment* indicators *of TVET graduates* such as "*paid employment in the formal sector* ***(small effect size)****, Self-employment opportunity* ***(medium effect size)****"*, where the OBCR produced the higher mean than the IBCR. (See Table 6.16). ***In general**, this study shows that the impact of the CRs on employment were found to be varied between IBCR and OBCR in terms of self-employment and paid employment in the formal sector.*

Hypothesis 11.9: *The graduate relevance indicators of the TVET CRs in terms of employment indicators of TVET graduates will be significantly varied between types of TVET institutions (public, private & NGO's).*

Further, the results of ANOVA (Table 6.17) were found to be statistically significant for *Job opportunity in the formal sector, and "Self-employment opportunity,* where NGO's institutions produced lower mean than private TVET institutions (***medium effect size)***. ***In general****, this study shows that the impact of the CRs on self-employment and paid employment in the formal sector were found to be varied between types of TVET institutions (private & NGO's institutions).*

Quality assurance indicators of TVET graduates

This study also considers the relevancy of the CRs on quality indicators of TVET graduates such as "*The quality of job match with the skill level, I am satisfied with the quality of my current job, and Employer satisfaction with the skill of graduates"*

The descriptive statistics shows that more than half of respondents reported, "*The quality of my job did not match with the level of my competency/skill"*. Further, more than half of the respondents were reported, as "*My employer did not satisfy with my competency/skill.* Finally, *two-third of respondents* reported, as *"I am not satisfied with the quality of my current job"*. ***Generally,*** *the findings show that there is quality gap in terms of quality indicators of employed TVET graduates, such as quality of job, job satisfaction and employer satisfaction. Majority of TVET graduate employees did not satisfy with the quality of the job.*

Hypothesis 11.10: *The graduate relevance indicators of the TVET CRs in terms of Quality assurance indicators of TVET graduates will be significantly varied between types of TVET institutions (public, private & NGO's)and between IBCR & OBCR,.*

The inferential statistics confirmed a non-significant results for the difference between IBCR & OBCR, and also non-significant difference among the type of TVET institutions (private, public and NGO's Institutions) for all three indicators of quality of employed TVET graduates such as "*The quality of job match with the skill level, I am satisfied with the quality of my current job,* and *employer satisfaction with the skill of graduates,* ***In summary****, this study shows that the impact of the CRs on quality indicators of TVET graduates found no difference between the types of reforms and among the types of institutions.*

Income indicators of TVET graduates

This study also deals with the impact of the CRs on income of TVET graduates by evaluating the following indicators, such as *"Better Opportunity for Self-employment earnings, and Better Opportunity for paid employment earnings"* Further, items to be replied by Employed graduates' were *" I am satisfied with the current salary/ income* and *my salary matches with the job"*

The descriptive statistics shows that about one-third of respondents reported for "b*etter Opportunity for Self-employment earnings"*, whereas about two-third of the respondents were reported as "*Better Opportunity for paid employment earning,* suggesting that in terms of earnings, paid employment earnings was better indicator. ***Generally,*** *this finding implies that paid employment was better income indicator of TVET graduates; however, the employment opportunity was leaned towards self-employment of TVET graduates.*

Furthermore, two-third of respondents reported that *"I am not satisfied with the current salary/ income* and similarly two-third reported that *my salary did not match with the job assigned"*. ***Generally,*** *this finding implies that majority of respondents were not satisfied with their monthly earnings and there was mismatch between earnings and the job assigned*.

Hypothesis 11.11: *The graduate relevance indicators of the TVET CRs in terms of income indicators of TVET graduates will be significantly varied between IBCR & OBCR,.*

The inferential statistics identified that the t-test resulted in statistically significant mean difference between the IBCR and the OBCR for "*income indicators of TVET graduates"*, such as "*Better Opportunity for Self-employment earnings* where the OBCR produced the higher mean than the IBCR., but the effect size was small (See Table 6.18). ***To sum up,*** *this study indicates that the CRs have impacted on income indicator for the self-employment earnings of TVET graduates were found to be varied between OBCR than IBCR.*

Hypothesis 11.12: *The graduate relevance indicators of the TVET CRs in terms of income indicators of TVET graduates will be significantly varied between types of TVET institutions (public, private & NGO's).*

Further, the t-test shows statistically significant effect among the types of institutions for income indicators, such as for *Item1: Better Opportunity for Self-employment earnings, where* NGO' produced higher mean than the private institutions with a medium effect size. **In summary**, the above findings suggests that variation was existed among the types of institutions for self-employment earnings, where graduates of NGO's institution suggested better earnings opportunity than private institutions with medium effect size.

9.12 ***Relevancy of CRs: Employer perspectives***

This study further investigated based on the data collected from employer industries in addition to what the TVET instructors and principals perceived regarding employer relevancies impacted by the CRs implemented in Ethiopia since 2001. Hence, this study focused on the issues of *curriculum development, roles in the design of TVET curriculum, Cooperative/apprenticeship training in industries, employer involvement in advisory board of the college, graduate relevance indicators such as employment, quality, and employer relevance of the CRs.* The inferential statistic also concluded on differences between the IBCR and the OBCR and also between respondents (employer and principals and/or graduates). In general, the exploration stage of the study identified the following findings:

Hypothesis 12.0: The TVET CRs will have positive impact on the estimated employer relevance indicators.

Curriculum development

As indicated in the Ethiopian policy, TVET curriculum is the responsibility of TVET institutions, whereas employers are responsible in providing occupational standard. This study requested their involvement in designing in TVET curriculum. The exploration stage of this study found from the descriptive statistics that there was less (16%) involvement of employers when compared with the instructors (48%) and principals (44%) of TVET colleges (see Table 7.2 & 5.3). ***Generally,*** *this study shows that employers are found to be likely the participants in the design of TVET curriculum, even though less.*

Hypothesis 12.1: *The employer relevance indicators of the TVET CRs in terms of participation in the design of TVET curriculum development will be significantly varied between employers TVET instructors and principals.*

In the inferential statistics, the chi square test found a significant difference between Employers, TVET instructors and principals in the participation in the design of TVET curriculum development, where employers produced lower result than instructors and principals, but the effect size was scloser to medium size (see Table 7.10).

Cooperative/apprenticeship training

For the success of effective TVET training apprenticeship/cooperative training plays a significant role. Thus, this study also evaluates the cooperative/apprenticeship training in the industries in the

view of employers regarding indicators, such as "*Access to Cooperative/ Apprenticeship training, company training match with college contents, sufficient workshop/Training materials in the company,* and *Adequacy of time for Apprenticeship/ cooperative training"*

The descriptive study shows "*Adequacy of time for Apprenticeship/cooperative training"* reported by almost two-third of respondents as the positive support to training in industries. More than 71% of respondents reported "*no sufficiency of workshop/Training materials in the company"*. Yet, 65% reported "*company training does not match with college contents"* ***To sum up, t****he impact of the CRs on cooperative/apprenticeship training in industries seems to be lack of sufficient workshop materials, mismatch between contents in the TVET colleges, no enough access to get training in industries.*

Finally, 67% employers reported "no enough *Access to Cooperative/Apprenticeship training in industries" (see Table 7.6).* On the other additional question, 91% of employer reported that they have been providing yet apprenticeship/cooperative training in their enterprises (see Table 7.4). Similar question was asked for TVET graduates. According to majority of (¾) TVET graduates report, there was a shortage of access to get a place for apprenticeship/cooperative training (see Table 6.3). ***Generally,*** *this study found that* inconsistency *responses are existed between employers and graduates in terms of providing Apprenticeship/cooperative training in industries.*

Hypothesis: 12.2: *The employer relevance indicators of the TVET CRs in terms Cooperative/ apprenticeship training in industries will be significantly varied between employers and TVET graduates.*

The inferential statistics also provide the difference between the response of employers and TVET graduates. Hence, the t-test shows statistically significant mean difference for *company training match with college contents* ***(closer to medium effect size)*** where TVET graduates produced higher mean than employers*, and sufficient workshop/Training materials in the company* ***(medium effect size),*** where TVET graduates produced higher mean than employers,*, but for Adequacy of time for Apprenticeship/ cooperative training"* ***(small effect size)****"*, where employers produced higher mean than TVET graduates. ***Generally,*** *the findings show that variation was existed regarding cooperative/apprenticeship training in industries between employers and TVET graduates.*

Employer involvement in TVET

The evidence suggests that employer involvement has a positive impact on: students' vocational skills, knowledge and understanding; academic and learning outcomes; health and well-being;

enjoyment and engagement; employment, earnings and family life. Furthermore, the research evidence also highlights the potential benefits of employer involvement for employers themselves (Burge, et.al, 2012, p. 3).

This study also considers the Employer involvement in TVET institutions by evaluating the following indicators, such as "*Employers involvement in advisory board, employers' involvement in internship (apprenticeship/cooperative), employers' involvement in visits to work sites, employer's involvement in sponsoring programs or tutoring, employers' involvement in reviewing student work* and *employers' involvement in setting curriculum or skill standards"*

The descriptive study shows that *Employers involvement in internship (cooperative/apprenticeship)* reported by more than one-third of respondents was in the first place of the employer involvement and the last place (below one fifth of respondents) was reported for *involvement in setting curriculum or skill standards*. Yet, in second place *involvement in visits to work sites* and as a third place (reported by almost one fourth of respondents) to *involvement in advisory board, in reviewing student work* and *in sponsoring programs or tutoring* with TVET institutions in Ethiopia since 2001. ***To sum up,*** *this study indicate that the involvement of employers in TVET mainly found to be in apprenticeship/ cooperative training (internships).*

Hypothesis 12.3: *The employer relevance indicators of the TVET CRs in terms of Employer involvement in TVET institutions will be significantly varied between employers and principals of the TVET colleges*.

The inferential statistics also provide the difference between the response of employers and principals of the TVET colleges. Hence, the t-test shows statistically significant mean difference for *Employers involvement in Advisory board* ***(closer to medium effect size)***, *Employers involvement in internship* ***(small effect size)***, *Employers involvement in visits to work sites* ***(medium effect size)***, *and: Employers involvement in setting curriculum or skill standards* ***(large effect size)****"* , where TVET principals produced higher mean than employers. ***In general****, based on the findings, it is possible to say that variation was existed between employers and TVET principals in terms of employers' involvement in advisory board, internship, and skill standard setting.*

Quality assurance indicators

This study also considers the quality assurance indicators of TVET graduates in the perception of employers in industries. The following indicators are evaluated, such as: "*Qualification level of TVET graduates match with standards of the enterprises, TVET graduates' quality of job match*

with the level of skill it requires in industry, Salary of TVET graduates' employees match with the job, availability of certified or experienced trainers in the company, and company upgrades the skill of graduates through workshop after employment."

The descriptive study shows the quality assurance indicators of TVET graduates employed in industries. Hence, the *"Qualification level of TVET graduates match with standards in the enterprises"* supported by more than half of respondents as the first place of the quality indicators and the least (one third of respondents) was reported for *"company upgrades the skill of graduates through workshop after employment."* Yet, as the second rank the *"availability of certified or experienced trainers in the company", (*below one-half of respondents*),* and finally, *"TVET graduates' quality of job match with the level of skill it requires in industry", and "Salary of TVET graduates' employees match with the job"* were supported by 44% and 39% of employer respondents respectively. ***To sum up**, this study shows that the quality indicators in industry seem reasonable for the qualification level and industry standard, whereas indicators such as the quality of trainer, salary of graduates, quality of the job and upgrading skill of graduates seem less supportive.*

Hypothesis 12.4: *The employer relevance indicators of the TVET CRs in terms of quality assurance indicators will be significantly varied between TVET graduates and employers.*

The inferential statistic intended to investigate whether there is variation between the perception of TVET graduates and employers in terms of *the Salary of TVET graduates' employees match with the job assigned by the employers.* Consequently, the t-test results in statistically significant difference, where employer produced higher mean than TVET graduates with **large** effect size. ***Generally**, the study found that perceptual difference existed between graduates and employers in terms of the mismatch between the salary of TVET graduates and the assigned job by the employers according to employer responses.*

Employer relevance indicators

This study tries to look at 4 employer relevance indicators to investigate the impact of the CRs upon employers. The items were: *"satisfy human resource needs to the demand of the industry, improved quality of production in your enterprise, the curricula* increased *the quality of employable skill in industry,* and *curricula improved technology transfer."*

The descriptive study shows the employer relevance indicators of the TVET CRs in Ethiopia. Hence, the *improved quality of production in your enterprise* supported by almost two-third of

respondents as the first place and the least (almost one-third of respondents) was reported for "*the curricula* increased *the quality of employable skill in industry"*. Yet, as the second place the *curricula improved technology transfer*, also supported by almost two-third or respondents TVET graduates' *quality of job match with the level of skill it requires in industry.* Finally, *the curriculum reform satisfy human resource needs to the demand of the industry* supported by half of respondents. ***To sum up****, the findings show that improvements in the quality of production and technology transfer as well as human resource needs found to be indicators of employer relevance.*

Important findings from the inspection stage of the study

This study also conclude some related interview findings from the inspection stage of the study in answering the basic questions of the study

- *The CRs have impacted on the curricular intervention factors.*
- *Curriculum organization/development is the responsibility of TVET institutions, however professional support was provided by the curriculum experts during the process of curriculum development in the colleges.*
- *The CRs have provided an opportunity to employers as a constituency participant of curriculum development.*
- *There is lack of mental setting that hinders the effective implementation of the TVET curricular reforms in Ethiopia.*
- *The inefficiency of the input based curriculum to provide employable skill was the major cause that influences the curriculum to be changed.*
- *Commitment of the government to TVET sector was considered as drives for effective implementation of the CR.*
- *Lack of capacity was found to be the main hindrance to implement the reforms effectively.*
- *There are inconsistent responses regarding impact indicators of the CRs.*
- *The CRs have impacted positively on TVET enrollment rate.*
- *The CRs have impacted positively on TVET graduation rate.*
- *Inconsistent response was existed on employment TVET graduates.*
- *A new assessment system has been innovated in Ethiopia since 2007.*
- *Quality assurance was one of the measures taken in TVET system during the CRs.*

9.13 *The limitations of the study and suggestions for future research*

This research was conducted with high concentration and caliber to address the objectives of this study, however all research designs are flawed and possess limited validity (McGrath and Brinberg 1983 p. 115). This part focuses on reviewing some limitations of the study and suggesting directions for future research.

Firstly, since CR is a complex, multi-faceted and long-term activity, it cannot possibly be explored in all its various dimensions and configurations in a single research project. Therefore, this study was focused only on the impact of the CRs on the relevancy to TVET graduate and thereby employer industries. Hence, future research should include other curricular reform issues to broaden the current knowledge of the impact of the CRs as well as on the cultural and economic for sustainable development of the country.

Secondly, this study was limited to the implementation period of the CRs from 2001 to 2010. By dividing two different time spans as the input-based CR between 2001 and 2005 and the outcome-based CR between 2006 and 2010; future research should extend the time span for further investigation in the effectiveness of CRs.

Thirdly, this study limited to the case of the vocational education of Ethiopia at TVET-based colleges. The subjects of the study were also limited by the 10+3 or Level IV graduates of public private and NGO' TVET institutions. Since the data was collected from Addis Ababa city administration (capital of Ethiopia). The sample size did not include other regional states due to financial and time constraints, although the data was fundamentally valid and reliable to suggest some recommendations that may address the other regions. However, generalizability of results to other regions remain limited. The practical generalizability of the study's findings is further limited when applied with educational systems with a different structure from the Ethiopian TVET system. Therefore, future researches should try to include some regions/states practice on the implementation of CRs.

Fourthly, the study used an exploratory case study method to address the objectives of the study. The survey method is used with regard to its usefulness to maximize the generalizability and supports in testing the research hypotheses. On the other hand, it is weaker in the areas of precision in control and realism of the context (McGrath 1982). In designing the questionnaire some contents were added for indigenous consumption, nevertheless the questionnaire was carefully edited to ensure the understanding of the graduates, employers, TVET instructors and college principals'

respondents regarding the meaning and objective of each question. In addition to some statistical quantitative data, this was not however enough to conclude in terms of graduates' income, employment status and the improvement of quality production in the industries due to the absence of objective and reliable data. Therefore, future researchers should broaden the scale of data collection to be national in scope by combining statistical quantitative and qualitative data for analysis through case study to explore the impact/relevance of CRs in Ethiopia.

Finally, the method of data collection was limited to qualitative and quantitative data collection methods acknowledged in the literature and discussed in chapter 4. Triangulation was used by involving different data types where each type played a role in addressing the research question (Patton, 2002, p. 307). In addition, data were scrutinized for the presence of negative or discrepant information thereby safeguarding the quality of the study (Yen, 2003). As a result, this study can only serve as a reference in conjunction with other similar research in the area of TVET relevance.

9.14 ***Major implication of the research***

This study emphasizes the impact of the CRs in the vocational education of Ethiopia. The findings extracted from the exploration and inspection stages of this study provided some important findings for curriculum policy designers, curriculum developers and more of practical implementers at the lower level. The research extends the knowledge base on TVET CRs and policy implementation into new contexts.

In essence, this study provides another perspective on why CR policies fail. Because specialists and experts think a linear link between policy and practice. By focusing on design and development of grand policies, they neglecting plans for the practical implementation *(Stoffels, 2004, p. 244).* The experts, designers, and specialists of the TVET curriculum should develop some mechanisms in cooperation with the stakeholders such as employers, to alleviate the practical implementation problems, because the major problem in Ethiopia is the implementation at the grassroots level**.**

Lastly, contrary to the availability of resources and allocation of budget is not a sufficient and deciding factor in TVET curricular policy implementation in Ethiopia. There is a need to create societal belief in TVET so that the commitment of the stakeholders can rise to involve in the process of TVET curriculum reform and therefore the objectives thereof are achieved.

REFERENCES

Abraham, K.1993. Ethiopia: The Challenge of the 20th Century Education and Modernization, SIDA, Stockholm.

ACE Europe (2008). Evaluation of The TVET Policy and Practice of ICCO, Woord EN Daad and Edukans . Final Evaluation Report

Adamson, B. & Morris, M. (2007). Comparing curricula. In: M. Bray, B. Adamson & M. Mason (Eds.). Comparative Education Research Approaches and Methods, Vol, 19, pp. 263-282. Springer. CERC Studies in Comparative Education.

Adamson, Bob; Kwan, Tammy & Chen Ka-Ki (2000). Changing the curriculum: Impact of the Reform on Primary Schooling in Hong Kong. Hong Kong: Hong Kong University Press.

Ajidagba, U.A. (2012) Facilitators/constraints in curriculum development an edu. 406 lecture www. Khulafau.org.

Akker, J. van den (2003). Curriculum development re-invented. In J. Letschert (Ed.), Curriculum development re-invented (pp. 16-30). Enschede: SLO.

Akker, J. van den, Fasoglio, Daniela, & Mulder, Hetty (2010). A Curriculum Perspective on Plurilingual education. (Netherlands institute for curriculum development) Enschede: SLO.

Alderson, Anna and Martin, Marie (2007) retrieved from Learning Conversations Pty Ltd: west Australian Curriculum Council, (1998). Curriculum frame work. West Australian Curriculum Council. In Educational Research, Vol 17, 2007
[Contents Vol 17] [IIER Home]

Alemayehu Bishaw & Jon Lasser (2012). Education in Ethiopia: Past, Present and Future Prospects: Texas: African Nabul.

Alemu, Y. (2000). A comparative analysis of vocational and employment and non-government schools/training centers in Ethiopia. Unpublished Master Thesis. Addis Ababa University, Addis Ababa, Ethiopia.

Altrichter, H., Feldman, A., Posch, P. & Somekh, B. (2008). Teachers investigate their work; An introduction to action research across the professions. Routledge. p. 147. (2nd edition).

Anderson, Andrea A. (2004). The Community Builder's Approach to Theory of Change. A PRACTICAL GUIDE TO THEORY DEVELOPMENT New York: The Aspen institute. (www.theoryofchange.org)

Aregash Asfaw (2005 p. 4) Public Private Partnership projects of the GTZ in Ethiopia "International Trade and the protection of Natural Resources in Ethiopia"

Arowolo, A, Zakari, A, & Ibrahim, A., (2010). Historical Factors that Influences Curriculum Development in Industrial Technical Education in Nigeria.

Atchoarena, D. (ed.), Durand-Drouhin, Sweet R., Ferej A. K. Jeong K., De Moura Castro C., Verdisco A. (2000).Transition of youth from school to work: issues and policies. Paris: IIEP

Atchoarena, D. and Delluc, A.M. (2009) Revisiting Technical and Vocational Education In Sub-Saharan Africa. (IIEP for the World Bank) Paris: UNESCO/II EP.

Atchoarena, D. and Philipps M., Holmes K., (2007). Strengthening Technical and Institutional Aspects of Technical & Vocational Training (TVET) in the Netherlands Partners Countries, Dutch Ministry of Foreign Affairs.

Atolagbe T.A.; Hlupic, V; Taylor s. J.E.; and Paul, R. J (1997). *Interactive Strategies for Developing Intuitive Knowledge as Basis for Simulation Modeling Education*. In Proceedings of the 1997 Winter Simulation Conference , Department of Information Systems and Computing Brunel University, Uxbridge Middlesex, UB8 3PH, United Kingdom

Auerbach, C.F., & Silverstein, L.B. (2003). Qualitative data: An introduction to coding and analysis. Available from http://site. Ebrary.com/lib/austrailiancathu/Doc?id=10074835

Ayalew, G. Sellassie (1964). „„Three years' experience in education."" (not published).

Babbie, Earl R. (1989). The Practice of Social Research (The 5th Ed., Vol. 5). Belmont CA: Wadsworth.

Badioli, Francesco (2011). Indicators of Impact. Training workshop for Sustainability & Embedding a programme founded by the European Union. Euromed Heritage. Nov. 17-19 2011.

Bransch, N. (2005). Service Engineering. Hintergrund, Methoden und Potenzial. Berlin: VDM Verlag.

Barnes, B. (1982) 'Education for Socialism in Mozambique, Comparative Education Review,' 26 (3) pp. 406-419.

Barnett, R. & Coates, K. (2005). A schema. In Engaging the curriculum in higher education (pp67-69). Berkshire: SRHE & Open University Press.

Becker, K.F. (2004). "The Informal Economy", SIDA Report, March 2004.

Bekele, M. (1966). A study of modern education in Ethiopia: Its foundations, its development, its future, with emphasis on primary education."" Columbia University, Teachers College.

Bennell, P. (1996) Privatization, Choice and Competition: The World Bank's Reform Agenda for Vocational Education and Training in Sub-Saharan Africa. In Journal of International Development, 8/3 pp. 467-487. Berlin: Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) 05.03 – 06.03.2005.

Birhanu, D., & Deneke , M. (1995). Education for production in Ethiopia. In W. Hoppers and D. Komba (eds.), Productive Work in Education and Training: A State of the Art in East Africa, The Hague: Center for the Study of Education in Developing Countries.

Black, P. Atkin, M., (1996). Eds., Changing the Subject?: Innovations in Science, Maths and Technology Education. London and New York in Association with OECD: Routledge,

Blakely, Kelsey et al. (2004). Providing Vocational Education to Committed Youth in North Carolina. Terry Sanford Institute of Public Policy—Duke University

Blumer, H. (1998). Symbolic interactionism: Perspective and method. Berkeley, CA: University of California Press.

Bouck, Emily C. (2008) Factors Impacting the Enactment of a Functional Curriculum in Self-Contained Cross-Categorical Programs Purdue University: Education and Training in Developmental Disabilities, 43(3), 294–310

Bouma, G.D. and Atkinson, G.B.D. (1995). A Handbook of Social Science Research: A Comprehensive and Practical Guide for Students (2nd ed.), Oxford University Press, Oxford.

Bruniges, Michelle (2005). What is driving curriculum reform in Australia? Chief Executive, ACT Department Education and Training. Curriculum & Leadership Journal website. Volume 3 Issue 40.

Burge, B., Wilson, R. and Smith-Crallan, K. (2012). Employer Involvement in Schools: a Rapid Review of UK and International Evidence (NFER Research Program: From Education to Employment). Slough: NFER

Burke, John W. (2005). Competency Based Education and Training. United Kingdom: The Taylor Francis e-Library.

Busemeyer, Marius R. (2009). Wandel trotz Reformstau: Die Politik der beruflichen Bildung Seit 1970. Frankfurt/ New York: Campus Verlag.

Butler, Mollie (2004). Outcomes Based/ Outcomes Focused Education overview. A PhD dissertation. Retrieved from http://scholar.google.com.hk/scholar?hl=en&q=Outcomes+based%2F+Outcomes+focused +education+overview&as_sdt=2000&as_ylo=&as_vis=0.

Byers, C. (2005), Defining, Developing, and Implementing a New Design for the Technology Component of a Human Resource Development Undergraduate Programme. Journal of European Industrial Training, Vol. 29 No. 3, PP. 235-245

Calmand J., Epiphane D. and Hallier P.(2009). De l'enseignement superieur a l'emploi : voies rapides et chemin de traverses, access on June 8th 2010 (access on June 8th 2010).

Carranya and Gallegos (2011). Ethiopia Demographic and Health surveys, Household Income and Consumption Expenditure Surveys, World development Indicators.

Carle, Ursula (2000). Was bewegt die Schule?: Internationale Bilanz Praktische Erfahrung, neue Systematische Möglichkeiten für Schulreform, Lehrerbildung, Schulentwicklung und Qualitätssteigerung. Germany: Schneider Verlag Hohngehren GmbH.

CEDEFOP (2010). Learning outcomes approaches in VET curricula. A comparative analysis of nine European countries, Luxembourg: Publications Office of the European Union,

CSA (2000). Ethiopian Labor Force Survey.

_____, (2005) Ethiopian Labor Force Survey.

_____, (2006) Ethiopian Labor Force Survey.

_____, (2007) Ethiopian Labor Force Survey.

Charon, J.M. (2007). Symbolic interactionism: An introduction, an interpretation, and integration (9th ed.). New Jersey: Pearson Prentice Hall.

Churchill, G. A. (1979). A paradigm for developing better measures of marketing constructs. Journal of Marketing Research, 16 (1), 64-73.

CIA World Facebook (1991). Ethiopia Education During Imperial Rule, The Library of Congress Country Studies. Retrieved on February 10, 2009 from http://www.photius.com/countries/ethiopia/geography/ethiopia_geography_education_during_imp~8128.html

Cohn J. (1988). effect size calculator. Http://www.ucc.ed/ faculty7 lbecker/

Cohn, J (1988). Statistical power analysis for the behavioral sciences (2nd ed.). Hillsdale, NJ Erlbaum.

Connell, Kubisch (1998). Applying a theories of change approach to the design and evaluation of comprehensive community initiatives: Progress, prospects, and problems

Cook, Sarah (2004). Measuring Customer Service Effectiveness, Gower Publishing, p. 24, ISBN 0-566-08538-0, "Most researchers use a 95 per cent confidence interval"

Creswell, J. W. & Plano Clark, V.L: (2007). Designing and conducting mixed methods research. Thousand Oaks: Sage Publications.

Creswell, J. W. (2002). Educational research: Planning, conducting and evaluating qualitative, and quantitative. Upper Saddle River, NJ Pearson Education.

Creswell, J. W. (2003). Research design: Qualitative, quantitative, and mixed method approaches (2nd.). Thousand Oaks: Sage Publications.

Creswell, J. W. (2007). Qualitative inquiry and research design: Choosing among five approaches. Thousand Oaks, CA: SAGE Publications.

Cronbach, L. (1951). Coefficient alpha and the internal structure of tests. Psychometrika , 16 , 297-334

Dasgupta, Partha (1999). Valuation and Evaluation: Measuring the Quality of Life and Evaluating Policy Beijer International Institute of Ecological Economics, Stockholm University of Cambridge.

Dawson, Graham (2005). Supporting curriculum reform in the pacific. Lessons learned from the CR implementation project. National Reform Curriculum Conference 13-15 July 2005

Decoster, J., & Hall, G. P. (1998). Overview of factor analysis. Stat-Help. Retrieved October 18, 2010, from http://www.stat-help.com/notes.html

Denzin, N. K., & Lincoln, Y. S. (2000). Introduction: The disciple and practice of qualitative research. In N. K. Denzin & Y. S. Lincoln (Eds.), Handbook of qualitative research (2nd ed., pp. 2 - 28). Thousand Oaks, CA: SAGE Publications.

Descy, P. and M. Tessaring (eds.) (2004a). Impact of Education and Training. Third Report on Vocational Training Research in Europe: Background Report, Cedefop Reference series, 54, EUR-OP, Luxembourg.

Descy, P. and M. Tessaring (eds.) (2004b). The Foundations of Evaluation and Impact Research. Third Report on Vocational Training Research in Europe: Background Report, Cedefop Reference series, 58, EUR-OP, Luxembourg.

Descy, P. and M. Tessaring (eds.) (2005). The Value of Learning – Evaluation and Impact of Education and Training. Third Report on Vocational Training Research in Europe: Synthesis Report, Cedefop Reference series, 61, EUR-OP, Luxembourg.

DeVellis, R. (1991). Scale development: Theory and Applications. Newbury Park, CA: Sage.

Dewey, J. (1992). The Child and the Curriculum.- Chicago. University of Chicago Press.

NESIC (1993) The need for government intervention in education reform. Retrieved on January 18, 2013 from Http://www.dreamessays.com/customessays/Education/6951.htm

Dressel, P.L., (1982). Curriculum and instruction in higher education. In H. mitzel (Ed.) Encyclopedia of Education Research; New York; Free Press.

Dyck N. & Pemberton J.B. (2002). A model for making decisions about text adaptation, intervention in school' and Clinic, 38(1) 28-35.

ecbp (2006). Co-operative Training Handbook. Addis Ababa: Engineering Capacity Building Program (ecbp).

ecbp, (2007) International symposium on Implementation issues of diversified financing strategies for TVET. Köln: Harry Schmidt, www.druckserviceschmidt.de GTZ,

Edukans Foundation (2009). Technical Vocational Education and Training in Ethiopia Mapping: Learn4Work Schokland Programme on TVET : Addis Ababa

Ehrenberg, R. G.; Brewer, D J., Gamoran, A.; and Willms, J. D. (2001). *Class size and students achievement*: Journal of American psychological Society, V.2 No.1. Cornell Higher Education Research Institute, ILR-Cornell University, Ithaca, New York.

ENQA-VET (2009). Study on the set of indicators in the European Quality Assurance Framework for Vocational Training.

Erickson, L.G. (1995). Supervision of literacy programs: Teachers as grass roots change agents. Needham Heights MA: Allyn & Bacon.

ESDP (2005). Education sector Development Program III. Program Action Plan. Addis Ababa

Eteffa, M. 1971. Education in Ethiopia in its Historical and Cultural Context. ERIC document No. ED 066267 [http://www.eric.ed.gov/ERICDocs/ data/ ricdocs2sql/content_storage_01/0000019b/80/39/20/be.pdfdownloaded on 05.05.2007]

Euromed, Heritage (2011). Indicators of Impact Training Workshop Atelier de Formation SUSTAINABILITY & EMBEDDING Ancrage et Durabilité Tangier/Tanger, Seminar presentation by Francesco Badioli from 17 > 19 / 11/ 2011.

FDRE (2000). The Development of Education National report of Ethiopia by National Agency for UNESCO (final version) of the international conference on Geneva, Switzerland.

FDRE (2006). The sustainable Development report (Rio+ National assessment report) Environmental protection authority of Ethiopia by National Agency for UNESCO :Addis Ababa, Ethiopia.

FDRE (2012). The Development of Education National report of Ethiopia by National Agency for UNESCO (final version) of the international conference on Geneva, Switzerland.

Field, Andy (2013). Discovering statistics using IBM SPSS statistics. 4Th Edition (pp 701-706). London: SEGA publications Ltd.

Freiger, Stephan; Nagel, Bernhard; und Rabe, Christian (1973). Was wird aus der Studienreform? Hamburg: Fischer Taschenbuch verlag.

Friedman, T. L. (2005). The World is Flat. New York: Farrar, Straus and Giroux.

Froyland, E. (2001). Training for survival and growth in Ethiopia. An explanatory working paper on policy frameworks, productive capacity building and international co-operation. Teacher Education Development Study Mission, 5-30 November, 2001, Ethiopia. Addis Ababa, Ethiopia: SIDA and Ireland Aid.

Fullan, M. (1982). The Meaning of Educational Change. New York: teachers College.

Fullan, M. (1991). The new meaning of educational change. New York: Teachers College Press.

Fullan, M. (1997). Emotion and hope: Constructive concepts for complex times. In M. Fullan (Ed.), The challenge of school change (pp. 287-304). Arlington Heights, Illinois: IRI/Skylight Training and Publishing.

Fullan, M. (1997). Leadership for change. In M. Fullan (Ed.), The challenge of school change (pp. 115-136). Arlington Heights, Illinois: IRI/Skylight Training and Publishing.

Fullan, M. (1997). The complexity of the change process. In M. Fullan (Ed.), The challenge of school change (pp. 34-56). Arlington Heights, Illinois: IRI/Skylight Training and Publishing.

Fullan, M. (2005b). The Meaning of Educational Change. Aquarter of a century of learning. In A. Lieberman (Ed). The Roots of Educational Change. Netherlands. Springer.

Gasskov, Vladimir (2000). Managing Vocational Training System: A Handbook for Senior Administrator. Geneva: ILO.

George, A. L., & Bennett, A. (2005). Case studies and theory development . Cambridge, MA: MIT Press.

Getinet Haile, Srour, Ilina; Vivarelli, Marco (2013). The Impact of Globalization and Technology Transfer on Manufacturing Employment and Skills in Ethiopia. IZA DP No. 7820: Bonn.

Girma Zewdie, Mehari Haile, and Nigatu Fantaye (1990). The Training and Placement of Vocational secondary School Teachers in Ethiopia. Addis.Ababa.Uiversity.

GOE (2006). Government of Ethiopia, National Technical and Vocational Education and Training Strategy,

Gomaa, Ali (2008) http://www.suhaibwebb.com/islam-studies/change-requires-both-reform-and-renewal-by-dr-ali-gomaa/(OCTOBER 18, 2008)

Gosling, D. (2009) Learning Outcomes Debate. Accessed 12th Sept, 2009 http://www.davidgosling.net/userfiles/Learning%20Outcomes%20Debate(1).pdf HEA, Higher Education Academy (2006). Curriculum Design. Retrieved February 10th,

Greinert, Wolf-Dietrich (2004). Zwischen Markt und Staat: Berufsbildungsreform in Deutschland und in der Schweiz (eine Tagung an der Technischen Universität Berlin: over all-verl.

Grollmann, P., & Rauner, F. (2007). Exploring innovative apprenticeship: Quality and costs. Education and Training Vol. 49, No. 6, 2007, pp. 431-446.

Gruba et., al. (2004). What drives curriculum change? University of Melabourne, Victoria: Australia. http// www. cs mu oz au/

GSP (2013). The Glossary of Education Reform: Curriculum. Great School Partnership: USA. http://edglossary.org/all-terms/

Haan, H. C. (2001). Training for work in the informal sector: Evidence from Kenya, Tanzania and Uganda. Employment. URL:http:www.ilo.org/public/english/employment/skills/recomm/pub/014.htm (date accessed 3/5/2012)

Hair, J. F., Black, B., Babin, B., Anderson, R. E., & Tatham, R. L. (2006). Multivariate data analysis (Sixth Ed., pp. 1-785). New Jersey: Prentice-Hall.

Harris, R. (2004), Information and communications technologies for poverty alleviation, Retrieved 24, October 2005, from united Nations Development program's Asia-Pacific Development information programme (UNDP-APDIP). Http:// www. apdjp.net/publications/ lespprimers//ICTs4povertyAlleviation.pdf

Hart, C. (1998). Doing a literature review: releasing the social science research imagination. London: Sage.

Hayter. A. J (1986). The maximum family wise error rate of Fisher's least significant difference test. Journal of the American Statistical Association, 81(396), 1000-1004.

Henkel, M. & Kogan, M. (1999). Changes in curriculum and institutional structures, in Gellert, ed.,'Innovation and Adaptation in Higher Education', Jessica Kingsley Publ.,116 Pentonville Road, London N19 JB, England.

Henson, R.K. (2001). Teacher Efficacy Scale: Substantive Implications and Measurement Dilemmas. Keynote Address, Annual Meeting of the Educational Research exchange, Texas A & M University, College Station, Texas. Available at: http://www.css.edu/users/dswenson/web/scaledevstat.html (Retrieved on 14th February, 2005).

Hermit A. (1830): A First Step in Reform: With sketch of a plan for a fair, equal, & not inquisitorial income tax, as it was submitted to the Duke of Wellington. London: E. Wilson, Effingham Wilson, 88 Royal exchange. PP. 3-4.

Hinde, E. R. (2002). Switching classes: Teachers' conceptualizations of change in their professional lives.

Horn, Raymond A., (1947). Understanding educational reform. Santa Barbara, Calif. : ABC-CLIO, c2002.

Hörner, Wolfgang (2002). Berufswissen des Lehrers und Bezugswissenschaften der Lehrerbildung: Ausgewählte Beitrage des 24. Jahrskongresses der Vereinigung für Lehrerbildung in Europa, Universität Leipzig verl.

Hörner, Wolfgang, et.al. (2007). The Education Systems of Europe. The Netherlands: Springer

Howell, D.c. (2006). Statistical methods for psychology, Belmont, CA: Wadsworth.

Hubert, M. Evans (1957). Review of Educational research: Organization for curriculum development. http://rer.aera.net.

Hundert, E.M., Hafferty, F. & Christakis, D.(1996). Characteristics of the informal curriculum and trainees ethical choices. Academic Medicine, 71 (6):624 - 642.

Hussey, T, & Smith, P. (2008) Learning Outcomes : A Conceptual Analysis. Teaching in Higher Education. 13 (1), 107-115.

Hussey, T. & Smith, P (2003) The Uses of Learning Outcomes. Teaching in Higher Education, Vol. 8, No. 3, 2003, pp. 357–368

Hyslop-Margison, Emery J. (2001). An assessment of the historical arguments in vocational education reform. Journal of Career and Technical Education: Simon Fraser University, Unpublished

IE (Education International). (2009) Education International. Vocational Education and Training.

Igwe, A. O. (1992). Assessing employer satisfaction with vocational education graduates: A follow-up study of graduates from Alvan Ikoku College of Education vocational/business studies programme. Journal of Technical Teacher Education, 1(1), 5 - 10.

IHE (2009). (International handbook of education for the changing world of work 2009, Part IX, Section 16, 2763-2776, DOI: 10.1007/978-1-4020-5281-1_181).

ILO, ETF & UNESCO (2012). Proposed Indicators for Assessing Technical and Vocational Education and Training. Inter-Agency Working Group on TVET Indicators.

Inlow, Gail M. (1965). Factors that influence curriculum change. Northwestern University, Evanston, Illinois.

Jack Lam, Y.L. (2001). "Economic rationalism and education reforms in developed countries", Journal of educational Administration. Vol. 39 ss : 4, PP.346-358.

Johnson, Mauritz Jr. (1971). Definitionen und Modelle in der Curriculumtheorie. In Achtenhagen, Frank; Meyer, Hilbert L. (eds). Curriculumrevision – Möglichkeiten und Grenzen. München: Koesel-Verlag, p. 30-46.

Jones, E.A. (2002),'Transforming the curriculum: Preparing students for a changing world', ASHEERIC Higher EducationReport29(3).

Jones, R.C. (2003),'Employers seek well-rounded engineering grads'. International Engineering Education Digest, 26 May 2003 .http://www.worldexpertise.com/

Juan, Nestor San (2013). The school and the global community. Appt. Presentation in completion of EDUC 12. BISCAST.

Kalb, K. A. (2009). The Three Cs Model: The context, content, and conduct of nursing education. Nursing Education Perspectives, 30(3), 176-180

Kantor, H. (1986). Work, education, and vocational reform: The ideological origins of vocational education, 1890-1920. American Journal of Education, 94, 401-426

Kaunas (2008). Experience Study of Vocational Teachers Qualification Improvement. Germany: Vytauts Mgnus University.

Kennedy, Kerry J. (2005). Changing Schools for Changing Times: New for the School Curriculum in Hong Kong. The Chinese University of Hong kong,

Keuffer, Josef (2004). Reform der Lehrerbildung in Hamburg: (Abschlussbericht der von der Senatorin für schul, Jugend und Berufsbildung und der Senatorin für Wissenschaft und Form. Weinheim /u.a./ Belz-ver).

Keuffer, Josef und Kublitz-Kramer, Maria (2008). Was braucht die Oberstufe? Diagnose, Förderung und selbstständiges Lernen. Germany_ Weinheim und Basel.

Khobragade, P. V. and Uke, Nilesh (2012) International Journal of Applied Information Systems (IJAIS) – ISSN : 2249-0868 Foundation of Computer Science FCS, New York, USA Volume 1– No.8, April 2012– www.ijais.org http://citeseerx.ist.psu.edu/viewdoc/

Kingombe, Christian (2011) Lessons for Developing Countries from Experience with Technical and Vocational Education and Training: Paper for the International Growth Centre – Sierra Leone country programme 1

Lachiver, G. & Tardif, J.(2002),Fostering and managing curriculum change and innovation, in 'Proc. Thirty-Second A SEE/IEEE Frontiers in Education Conf.', Vol.2,Boston, MA, pp. F2F7–12

Lamb, Janeen Therese (2010). Implementing mandated CR sources of support for teacher meaning making. Desertion: School of education Leadership Faculty of education. Australia: Australian catholic University.

Lane, Carla (2000) Technology and Systemic Educational Reform. http://www.tecweb.org/eddevel/depth/reform.pdf

Lasonen, Johanna, Kemppainen, Raija and Raheem, Kolawole (2005). EDUCATION AND TRAINING IN ETHIOPIA: AN EVALUATION OF APPROACHING EFA GOALS, Finland: Jyväskylä University Press Jyväskylä,

Lawton, D. (1980). The politics of the school curriculum. London: Routledge & Kegan Paul.

Losh, Charles L.,(2000) Using National and State Skill Standards for Vocational-Technical Education Curriculum Development ERIC Clearinghouse on Adult, Career, and Vocational Education.

Maclean R., Wilson D, (eds.),(2009) International Handbook of Education for the changing world of Work, DoI 10.1007/978-14020-5281-1-IX.7, Springer Science +business Media B.V.

Majumdar, S. (2007). Market conditions and worker training: How does it affect and whom? Labour Economics , 14 (1), 1-23.

Malan, B. (2000). The New Paradigm of Outcomes-based Education in Perspective. Tydskrif vir Verbruikerwetenskappe, 28, 22-28. Retrieved September 18, 2004 from http://www.up.ac.za/academic/acadorgs/saafecs/vol28/malan.html

Marsh, Colin J. (2004). Key concepts for understanding curriculum. 3rd ed. London, New York: Routledge.

Marshall, C., & Rossman, G. (1999). Designing qualitative research (3rd ed.).Thousand Oaks, CA: Sage

Martin, David S.; Philip S. Saif, & Linda Thiel (1986). Curriculum Development: Who Is Involved and How? The Association for Supervision and Curriculum Development.

Masresh Geleta (2004). The Implementation of Apprenticeship Training Program in Some Selected Government TVET Institutions in Oromia. Addis Ababa University MA. Thesis.

Mâţă (2012). Key Factors of Curriculum Innovation in Language Teacher Education: World Academy of Science, Engineering and Technology, International Journal of Social, Education, Economics and Management Engineering Vol:6, No:6.

McBeath, C (1997, p. 53-67) htto://www.clare-macbeath.id au/pubs/bris95 html.

McGrath, J. E, & Brinberg, D. (1983). External validity and the research process: A comment on the Calder/Lynch Dialogue. The Journal of Consumer Research, 10(1), 115-124.

McGrath, J. E. (1982). Dilemmatics: The study of research choices and dilemmas. In J. E. McGrath, J. Martin,

Meyemand Zahra. Z. (2011). A Guidance Pattern of Curriculum Development Based on Faculty Members' Awareness and Major Influential Factors on Curriculum Planning. idosi.org

Miles, Matthew B. (1998). Finding Keys to School Change: A 40- year Odyssey. International Handbook of Educational change. Great Britain.: Kluwer Academic Publishers.

Milner, H. R. (2003). Reflection, racial competence, and critical pedagogy: How do we prepare preserve teachers to pose tough questions? Race, Ethnicity, and Education, 6(2) 193-208.

Milner, H.R. (2003). A case study of an African American English teacher's cultural comprehensive knowledge and self-reflective planning. Journal of Curriculum and Supervision, 18(2): 175–196.

MOE, Ministry of Education Ethiopia. (1994). Education Sector Strategy. Addis Ababa.

----------. (1998). The Three Stories of Educational Reform: Inside; Inside/Out; Outside.& R. A. Kula (Eds.), Judgment Calls In Research. Beverly Hills: Sage Publications.

----------. (1999). Second International Conference on Technical and Vocational Education: Final Report. (Paris, UNESCO)

----------. (2001). Revised Recommendation Concerning Technical and Vocational Education and Training. (Paris, UNESCO)

----------. (2001). THE DEVELOPMENT OF EDUCATION: National Report of Ethiopia by Ethiopian National Agency for UNESCO (Final Version)

----------. (2002). Financing Vocational Education and Training in Developing Countries. Paris: UNESCO.

----------. (2002). Technical and Vocational Education and Training in the 21st Century: New Roles and Challenges for Guidance and Counseling. Paris: UNESCO.

----------. (2003). Adult and Non-formal Education Department. Hand Book for giving training in CSTCs. Addis Ababa.

----------. (2003). Ethiopian Technical and Vocational Education and Training qualification system. Addis Ababa. Ethiopia

----------. (2004). Report on the Development of Education in Ethiopia to the UNESCO Forty-seventh session of the international conference on Education 8-11 September 2004 Geneva, Switzerland:. FDRE,

----------. (2004). TVET Strategy of Addis Ababa City Government Addis Ababa.

_____. (2004). Federal Negarit Gazeta of Federal Democratic Republic of Ethiopia. Proclamation to Provide for the Organization of a Technical and Vocational Education and Training System. Proclamation No. 391/2004. Addis Ababa.

----------. (2005). Apprenticeship Guideline. Federal Democratic Republic of Ethiopia. Addis Ababa.

----------. (2005). Education Sector Development Program III (ESDP III) 2005/2006– 2010/2011 (1998 EC – 2002 EC). Program Action Plan. Addis Ababa: Federal Ministry of education.

----------. (2006). Report on Small Scale Manufacturing Industries Survey,

----------. (2006). National Technical and Vocational Training (TVET) Strategy. Addis Ababa

----------. (2006). Ethiopian Technical & Vocational Education & Training Qualification System. Addis Ababa: Brehanena Selam Printing Enterprise.

----------. (2006). Federal Democratic Republic of Ethiopia, National Technical and Vocational ducation and Training Strategy.

----------.(2006). Basic Education Association in Ethiopia): An Assessment of the Implementation Status and Impact of the directive for Educational Management, Organization, Public Participation and finance" of the Ministry of Education. : Addis Ababa

----------. (2006). Employment and Unemployment Survey

----------. (2007). Evaluation of CR .ww2.unescobkk.org/.../buildingcurriculum/pt5.pd.

----------. (2008). Report on Large and Medium Scale Manufacturing and Electricity Industries Survey,

----------. (2008). Education Statistics Annual Abstract: Addis Ababa, February.

----------. (2008). Education Statistics Annual Abstract: Addis Ababa, February.

----------. (2008). National TVET strategy: Addis Ababa, August.

----------. (2009). EFA Global Monitoring Report 2009, Overcoming Inequalities: Why Governance Matters. (Paris, UNESCO).

----------. (2010). Education Sector Development Program IV (ESDP IV) 2010/2011– 2014/2015 (2003 EC – 2007 EC). Program Action Plan. Addis Ababa: Federal Ministry of education.

----------.(2010).Educationreform,thefreeencyclopedia.mht!http://en.wikipedia.org/wiki/Education_reform 2007) Statistical Abstract, Central.

Molebash, P. (1998). Technology and Education: Current and Future Trends. INDUS Training and Research Institute, Bangalore.

Morrison, G. S. (1993). Contemporary curriculum K-8. Boston: Allyn & Bacon.

Nasta, T. (1994). How to Design Vocational Curriculum. London: Kogn Page Ltd.

Naumes, W. And Naumes, M. J. (1999) The Art and Craft of Case Writing, Sage Publications, Thousand Oaks, California.

Negash, T. 2006. Education and Development in Ethiopia: the history of dubious correlation. In: Annual of Oriental Studies (Rocznik Orientalistyczny), 59(1), 151-172

Neuman, W.L. (2007). Basics of social research: Qualitative and quantitative approaches (2nd ed.) Boston: Pearson Education.

Nickolaus, Reinhold (2007). Didaktik-Modelle und Konzepte beruflicher Bildung: Orientierungsleistungen für die Praxis. Germany: Schneider Vorlag Hohengehren.

Nieuwenhuis, Loek & Shapiro, Hanne (2004) Evaluating systems reform in vocational education and training: learning from Danish and Dutch cases. Third report on vocational training research in Europe: background report. Luxembourg: Office for Official Publications of the European Communities, 2004 (Cedefop Reference series, 57)

Norman, Pamela A., (2005 p 1). Impact of CRs on some Teacher Education programs 2005 National CR Conference Sustainable curriculum development – the PNG CR experience , Divine Word University

Northern Territory board of Studies (1998). Common curriculum statement: Transition to Year 10. Darwin, Austria, Northern Territory Government.

O'Donoghue, T. (2007). Planning your qualitative research project: An introduction to interpretive research in education. London: Routledge.

O'Neill, G. (2010). In Press. Initiating Curriculum Revision: Exploring the Practices of Educational Developers. International Journal for Academic Development.

O' Donoghue, T.& Punch K. (2003). Qualitative Educational Research in Action: Doing and Reflecting. Routledge. p.78.

OECD DAC (2002-2008). : Glossary of Key Terms in Evaluation and Results Based Management (English/ French/ Spanish and other languages) The English / French / Arabic version is available online at: http://www.oecd.org/dataoecd/16/29/45810943.pdf.

Ogwo, B. A. and Oranu, R. N. (2006). Methodology in Formal and Non – Formal Technical/Vocational Education. Nsukka: University of Nigeria Press.

Oketch M.O. (2007) To Vocationalise or Not To Vocationalise? Perspectives on Current Trends and Issues in Technical and Vocational Education and Training in Africa. In International Journal of Educational Development, 27, pp.220-234. 19 |.

Oliver, K.M., Campos, J., Moran, N.A., and M.S., Hunter (2008). Population dynamics of defensive symbionts in aphids. Preceedings of the Royal Society B-Biological Sciences 275(1632): 293-299

Onyike, I. O. (1981). Curriculum development for African. Africana Publisher Ltd. Onitsha, Nigeria.

ORAAMP (2010). City map of Addis Ababa Ethiopia. http://www.un.org/esa/dsd/susdevtopics/sdt_pdfs/meetings2010/icm0310/2b-2_Tessema.pdf

Ornstein A.C. & Hunkins, F.P. (2004).Curriculum foundations, principles and issues. (3rd ed)). Boston: Allyn and Bacon.

Ornstein A.C. & Hunkins, F.P. (2009). Curriculum foundations, principles and issues. (5th ed). Boston: Allyn and Bacon.

Osuala, E.C. (1981). Foundation of vocational education. A behavioural objective approach Calabar: Centaur press.

Otunga, Ruth N. and Nyandusi, Charles, (2009). The context of curriculum development in Kenya: Moi University, Eldoret.

Oxford English dictionary (2003). Retrieved February 6, from University of North Carolina at Chapel Hill, Davis Library Web site: http://eresources.lib.unc.edu/eid/subject.php?subjectName= Reference.

Patton, M. (2002). Qualitative research & evaluation methods (3rd ed.). Thousand Oaks: Sage

Paul M. Kurtz (1981). An Inventory of the Criminal Justice Curriculum of American Law Schools University of Georgia School of Law, pmkurtz@uga.edu

Peterson, Richard A. (2005). Problems in comparative research: The example of omnivorousness. Vanderbilt University, 3301 Orleans Drive, Nashville, TN 37212, USA.

Pissarides, C. (2000). Equilibrium Unemployment Theory, 2nd ed, MIT Press,.

Posner, G.J. 1995. Analyzing the curriculum. 2nd edition. New York: McGraw-Hill.

Prager, U. Jens & Wieland, Clemens (2007). Duales Ausbildungssystem. Qua Vadis? :Berufliche Bildung auf neuen Wegen. Gütersloh: Verl. Bertelsmann- Stiftung.

Prasad, G., & Bhar, C. (2010). Accreditation system for technical education programs in India: A critical review. European Journal of Engineering Education, 32 (2,) 187-213.

Raide´n, A. and Dainty, A. (2006), Human resource development in construction organisations an example of a "chaordic" learning organisation? The Learning Organisation, Vol. 13 No. 1, pp. 63-79.

Rogers, A. and P. Taylor (1998), Participatory Curriculum Development in Agricultural Education. A Training Guide. Rome: FAO.

Röhner, Charlette; Skischus, Gabriele & Ties, Wiltrud (1998). Was Versuchen Versuchsschulen. Einblicke in die Reformschule. Kassel: Schneider Verlag Hohengehehren GmbH.

Rojewski, J. (2002). Preparing the Workforce of Tomorrow: A Conceptual Framework for Career and Technical Education. Report by the National Dissemination Center for Career and Technical Education, the Ohio State University. Columbus, Ohio.

Rorty, Amelie (ed.),(1966). Pragmatic Philosophy, (Garden City, New Jersey: Anchor Book, Doubleday and Co., Inc.,).

Ruettgers, Juergen (1997). Vocational Training in the Dual System in Germany. Koeln: Moeker Merkur Druck GmbH.

Rugg, H. & Shumaker, A. (1928). The child centered school. New York: World Book.

Rule, I.A.C. (1973). A philosophical inquiry into the meaning(s) of curriculum. Doctoral thesis at New York University.

Sahlberg, Pasi (2004) Curriculum change as learning: In search of better implementation.

Sahu, A.R., Shrivastava, R,R., & Shrivastava R. L. (2008). " Key Factors Affecting the Effectiveness of Technical Education- An Indian Perspective", Proceedings of International Conference on manufacturing Engineering & Engineering management, World congress on Engineering, London (UK). July, 2-4.

Schagen, S.. (2010). Implementation of the NZ Curriculum: Synthesis of research & evaluation. Ministry of Education, New Zealand. www.educationcounts.govt.nz/publications.

Scheffler, I. (1997). Moral education and the democratic ideal. n S.M. Cahn (Ed.), Classic and contemporary readings in the philosophy of education (pp. 345-442). New York: McGraw-Hill.

Schmider E, Ziegler M, Danay E, Beyer L, Bühner M (2010) Is it really robust? Reinvestigating the robustness of ANOVA against violations of the normal distribution assumption. Methodology: Euro J Res Meth Behav Social Sci 6: 147–151. doi: 10.1027/1614-2241/a000016

Schubert, W.H. (1991). "historical perspective on Centralizing Curriculum." In The Politics of Curriculum Decision-making, edited by F.M. Klein. Albany: State University of New York Press.

Schuler S.R. and Hashemi, S.M. (1994). Credit programs women's changing roles and status in Bangladesh's fertility transition: evidence from a study of credit programs and contraceptive use. Wrld Development.

Sebstad et al., (1995). Assessing the impacts of microenterprise interventions: a framework for analysis USAID, Washington, DC.

Sethi, G. S. (2001). A Practical Guide to Apprenticeship Training. India: An Acian Publishers.

Seyoum Tefera (1996). „„Attempts of educational reform in Ethiopia: A top-down or a bottom-up reform?"" *The Ethiopian Journal of Education, 16* (1), 1-37.

Sharma, Akhilanand (2008). Technical Vocational Education and Training: 'The Master Key' the review of the Functions of FIT,TPAF and other TVET Providers For the ministry of Education, Youth and Sports, Arts, Culture & National Heritage, University of the South Pacific.

Shelly, Richard W. (2000). Curriculum Benchmarking: A Tool for School Improvements. NASSP Bulletin Aprill 2000. rshelly& rvgs.k12.va.us

Shigeru Kawachi (2009), Reforming Ethiopia's Technical Vocational Education and Training (TVET): St. Bernard University, Unpublished

Sifuna. D. N. (1976). Vocational Education in Schools: A Historical Survey of Kenya and Tanzania. Nairobi: ELB.

Simmons, Llewellyn and Robinson, Carl (2009). Curriculum Reform. http://www.MOEd.bm/academics/Lists/Announcements/DispForm.aspx?ID=3

Smeed, Judy L. and Kimber, Megan and Mill water, Jan and Ehrich, Lisa C. (2009) Power over, with and through : another look at micropolitics. Leading & Managing, 15(1). pp. 26-41.

Smith, Clifton L. (2012). Journal of Vocational and Technical Education: Initial Analysis of Youth Apprenticeship Program in Georgia. http://Jobsearchtech.lib.vt du/ejournals/JVET/vl4nl/JVTE-2.html.

Smith, P.L., Ragan, T.J. (2005) Foundations of Instructional Design. In, Instructional Design. NJ: John Wiley & Sons Inc. pp17-37.

Spady, W. (1994). Outcome-based education: Critical issues and answers. Arlington, VA: American Association of School Administrators.

SPSS for Windows, Release 16.8.11. (16 August. 2011). Copyright © SPSS Inc. Licensed to BI-user, NSM/BI, 12345

Sroczynski, Maureen (2008) THE COMPETENCY OR OUTCOMES BASED CURRICULUM MODEL Recipe for Success, DNP, RN President/CEO, Farley Associates, Inc. Consultant, Center to Champion Nursing in America Retrieved 21. December 2008 from http://www.ACGME.org/outcomes/comp/comp Full.asp

Steedman ,Hilary, (2010). The state of Apprentices. International comparisons Australia, Austria, England, France, Germany & Ireland.

Stenhouse, L. (1985) Case study methods. In Husen, T and Postlethwalte, N.T. (eds), The International Encyclopedia of Education, PP. 645-650, Pergamoln Press, Oxford.

Stern, D., Bailey, T., & Merritt, D. (1996). School-to-work policy insights from recent international developments . National Centre for research in Vocational Education, Berkeley: CA., MSD-950.

Stiehl, R., & Lewchuk, L. (2000). The outcome primer. Corvallis, OR: The Learning Organization.

Sturman, A. (1997) Case study methods. In J.P. Keeves (ed.) educational Research. Methodology and measurement: An International Handbook, PP. 173-179, Pergam on Press, Oxford.

Subic, A. & Maconachie, D. (1997). Strategic curriculum design: An engineering case study. European Journal of Engineering Education, 22(1), 19-33.

Szabo, M. (2002). Educational reform as innovation diffusion: Development of a theory and test of a model using continuing professional development and instructional technology. Paper presented at the Informing Science conference, June, Cork, Ireland. Retrieved My 18, 2005, from Http://www. quasar.ualberta.ca/IT/research/Szabo/Szabo-Educa.pdf.

Taba, H. (1962). Curriculum development: Theory and practice. New York: Harcourt Brace.

Taneja, R. P. (2002). Dictionary of Education. Newdelhi: Anomal Publications PVT.LTD

Tayler, R.W. (1949). Basic principles of curriculum and instruction. Chicago: University of Chicago Press

Taylor, Hill (2002) Articulating Reform and the Hegemony Game TDC/Workplace Award Winner: Alan Eladio Gomez. http://louisville.edu/journal/workplace/issue5p2/taylor.html.

Teferra, D. and Altbach, P.G. (2004) African higher education: challenges for the 21st century. Higher Education 47: 21-50.

Tekeste, N. (1990).The crisis of Ethiopia Education: Some Implications for Nation Building Sweden: Uppsalo University.

TESDA (2010) The TVET GLOSSARY OF TERMS. Fourth Edition. Issue No.1 Published by the Planning Office, TESDA East Service Road, South Superhighway. www.tesda.gov.ph

Tesfaye, H.Z., (1995). Comprehensive secondary education in Ethiopia: Case study in four schools 1961-1986. Addis Ababa, Ethiopia: University of Addis Ababa, institute of Education Research.

Tesfaye, S, and C. V. Taylor (1976). Language Curricula. In M.L Bender. J. D

The World Bank (1991) Vocational Education and Training: A World Bank Policy Paper.(Washington DC, the World Bank)

Thomas, Gerhards,(2010) How donors are measuring the impact of TVET projects that they manage, June 22th, 2010

Toohey, S. (2000). Beliefs, values and ideologies in course design. In Designing courses for higher education. (pp44-69).

Transitional Government of Ethiopia. (1994). Education and Training Policy. Addis Ababa.

Treagust, D.F., & Rennie, L.J. (1993). Implementing Technology in the School Curriculum: A Case Study Involving Six Secondary Schools. Journal of Technology Education, 5 (1).

Tye, K.A., ed. (1991). Global Education: From Thought to Action. 1991 ASCD Yearbook. Alexandria. Va,:ASCD.

UNESCO (1973). Technical and Vocational Teacher Education and Training. (Paris UNESCO). Unpublished doctoral dissertation. Arizona State University.

UNESCO (2001). Teacher Education through Distance Learning: Technology, Curriculum, Evaluation, Cost. Paris.

UNESCO (2003). The use of ICTs in Technical and Vocational Education and Training UNESCO Institute for Information Technologies in Education: Moscow.

UNEVOC (1998). Cooperation with the world of work in technical and vocational education. UNESCO's UNEVOC Implementation Unit, Berlin, Germany.

USED (2010). http://www2.milwaukee.k12.wi.us/dsi/MPS_District_%26_School_Improvement/Home.html.

Walkington, J. (2002). A process for curriculum change in engineering education. European Journal of Engineering Education, 27(2), 133-148.

Wang, H. (2006). An implementation study of the English as a foreign language curriculum policies in the Chinese tertiary context. Ontario: Queen's University,.

Watkins, Larea Anne (1993). Contributions of Vocational Education to Educational Reform as Perceived by Vocational Education Policy Influencers. Dissertation. The Ohio State University: Ohio.

Westfall, Linda (2008). Sampling Methods. Excerpt from the Certified Software Quality Engineer Handbook. ASQ Quality press. WWW.Westfallteam.com.

White, R. (1995). The ELT Curriculum: Design, Innovation and Management. Cambridge, Massachusetts: Blackwell.

Wiggins, G. and McTighe, J. (2010). Understanding by Design: A brief introduction. Center for Technology & School Change at Teachers College, Columbia University. Teaching % 20Ellen %20 Meier %20 CTSC.pdf Retrieved 10/1/2010. http://iearn.org/civics/may2003workshop/Understanding%20by%20Design%20

Willis, S. & Kissane, B. (1995). Outcome-Based Education: A Review of the Literature. Prepared for the Education Department of Western Australia.

Winter, Hager, & Wolfgang, Dietrich.(1974). Reform der Berufsbildung: Aktuelle Programme und Initiativen von Bundesregierung, Parteien, Sozialpartnern und Wissenschaftlern. Berlin .New York: Walter de Gruyter.

Wolter, S.; S. Mühlemann; J. Schweri (2006): Why Some Firms Train Apprentices and Many Others Do Not, German Economic Review 7: 249Ð264.

Wood, Jane C. Millar (2008). The impact of globalization on education reform: a case study of Uganda. A dissertation paper for a Doctor of Philosophy, at University of Maryland.

Worku, S. 1981. The implementation of Technical education Curriculum In The Recognized Secondary School in Addis Ababa .In: Sachsenmeier, p., Quansah, k., & Dioh, S., (Eds.), African Studies in Curriculum Development and Evaluation, No. 12. Nairobi.

World Bank (2005). Education in Ethiopia: Strengthening the foundation for educational progress. Washington, DC: World Bank.

World Bank (2015). Ethiopian overview: Economic overview. Washington, DC: World Bank.

World Bank, (2007). Urban Labor Market in Ethiopia: Challenges and Prospects, Vol I and II,

Yin, R. K. (2003). Case study research: Design and methods (3rd ed.). Thousand Oaks, California: Sage Publications.

Yishak, DM & Gumbo, MT (2014) Indigenising the Curricula in Ethiopia from a Gamo Ethnic Group Perspective: The Case of Constitutional, Policy and Strategy Provisions, Mediterranean Journal of Social Sciences Rome-Italy: MCSER Publishing Vol 5 No 10.

Zewdie, M. (2000). A Study Guide for Curriculum Implementation and Evaluation, Unpublished Teaching Material s for the Course Educ.676, Addis Ababa University

Zigmond, N. (1997). Educating students with disabilities: The future of special education. In J. W. Lloyd, E. J. Kameenui, & D. Chard (Eds.), Issues in educating students With disabilities (pp. 377-390).Mahwah, NJ: Erlbaum.

Zimmer, Gerhard (2004). Kompetenzentwicklung und Reform der Berufsausbildung: Arbeit, Qualifikation und Ausbildung in der Netzwerkgesellschaft. Bielefeld: Bertelsmann.

Zucker, A. A., Shields, P. M., Adelman, N. E., Corcoran, T. B., & Goertz, M. E. (1998). A report on the Evaluation of the National Science Foundation's Statewide Systemic Initiatives (SSI) Program. Menlo Park, CA: SRI International.

Zuraidah M. Z. (2008). TVET in Malaysia. Retrieved 16 January 2013 at http://dspace.unimap.edu.my/dspace/bitstream/123456789/7186/1/TVET%20in%20Malaysia.pdf

Zwick, Thomas, (2007). Apprenticeship training in Germany –investment or productivity driven? Mannheim : Centre for European Economic Research (ZEW).

APPENDICES

Appendix 1–SURVEY QUESTIONNAIRE FOR INSTRUCTORS OF VET-BASED COLLEGES

Introduction: This is a study conducted by Selemon Worku a PhD student with the support of my advisor Prof. Dr. Reinhold Nickolaus at the University of Stuttgart-Germany.

Objective: Since the development of the 1994 Education Policy reform in Ethiopia, a high priority is given to the area of TVET. Hence, this study seeks to identify the impact of TVET CRs conducted from 2001-2010 on the TVET clients (Students and Industry), focusing at VET-based Colleges in the Ethiopian context.

Instruction: *Please answer the questions below. Make an (x) mark code of your answers in the boxes provided as applicable. All answers will be treated confidential.*

PART I: GENERAL PERSONAL AND INSTITUTIONAL INFORMATION

1. Sex: a. Male ☐ b. Female ☐
2. Age a. 18-29 ☐ b. 30-44 ☐ c. 45-59 ☐ d. 60 and above ☐
3. Qualification: a. Diploma ☐ b. Degree ☐ c. Master ☐ d. PhD ☐
4. Your status as instructor a. A-Level (Master & above) ☐ b. B-Level (Degree) ☐
   c. C-Level (L/3 & L/4) ☐ d. Other .....
5. The subject/area of study currently you teach: .....
6. Teaching experience in teaching TVET courses.
   a. Below 5 years ☐ b. 5 - 10 years ☐ c. 11 - 20 years ☐ d. Above 20 years ☐
7. The name of your institution .....
8. What is the ownership status of your institution?
   a. Public institution ☐ b. Private institution ☐ c. NGO ☐

PART II: The context-TVET CRS

1. I was part of the TVET CRs conducted during: (only one answer)
   a. the curricula changes between 2001 and 2005 (10+system) ☐
   b. the curricula changes between 2006 and 2010 (Level-system) ☐

2. How do you agree/disagree the curricular review/reforms conducted in your area of studies at your institution:	1 Strongly disagree	2 Disagree	3 Mildly disagree	4 Mildly agree	5 Agree	6 Strongly agree	Do not know
a. Did you participate in the design of TVET curriculum? (Answer agree or disagree)							
3. I agree the curricula in my area of study at my institution were effective in terms of:							
a. Input-based CR (10+system) (2001 and 2005)							
b. Outcome-based CR (Level-system) (2006 and 2010)							

4. If agree (Q.2) what was your role/s at your institution?
   I. no role to change the curriculum contents ☐
   II. has power to modify the curriculum contents ☐
   III. has power to change the curriculum contents? ☐
   IV. Other please specify:_____
5. If disagree (Q.2), please specify the major reasons:
   _____ _____ _____
   _____ _____ _____

6. Did you take competency assessment a. Yes ☐ b. No ☐
7. If agree, (Q.6), Specify the competency level awarded a. I ☐ b. II ☐ c. III ☐ d. IV ☐ e. V ☐

Interventions of curricula changes

8. How do you agree/disagree the interventions\issues of the curricular review/reforms conducted in your area of studies at your institution	Strongly disagree	Disagree	Mildly disagree	Mildly agree	Agree	Strongly agree	Do not know
a. subjects/trades changes							
b. contents changes							
c. new learning areas/methods changes							
d. Time allocation changes							
e. Professional change							
f. Evaluation system change							
g. Instructional media change							
h. Technical or scientific change							

Organization of TVET Curriculum

9. Review of the curriculum in my area of study/institution is conducted with the participation of:	1 Strongly disagree	2 Disagree	3 Mildly disagree	4 Mildly agree	5 Agree	6 Strongly agree	Do not know
a. Professional teachers							
b. Community/family representatives							
c. Selected group of students							
d. Employers							
e. College administrators							
f. TVET curriculum experts/specialists							
g. Independent Consultants							

10. How do you agree/disagree the extent of the curricular review/reforms conducted between 2006 and 2010 in your area of studies at your institution:							
a. Continue the curricula with no change							
b. Continue the curricula with modification(s)							
c. Terminate the course of study/program							
D The curriculum has replaced by a new course/subject							

Factor Assessment

Reasons for CRs

11. The following reasons can be considered as reasons that may influence the curriculum to be reformed between 2001 and 2010 in your area of study at your institution. What do you think of these roles?	1 Strongly disagree	2 Disagree	3 Mildly disagree	4 Mildly agree	5 Agree	6 Strongly agree	Do not know
a. Government policy & regulations							
b. Student ability (Difference in Competency of students)							
c. Student viewpoint (Labor market employment needs)							
d. Staff issues (Change of Professional staff)							
e. Influence of accreditation bodies (quality assurance)							
f. Inadequacy of the TVET curriculum to provide employability skill in the job market							
g. Adaptation of new curriculum change from abroad (change of bench mark)							
h. Employer/industry viewpoint (Influence of employers)							
i. Influential individuals (Influence of TVET experts)							
j. Academic fashion (Market & industry shift)							
k. Academic merit (Need to change trades/courses)							
l. Financial pressure (The availability of external funds)							

Internal Factors for the effectiveness of CRs

12. The following internal factors can be considered as hindrances to or drivers for the effective implementation of TVET CRs implemented between 2001 and 2010 in your area of studies. What do you think of their roles?	1 Strong hindrance	2 Hindrance	3 Slight hindrance	4 Slight driver	5 Driver	6 Strong driver	Do not know
a. Subject area objective							
b. Professional Teachers' teaching skill & experience							
c. Background & Inherent cognitive skill of students							
d. Application of teaching methods							
e. Organization of modular contents							
f. Assessment and evaluation process of learning outcomes							
g. Availability of equipment such as computers							
h. Usage of assigned time allocation							
i. Number of students in a class							
j. Motivation of Teaching staff							
k. Awareness of teaching staff to TVET							
l. Financial budget allocation							

External Factors for the effectiveness of CRs

13. The following external factors can be considered as hindrances to or drivers for the effective implementation of the TVET CRs between 2001 and 2010 in your area of studies. What do you think of their roles?	1 Strong hindrance	2 Hindrance	3 Slight hindrance	4 Slight driver	5 Driver	6 Strong driver	Do not know
1. Political Factors:							
a) TVET administrative practice in TVET colleges							
b) TVET policies practice							
c) National labor market influence							
d) External relation to develop TVET							
e) Adaption of external curriculum(Benchmarking)							
2. Economic Factors:							
a) Salary of TVET instructors							
b) Budget allocation to TVET							
c) Foreign financial aid to TVET (Donors)							
3. Social Factors:							
a) Family influence on TVET							
b) Cultural appropriateness							
c) Social Attitude to TVET							
d. Employers need for TVET graduates							
4. Technological Factors:							
a) Accessibility of ICT							
b) Research development practice							
c) Globalization							
d) Network & linkage system							
e) External technical support							

IMPACT ASSESSMENT

Impact indicators of TVET Curriculum

14. **The TVET CRs in my area of study will have positive impacts on:** Please make an 'x' mark for your answer	1 Strongly disagree	2 Disagree	3 Mildly disagree	4 Mildly agree	5 Agree	6 Strongly agree	Do not know
a. Access to enrollment to programs(Subjects/trades) in my area of study							
b. Graduation rates in my area of study							
c. Employability of graduates in my area of study							
d. Quality of education in my area of study							
e. Creating a competent/skilled workforce							
f. competence assessment							
g. Cost-effectiveness of training							
h. New methods of training							
i. Time table /schedule adjustment of training hours							

GRADUATE RELEVANCE

15. How do you agree/disagree the effect relevance of the CRs in your area of study/ institution regarding **graduates**?

Please make an 'x' mark for your answer	1 Strongly disagree	2 Disagree	3 Mildly disagree	4 Mildly agree	5 Agree	6 Strongly agree	7 Do not know
a. The curricula minimized unemployment rate of TVET graduates							
b. The curricula provided TVET graduates with paid employment opportunity							
c. The curricula provided access to makes the qualification of TVET graduates match with the labor market							
d. The curricula provided access for employed jobs found by the TVET graduates							
e. The curricula prepared TVET graduates for self-employment							
f. The curricula provided access for further training for TVET graduates for those already active in the labor market							

EMPLOYER RELEVANCE

16. How do you agree/disagree the effect relevancy of the CRs in your area of study/institution in relation to **employers?**

Please make an 'x' mark for your answer	1 Strongly disagree	2 Disagree	3 Mildly disagree	4 Mildly agree	5 Agree	6 Strongly agree	7 Do not know
a. The competency of graduates is appreciated by the employers							
b. TVET graduates are more productive in industries							
c. Employers are satisfied with the performance of TVET graduates							
d. Improved technology transfer in the industries							
e. The qualification of TVET graduates match with the industry standards for employment							
f. The curriculum responds the human resource needs of employer							

Institutional Follow up of Employment at Graduation

17. Employment Opportunity & follow up by the institution	1	2	3	4	5	6	7
	Strongly disagree	Disagree	Mildly disagree	Mildly agree	Agree	Strongly agree	Do not know
a. The institution has follow up mechanism for its graduates							
b. The institution actively assists graduates with identifying and pursuing employment opportunity							
c. Your institution anticipates changes in employment opportunity for its graduates							
d. Your institution identified new or emerging trends that may impact (+ or -) the ability of its graduates to find employment up on graduation							

SWOT Assessment of TVET Curricula Reform

18. Please, identify major perception of the TVET CRs in your area of study/institution:

Strengths	Weaknesses
....	....
Opportunities	**Threats**
....	....

Closing Questions and/or Advices

19. What domain of knowledge/educational interventions should be added and/or removed during the CRs in your area of study at your institution?

.....
.....
.....
.....
.....
.....
.....
.....

Thank you for your kind co-operation!

Appendix 2-SURVEY QUESTIONNAIRE FOR PRINCIPALS OF TVET-BASED COLLEGES

Introduction: This is a study conducted by Selemon Worku a PhD student with the support of my advisor Prof. Dr. Reinhold Nickolaus at the university of Stuttgart-Germany.

Objective: Since the development of the 1994 Education Policy reform in Ethiopia, a high priority is given to the area of TVET. Hence, this study seeks to identify the impact of TVET CRs conducted from 2001-2010 on the TVET clients (Students and Industry), focusing at VET-based Colleges in the Ethiopian context.

Instruction: *Please answer the questions below. Make an (x) mark code of your answers in the boxes provided as applicable. All answers will be treated confidential.*

PART I: GENERAL PERSONAL AND INSTITUTIONAL INFORMATION

1. SEX: a. Male ☐ b. Female ☐

2. Age a. 18-29 ☐ b. 30-44 ☐ c. 45-59 ☐ d. 60 and above ☐

3. Qualification: a. Deploma ☐ b. Degree ☐ c. Master ☐ d. PhD ☐

4. Your current position in the institution/department: _____

5. Total experience in TVET area.

   a. Below 5 years ☐ b. 5 - 10 years ☐ c. 11-20 years ☐ d. Above 20 years ☐

6. The name of your institution:_____

7. What is the major responsibility of your institution to train.....

8. What is the ownership status of your institution?

a) Public institution ☐ b) Private institution ☐ C) NGO ☐

PART II: TVET CRS

1. I was part of the CRs conducted during: (only one answer)
   a. The curricula change between 2001 and 2005 (10+system) ☐
   b. The curricula change between 2006 and 2010 (Level-system) ☐

How do you agree/disagree the curricular review/reforms conducted at your institution:	1	2	3	4	5	6	
	Strongly disagree	Disagree	Mildly disagree	Mildly agree	Agree	Strongly agree	Do not know
4. Did you participate in the design of TVET curriculum? (Answer agree or disagree)							
3. I agree the curricula in my area of study at my institution were effective in terms of:							
c. Input-based CR (10+system) (2001 and 2005)							
d. Outcome-based CR (Level-system) (2006 and 2010)							

4. If agree (Q.2) what was your role/s at your institution?

I. no role to change the curriculum contents ☐

II. has power to modify the curriculum contents ☐

III. has power to change the curriculum contents? ☐

IV. Other please, specify:_____

5. If disagree (Q.2), please specify the major reasons:

_____ _____ _____

_____ _____ _____

6. Did you take competence assessment? A. yes ☐ b. No ☐

7. If agree, (Q.6), Specify the competency level awarded a. I ☐ b. II ☐ c. III ☐ d. IV ☐ e. V ☐

Interventions of curricula changes

5. How do you agree/disagree the interventions\issues of the curricular review/reforms conducted at your institution	Strongly disagree	Disagree	Mildly disagree	Mildly agree	Agree	Strongly agree	Do not know
i. subjects/trades changes							
j. subjects/trades changes							
k. contents changes							
l. new learning areas/methods changes							
m. Time allocation changes							
n. Professional change							
o. Evaluation system change							
p. Instructional media change							
q. Technical or scientific change							

7. If you agree on Q. No. 5, Could you please provide the major courses changed in the curriculum, if any, made at your institution interms of:		
	A TVET system on Input based curriculum (between 2001 and 2005)	A TVET system on outcome based curriculum (between 2006 and 2010)
a.		
b.		
c.		
d.		
e		
f		
g		
h		

Organization of curricular review

8. Review of the curriculum in my area of study/institution is conducted with the participation of:	1 Strongly disagree	2 Disagree	3 Mildly disagree	4 Mildly agree	5 Agree	6 Strongly agree	Do not know
a. Professional teachers							
b. Community/family representatives							
c. Selected group of students							
d. Employers							
e. College administrators							
f. TVET curriculum experts/specialists							
g. Independent Consultants							
9. In what ways does the institution interact with employers to improve TVET curriculum? Employers involvement in:							
a. Advisory boards							
b. Internships/Cooperative Training							
c. Visits to work sites							
d. Employer sponsors programs or tutoring, e.g., vocational student organizations							
e. Review of student work							
f. Setting curriculum or skill standards							
g. TVET Curricula are reformed fully							

10. How do you agree/disagree the curricular review/reforms conducted between 2001 and 2010 at your institution:	1 Strongly disagree	2 Disagree	3 Mildly disagree	4 Mildly agree	5 Agree	6 Strongly agree	Do not know
a. Continue the curricula with no change							
b. Continue the curricula with modification(s)							
c. Terminate the course of study/program							
d. The curriculum has replaced by a new course/subject							

Factor Assessment

Reasons for CRs

11. The following reasons can be considered as reasons that may influence the curriculum to be reformed between 2001 and 2010 in your area of study at your institution. What do you think of these roles?	1 Strongly disagree	2 Disagree	3 Mildly disagree	4 Mildly agree	5 Agree	6 Strongly agree	Do not know
m. Government policy & regulations							
n. Student ability (Difference in Competency of students)							
o. Student viewpoint (Labor market employment needs)							
p. Staff issues (Change of Professional staff)							
q. Influence of accreditation bodies (quality assurance)							
r. Inadequacy of the TVET curriculum to provide employability skill in the job market							
s. Adaptation of new curriculum change from abroad (change of bench mark)							
t. Employer/industry viewpoint (Influence of employers)							
u. Influential individuals (Influence of TVET experts)							
v. Academic fashion (Market & industry shift)							
w. Academic merit (Need to change trades/courses)							
x. Financial pressure (The availability of external funds)							

12. In your opinion what are the **reasons** for the TVET curriculum to be **reformed** between 2001 and 2010, would you please specify, if any other than specified on Q. No 9.

1.	2.
3.	4.
5.	6.
7.	8.
9.	10.

Internal Factors for the effectiveness of CRs

13. The following internal factors can be considered as hindrances to or drivers for the effectively of a TVET CRs between 2001 and 2010 in your area of studies. What do you think of their roles?	1 Strong hindrance	2 Hindrance	3 Slight hindrance	4 Slight driver	5 Driver	6 Strong driver	Do not know
a. Subject area objective							
b. Professional Teachers' teaching skill & experience							
c. Background & Inherent cognitive skill of students							
d. Application of teaching methods							
e. Organization of modular contents							
f. Assessment and evaluation process of learning outcomes							
g. Availability of equipment such as computers							
h. Usage of assigned time allocation							
i. Number of students in a class							
j. Motivation of Teaching staff							
k. Awareness of teaching staff to TVET							
l. Financial budget allocation							

External Factors for the effectiveness of CRs

14. The following external factors can be considered as hindrances to or drivers for the effective implementation of the TVET CRs between 2001 and 2010 in your area of studies. What do you think of their roles?	1 Strong hindrance	2 Hindrance	3 Slight hindrance	4 Slight driver	5 Driver	6 Strong driver	Do not know
1. Political Factors:							
a) TVET administrative practice in TVET colleges							
b) TVET policies practice							
c) National labor market influence							
d) External relation to develop TVET							
e) Adaption of external curriculum(Benchmarking)							
2. Economic Factors:							
a) Salary of TVET instructors							
b) Budget allocation to TVET							
c) Foreign financial aid to TVET (Donors)							
3. Social Factors:							
a) Family influence on TVET							
b) Cultural appropriateness							
c) Social Attitude to TVET							
d) Employers need for TVET graduates							
4. Technological Factors:							
a) Accessibility of ICT							
b) Research development Practice							
c) Globalization							
d) Network & linkage system.							
e) External technical support							

15. Would you please provide additional **factors,** if any other than (Q.11&12), that may influence the effectiveness of a TVET CRs conducted at your institution between 2001 and 2010?

Internal factors	External factors

IMPACT ASSESSMENT

Impact indicators of TVET Curriculum

16. The TVET CRs conducted between 2001 and 2010 in my area of study will have **positive impact** on:

Please make an 'x' mark for your answer corresponding to:	1 Strongly disagree	2 Disagree	3 Mildly disagree	4 Mildly agree	5 Agree	6 Strongly agree	Do not know
a. Access to enrollment to programs (Subjects, trades) in my area of study							
b. Graduation rates in my area of study							
c. Employability of graduates in my area of study							
d. Quality of education in my area of study							
e. Creating a competent/skilled workforce							
f. competence assessment							
g. Cost effectiveness of training							
h. New methods of training							
i. Time table /schedule adjustment of training hours							

GRADUATE RELEVANCE

17. How do you agree/disagree the impact of the curricula reforms in your institution regarding **graduates**?

Please make an 'x' mark for your answer	1 Strongly disagree	2 Disagree	3 Mildly disagree	4 Mildly agree	5 Agree	6 Strongly agree	7 Do not know
a. The curricula minimized unemployment rate of TVET graduates							
b. The curricula provided TVET graduates with paid employment opportunity							
c. The curricula provided access to makes the qualification of TVET graduates match with the labor market							
d. The curricula provided access for employed jobs found by the TVET graduates							
e. The curricula prepared TVET graduates for self-employment							
f. The curricula provided access for further training for TVET employed graduates for those already active in the labor market							

EMPLOYER RELEVANCE

18. How do you agree/disagree the relevancy of the curricula reforms of your area of study/institution in relation to **employers?**

Please make an 'x' mark for your answer:	1 Strongly disagree	2 Disagree	3 Mildly disagree	4 Mildly agree	5 Agree	6 Strongly agree	7 Do not know
a. The competency of graduates is appreciated by the employers							
b. TVET graduates are more productive in industries							
c. Employers are satisfied with the performance of TVET graduates							
d. Improved technology transfer in the industries							
e. The qualification of TVET graduates match with the industry standards for employment							
f. The CRs respond the human resource needs of employer							

Institutional Follow up of **Employment at graduation**

19. Employment Opportunity & follow up by the institution	1 Strongly disagree	2 Disagree	3 Mildly disagree	4 Mildly agree	5 Agree	6 Strongly agree	7 Do not know
a. The institution has follow up mechanism for its graduates							
b. The institution actively assists graduates with identifying and pursuing employment opportunity							
c. Your institution anticipates changes in employment opportunity for its graduates							
d. Your institution identified new or emerging trends that may impact (+ or -) the ability of its graduates to find employment up on graduation							
e. There is strong relationship existed between your institution and the industries							

SWOT evaluation of TVET Curricula

20. Please identify major perception of the TVET curriculum in your department/institution:	
Strengths	***Weaknesses***
Opportunities	***Threats***

21. Would you please provide information regarding financial budget allocated & no. Of graduates at your institution from 2001 to 2010?

Year	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Budget										
Graduates										

Closing Questions & Advices

22. What further changes, you think, need to be implemented in the curriculum in order to improve the quality and relevance of graduates in employment?

23. Is there any thing that is not included in this questionnaire and you would like to add?

Thank you very much for your time and collaboration!

Appendix 3-SURVEY QUESTIONNAIRE FOR GRADUATES OF VET-BASED COLLEGES

Introduction: This is a study conducted by Selemon Worku a PhD student with the support of my advisor Prof. Dr. Reinhold Nickolaus at the university of Stuttgart-Germany.

Objective: Since the development of the 1994 Education Policy reform in Ethiopia, a high priority is given to the area of TVET curriculum. Hence, this study seeks to identify the impact of TVET CRs conducted from 2001-2010 on the TVET clients (Students and Industry), focusing at VET-based Colleges in the Ethiopian context.

Instruction: Please answer the questions below. Make an 'X' mark for the code of your answers as applicable. All answers will be treated confidential.

PART I: GRADUATE'S PROFILE

1. Sex: a. Male ☐ b. Female ☐
2. Age a. < 25 ☐ b. 25-35 ☐ c. > 35 ☐
3. Type of TVET college attended a- Private ☐ b -Public ☐ c -NGO ☐
4. Graduation Levels of TVET Program a. 10+1 ☐ b. 10+2 ☐ c. 10+3 ☐
5. Levels of competence certificate awarded
   a.I ☐ b. II ☐ c.III ☐ d. VI ☐ e.V ☐ f. Not yet certified ☐
6. Occupational title/training field/s attended _____
7. Year of graduation_____
8. Name of Training Institution/s Attended. _____

PART II: IMPACT/EFFECT RELEVANCE OF THE TVET CURRICULLAR REFORMS SKILL/TRAINING AT COLLEGE

9. How do you agree with the following relevancy of the TVET curriculum/training	**Strongly disagree**	**Disagree**	**Mildly disagree**	**Mildly agree**	**Agree**	**Strongly agree**	**Do not know**
a. The modular contents of the core training/curriculum was relevant to my needs and interests							
b. I have taken enough class-room training at my institution in my field of study							
c. I am satisfied with the method/the way I am being tought at my college.							
d. The curriculum creates an opportunity for further training							
e. I have got the adequate competence from my institution in order to tackle with the job opportunities in the labor market.							
10. Your answer for question 9 item. e is 4 to 6, to what extent do you agree that it was helpful to get a job?							

11. . If your answer (for Q. No. 10 is 1 to 3), not helpful to get a job, please specify the reason(s)

    ---

12. If your answer (for Q. No. 9e is 1 to 3) did not get adequate competence, please specify the reason(s)

SKILL/TRAINING IN THE COMPANIES

	1	2	3	4	5	6	
13. How do you agree with the measurs taken to improve your sikill in the training organizations?	**Strongly disagree**	**Disagree**	**Mildly disagree**	**Mildly agree**	**Agree**	**Strongly agree**	**Do not know**
a. There was access to get cooperative (apprenticeship) raining in the training organizations in my field of study.							
b. The contents in the company training was related with the contents in the college							
c. There was sufficient workshop materials during cooperative/apprenticeship training							
d. . Adequacy of time for apprenticeship/ cooperative training in the enterprises							

14. How useful are your skills acquired from the training to your job/business? ***(please select one answer only) (If employed)***
    a. very useful (when often or directly used in the job) ☐
    b. some use (when seldom or sometimes used in the job) ☐
    c. no use at all because: ☐
    c.1 skills acquired from training/course not needed in actual work ☐
    c.2 occupation is entirely different with training/course completed ☐
    c.3 others, specify _____

COMPETENCY ASSESSMENT

15. Did you take the Competency Assessment? a. Yes ☐ No ☐
16. If ‚Yes', was the competency assessment related with the contents studied at the college? A. Yes ☐ b. No ☐
17. If you take the assessment, what is your Competency Assessment result? a. Passed ☐ b. Failed ☐
18. If you take the assessment (Q N0.15), How many times did you take the assessment ? _____
19. (If ‚No', for Q 15) please specify reason/s for not taking the assessment _____
    _____ _____
    _____

EMPLOYMENT OF GRADUATES

20. Did you get a job/employment after completing the course/training program?
    a.Yes ☐ B. No ☐ if yes, specify b.1 occupational title _____
    b.2 monthly income: Eth. Birr _____

21. If your answer is not yet employed (Q. No 20) Please specify the reasons
    _____
    _____
22. How long did it take to get your first employment/searching a job after completing the course?
    a. Less than 1 year ☐ b. 1 to 2 years ☐. . more than 2 years ☐
23. What type of industry/business job are you looking for ?
    _____ _____
    (Pls. specify, e.g. iron works, garments, , construction, trading, etc.)
24. Whom do you work for? (please select one answer only)
    a. work for private household/establishment/family operated activity ☐
    b. work for government/government corporation ☐
    c. work for own business or self-employed ☐
    d. work without pay on own family business ☐
    e. Other,Please spesify_____
25. What is the nature of your employment? ***(please select one answer only)***
    a. Permanent job ☐ b. Part-time job ☐
    c unpaid family work/ business ☐ d. Self-employed/business ☐
    e short-term/seasonal job ☐ f. others, specify ----------

26. How do you agree with the following indicators regarding job/employment	Strongly disagree	Disagree	Mildly disagree	Mildly agree	Agree	Strongly agree	Do not know
a. There is better employment opportunity (available) in the formal sector in my field of study.							
b. There is better opportunity to get a paid employment job in my occupation/field of study.							
c. There is better opportunity for self-employment in my occupation/field of study							
d. Better employment opportunity in the non-formal sector							
(To be answered by employed graduates)							
a. The quality of the job I got matches with the level of the skill it requires							
b. I am satisfied with quality of my current job							
c. My competency/skills is appreciated by my employer.							

INCOME OF GRADUATES

27. How do you agree with the following factors regarding income of graduates	Strongly disagree	Disagree	Mildly disagree	Mildly agree	Agree	Strongly agree	Do not know
a. There is an opportunity for self-employment earnings in my occupation							
b. There is an opportunity for paid employment earnings in my occupation							
(to be answered by employed graduates)							
a. I am satisfied with the current salary/income							
b. My salary matches with the job assigned							

Closing Questions & Advice

28. In your opinion, what sort of competencies in the occupational standards do you recommend for better employable skills in the job market?

.....

.....

.....

29. Is there any thing that it is not included in this questionnaire and you would like to add?

.....

.....

.....

.....

Thank you very much for your time and collaboration!

Appendix 4-በቴክኒክና ሙያ ተመራቂዎች የሚሞላ መጠይቅ

መግቢያ' *ይህ ጥናት የሚከናወነው በአቶ ሰለሞን ወርቁ ሲሆን ተቀማጭነታቸው በጀርመን አገር የሽቱትጋርት ዩኒቨርሲቲ በፕሮፌሰር ዶር ራይንሆልድ ኒኮላውስ አማካሪነት የሚካሄድ ጥናት ነው::*

ዓላማ' *እኤአ በ1994 ዓ.ም በተደረገው የትምህርት ፖሊሲ ሪፎርም/ለውጥ መሰረት ለቴክኒክና ሙያ ትምህርት ከፍተኛ ትኩረት ተሰጥቶታል:: ስለሆነም የዚህ ጥናት ዋና ዓላማ እኤአ ከ2001-2010 በተግባር ላይ የዋለው የቴክኒክና ሙያ ትምህርት ስርዓተ ትምህርት በተመራቂዎች ብሎም በኢንዱስትሪ ላይ ያመጣውን ለውጥ ለመመርመር ነው::*

መመሪያ' *የሚከተሉትን ጥያቄዎች እንደአስፈላጊነቱ በተሰጠው ሳጥን ውስጥ የ(x) ምልክት በማድረግ ይመልሱ:: የ ርሱ ምላሽ ለጥናቱ ከፍተኛ አስተዋጽኦ አለው:: ሚስጥራዊነቱም የተጠበቀ ነው::*

ክፍል I ጠቅላላ የግል መረጃ

1. ጾታ' a. ወንድ ☐ b. ሴት ☐
2. እድሜ a. <25 ☐ b. 25-35 ☐ c. >35 ☐
3. የተማሩበት የኮሌጁ ዓይነት' a. የግል ☐ b. የመንግስት ☐ c. የመንግስት ያልሆነ /NGO/ ☐
4. የተመረቁበት የኮሌጅ ትምህርት ደረጃ /Levels/ a. 10+1 ☐. 10+2 ☐ c. 10+3 ☐
5. የችሎታ ብቃት መለኪያ ሰርትፍኬት ደረጃ a.I ☐ b. II ☐ c.III ☐ d. VI ☐ e.V ☐
6. የተመረቁበት የትምህርት ዓይነት _____
7. ከኮሌጅ የተመረቁበት ዓመት_____
8. ትምህርትዎን ያጠናቀቁበት ኮሌጅ ሥም _____

ክፍል II የቴክኒክና ሙያ ስርዓተ ትምህርት ሪፎርም/ለውጥ ውጤት

የተግባር ትምህርት ስልተና በኮሌጅ

9. የሚከተሉት ምክንያቶች የተግባር ሥልጠና ሁኔታን ይመለከታሉ ምን ያህል ይስማማሉ ውይም አይስማሙም	**1 በጣም አልስማማም**	**2 አልስማማም**	**3 በመጠኑ አልስማማም**	**4 በመጠኑ እስማማለሁ**	**5 እስማማለሁ**	**6 በጣም እስማማለሁ**	**አላውቅም**
a. የቴክኒክና ሙያ ስርዓተ ትምህርት ይዘቶች ከእኔ ፍላጎት ያር ይጣጣማል የኮሌጁ የቴክኒክና ሙያስርዓተ ትምህርት ይዘት ከድርጅታችን የስልጠና ይዘት ጋር ይጣጣማል							
b. በኮሌጅ ውስጥ የተማርኩት ትምህርት በቂ እውቀት አግኝቻለሁ							
c. በኮሌጅ ውስጥ የተሻሻለው የማስተማር ዘዴ የሥራ ችሎታዬን አዳብሯል							
d. የቴክኒክና ሙያ ስርዓተ ትምህርት ለውጥ ለከፍተኛ ትምህርት እድል በር ይከፍታል							
e. በኮሌጅ ውስጥ የተማርኩት ትምህርት በሥራ ገበያ ላይ ለመወዳደር የሚያስችል በቂ እውቀት አግኝቻለሁ							
10. በቂ እውቀት አግኝቻለሁ ከሆነ (መልሶ- 4 5 6 ከሆነ) (ጥ.ቁ.9 e)ሥራ ለማግኘት ያስችለኛል ብለው ያምናሉ?							

11. ያገኘሁት እውቀት ሥራ ለማግኘት አያስችለኝም (ጥ.ቁ.10 መልሶ- 1 ና 2 ከሆነ) እባክዎ በቂ እውቀት ማግኘት ያልቻሉበትን ምክንያቱን ቢጠቅሱ
_____
_____

12. በቂ እውቀት አላገኘሁም (ጥ.ቁ.9 e መልe- 1,2,3 ከሆነ) እባክዎ በቂ እውቀት ማግኘት ያልቻሉበትን ምክንያቱን ቢጠቅሱ
_____
_____

የተግባር ትምህርት ስልጠና በድርጅቶች

13 የሚከተሉት ምክንያቶች የተግባር ሥልጠና ሁኔታን ይመለከታሉ ምን ያህል ይስማማሉ ውይም አይስማሙም	**1**	**2**	**3**	**4**	**5**	**6**	
	በጣም አልስማማም	**አልስማማም**	**በመጠኑ አልስማማም**	**በመጠኑ እስማማለሁ**	**እስማማለሁ**	**በጣም እስማማለሁ**	**አላውቅም**
a.ድርጅቶች የተግባር ትምህርት ስልጠና ለተማሪዎች የተሻለ እድል ይሰጣል							
b.የኮሌጁ የቴክኒክና ሙያስርዓተ ትምህርት ይዘት ከድርጅቶች የስልጠና ይዘት ጋር ይጣጣማል							
c.በድርጅቶች በቂ የወርክሾፕ መሳሪያዎች ሰተግባር ትምህርት አቅርባል							
d.በድርጅቶች ለተግባር ትምህርት ስልጠና የሰጠው ሰዓት በቂ ነው							

14. የሰለጠኑበት የሙያ አሁን ከሚሰሩት ሥራ ጋር ምን ያህል ይጣጣማል? (እባክዎ አንድ መልስ ብቻ ይመልሱ)
   a. በጣም ይጣጣማል (በሥራው ላይ ሙሉ ለሙሉ እጠቀምበታለሁ) ☐
   b. በከፊል ይጣጣማል (በሥራው ላይ አልፎ አልፎ እጠቀምበታለሁ) ☐
   c. በፍጹም ይጣጣማል (ሙያዬ እና ሥራዬ አልተገናኙም) ምክንያቱም ☐
      c.1 የሰለጠንኩበት ሙያ አሁን ለምሰራው ሥራ አስፈላጊ አይደለም ☐
      c.2 የሥራው ቦታ ከሙያዬ ጋር ሙሉ ለሙሉ ስለማይገናኝ ☐
      c.3 ሌላ ካለ ቢጠቅሱ _____

የችሎታ ቢቃት መመዘኛ (Competency assessment)

16 የችሎታ ብቃት መለኪያ ፈተና ወስደዋል? a. ወስጃለሁ ☐ b. አልወሰድኩም ☐

17 የብቃት መለኪያ ፈተና ከወሰዱ የፈተናው ይዘት ከኮሌጅ ትምህርት ይዘት ጋር ይጣጣማል

a. ይጣጣማል ☐ b. አይጣጣምም ☐

17. ወስጃለሁ ከሆነ መልስዎ የችሎታ ብቃት መለኪያ ፈተና a. አልፌአለሁ ☐ b. አላለፍኩም ☐

18. ብቃት መለኪያ ፈተና ወስጃለሁ ከሆነመልስዎ (ጥ.ቁ.15) ምንያህል ጊዜ ፈተናውን ወስደዋል? _____

19. የብቃት መለኪያ ፈተና አልወሰድኩም ከሆነ መልe- (ጥ.ቁ.1) እባክዎ ያልተፈተኑበትን ምክንያቱን ቢጠቅሱ

_____

_____

የተመራቂዎች የሥራ ቅጥር ሁኔታ

20. የኮሌጅ ትምህርቴን እንደ ጨረስኩ የሥራ እድል
   a. አላገኘሁም ☐ b. አግኝቻለሁ ☐
      b.1 የሥራው ደረጃ _____
      b.2 ወርሃዊ የገቢ መጠን በኢት ብር _____

21. አላገኘሁም ከሆነ መልሶ - (ጥ.ቁ.20) ሥራ ያላገኙበትን ምክንያት ቢጠቅሱ

_____

_____

22. አላገኘሁም ከሆነ መልe- (ጥ.ቁ.20) የመጀመርያውን ሥራ ለማግኘት ምን ያህል የጊዜ ቆይተዋል?
   a. <1 ☐ b. 1 እስከ 2 ዓመት ☐ c. > 2 ዓመት ☐

23. አሁን የሚሰሩት የሥራ ዓይነት_____ (ምሣሌ=የብረታብረት ሥራ፣ የህንጻ ሥራ፣ የንግድ ሥራ፣ ወዘተ)

24. በሰለጠንኩት ሙያ አሁን የምሰራው (እባክዎ አንድ መልስ ብቻ ይመልሱ)
   a. በግለሰብ በተቋቋመ ድርጅት ☐
   b. በመንግስት በተቋቋመ ድርጅት ☐
   c. በግሌ ባቋቋምኩት ድርጅት ☐
   d. ቤተሰብ በተቋቋመው ድርጅት ግን ያለ ክፍያ ☐
   e. ሌላ ካለ ቢጠቅሱ_____

25. አሁን የሚሰሩት የሥራ መደብ(እባክዎ አንድ መልስ ብቻ ይመልሱ)
   a. ቋሚ ሥራ (permanent job) ☐ b. በጊዜያዊ ሥራ (Part-time job) ☐
   c. ያለክፍያ በቤተሰብ ድርጅት (Family Business) ☐ d. በግሌ ድርጅት (self-employed) ☐
   e. የአጭር ዬዜ / ወቅታዊ ሥራ (short-term/seasonal job) ☐
   f. ሌላ ካለ ቢጠቅሱ_____

26. የሚከተሉት ምክንያቶች የሥራ ቅጥር ሁኔታን ይመለከታሉ ምን ያህል ይስማማሉ ውይም አይስማሙም	1	2	3	4	5	6	
	በጣም አልስማማም	አልስማማም	በመጠኑ አልስማማም	በመጠኑ እስማማለሁ	እስማማለሁ	በጣም እስማማለሁ	አላውቅም
a. ድርጅቶች ለቴክኒክና ሙያ ተመራቂዎች መደበኛ የክፍያ ሥራ እድል ይሰጣል							
b. ድርጅቶች ለቴክኒክና ሙያ ተመራቂዎች የሙሉ ሰዓት/ቋሚ ሥራ እድል ይሰጣል							
c. ስልጠናው የግልሥራ ለማቋቋም እድል ይሰጣል							
d. ስልጠናው ለቴክኒክና ሙያ ተመራቂዎች ኢመደበኛ የክፍያ ሥራ እድል ይሰጣል							
በተቀጣሪዎች የሚመለስ							
a. የሰለጠንኩበት ሙያ ከምሰራው የሙያ ዘርፍ/ደረጃ ጋር ይጣጣማል							
b. ያገኘሁት ስራ ዓነት ጥራት ተመችቶኛል							
c. የሥራ ቀጣሪዬ በሥራ ብቃት/ ችሎታዬ ይተማመናል							

የገቢ/ደሞዝ ሁኔታ

27. የሚከተሉት ምክንያቶች የገቢ/ደሞዝ ሁኔታይመለከታሉ ምን ያህል ይስማማሉ ውይም አይስማሙም	1	2	3	4	5	6	
	በጣም አልስማማም	አልስማማም	በመጠኑ አልስማማም	በመጠኑ እስማማለሁ	እስማማለሁ	በጣም እስማማለሁ	አላውቅም
a. የስርዓተ ትምህርት ለውጥ ለቴክኒክና ሙያ ተመራቂዎች በግልሥራ የተሻለ የገቢ ምንጭ እድል ይሰጣል							
b. የስርዓተ ትምህርት ለውጥ ለቴክኒክና ሙያ ተመራቂዎች መደበኛ ቅጥር ሥራ የተሻለ የገቢ ምንጭ እድል ይሰጣል							
በተቀጣሪዎች የሚመለስ							
a. ያገኘሁት የገቤ መጠን/ደሞዝ ተመችቶኛል							
b. ደመውዜና የሥራ ደረጃዬ ይጣጣማል							

የመዝጊያ ጥያቄና አስተያየት

28. የትምህርት ጥራትን ሰማሻሻልና ብቁ የሰው ሃይል በገበያ ላይ ለማቅረብ በቴክኒክና ሙያ ስርዓተ ትምህርት ላይ ምን አይነት ለውጦች ቢካተቱ ይመረጣል ይላሉ?

_____
_____
_____
_____
_____

29. በእስዎ አስተያየት እዚህ መጠይቅ ውስጥ ያልተካተተ ሃሳብ ወይም አስተያየት ካለቢጨምሩ

_____
_____
_____
_____
_____

ላደረጉት ትብብርም ሆነ ወርቃማ ጊዜዎን ሣስዋእት ስላደረጉ ምስጋናችን የላቀ ነው!

Appendix 5-SURVEY QUESTIONNAIRE FOR EMPLOYERS

Introduction: *This is a study conducted by Selemon Worku a PhD student with the support of my advisor Prof. Dr. Reinhold Nickolaus at the university of Stuttgart-Germany.*

Objective: *Since the development of the 1994 Education Policy reform in Ethiopia, a high priority is given to the area of TVET. Hence, this study seeks to identify the impact of TVET CRs conducted from 2001-2010 on the TVET clients (Students and Industry), focusing at VET-based Colleges in the Ethiopian context.*

Instruction: *Please* answer *the questions below. Make an (x) mark code of your answers in the boxes provided as applicable. All answers will be treated confidential.*

PART I: GENERAL PERSONAL AND INSTITUTIONAL INFORMATION

1. SEX: a. Male ☐ b. Female ☐
2. Age: a. <25 ☐ b. 25-35 ☐ c. >35 ☐
3. Qualification: a. Deploma ☐ b. Degree ☐ c. Master ☐ d. PhD ☐
4. Your current position in the organization: _____
5. Total experience in the company.
   b. Below 5 years ☐ b. 5 - 10 years ☐ c. 11-20 years ☐ d. Above 20 years ☐
6. The name of your organization and/or _____
7. Area of service/production :_____

PART II: TVET CRS

8. Have you ever participated in the design of TVET curriculum?
   a. Yes ☐ If yes, what was the roles of your organization?
   I. No role to change the contents in the curriculum
   II. have power to modify the curriculum contents
   III. have power to change the curriculum contents
   IV. Other please specify:_____
   b. No ☐ If no, please specify the major reasons:

   _____ _____

   _____ _____

   _____ _____

   _____ _____

9. Do you provide apprenticeship/cooperative training? A. Yes ☐ B. No ☐

Employers' involvement

10. In what ways does the company interact with the institutions to improve TVET curriculum? Employers involvement in:	1 Strongly disagree	2 Disagree	3 Mildly disagree	4 Mildly agree	5 Agree	6 Strongly agree	Do not know
a. Advisory boards							
b. Internships/Apprenticeship							
c. Visits to work sites							
d. Employer sponsors programs or tutoring							
e. Review of student work							
f. Setting curriculum or skill standards							

SKILL/TRAINING IN THE COMPANIES

11. How do you agree/disagree with the following factors regarding company training in your industry	1 Strongly disagree	2 Disagree	3. Mildly disagree	4 Mildly agree	5 Agree	6 Strongly agree	Do not know
e. There is better access to provide cooperative training in my enterprise.							
f. The current contents in your company training was more related with the contents in the TVET colleges							
g. Currently there are sufficient workshop materials for cooperative training.							
h. The current practical training time for cooperative training in the company is adequate.							

Employment of TVET graduates

12. How do you agree/disagree with the following factors regarding employment in your industry currently	1 Strongly disagree	2 Disagree	3. Mildly disagree	4 Mildly agree	5 Agree	6 Strongly agree	Do not know
a. There is better opportunity for TVET graduates to get paid employment in my company.							
b. There is access for full-time employment opportunity for TVET graduates.							
c. Competency certificate is a requirement for employment in my company.							
d. My company is more satisfied with the /competency/skill of TVET graduate employees							

Quality assessment

13. How do you agree/disagree with the following factors regarding quality to skill and job in your industry currently	1 Strongly disagree	2 Disagree	3. Mildly disagree	4 Mildly agree	5 Agree	6 Strongly agree	Do not know
a. The qualification of TVET graduates match with standards of job in your enterprise							
b. The quality of the job of TVET graduate employees match with the level of the skill it requires in industry	.						
c. The salary of TVET graduate employees match with the job assigned in my company							
d. Currently my company has well certified & experienced trainers.							
e. My company appgrades the skill of graduates through workshop after employment							

Employer Relevance indictors of CR

14. How do you agree/disagree with the following relevancy of the CR to your company?	1 Strongly disagree	2 Disagree	3. Mildly disagree	4 Mildly agree	5 Agree	6 Strongly agree	Do not know
a. satisfy human resource needs to the demand of the industry							
b. Improved quality of production in your enterprise,							
c. increased quality of employable skill in industry							
d. Curricula improved technology transfer.							

15. How do you rate the number of TVET graduates employed in your enterprise from 2001 to 2010?

a. Below 10 ☐ B 10-20 ☐ c. 21-30 ☐ d. 31-40 ☐ e. Above 40 ☐

Closing Questions & Advice

16. What further changes, you think, need to be implemented in the curriculum in order to improve the quality and relevance of graduates in industries?

_____

_____

_____

_____

17. Is there any thing that is not included in this questionnaire and you would like to add?

_____

_____

_____

Thank you very much for your time and collaboration!

Appendix 6-በቀጣሪ ድርጅቶች የሚሞላ መጠይቅ

መግቢያ፡ ይህ ጥናት የሚከናወነው በአቶ ሰለሞን ወርቁ ሲሆን ተቀማጭነታቸው በጀርመን አገር የሽቱትጋርት ዩኒቨርሲቲ በፕሮፌሰር ዶር ራይንሆልድ ኒኮላውስ አማካሪነት የሚካሄድ ጥናት ነው፡፡

ዓላማ፡ *እኤአ በ1994 ዓ.ም በተደረገው የትምህርት ፖሊሲ ሪፎርም/ለውጥ መሰረት ለቴክኒክና ሙያ ትምህርት ከፍተኛ ትኩረት ተሰጥቶታል፡፡ ስለሆነም የዚህ ጥናት ዋና ዓላማ እኤአ ከ2001-2010 በተግባር ላይ የዋለው የቴክኒክና ሙያ ትምህርት ስርዓተ ትምህርት በተመራቂዎች ብሎም በኢንዱስትሪ ላይ ያመጣውን ለውጥ ለመመርመር ነው፡፡*

መመሪያ፡ *የሚከተሉትን ጥያቄዎች እንደአስፈላጊነቱ በተሰጠው ሳጥን ውስጥ የ(x) ምልክት በማድረግ ይመልሱ፡፡ የርሶ ምላሽ ለጥናቱ ከፍተኛ አስተዋጽኦ አለው፡፡ ሚስጥራዊነቱም የተጠበቀ ነው፡፡*

ክፍል I ጠቅላላ የግልና የድርጅቱ መረጃ

1. ጾታ፡ a. ወንድ ☐ b. ሴት ☐
2. እድሜ a. <25 ☐ b. 25-35 ☐ c. >35 ☐
3. የትምህርት ደረጃ፡ a. ዲፕሎማ ☐ b. ዲግሪ ☐ c. ማስተር ☐ d. ዶክተር ☐
4. የሥራ ኃላፊነት፡ _____
5. የሥራ ልምድ በዓመት፡
   c. < 5 ☐ b. 5 - 10 ☐ c. 11-20 ☐ d. > 20 years ☐
6. የድርጅቱ ሥም_____
7. የድርጅቱ አገልግሎት ወይም የምርት ዓይነት፡ _____

ክፍል II: ***ቴክኒክና ሙያስርዓተ ትምህርት ሪፎርም***

8. የቴክኒክና ሙያ ትምህርት ስርዓተ ትምህርት ሲቀረጽ ተሳትፎ አድርገው ያውቃሉ?

   b. አውቃለሁ ☐ አውቃለሁ ካሉ ምን ዓይነት ሚና ነበረዎት? (ከአንድ በላይ መልስ ይቻላል)
   - V. የካሪኩለሙን ይዘት ወይም ኮርስ የመለዎጥ ሚና የለኝም
   - VI. የካሪኩለሙን ይዘት የማስተካከል ብቃቱ አለኝ
   - VII. የካሪኩለሙን ኮርስ የመለወጥ ብቃት አለኝ
   - VIII. ሌላ ካለ ይጥቀሱ፡_____

   b. አላውቅም ☐ አላውቅም ካሉ እባክዎ ዓብይ ምክንያቶችን ይግለጹ፡
   _____
   _____
   _____

9. ድርጅታችን የተግባር ትምህርት ስልጠና ለተማሪዎች ያመቻቻል ይሰጣል a. ይሰጣል ☐ b. አይሰጣም ☐

የቀጣሪ ድርጅቶች ተሳትፎ

10. የቴክኒክና ሙያ ስርዓተ ትምህርትን ለማሻሻል ድርጅትዎ ከተቋሟቱ ጋር ቤየትኛው መንገድ ተሳትፎ ያደርጋል?	1	2	3	4	5	6	
	በጣም አልስማማም	አልስማማም	በመጠኑ አልስማማም	በመጠኑ እስማማለሁ	እስማማለሁ	በጣም እስማማለሁ	አላውቅም
g. አማካሪ ቦርድ በሚቋቋም							
h. ኢንተርንሽፕ በመስጠት							
i. የልምምድ ቦታዎችን በመፈብለግ							
j. ፕሮግራሞችን ስፖንሰር በማድረግ ወይም ቱቶር በመስጠት							
k. የተማሪዎችን ተግባር በመቃኘት							
l. በካሪኩለሙ ላይ የክህሎት መመዘኛ/standard በማውጣት							

የተግባር ትምህርት ስልጠናና የቅጥር ሁኔታ በድርጅት

11. የሚከተሉት ምክንያቶች የተግባር ሥልጠና ሁኔታን ይመለከታሉ ምን ያህል ይስማማሉ ውይም አይስማሙም	1	2	3	4	5	6	
	በጣም አልስማማም	አልስማማም	በመጠኑ አልስማማም	በመጠኑ እስማማለሁ	እስማማለሁ	በጣም እስማማለሁ	አላውቅም
i. ድርጅታችን የተግባር ትምህርት ስልጠና ለተማሪዎች የተሻለ እድል ይሰጣል							
j. የኮሌጁ የቴክኒክና ሙያስርዓተ ትምህርት ይዘት ከድርጅታችን የስልጠና ይዘት ጋር ይጣጣማል							
k. ድርጅታችን በቂ የወርክሾፕ መሳሪያዎች ለተግባር ትምህርት አቅርባል							

l. ድርጅታችን ለተግባር ትምህርት ስልጠና የሰጠው ሰዓት በቂ ነው							

የሥራ ቅጥር ሁኔታ

12. የሚከተሉት ምክንያቶች የሥራ ቅጥር ሁኔታን ይመለከታሉ ምን ያህል ይስማማሉ ውይም አይስማሙም	1	2	3	4	5	6	
	በጣም አልስማማም	አልስማማም	በመጠኑ አልስማማም	በመጠኑ እስማማለሁ	እስማማለሁ	በጣም እስማማለሁ	አላውቅም
e. ድርጅታችን ለቴክኒክና ሙያ ተመራቂዎች የክፍያ ሥራ እድል ይሰጣል							
f. ድርጅታችን ለቴክኒክና ሙያ ተመራቂዎች የሙሉ ሰዓት/ቋሚ ሥራ እድል ይሰጣል							
g. ድርጅታችን ስራ ለማግኘት የብቃት ማረጋገጫ ሰርተፍኬት ያስፈልጋል							
h. ድርጅታችን በቴክኒክና ሙያ ተመራቂ ሰራተኞች ብቃት ይተማመናል							

የጥራት ምዘና

13. የሚከተሉት ምክንያቶች የተመራቂዎችን ብቃት እና የሥራ ጥራትሁኔታን ይመለከታል ምን ያህል ይስማማሉ ውይም አይስማሙም	1	2	3	4	5	6	
	በጣም አልስማማም	አልስማማም	በመጠኑ አልስማማም	በመጠኑ እስማማለሁ	እስማማለሁ	በጣም እስማማለሁ	አላውቅም
f. የተመራቂዎች የብቃት ደረጃ ድርጅቶ የሚፈልገውን የሥራ ችሎታ ብቃት ያሟላል							
g. በድርጅቶ ውስጥ ለቴክኒክና ሙያ ተመራቂዎች የሚሰጠው ሥራ ከብቃት ደረጃቸው ጋር የተመጣጠነ ነው							
h. የቴክኒክና ሙያ ተመራቂ ሰራተኞች ደመዎዝ ከሥራው ጋር ተመጣጣኝ ነው							
i. ድርጅታችን በቂ የቴክኒክና ሙያ አሰልጣኝ ሰራተኞች አሉት							
j. ድርጅታችን ከሀሎትን ለማጎልበት የማማሻሻያ ወርክሾፕ ለተመራቂዎች ከቅጥር በፊት ይሰጣል							

የስርዓተ ትምህርት ሪፎርም| ለውጥ ውጤት| ጠቀሜታ

14. የስርዓተ ትምህርት ሪፎርም| ለውጥ በድርጅቶ ላይ ያስገኘው ውጤት/ጥቅም ምን ይመስላል? በሚከተሉት ላይ ምን ያህል ይስማማሉ?	1	2	3	4	5	6	
	በጣም አልስማማም	አልስማማም	በመጠኑ አልስማማም	በመጠኑ እስማማለሁ	እስማማለሁ	በጣም እስማማለሁ	አላውቅም
a. የስርዓተ ትምህርት ለውጥ ብቁ የሰው ሃይል በስራ ገበያ ላይ የማቅረብ እድል ፈጥራል							
b. የቴክኒክና ሙያ ስርዓተ ትምህርት ለውጥ የድርጅታችን የምርት ጥራት እድገት አሳይቷ							
c. ስርዓተ ትምህርቱ ለውጥ ብቁ የሰው ሃይል በስራ ገበያ ላይ የማቅረብ እድል ፈጥራል							
d. የቴክኒክና ሙያስርዓተ ትምህርት የቴክኖሎጂ ሻግግርን አጠናክሮዋል							

15. በድርጅታችሁ እኤአ ከ2001 እስከ 2010 ምን ያህል የቴክኒክና ሙያ ተመራቂዎች ተቀጥረዋል?

a. <10 ☐ b. 10-20 ☐ c. 21-30 ☐ d. 31-40 ☐ e. > 40 ☐

የመዝጊያ ጥያቄ እና አስተያየት

16. የትምህርት ጥራትን ሰማሻሻልና ብቁ የስራ ሃይል በገበያ ላይ ለማቅረብ በቴክኒክና ሙያ ስርዓተ ትምህርት ላይ ምን አይነት ለውጦች ቢካተቱ ይመረጣል ይላሉ?

_____

_____

_____

17. በእርሶ አስተያየት እዚህ መጠይቅ ውስጥ ያልተካተተ ሃሳብ ወይም አስተያየት ካለ ቢጨምሩ

_____

_____

_____

ላደረጉት ትብብርም ሆነ ወርቃማ ጊዜዎን መስዋእት ስላደረጉ ምስጋናችን የላቀ ነው

Appendix 7- INTERVIEW QUESTIONS GUIDELINE

General Introduction: This is a study conducted by Selemon Worku a PhD student with the support of my advisor Prof. Dr. Reinhold Nickolaus at the university of Stuttgart-Germany.

General Objective: Since the development of the 1994 Education Policy reform in Ethiopia, a high priority is given to the area of TVET. Hence, this study seeks to identify the impact of TVET CRs implemented from 2001-2010 on the TVET clients (Students and Industry), focusing at VET-based Colleges in the Ethiopian context.

PART I- OPENING	MAIN CONTENTS OF INTERVIEW	REMARKS
	✓ . Introduce interviewer and Supporters	
	✓ . Introduce the main objectives of the interview	
	✓ . Ask for record permission	
	✓ . Ask for guide line documents	
	✓ . Ask for observation in the office	
	✓ . Ask for making pictures	
	✓ . Introduce some major terminologies	
PART II- DEMOGRAPHIC DATA		
	✓ .Position and responsibilities of interviewee	
	✓ .Back graund and training	
	✓ .Total experience in the area	

PART I

INTERVIEW QUESTIONS TO TVET AGENCY/MINISTRY OFFICIALS IN CHARGE OF TVET POLICY*ISSUES*

Intervention/Issues

1. Would you please provide me the major policy changes accompanying the TVET CR before and after 2005? (Ministry policy guidelines, Quality framework (ETQF), standards, strategies and evaluation system, etc.)
2. Would you please identify the major issues/interventions of the TVET curricula adapted in the policy during the year 2001 to 2005 and 2006 to 2010 (Addressed in ESDP II & III)? In terms of Professional change, Structural change, Technical chenge (new media), Content, Method, Organizational and institutional change and reform net work change, Which countries' TVET System are benchmarked or adapted? And why? When are these benchmarks developed and implemented in the country?
3. Would you please tell me the TVET financing strategy in Ethiopia?' What are the major sources of finance and material for the implementation of the TVET reforms. How was it allocated to each TVET Institutions?

***Organization* & implementation**

4. How was the frame work (ETQF) of the TVET curriculum organized (competency/outcome based) What are the principal problems you have faced in the organization of ETQF and in the implemention of the TVET CR. Have you faced any resistance and if yes by whom? why?
5. How the several TVET CRs were being communicated to the stakeholders? What standards/mechanisms have you adopted in order to enhance a public dialoge before/after 2005?

Effect relevance of the CR

6. How do you evaluate the TVET reforms interms of demand driven (competence /outcome based training) in facilitating high quality TVET ?'What indicators are there?
7. Would you please provide me the indicators regarding the effectivety of the curriculum to TVET graduats, in terms of *Access, graduation, employability, quality and cost effectivity* since 2001.

Factor Assessment

8. Would you please tell me the reasons that influence the reform of TVET curriculum before and after 2005:
   A. that motivated the competence based CRs.
   B. that initiate the establishment of a TVET system based on outcomes rather than curricula (concept of competences).
9. Would you please identify factors (internal/external) in terms of the (PEST factors) Political, Economical, Social, and Technical that influence the effectivity of the competence based CRs?
10. What are the factors (internal/external) that influence the effectivity of a TVET system based on outcomes rather than curricula (concept of competences)?

Impact Assessment

11. How do you evaluate the effectiveness of the TVET curricula reforms in preparing students vocationally (technically, intellectually and emotionally)? (Lickert scale) Do the curricula make graduates competent in a job? Are they able to find jobs in the labor market? If yes what are the indicators and/or mechanisms to prove this? If no why?
12. Would you please provide me the indicators regarding the effectiveness of the curriculum to TVET graduats from 2001 to 2010. In terms of Access, graduation, employability, quality and cost effectivity.

SWOT evaluation of TVET Curricula

13. Please identify your perception on:
    a. the major **strengths** of the TVET curriculum in your opinion:
    b. the major **weaknesses** of the TVET curriculum in your opinion:
    c. the most significant potential **opportunities** of the TVET Curriculum:
    d. the most significant potential **threats** of the TVET Curriculum:

Closing Questions & Advice

14. Is there any thing that it is not included in this questionnaire and you would like to add?

Thank you very much for your time and collaboration!

PART II

INTERVIEW QUESTIONS TO TVET AGENCY/MINISTRY OFFICIALS *RESPONSIBLE FOR TVET CURRICULUM*

Intervention

1. Would you please provide me the major policy changes accompanying the TVET CR before and after 2005 (2001-2010)? (Ministry policy guidelines, Quality framework (ETQF), standards, strategies and evaluation system, etc.)
2. Would you please identify the major issues/interventions of the TVET curricula adapted in the policy during the year 2001 to 2005 and 2006 to 2010 (Addressed in ESDP II & III)? In terms of Professional change, Structural change, Technical chenge (new media), Content, Method, Organizational and institutional change and reform net work change, which countries' TVET systemare bench marked/adapted? And why? Is there any more chang?
3. Would you please tell me the TVET financing strategies in Ethiopia? What are the major sources of finance and material for the organization of the TVET curriculum since 2001. How was it allocated to each TVET Institutions?

***Organization* & implementation**

4. How was the frame work (ETQF) of the TVET curriculum organized (competency/outcome based)? What principal problems have you faced in the organization of EQF and in the implemention of the TVET CR since 2001. Have you faced any resistance and if yes by whom? why?
5. Would you please tell me the participant/stakeholders in the decision-making process during the design of the TVET CRs? Were students/teachers participated in the design of the TVET CR? If yes how? If no why?
6. What forms of resistance from steckholders, if any, were encountered during the design of the TVET curriculum (competence & outcome based) before and after 2005? Are they overcome? If yes How?

Consequence of the reform

7. How do you rate the competence based TVET reform facilitate high quality TVET curriculum?(five likert scale) Why do you rate it in that way?
8. How do you rate the demand driven/outcome based TVET reform facilitate high quality TVET curriculum? (Five likert scale) Why do you rate it in that way?
9. Could you please identify the main differences/changes between the competence based CR(2001-2005) and the outcome based curriculum (2006-2010) implemented in VET-based colleges in Ethiopia?
    a. Which **subjects/trades** and/or **contents** are excluded/included from/in the TVET curricula?
    b. Which subjects/trades are remained in the TVET curricula but reviewed to eliminate the idiological elements?
    c. Which new learning areas/**methods** have been emerged and how were incorporated into VET-based college curriculum?
    d. What changes in the **time** allocation of the subjects/trades have been made in the college timetable?

Factor Assessment

10. Would you please tell me the reasons that influence the reform of TVET curriculum before and after 2005:
    A. that motivated the competence based CRs.
    B. that initiate the establishment of a TVET system based on outcomes rather than curricula (concept of competences).
11. Would you please identify the factors (internal/external) interms of the (PEST factors) Political, Economical, Social, and Technical that influence the effectivity of the competence based CRs?
12. What are the factors (internal/external) that influence the effectivity of a TVET system based on outcomes rather than curricula (concept of competences)?

Impact/Effect relevance of the curriculum

13. How do you evaluate the effectiveness of the TVET curricula reforms in preparing students vocationally (technically, intellectually and emotinally)? (Lickert scale) Why? Is there any evidence?
    Do the curricula make graduates competent in a job? Are they able to find jobs in the labor market? If yes what are the indicators and/or mechanisms to prove this? If no why? Before and after 2005.
14. Would you please provide me the indicators regarding the effectiveness of the curriculum to TVET graduats from 2001 to 2010. Interms of Access(enrollement, gender, disadvantaged, Trades/subjects), graduation, employability, quality(assessment, certificate, level..) and cost effectivity(return to graduates, income, job, skill...).

SWOT evaluation of TVET Curricula

15. Please identify your perception on:

    a. the major strengths of the TVET curriculum in your opinion:
    b. the major weaknesses of the TVET curriculum in your opinion:
    c. the most significant potential opportunities of the TVET Curriculum:
    d. the most significant potential threats of the TVET Curriculum:

Closing Questions & Advice

16. Is there any thing that it is not included in this questionnaire and you would like to add?

Thank you very much for your time and collaboration!

Part III

INTERWIEW QUESTIONS TO MINISTRY OFFICIALS RESPONSIBLE FOR

TVET OCCUPATIONAL ASSESSMENT (COC) Optional

Intervention

1. Would you please tell me the criteria and standards that would be used to evaluate the competence of TVET graduates of the competence exam?
2. Which competence requirements are necessery be fulfilled by the TVET graduates to be concidered as a trade person ? Would you please tell me?
3. Are there any changes made in the process of competence assessment due to the CR since 2001? Please specify. If no why?
4. Would you please provide me the results of graduates in the competence center examination since 2009?

***Organization* & implementation**

5. How is the process of assessment made by the center of competence exam being managed and administered? Please explaine.
6. Which Subjects/trades are being assessed under the Center of competence examination? Why those? Is there any trade not yet assessed?
7. Why the competence center examination became compalsory for all TVET graduates with out exceptions? Do you think this evaluation ineffective? If yes how? If no why?
8. What has been done to adjust the target level of the competence examination so as to cover the whole ability range? Were there any problems to cover the whol ability change? If yes, What?
9. Are competence exam applicable different from the final examinations in the VET-based colleges? If yes why? If no how then? Do you rate, the validity, reliability and objectivity of competence assessements?(Lickert scale) Were there any problems to faciliitate these quality indicators? If yes What?

Consequence of the reform

10. How do you differenciate the competence result of graduates in the college and the Center of Competence exam (COC) result? Is there any similarity/diferences? If yes What are these? If no why?
11. In which field of study/trade is more frequently get pass mark/be licensed the graduates and what in your opinion they pass this one? What is the pass mark for competency?

Impact/Effect relevance of the curriculum

12. How do you rate that the competence assessment identify the quality/skilled graduates and the competence certificate accepted in the industries? (Lickert scale)
13. How do you rate the success of the graduates in the competence exam? (Lickert scale)
    Are the graduates performance effective in industries? If yes, what are the indicators?

Closing Questions & Advice

14. Is there any thing that it is not included in this questionnaire and you would like to add?

Thank you very much for your time and collaboration!

Appendix 8- DOCUMENT ASSESSMENT

PART IV
DOCUMENT ASSESSMENT

Data to be collected from Central Statistical Agency (CSA) and/or from the ministry officials responsible for TVET.

The Impact of the CRs in this project is concentrated on five issues/indicators of necessary statistical information:

Access:

1. What is the impact on admission rate of students by sex at VET based colleges from 2001-2010?
2. What is the impact on the number of VET-based colleges in Ethiopia annually from 2001 to 2010?
3. What is the impact on the number of VET based colleges in terms of Private, public and NGO from 2001-2010?
4. What is the impact on the types of trades/field of training to prepare for the job market from 2001-2010?
5. What is the impact on the number of professional instructors in VET based colleges from 2001-2010?

Graduaton:

6. What is the impact on graduation rate by region from 2001-2010?
7. Has the flexibility on (national) labor market increased since 2001?
8. Is the number of TVET Graduates by Sex affected (from 2001-2010)?

Employability:

9. The number of employed certified TVET graduates (who award a certificate from COC) since 2001.
10. Employed TVET Graduates by Sex from 2001-2010
11. The rate of Employed TVET Graduates by occupation since 2001,
12. The rate of income of employed TVET graduates by occupation since 2001.
13. The annual growth rate of labor market since 2001

Quality of Education:

14. What is the rate of 'Scores' on performance test indicators (theory & practice) by type of institution (public, private, NGO) since 2009?
15. What is the number of TVET graduates sat for the competence exam since 2009? What is the rate of graduates who passed the exam annually since 2009?
16. The rate of results on Competency Assessment by Occupations/Priority Sector since 2009

Cost effectiveness

17. What are the financial interventions to reform the TVET curriculum since 2001?
18. Have the CRs in TVET areas of study led to employable skill? (with the given financial interventions) What are the indicators of this since 2001?
19. Are there any indicators of the availability of job in the labor market? What are the indicators of the cost benefit ratio of the TVET CR since 2001?

Thank you very much for your time and collaboration!

Appendix 9- Addis Ababa Administrative region TVET Centers based on eight clusters

Clusters	
1.	**General wingate TVET College** Higher 4 TVET Institute, Higher 7 TVET Institute, AA Technology and Bussines College, Awaliya College Info Net College, Kunz College, Micro Link College, Pretor Law College, Queenes College, Rift Valley College, Royal College.
2.	**Misrak TVET college** Ethio-Chinese Polytechnic Colleg, Addis College, Admas University College, Dynamic International College, Kokeb Technical College, New Generation College, Roha College, Selam Technical College, Sunshine business college, Unity university college,
3.	**Entoto TVET college** Birhan Ethiopia TVET Institute, Addis Ababa poly technic college, City college, CPU college, International Leadership college, Lion Ethiopia hotel and tourisim, Madeot tourism Institute, Universal college
4.	**Nifas silk TVET college** Akaki TVET college, Higer 20 TET institute, Kaliti Leather Institute, Alpha university college, Ethiiopis Distance college, Gage information college, New Abissinia college, New life community college, Orbit information college, Urban workers institute, Zerihun Desta college,
5.	**Tegbareid TVET college** Africa beza college, Kidist Mariam university college, Mekaneeyesus Management college, Mount Fudi college. National college, Nekat engineering college, Nur selam college.
6.	**Minilik II Medical college** A.A medical college, Alkan medical college, Arada Georgis Medical college, Atlas Medical college, Enat medical college, Eyukusta medical college, Rift valley medical college.
7.	**Central medical college** A.A. dental medical college, Betezata medical college, Care medical college, Ethio national medical college, Kiamed medical college, Medico bio medical college, Omega medical college, Unity medical college, Universal medical college,
8.	**Betel medica college** Ayer tena medical college, Kidist lideta medical college, Love light medical college, Selam nursing college, Tezenea medical college, Tropical medical college, yanet medical college.

Source, Addis Ababa TVET Agency (2013)

Apendix 10- Vocational Education Training at Misrak TVET College, Addis Ababa, Ethiopia

CURRICULUM VITAE

1. PERSONAL INFORMATION

• Name: Selemon Worku Hailemicheal
• Birthday: September 8th, 1963
• Sex: Male
• Nationality: Ethiopian

2. EDUCATON

• 2009 - 2012: Doctoral study department of vocational science, Faculty general educational science - und vocational education, Technische Universität Darmstadt, Germany
2013 – 2015: Doctoral study at the Department of vocational studies and economic education, Institute for educational science and psychology, Universität Stuttgart, Germany
• 2005 - 2007: Master degree of arts in Vocational Education management- Addis Ababa University, Ethiopia
• 1984 - 2001: Bachelor degree in Business Education, Addis Ababa University, Ethiopia
• 1983 – 1984: College Diploma, in Business Education, Addis Ababa University, Ethiopia

3. EMPLOYEMENT RECORD

• 2010 – present: Business & quality management at Tierarzt praxis Dr. Worku, Germany
• 2013 – 2015: Research assistance at the department of vocational studies and economic education, Universität Stuttgart, Germany
• 2004 – 2008: Lecturer at St. Mary's University, Addis Ababa, Ethiopia
• 1985 – 1992: Teacher, at High schools, Gondar, Ethiopia

4. SOCIAL ACTIVITIES

• 1985 –present: Member and organizer of Ethiopian Business Education Association, Addis Ababa University, Ethiopia
• 2010 –2015: Member of International Generation Meeting (IGM) in Darmstadt, Germany

Declaration of Honor

I hereby confirm on my honor that the doctoral thesis submitted herewith is my own work. All resources and aids that are used in my dissertation have been cited according to the rules for academic work and by means of footnotes or other precise indications of source. The academic work has not been submitted to any other examination authority.

Hiermit melde ich mich bei meiner Ehre, zu bestätigen, dass die vorliegende Arbeit selbständig angefertigt habe. Alle Ressourcen und Hilfsmittel, die in meiner Dissertation verwendet werden, sind nach den Regeln für die wissenschaftliche Arbeit und durch Fußnoten oder andere präzise Herkunftsangaben zitiert worden. Die wissenschaftliche Arbeit hat keiner anderen Prüfungsbehörde vorgelegt worden.

Stuttgart, Oktober 6, 2015

Selemon Worku Hailemicheal