

**EVALUATION OF BUILDING CONSTRUCTION PROGRAM IN  
TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING  
COLLEGES OF ADDIS ABABA**

**A Thesis Submitted to the School of Graduate Studies  
Addis Ababa University**



**In Partial Fulfillment of the Requirements for the Degree of Masters of Arts in  
Measurement and Evaluation**

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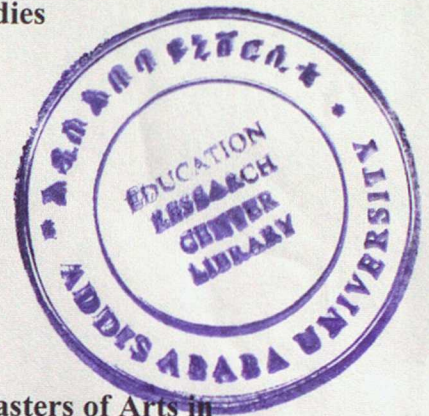
**By  
Abraham Zewdie Shibeshi**

**March 2007**

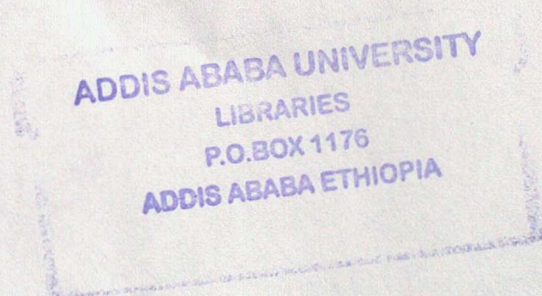


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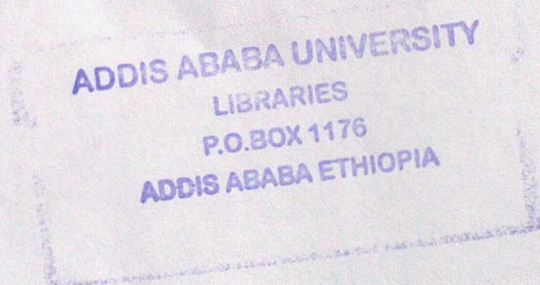


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## ABSTRACT

*This is a descriptive evaluative study of Building Construction Program in five TVET Colleges of Addis Ababa as perceived by trainers, trainees, college principals, and construction industries. The four components of the program that have been evaluated are: Content- in terms of the adequacy of the course and course content; Input- in terms of the availability and adequacy of well qualified trainers, reference materials, and raw materials that would be used to overcome the difficulties in meeting objectives; Process- in terms of the real gap between actual program operation during implementation stage and the original design; and Product- in terms of the evaluation of outcomes in relation to the program's objectives. The study was conducted by employing the CIPP model for program evaluation. The sample included 130 trainees, 30 trainers, five college principals, and four construction industries. The data, which was collected by the use of questionnaires and unstructured interview, resulted in findings among which the following are to be indicated- The objectives stated for Building Construction Program is not adequately adjusted by using the present existing training materials, tools, machineries, and equipment in TVET colleges, trainer's part in curriculum development process particularly in setting objectives and content while it was drafted looks insignificant, trainees assigned in Building construction program are not according to their interest, there are no adequate reference materials and textbooks in Building Construction program, the apprenticeship program implemented once in a year appears to be minimal, there is loose link between TVET colleges and Construction Industry. Finally, based on the findings, recommendations were stated.*



## **CHAPTER ONE**

### **INTRODUCTION**

#### ***1.1 Background of the Study***

Education is the most important factor that enhances human development where a person transmits his experiences, new findings and values accumulated over the years, in his/her struggle for survival and development through generation.

Based on the common understanding in linear relationship between education and development many countries have given priorities for education that seriously hamper their economic development. The lack of middle level manpower, skilled labor, increasing number of unemployment, for instance, were found to be bottleneck for development, and as one of the measures to improve this problem, Technical and Vocational Training programs have been created in a large number of countries from 1970 on wards.

In Ethiopia, Technical and Vocational Education and Training (TVET), both in specialized TVET Institutions and Comprehensive schools, considered as second-class by the society due to the low rewards to those who had completed the training. The Education and Training Policy (ETP 1994) reversed this trend and promote the provision of diversified TVET program parallel to General Education.

The need for relevant training urged educators and scholars to strive for a better way of evaluating the effectiveness of educational practices and its relevance. The question of program /curriculum Evaluation is an important aspect of any educational program. There is no way that Technical and Vocational Education and Training would escape this reality. For instance, Finchi and Crunkilton, (1989) indicated that evaluation could help to ensure that the curriculum is of a high quality and deficiencies before they causes major problems to arise.

In this sense then, program /curriculum evaluation is seen as a means by which one determines whether there happens a high quality education or where there is a deficiency that needs corrective decisions that may lead towards the termination of the program.



The focus of the present evaluation is then, within the framework of the Technical and Vocational Education and Training Institutes and the program more particularly the Building Construction Technology.

Building Construction is a procedure involved in the erection of various types of structures. The major trend in present-day construction continues away from handicraft at the building site and toward on-site assembly of ever larger, more integrated sub-assemblies manufactured away from the site. Another characteristic of contemporary building, related to the latter trend, is the greater amount of dimensional coordination; that is, buildings are designed and components manufactured in multiples of a standard modules, which drastically reduces the amount of cutting and fitting required on the building site.

Building Construction in Ethiopia is the product of a diverse group of sub industries, with many individuals and organizations involved in the construction of a single structure, from the manufacture of necessary components to final assembly.

With this understanding the Training Curriculum package in the area of Building Construction consists of the following courses developed for selected major job areas, which are modular.

**Major Courses:**

- Foundation setting out and Earth work
- Form-Work and Scaffold Work
- Reinforcement Work
- Brick Layer and Stone Mason Work
- Concrete Structure Construction
- Roof and Roof Covering
- Building Surface Finishing
- Constructing Floor & Wall Covering
- Glass and Glazing
- Installation of Water Supply and Drainage System
- Quantity Surveying



**Supportive Courses:**

- Technical Drawing
- Building Materials
- Soil Mechanics
- Building Drawing

**Common Courses:**

- Mathematics
- English
- Civics
- Information Technology
- Entrepreneurship

The modules for main courses are designed in such way that the trainee will spend 30% of the allotted time in gaining theoretical knowledge and 70% in doing practical works, which will be given during the three year training program. For each job area, recommended project work and apprenticeship training time has been allotted in order to help the trainees improve their practical skill. In general trainees will spend most of their school training time in practical work rather than on theoretical education.

In addition to the main courses there exist supportive courses and common courses, which are more of theoretical knowledge and designed to help the trainees follow the training or meet the exit profile, as far as the knowledge aspect of the training is concerned.



Generally the whole training program is 1392 hours per year for three years for diploma program. For this specific training area the time allotted for different courses and the apprenticeship program per year is as follows:

|                      |                 |
|----------------------|-----------------|
| • Main Courses       |                 |
| - In School Training | 450 hrs         |
| - Project work       | 120 hrs         |
| - Apprenticeship     | 312 hrs         |
| • Supportive courses | 180 hrs         |
| • Common courses     | <u>330 hrs</u>  |
| Total                | <u>1392 hrs</u> |

The trainees who join this program are expected at least to successfully complete grade 10 General Education with the following profile (Building Construction Curriculum, 2002)

- They are mentally and physically mature to involve in productive activities.
- They are ready for advancement through Technical and Vocational Training owing to their acquisition of general knowledge in which theory is linked with practices.
- They are conscious of their civic responsibilities and ready to fight social ills and mal-practice.
- They are capable to be involved in productive activities
- They can actively participate in different activities such as social meeting, discussions and community development activities.
- They are ready to acquire practical and theoretical knowledge through TVET

The focus of interest in Curriculum Evaluation seemed to have undergone several changes since the 1960's (Alkin and Lewy 1991: 399-400). This, according to Alkin and Lewy is attributed to the "shifts of interest of those who were in charge of developing new curriculum". Though the term Curriculum Evaluation is a slippery one (Jenkins, 1976: 6), scholars who have a grip of their hands on the profession have developed a number of curriculum evaluation models which have been thought to reflect the changing scene. Some of these models include: Instructional objective model which is attributed to (Tyler, 1983: 8, Payne, 1974: 12), Decision making models which is attributed to Stufflebeam (Finch and Crunkilton, 1989: 47, Payne, 1974: 12) and Evaluator's goal free model which is attributed to Scriven (Hause, in Madaus et al 1983: 46) (Jenkins, 1976: 54).



The model being used here is the "CIPP (Content, Input, Process and Product) model for program evaluation". The CIPP model for Program Evaluation includes four strategies or types (Stufflebeam, 1983: 125) that may be used for provision of information necessary to secure continuity of education. According to Stufflebeam, it was in the late 1960s that the CIPP model for program evaluation was developed. The most important purpose of evaluation as conceived in the models is "not to prove, but to improve" the program.

The full implementation of the CIPP model, according to Stufflebeam, produces information that can be used in addressing the following questions;

- What needs were addressed, how pervasive and important were they, and to what extent were the project's objectives reflective of assessed needs.
- What procedural and budgeting plan was adopted to address the needs, what alternatives were considered, why it was chosen over them, and to what extent was it a reasonable, potentially successful, and cost effective response to assessed needs
- To what extent was the project plan implemented and how and for what reasons did it have to be modified
- What results positive and negative as well as intended and unintended were observed, how did the various stakeholders judge the worth and merit of outcomes, and to what extent were the needs of the target population met.

Since the purpose of evaluation, in CIPP model, is "to provide data, to decision makers, that are relevant to the judgment that is to be made" (Abramson, et al., 1979: 140) in terms of four types of decisions for which the evaluation is to provide information. According to Abramson, the four types of decisions and the associated evaluation are classified as:

1. Planning decisions (intended ends)- context evaluation,
2. Structuring or programming (intended means) decisions –input evaluation,
3. Implementing decisions (actual means)- process evaluation,
4. Recycling decisions (actual ends) –product evaluation.



## **1.2 The Concept of Curriculum**

Obviously, when one wants to make an investigation about what happens in any type of teaching-learning process, the first question is to be about the kind of curriculum that is being used in the school.

However, there may be an inclination to think that there is one and readily available and universally acceptable meaning for the term curriculum. One may also think that there happens, no significant impact, as a result of the definition held. As many educationists try to indicate, both of these thinking are unlikely to be true.

As a result of the definition of the term curriculum, not to mention other reasons in this study, there was and there still tends to be considerable impact on the quality of education that is being offered in today's schools of the world. The fact that there are different emphasis and views on what to teach and how to teach can be taken a tangible justification for this general assertion.

Saylor, J. Galen, Alexander W. Lewis A. J. (1981:8) after having made an analysis of the concepts of curriculum, which are treated as subjects and subject matter, experience, objectives, planned opportunities for learning, provided their definition of the term curriculum as a plan for providing sets of learning opportunities for persons to be educated. According to these authors, such a definition is so wide in that it can embrace "subject centered curriculum", "Competency based curriculum" and "experience based curriculum". The term "plan" write the authors, is viewed as an intention rather than as a blue print.

Eisner (1985: 45) defines the term curriculum as a "series of planned events that are intended to have educational consequences for one or more students". According to Eisner, this definition has four features. These are: the curriculum is a series of planned events, curricula are planned and have aims, purposes, goals or objectives, the intention be educational and the concept deals with consequences.



The authors of Curriculum Development in Vocational and Technical Education – Finch and Crunkilton (1989: 9) define the term curriculum as the sum of learning activities and experiences that a student has under the direction of the school. To them this definition of the term makes the student to be the central focus. It also draws attention to “breadth” and “width” of the learning experiences and the “activities” associated.

Finch and Crunkilton also contend to indicate that their definition of the term curriculum not only encompasses activities and experiences that have to do with Vocational and Technical Education, but also with “General” (Academic) Education.

In addition to the definition, which is already discussed, “The Ethiopian Education Policy Implementation Strategy (2006)” which was issued by the Ministry of Education cited that:

*Curriculum is an educational program grounded on a clearly stated educational policy addressing a country's developmental problems and needs. Such curricula should be able to develop knowledge cognition, skills and attitude. In short curriculum is a planned body of learning experiences organized by grades and levels, presented as syllabus, Teacher's guide, pupils' text, teaching aids and other educational inputs.*

This definition clearly articulates that the curriculum is “an Educational Program” which is directed towards reflecting the country's developmental problems and needs. When we breakdown the parts contained in the definition we will probably be in a position to understand that the curriculum is a program, that the curriculum must be based on the educational policy, and that the curriculum must or should reflect “developmental problems” in the country.

For the purpose of this study, in addition to this definition, we give due regard to the definition provided by Wiles and Bondi (1989), i.e. a Curriculum is a goal or set of values, which are activated through a development process culminating in classroom experiences for students.



### **1.3 Curriculum Development Process**

The process of curriculum development in general requires quite a number of decisions to be taken before and after the process has been commenced.

Curriculum developers and decision makers at the higher level or at the intermediate level can be faced with a number of situations that may require their expert judgment of decisions. Judgments as to which approach must be more appropriate for the purpose at hand, as to how to formulate the objectives, as to how to organize the content, can be said among the main ones.

The purpose in this part is to examine what is included in, and what is known as curriculum development process. There are authorities who regard the curriculum as it constitution a "system" and curriculum development as a "system's analysis" (Hopper, 1971: 116). According to Hoper, "education and the curriculum within it, has a set of input, which are subject to a process in order to attain certain outputs which are intended to satisfy the system objective". A curriculum constitution, according to him, can be shown with the help of a model. While the use of a model is straight forward and can be generally agreed on, the model by itself does not give guidance as to which objectives to select, what content, what method, and which type of evaluation. Curriculum development process in Hoppers sense, involves a critical examination of the constituent elements of the curriculum, which are objectives, methods and evaluation. The process of curriculum development in Ethiopia begins with the identification of needs rather than just "syllabus planning". And next there are four phases, which are Syllabus planning, Material Development, Implementation, and Evaluation.

As it can be seen from the above list, the curriculum development process in Ethiopia appears after need assessment start with syllabus planning. This tends to imply that the term curriculum is connoted with the term "syllabus" and the term "curriculum development process" with "syllabus planning".



The planning phase includes the following sequential steps:

1. Explanation of the major educational objectives
2. Derivation of the aims of education for the different levels
3. Specification of subject objectives for the different levels
4. Selection of contents
5. Determination of learning strategies, evaluation techniques and teaching aids
6. Determination of period allotment
7. Consideration of manpower, physical resources and other inputs.

#### **1.4 Concept of TVET**

In referring to what is meant by the terms Technical Education or Vocational Education, it is obvious that one can meet somewhat broader definitions as well as definitions of those type of which are narrower in their scope. While some educators and educational writers contend to define all education as vocational education (Ainley, 1961:6), (Entwistle, 1970:56) describes Vocational Education as a term which is more comprehensive and which embraces Technical Education and the learning of technical competence.

Entwistle, H. (1970) in addition, contends to suggest that "General", "Vocational" and "Technical" Education should be seen as related to each other rather than as inclusive terms or concepts. According to Entwistle, while "General Education" is the most comprehensive "Vocational Education" is the next comprehensive term, which embraces Technical Education and/or Technical Training.

On the other hand, Technical Education is seen as that type of education, which designates post high school courses, and that type of curricula, which require higher skills, and longer period of training (Evans, 1971: 183). According to Evans, Technical Education is miss-understood as being a type of education "for certain engineering or technologies". This, however, according to Evans, is being changed and an agreement has been reached that the term Technical Education refers to a "level of education" rather than a type of education.



To many people, occupational education was just a new name for Vocational Education for the large number of students who do not continue formal education beyond high school. However, for the purpose of this study, our tentative definition will be that Technical and Vocational Education is one that is designed to train and educate students in specific traditional and modern fields of vocational skills as well as in general education. It is obvious to understand that this definition reflects the reality in our Technical and Vocational schools at present. The education being offered in these schools, not only concerned with specific courses of vocational nature that detaches the students from getting access to courses of academic nature.

### ***1.5 Historical Development of Technical and Vocational Education -A Global Perspective***

Vocational Education is relatively modern development (Zywiece, 1993: 414). As stated by Zywiece, until the 19<sup>th</sup> century, such education was provided only by apprenticeship. This situation was partly due to the fact that low status was associated with such instruction as opposed to classical curriculum, which was considered “necessary for gentlemen”, with the growing industrialization during the 19<sup>th</sup> century. According to Zywiece, by the late 19<sup>th</sup> century, public Vocational Education schools in the United States consisted of manual training and practical arts. “These programs were gradually expanded until the 1917 when federal aids were provided to public schools for trade and industrial, agricultural, and home making courses”.

Following the above development of TVET, now the sector becomes the agenda for almost all countries because economic development cannot be achieved without having of well-trained skilled manpower.

Views and purposes attached to Technical and Vocational Education by no means appear to be in agreement with each other. Scholars who are in favor of Technical and Vocational Education do believe that it develops not only the knowledge and skill that is essential for specific occupation but also the individual’s intellectual capacity (Evans, 1971).

Approaches to Technical and Vocational Education and Training currently seem to follow three models. As indicated in one of the publications of UNESCO (1989:16), the first of these models



is "Market model". Technical and Vocational Education and Training under this model, according to the publication, is not under the government influence. Technical qualification is provided according to the demand, which is determined by the consumer.

The second model is "School Model". Provision under this model has a feature of "graded vocational school system closely linked with general education". A private enterprise does not play a role in such system of Technical and Vocational education".

The third, which is termed as "Government Controlled model" or "Dual system" can be found in Germany, Switzerland etc. Students engaged under this model learned in the enterprise as well as in Vocational school.

### ***1.5 Historical Development of TVET in Ethiopia***

The most important factor for development is the skill and knowledge of people, Teklehaimanot (2002:2). He further stated that, there was a time when Ethiopians valued the skill of people and as result; the country was relatively an important center of technology and arts of that time.

Traditional attitude in Ethiopia relegated the skilled worker to the status of an outcast. Potters, metal workers, leather workers and wood workers were despised and excluded from the possibility of owning land which was the foundation of the feudal society. These attitudes persisted until the revolution of 1974. The fascist invasion in 1935 had important cultural side effect. In the process of developing a colonial economy and social infrastructure, the Mussolini regime imported an estimated 200,000 Italian artisans and technical personnel who were required for elements of modernization under fascist rule (MOE, 1984).

Starting from 1991, Technical and Vocational Education has been gaining its energy and become the agenda of the present government. According to the existing Education and Training Policy (ETP 1994) attention has been given to this sector having in mind that the general development of the country will be unthinkable with out producing well-qualified middle level skilled personnel in various fields of studies. Introducing a variety of fields in to the program and



changing the general policy and the general goals of Technical and Vocational Education has manifested this fact. Hence, the TVET expanded through out the country and number of schools increased from 17 \_126 in 2001/2002 academic year (MOE, 1994:15).

The development of TVET in Ethiopia is still in its infancy and remained a neglected sub-sector of education until recently (MOE, 1994). The international comparative data (1994) as cited in MOE (1994:14) stated the following: "The proportion of TVET to academic students at the secondary levels of education in Ethiopia was nine times less than that of the sub-Sahara African, as a whole."

According to MOE (1994:20-47) there are general higher education and extended TVET programs with-in the system of polytechnic education. General polytechnic education was a program which included all the major areas of content treated appropriately of the junior secondary (7-8) level while higher general polytechnic education was a program offered at ninth and tenth grades. The extended TVET program was given to prepare and produces skilled manpower.

Later it was found that, the education given in TVET schools was not related to available fields in the industries. It failed to prepare students for the other available Jobs and as a result, the majority had to employ in jobs that had no connection with their training. To this end in 1983 the government passed a resolution calling for a review of the education sector (Tekest. 1990:18). As a result of this review in 1985 a 10+3 program was inaugurated and new training policy composed of various criteria become functional. This change was intended to equip the prospective graduates with better knowledge and skills, which could not cover at the previous 10+2 level.

As discussed earlier the previous 10+2 Training program was replaced by 10+3 program. The 10+3 Training program was launched to fulfill the following specific objective of the training program.

- To develop the skills of modern production system
- To familiarize one with the processes and the means of production in the economic sector.



- To link theory and practice.
- To practically and effectively participate in local development activate

Toward the end of the military regime, it was observed that existing training program has failed to fulfill its objectives and the program became ineffective. According to the study conducted by Berhanu et. al. (1992: 27) around the fall of the military regime trainees' enrollment was declining. The reason according to these writers was the dissatisfaction of trainees in some field of the program and the training given was not based on the real needs of the country. The present government after taking power from the Dergue regime in 1991 started to identify the major problems of the educational sector and efforts have been made to overhaul the entire system, which has given priority for formulating new Education and Training Policy (1994). In the preceding pages effort has been made to discuss how these tasks have been achieved.

In line with the new Education and Training Policy of 1994 with the following major objectives the new TVET program has been launched: such as Construction Technology, Industrial, and Business. To provide basic education and integrated knowledge at various levels of vocational training, to satisfy the country's need for skilled manpower by providing training in various skills and at different levels, to make education supportive tools for developing traditional technology and for utilizing modern technology, to provide education that promotes the culture of respect for positive work habits and high regard for workmanship. Different providers at various qualification levels now have delivered the new Technical and Vocational Education and Training (TVET) in Ethiopia. Public TVET Institutions under the education sector, was focusing on Middle level technical training at post Grade 10 level, are complemented by the employer-based TVET schemes of public and private companies.

During the late 1990s, government committed itself to reforming the basic framework conditions of the TVET system. This recognized the fact that while the country was in terrible need of skilled technicians, training programs lacked relevance to the workplace reality. This reform process, however, was slow and limited by the fact that all effort and resource were directed towards the massive quantitative expansion of the public TVET supply. As a consequence, programs, by-and-large, do not address actual skills needs in the constraints and lack of skilled



TVET teachers. A systematic integration of TVET with in world of work has not yet been achieved. Most curricula used in formal TVET were developed without sufficient involvement of employers.

After all these vast structural problems, important reform steps have been introduced after the adoption of the National TVET strategy of 2002 and TVET proclamation of 2004 (National TVET Strategy, 2006). A significant step was the broadened governance structure for TVET through the establishment of National TVET council comprising representatives from different government sector including State representatives, public and private TVET providers and from the business community. This represented a start of institutionalized stakeholders' involvement and helped stimulate deeper integration and understanding of TVET within the broader Ethiopian development environment. A further strengthening of this governance set-up, however, will be necessary while the TVET reform is unfolding.

### ***1.6 Purposes of Technical and Vocational Education and Training***

Technical and Vocational Education initiation in the general education of youth should fulfill the educational requirements of all spheres of interest and ability. It should mainly perform three functions:

- a. To broaden educational horizons by serving as an introduction to the world of work, and the world of technology and its products through the exploration of materials, tools, techniques, and the process of production, distribution and management as a whole, and to enrich the learning process through practical experience;
- b. To orient those with the interest and ability in technical and vocational education towards preparation for an occupational field or training outside the formal education systems;
- c. To promote those who will leave formal education with no specific occupational aims or skills, attitudes and thought processes likely to enhance their aptitudes and potential, to facilitate the choice of an occupation and access to a first job, and to permit them to continue their vocational training and personal development.



General Technical and Vocational studies in schools, having great importance for the orientation and education of youth programs, should include an appropriate balance between theoretical and practical work. Such a program of studies should be drawn up in collaboration with the professional community and with those responsible for Technical and Vocational Education. These programs should:

- a. Be based upon a problem-solving and experimental approach, and involve experience in planning methods and decision-making
- b. Introduce the learner to a broad spectrum of technological fields and to productive work situations;
- c. Develop a certain command of valuable practical skills such as tools use, repair and maintenance and safety procedures, and a respect for their values;
- d. Develop the ability to function as a team member and to communicate technical information;
- e. Be closely related to the local environment without, however, being limited to it

Technical and Vocational initiation programs in general education enrichment for youth and adults should be directed to enabling those engaged in working life to:

- Understand the general implication of technical change, its impact on their professional and private lives, and how to adapt to these changes
- Use practical skills for improving the home and community environment, and thus the quality of life and productive leisure-time activities

The purpose of Technical and Vocational Education as meeting the manpower needs was reflected in documents such as: Technical and Vocational Education Handbook: that was issued by the division of Technical and Vocational Education in 1973, Education in socialist Ethiopia in 1984.

The second major objective attached to Technical and Vocational Education, (according to Evans, 1971:29) is the increasing of options to students. The availability of vocational education, as indicated in the work of Evans, gives students an opportunity of having more options in relation to the options that may be possible by attending only general education.



Evans (1971:5) also contends to indicate that vocational education serves as a motivating force to all kinds of education. The argument, for this, according to Evans, is that students of vocational subjects start to realize the importance of the general education, which they have considered as unimportant before.

In addition to the above-discussed objectives, Technical and Vocational Education is also regarded as a means of resolving the problems of unemployment of school leavers.

In general, Grab (in Weinberg, 1983:356) after having made a number of studies on the purposes attached to Technical and Vocational Education, identified the following claims that are made by those who are in favor of vocational education.

- Vocational Education is a logical, effective way of integrating those at the bottom of the economic heap in to the main stream.
- Vocational Education helps solve national Economic problems. It does so by somehow matching workers to jobs, thus overcoming employment bottlenecks, i.e., situations in which jobs go begging for lack of skilled workers.
- Vocational Education is an important tool in tackling the higher "youth problem" which is manifested in such system as gang activity, crime and teenage pregnancy.

### ***1.8 Concepts of Building Construction***

It is the techniques and industry involved in the assembly & erection of structures, primarily those used to provide shelter. A brief treatment of building construction materials and techniques follows. Early man built with reeds, grasses and trees, animals' skins, stones, ice and mud. As construction evolved, however, two basic materials came to the fore: wood and stone. In Europe and other places where timber was available, wood was split in to planks and then cut in to posts that could be used to support a roof and to subdivide the space in to multiple units, or rooms.

With the industrial revolution of the 18th century, iron brought on a new era in building in which rigid frames could be combined together to support a buildings weight. Iron was quickly replaced by steel in the early 20th century, and this development, along with the invention of modern



concrete in 1870s, made possible the multistoried buildings that symbolize modern building construction. At the end of World War II, shortage of labor, extensive demand for housing because of bombings, and government participation led to the wide spread development of prefabricated building systems.

Before most buildings, are constructed, the function of the proposed building must be determined, a geographic location chosen, a cost estimate drawn up, and a design plan accompanied by sketches prepared by architects. Architectural design proceeds in a series of stages of increasing detail and specificity. Schematic design sketches that give a rough idea of the buildings look and form are followed by detailed development design, comprising drawings of plans, elevations, building cross-sections, and perspectives. Working drawing and specification follows these, which are contract documents, that describe the design, location, and dimension of the elements of the building and that also describe the quality of materials and workmanship to be used in the construction of the building. (Building Construction Text, MOE, 1994)

Coming to the present study, the specific objectives of the Building Construction program in Technical and Vocational Education and Training according to the Ethiopian Education are stated as follows: -

A. The Assistant Building Construction Technician who has completed courses like Foundation setting-out and Earth work, Formwork and Scaffolding construction, Reinforcement work, and Masonry construction in Building Construction program is expected to have the following occupational profile (MOE, Building Construction Curriculum guide, 1994):

- i) Working as sub-contractor in the areas of foundation setting-out and Earthwork, masonry construction, and reinforcement mesh fabrication.
- ii) Establishing his/her own medium material production centers for his/her construction works as well as market supply.
- iii) Regulating the cash flow in his/her own business enterprises
- iv) Being employed as assistant technician in any construction project in the areas of:



- Foundation setting-out and Earthwork.
- Formwork and scaffold construction.
- Reinforcement work
- Bricklayer and stone mason construction

B. And then in addition to the above stated courses the trainees take Concrete Structure and Roof and roof covering courses and after completion of these intensive training in building construction program the trainee will have the following profiles:

I. The technician can work as sub-contractor in the area of foundation setting out and earth worker, masonry worker, formwork worker, reinforcement bar bender, concrete structure building works and roofing work.

II. Can establish his /her own firm be employed as concrete structure builder and roofer

III. The technician can be employed as technician in any construction company in the area of out lined jobs

C. Finally the advanced Building Construction Technician who has completed three-year training and adding the courses like Building Surface finishing, Glass and Glazing, Quantity surveying, and Water supply and drainage in building construction program has the following profile:

- The technician can work as sub -contractor and a contractor in building construction
- The technician can establish his/ her own medium material production centers for his /her construction works as well as market supply.
- Can regulate the cash flows in his / her own business enterprises
- Can be employed as technician in any construction company in the areas of out lined job
- The technician can work as quantity surveyor.

The trainees in Building Construction program, after completing the course they are expected to satisfy the industry and capable enough to erect modern buildings as stated earlier. As it is obviously known that, in designing a curriculum, the need of the industry, society has to study.



Then the syllabus will be prepared and implemented. Finally to check whether the program is effective or not and to make a decision to modify, or terminate the program, evaluation of the program plays a vital role.

### ***1.9 Approaches to Program Evaluation with Special Reference to CIPP Model***

Program Evaluation is a collection of methods, skills, and sensitivities necessary to determine whether a human service is needed and likely to be used, whether the service is sufficiently intensive to meet the unmet needs identified, whether the service is offered as planned, and whether the service actually does help people in need at a reasonable cost without unacceptable side effects. (Posavac and Carey, 1997, p.2)

To the extent that educational initiatives are most commonly evaluated in order to determine past effectiveness and to create future goals, "evaluation is an essential, integral component of all innovative programs" (Somekh, 2001, p. 76). It is "the process of making judgment about the merit, value, or worth of educational programs, projects, materials, and techniques" (Borg and Gall, 1983, p. 733). A more extensive definition of program evaluation might outline, "The sets of activities involved in collecting information about the operations and effects of policies, programs, curricula, courses, and other educational materials" (Gredler, 1996, p.13). That program evaluation not be confused with other forms of inquiry or data collections which are conducted for different purposes is of critical importance (Gredler, 1996). For example, it is the use of evaluation as a strategy for program evaluation rather than for accountability, justification, and program continuity that has traditionally differentiated formative from summative evaluation. The latter consists of activities "to obtain some kind of terminal or over all evaluation in order that some type of general conclusion can be made" (Tyler, Gagne and Scriven, 1967, p.86). What summative evaluation can serve to justify additional funding, it may also generate modification or elimination of a program or its individual components (Tyler, 1967, p. 86). The benefit of such actions can usually facilitate the saving of both finite time and money. Alternately, programs conducted without an evaluation component run the very real risk of waste funding when "opportunities are lost for policy makers to learn from their successes or from their mistake".



The question of evaluation at the earlier days seemed to revolve mainly around tests, marks, grades and teacher ratings (Saylor et al. 1981: 316). Though these are still parts of evaluation, according to Saylor et al, a total dependence on them focuses attention on the products or ends of education rather than focusing to the curriculum.

Hence, different scholars made a call that evaluation should include a broader concept and purposes other than indicated above. Questions like: Has the educational plan considered the important educational issues of the society in which the plan is to be implemented? Is the education being given at present consistent with the intentions or the plan? Has the education being given in the schools resulted in bringing about the desired behavior in students? Is the philosophy of the education well articulated? Has the education being given resulted in the type of persons needed in specific areas of society's development? Though some of these questions tend to focus on ends or products, more of the questions are focused to what is there in the curriculum.

To this end Squires (1987:18) contends to indicate that "curriculum evaluation" in the recent days, "raises questions which are less familiar and perhaps less comfortable". In the words of Squires, such questions are; "Did the course achieve what is set out to do? Was what it set out to do worthwhile any way? And so on.

From this and from what is indicated earlier it is possible to understand that curriculum evaluation not only deals with the products but also with the determination of the plan itself. However, the fact that different scholars view the question of evaluation differently seem to have resulted in the development of evaluation models of which some are treated in this study.

Some scholars see the question of evaluation as the examination of whether or not the objectives set for the educational program are attained according to the intention (Tyler, 1942 in Beausy, 1972, pp. 48-57).

Tyler's approach to evaluation seemed to derive out of the belief that the educational institute operates on the bases of a plan, which is regarded to be satisfactory by the staff. On this account



then, according to Tyler, the curriculum is based on certain assumptions that need to be proved. Hence, the process of evaluation leads to the assertion or correction of those assumptions. In doing so, the result from the evaluation process can serve the following purposes:

- Indicates the points at which improvements in the program are necessary.
- Validates the hypothesis upon which the educational institution operates.
- Provides information basic to effective guidance of individual studies.
- Provides a certain psychological security to institutes or college staff, to trainees, and the parents.
- Provides a sound basis for public relations.
- Helps both trainers and trainees to clarify their purposes and to see more concretely the direction in which they are moving.

The general evaluation procedure in Tyler's approach had to include:

- Formulation of educational objectives.
- Defining each of the objectives in terms of behavior.
- Identification of situations in which students can be expected to display that type of behavior so that one may know where to go to obtain evidence regarding these objectives.
- Selection and trial of promising methods for obtaining evidence regarding each type of objectives.
- Select the basis of this preliminary trial and the more promising methods for obtaining evidence regarding each type of objectives.
- Device means for interpreting and using the results of the various instruments of evaluation.

Evaluation, according to Tyler, is seen as an integral part of the educational process. Many scholars have regarded Tyler's model of evaluation as a major influence, which has made a great contribution to the development of educational evaluation and education in general (Payne, 1973: 13), (Madaus, et al. 1983: 8).

There is no doubt that Tyler's approach had contributed to educational evaluation. But the fact that the process of evaluation required more than knowing the extent of the attainments of the set



objectives and the measurements of student's behavior brought Tyler's approach in question by other scholars such as those indicated above.

Other approaches of evaluation different from that of Tyler's approach seemed to have emerged and developed in the 1960s. For instance Stake (1969), in his "countenance model" indicated that the following questions should be asked before one draws up an evaluation plan (in Payne, 1974:126).

1. What is the entity that has to be evaluated?
2. Whose standards will be used as reference mark?
3. What subsequent decisions can be anticipated?

Evaluation, according to Stake, has to include finding the contingencies among antecedents, transactions and outcomes. Moreover, it includes finding the congruence between intents and observations (Stake, in Payne, 1974: 128).

According to stake, intents and observations are congruent if what is happening is in accordance with the intention. This, in other words means that the intended antecedents, transactions and outcomes must be "identical" with the observed antecedents, transactions and outcomes. On the other hand contingencies are relationships among the variables, which are the antecedents, transactions, and outcomes. According to Stake the search for contingency is the search for "causal relationships" what causes and what facilitates the improvement of instruction.

Abramson, et al. (1979) indicates that in the processing of the data three questions arise: "questions about logical contingency among intentions, questions about empirical contingency among observations and questions of congruence at each level intentions and observations".

The countenance Model, as described by Stake (1969), Abramson et al. (1979) and Ornstein and Hopkins (1988), enables the evaluator, to describe the program based on the examination of the congruence between the intended and observed antecedents, transactions, and outcomes as well as, the logical or empirical relationships or contingencies between them.



Strengths attached to Stake's model include that it has expanded the notion of evaluation to include a focus on judgment (Guba and Lincoln 1981:31). Moreover, it is regarded as an "action research" (Stufflebeam and Webster 1983: 35) in which people implementing the program are helped to conduct their own evaluation.

However, Stake model, like the previous approach discussed in this study, was not without critics. According to some critics, the model lacks "external credibility and it is susceptible" to bias on the part of the people in the local setting, since they, in effect, have great control over the evaluation study" (Stufflebeam and Webster, 1983). Moreover, according to (Guba and Lincoln 1981) the model has left "the means for deriving standards in specified". These critics also indicated that the model was found to be complex to be used by practitioners. By the way, Guba and Lincoln, though they indicate that the countenance model has the above unfavorable conditions, they are in favor of the responsive model of Stake.

Scriven also describes the responsive model along with the models such as the illuminative model, as they are more interested in the process of evaluation than in the informational outcomes (Scriven, 1991: 315).

Turning back to another evaluation model, which is thought to have contribution, I found the "Goal-Free" evaluation model, which is attributed to Michael Scriven (Scriven, 1991, Popham, 1988). According to Scriven, during the goal – free evaluation the evaluators told the purpose of finding out what the program is actually doing.

This is what makes the model a goal free evaluation model. The evaluator starts his evaluation without making any reference to the goal or goals set by the program developer or developers. What he/she (the evaluator) is supposed to do is make an evaluation of what is actually happening and it is from the final report that the program developer would be able to find out whether the set goals are attained or not. Scriven, in promoting this model, believes that the evaluator who does not know about what the program is supposed to do "look thoroughly for what it is doing" (Scriven, 1991, Popham, 1988.). However Scriven believes that the goal free model works better in combination with other models or in his own term in a "hybrid form".



The main advantage attributed to goal – free model, according to Popham (1988: 30), is that "it encourages the evaluator to be attentive to a wider range of program outcomes" than those type of evaluations that would be made on the bases of the aims set for the program.

On the other hand the CIPP model (Context, Input, Process and Product) is an evaluation model, which comprises four phases of evaluation. The acronym CIPP refers to these phases of evaluation, which are:

- (1) Content evaluation which refers to that type of evaluation concerned with the planning decisions
- (2) Input evaluation – which refers to the type of evaluation concerned with the programming decisions
- (3) Process evaluation – which refers to that type of evaluation concerned with implementing decisions
- (4) Product evaluation – which refers to that type of evaluation concerned with recycling decisions (Abramson, et al. 1979: 140), (Stufflebeam, 1983).

Since evaluation is defined as a "process of providing useful information for decision making" (Stufflebeam, 1983: 120) and the result from the evaluation has to serve decision makers, the use of the model requires the identification of major decisions that typically confront decision makers. These according to Stufflebeam are planning decisions, structuring decisions, implementing decisions, and recycling decisions.

As explained above, within the CIPP model, there are four types of decisions to be made. For instance context evaluation is concerned with the identification of needs, conditions and problems within a defined and operating program. Context evaluation, in addition, deals with analyzing the situation, describe and define the actual and desired conditions. It also questions the value of any stated goals and looks for "unmet needs and unused opportunities" (Jenkins, 1976: 49), (Stufflebeam, 1983: 128), Abramson et al. 1979: 141).

It can be seen that context evaluation is more concerned with the general strength and /or weakness of the program. To this end Stufflebeam contends to state "the results of a context



evaluation should provide a sound bases for judging its existing goals and priorities and targeting needed changes (Jenkins, 1976: 49), (Stufflebeam, 1983: 128), Abramson et al. 1979: 141).

Input evaluation, within the CIPP model is used to identify and assess the system's capabilities' that would be used to overcome the difficulties in meeting the objectives. This type of evaluation includes cost benefit analysis of human and material resources (Abramson et al, 1979: 141), (Jenkins, 1976: 50). The main focus of input evaluation is regarding resources, budgets and time requirements for achieving the goals. According to Stufflebeam (1973:22) the end product of input evaluation is an analysis of alternative procedural designs in terms of benefits.

The third type of evaluation is that which deals with relationship between actual program operation during implementation stage and the original design (Abramson, et al. 1979) and which is termed as process evaluation. Process evaluation according to Griessman, "deals with the question what the program did that produced the observed effects?" In other words process evaluation is described as an organizing check on the implementation of a plan ( Stufflebeam, 1983: 132). Stufflebeam describes the objectives of this type of evaluation as the following:

One objective is to provide feedback to managers and staff about the extent to which the program activities are on schedule, are being carried out as planned, and are using the available resources in an efficient manner. Another objective is to provide guidance for modifying or explicating the plan as needed, since all aspects of a plan can be determined in advance and since some of the initial decisions may later be inconsistent.

The fourth type of evaluation in the CIPP model is that which deals with the evaluation of outcomes in relation to the program's objectives. It is an evaluation that brings all the content, input, and process evaluations to be related with the product. It is used to determine the effectiveness of the project after it has run full cycle (Stufflebeam, 1975: 23) and termed as product evaluation, reports that objectives were or were not achieved" (Jenkins, 1976: 50).

In summary the CIPP model is a type of evaluation model, which comprises four types of evaluation. While context evaluation specifically deals with the provision of information for



planning purposes, input evaluation refers to the type of evaluation, which is concerned with resources and budget. Process evaluation deals with the actual program operation, that is, whether the program is being implemented according to the original plan. The last type of evaluation product evaluation calls attention to the program outcomes and the attainment of the objectives.

At this junction, it would be necessary to include what the CIPP model looks like in the perception of other scholars who are concerned with the activities and promotion of evaluation ideas.

The CIPP model described by, Scriven (1991: 81) as "the first sophisticated model for program evaluation and possibly still the most elaborate and carefully thought out model". According to Scriven, the CIPP model makes an emphasis on "systematic procedure to cover the multifaceted effort of program evaluation".

One can see that Scriven's description of the CIPP model suggests that the model has made not only an attempt but also proved to have more of the qualities required of an evaluation model.

Guba and Lincoln (1981:16) contend to state that the CIPP model has extended "the list of available organizers for evaluation beyond objectives". Moreover, according to Guba and Lincoln, the CIPP model has responded many of the new demands and requirements imposed on evaluators. In addition to this, according to Guba and Lincoln, it is also found to be useful for that program which is large scope and multi-level organizations.

Guba and Lincoln's description appears to suggest that the CIPP model is well ahead of those models, which used objectives as their organizers, probably than Tyler's model and the like. It (the description made by Guba and Lincoln) also witness that the model is specifically useful to evaluate program that are large in their scope.

The CIPP model compared to other models seemed to demonstrate that it has combined features that are inherent in other models in addition to its peculiar characteristics. For instance the CIPP model called for "assessment of outcomes" as the countenance model did. The identifying and



assessing of “antecedent conditions” which are characteristics of the countenance model could be assumed to cover in context evaluation of the CIPP model (Stufflebeam).

The process of evaluation in the CIPP model be it in context evaluation, input evaluation, process evaluation or product evaluation, involves three steps of which the first is “delineating”, the second is “obtaining” and the third is “providing” (Stufflebeam, 1983), (Popham, 1988), (Jenkins, 1976). Information requirements needed by decision makers are focused through the delineating step. Included operations during this step are specifying, defining and explicating useful information (Popham, 1988.). In general this step requires seeking answer for “what questions will be addressed?”

The second step, obtaining- “refers to the collection, organization and analysis of information using such to technical procedures as measurements and statistics” (Popham, 1988). This, according to Jenkins (1976.), involves seeking answer to a general question “how well the needed information be obtained?”

The final step- the providing step is that which is concerned with synthesizing of information so that it would be optimally useful for purposes of evaluation. This involves seeking answer to a general question “how well the obtained information be reported?”

### ***1.10 Review of Selected Studies***

On the Ethiopian context, we have only two studies that somehow speak about the curriculum evaluation of TVET in general carried out by Mekonnen Lemma (2004), Mesfin Sileshi (1994).

If we take Mekonnen Lemma's (2004) study, it concentrated on the implementation of 10+1 Drafting Curriculum in TVET in different Institutes in Addis Ababa. The purpose of his study was to evaluate the implementation process of 10+1 drafting curriculum and to identify the outcomes and problems encountered during the implementation process of the training program. For his study he took ten TVET institutes of Addis Ababa. In his findings, Mekonnen states that there are a shortage of drawing equipments, and teaching aids. The sizes of drawing rooms are



below standard and teaching a large class size has created a serious problem in the teaching-learning process. Consequently, the implementation process of the training program is not effective as it should have been in order to enable the trainees to have the mastery of the subject matters.

As mentioned above, Mesfin Sileshi (1994) also carried out a study that has the closer similarity to the present research. The objectives of his study were to assess the situation of Technical and Vocational Education Curriculum in catering to the needs of the students and society only on Content wise. For his study he took again three of the technical schools that were present in the capital at that time. The samples included 316 students, 24 teachers, and 5 officials of three schools. According to the findings of Mesfin Sileshi (1994), the links between the schools and the employers of the industry was found to be low and most of the teachers indicated that statement of objectives in each of the fields of studies do not reflect the occupation outside.

Both the above stated studies dealt with TVET program in a very specific context. It also speaks that there was no specific and in-depth study dealt with the Building Construction Program in TVET.

The present study were try to evaluate the program in four parts; there are Content, Input, Process and Product of the program. And the findings will be helpful to Modify or to continue the program. To improve or develop the entire TVET program in Ethiopia the researcher recommends that the entire program like Building Construction needs evaluation after its implementation.

### ***1.11 Statement of the Problem***

The major objective of any educational system is to cultivate the individual's capacity for problem solving and adaptability to the environment by developing the necessary knowledge, ability, attitude and skill. This is so with an assumption that the person will be able to participate in an all rounded way in the community and contribute to the over all development of the society where she/he lives in.



One of the objectives of education in Ethiopia is to satisfy the country's need for skilled manpower by providing training in various skills and at different levels. Hence the areas, according to the strategy set, (MOE 1994: 90) have been given special attention and action priority is focus on TVET (Technical and Vocational Education and Training). The strategy that is followed so that the necessary education outcome is achieved, in addition to conventional one is providing TVET (Technical and Vocational Education and Training).

In revising the scarcely available materials concerned with the status and the overall situations of Technical and Vocational Education and Training in Ethiopia, one can understand that there is less work done in the field. The problems appear more serious when it comes to the Technical and Vocational Institutes and Colleges and to the curriculum of Technical and Vocational Education and Training.

The present study is then an attempt made to Evaluate Building Construction Program in Technical and Vocational Education and Training (TVET) by using one of the contemporary approaches of Program evaluation -the CIPP model.

Evaluation gathers information for making decisions about curriculum, program, or instructional materials. The purpose of the present study is to evaluate the Building Construction Program. To investigate whether the program are adjusted to the knowledge and skill needs of the Trainees and from the Industries demand point of view.

With this background the present study can be stated as Building Construction Program Evaluation in TVET Colleges of Addis Ababa.



### **1.12 Purpose of the Study**

The purposes of the present study are: to make an Evaluation of Building Construction Program in TVET Colleges of Addis Ababa that refers to: -

- **Content-** in terms of course objectives and content of course, i.e. theoretical knowledge, practical skills, and field experiment given to the trainees are concerned with the identification of needs, as perceived by trainers and trainees;
- **Input-** in terms of the availability and adequacy of reference materials, interested trainees, well trained trainers, raw materials in reaching the courses objectives as perceived by the trainers and trainees to identify and assess the system's capabilities' that would be used to overcome the difficulties in meeting the objectives. And the trainers part in developing the curriculum as one of the input in the program;
- **Process-** in terms of assessing the real gap between actual program operation during implementation stage and the original design to link with the world of work and whether the teaching-learning process was conducted according to the planned objectives as perceived by the trainers and trainees;
- **Product-** in terms of the evaluation of outcomes in relation to the program's objectives and the skills & knowledge of trainees acquire from the colleges as perceived by the trainers, principals, and Industries.

### **1.13 Operational Definition of Terms**

**Building Construction Program:** - is a program in TVET Colleges which provides theoretical knowledge and practical skills relating to Building structures consisting of Sub-structures work, Formwork and scaffolding, Reinforcement work, Masonry work, Concrete structures, Roof work, Finishing work, Plumbing work, and quantity surveying erected to provide cover space for



different functions; such as residence, Business, Industries, Entertainment, Workshops etc. to its graduates.

**CIPP Model of Program Evaluation** is an evaluation model that includes evaluating Content, Input, Process, and Product.

**TVET:** in this content it refers to a program of education that emphasizes occupational vocational and technical training in different areas to prepare skilled manpower in their specific areas.

**Trainer:** - a person who gives training for somebody else for some performance as technicians.

**Trainees:** - a person who gets training by the trainer for some performance or skill.

**Stakeholder** – refers to construction industries that are the consumers of the TVET graduates.

#### ***1.14 Significance of the Study***

In most cases, it is believed that Technical and Vocational Education and Training is said to affect by the changes that are occurring outside the school at large. This obviously reminds and calls the attention of educators and educational decision makers to think over the necessity of frequent systematic evaluation of the curriculum and employment of an appropriate approach for the purpose.

Bringing together both the curriculum and the person to be catered through the curriculum, we can see that there is a logical relationship. An improved curriculum, in terms of meeting the needs of trainees and industries at large, though it must be proved through experiment and implementation, and in spite of the quality and the quantity of other variables like that of the education possessed by trainers and the quality and quantity of the educational materials available, is likely to result in bringing the desired behaviors of trainees aimed at.



In this respect then, the findings of the study will be proved to be significant:

1. For curriculum developers, who are particularly involved in and concerned with curriculum of Technical and Vocational Education and Training
2. For educational leaders who are assigned to be in charge of curricular matters in various Institutes of Technical and Vocational Education and Training.
3. For educational researchers whose main interest lies on investigating the effectiveness and efficiency of the curricula used in Technical and Vocational Education and Training.
4. And also those who are participating for the implementation of Technical and Vocational Education and Training, both the trainees and trainers, are beneficiary from the findings.

### ***1.15 Delimitation of the Study***

The study is delimited in the following manner: -

- Technical and Vocational Education and Training colleges in Addis Ababa are fifteen in number that are involved in offering Building Construction. This study focuses only on five of them that provide Diploma program in Building Construction.
- Building Construction Trainers, Trainees, and College principals in all the five Technical and Vocational Education and Training Colleges in Addis Ababa that offer Building Construction and four Construction Industries, which is employer of Building Construction graduates, are included in this study.



## CHAPTER TWO

### PLAN AND PROCEDURE

#### 2.1 Research Method

The major purpose of this study was to Evaluate Building Construction Program in Addis Ababa TVET Colleges that offers the program at diploma level. Thus to attain this purpose, a survey method were conducted by employing the CIPP model for program evaluation. Accordingly, the following techniques and procedures were employed to collect and analyze the data.

The CIPP model for program evaluation (Stufflebeam, 1971) suggests that evaluation focus on four elements basic to decision-making they are Content, Input, Process and Products. Evaluation design for the CIPP model involves three steps.

The first step in the evaluation design of the CIPP model is *delineating*. It is concerned with specifying, defining and explicating useful information. It deals with the explanation of the questions that will be addressed in the study.

The second step in the design of the CIPP model is *obtaining*. It deals with the collection, organization, and analysis of information by using such technical procedures as measurement and statistics.

The final step of the design is *providing*. It deals with synthesizing of information. So that it would be optimally useful for purpose of evaluation.

Hence, the present study, which was based on the CIPP model and design is, an attempt made to identify what is there in the program and what should have been in the Building Construction Program.



## 2.2 Study Site

The site of the study includes TVET Colleges, which offer Building Construction Program at the diploma level in Addis Ababa. Out of available fifteen TVET colleges five of them were selected randomly by lottery method. Since the study was a focus on Building Construction Program Evaluation, all of the selected colleges offer Building Construction program in diploma level. Those are: -

- General Wingate TVET College
- Mount Fudi TVET College
- Addis TVET College
- Kokeb TVET College
- Nur-Selam TVET College

## 2.3 Population

The population of the study includes 309 trainees and 30 trainers from Building Construction program, five College Principals and four Construction industries /Stake holders/ who employ the Building Construction graduates were included in this study.

**Table No. 2.1 Number and Location of Population**

| Respondents                      | TVET Colleges    |              |         |         |            | Construction Industries /GC-4/ | Total |
|----------------------------------|------------------|--------------|---------|---------|------------|--------------------------------|-------|
|                                  | *General Wingate | **Mount Fudi | **Addis | **Kokeb | **Nurselam |                                |       |
| Trainees                         | 68               | 43           | 75      | 30      | 38         | -                              | 254   |
| Trainers                         | 8                | 6            | 10      | 2       | 4          | -                              | 30    |
| Institute Principals             | 1                | 1            | 1       | 1       | 1          | -                              | 5     |
| Construction Industries Managers | -                | -            | -       | -       | -          | 20                             | 20    |
| Total                            | 77               | 50           | 86      | 33      | 43         | 20                             | 309   |

\* - Government TVET Colleges

\*\* - Non-government TVET Colleges

GC-4 - Grade four General Contractor /Construction Industry/



## 2.4 Sample

Five TVET Colleges that provide Building Construction program at Diploma level were included in the study. Moreover, efforts have been made to include Principals, Trainers and Trainees in the college. And Managers of randomly selected four Construction Industries have been taken as a sample.

In selecting the trainees, simple random sampling was adopted by using lottery method to the selected colleges. There were 254 population and 135 of them have taken as a sample. And all the trainers in Building Construction program (30 in number) have been taken as a sample. Institute Principals of each college have taken as a sample (5 in number). From 20 GC-4 /General Contractor Grade - 4/ construction industries/stakeholders four of them were included. The details of selected sample for each category are presented in Table 2.2.

**Table No. 2.2 Number and Location of Samples**

| Respondents                      | TVET Colleges    |              |           |           |            | Construction Industries /GC-4/ | Total      |
|----------------------------------|------------------|--------------|-----------|-----------|------------|--------------------------------|------------|
|                                  | *General Wingate | **Mount Fudi | **Addis   | **Kokeb   | **Nurselam |                                |            |
| Trainees                         | 36               | 25           | 37        | 18        | 19         | -                              | 135        |
| Trainers                         | 8                | 6            | 10        | 2         | 4          | -                              | 30         |
| Institute Principals             | 1                | 1            | 1         | 1         | 1          | -                              | 5          |
| Construction Industries Managers | -                | -            | -         | -         | -          | 4                              | 4          |
| <b>Total</b>                     | <b>45</b>        | <b>32</b>    | <b>48</b> | <b>21</b> | <b>24</b>  | <b>4</b>                       | <b>174</b> |

\* - Government TVET Colleges and

\*\* Non-government TVET Colleges

GC-4 - Grade four General Contractor /Construction Industry/



## **2.5 Data Gathering Instruments and procedure**

For the purpose of the present study two major instruments were employed. These were questionnaires for the trainers and trainees to gather data to evaluate Content, Input, Process, and Product of the program, and interview schedules for the college principals, and Stakeholders from Construction Industries to gather data to evaluate Process and Product of the program. A format was prepared in the above dimensions and necessary modification was done by expertise.

The questionnaire was checked for: clarity of wording, construction of sentences, suitability of the question format, and presence of difficult questions, time requirements, and usefulness of data. After all these, the questionnaire type, duplicate and administer to all of the respondents.

From the entire distributed 135 questionnaires for trainees 130 of them return the paper. The purpose of the questionnaire filled by the trainers and trainees was to find information regarding the program. These include general information, Ethiopian Training Policy, curriculum design, assessment of teaching learning process, requirements of staff, availability of tools and materials and factors that affect the outcome or the product.

Unstructured interview schedule was used to collect additional data from College principals and Stakeholders /Construction Industries/. The interview guide focuses mainly on the major constraints faced while employing the graduates of the program and recommended solution to come up with the objectives that are stated by the Ministry of Education in Education and Training Policy (1994).

## **2.6 Data Analysis Techniques**

The data, collected through interviewing and questionnaires are organized, analyzed and discussed. The method of analysis is descriptive. After the data were collected response frequency were registered.



In addition to responses to the survey questionnaire, additional data are gathered by unstructured personal interviews for the four selected Industry /Stakeholder managers, and Colleges principals. Participating Industry managers were asked to evaluate the Building Construction Program whether it was adjusted to their needs by relating to the world of work, and whether the graduates from the department fits successfully the challenges in the job market.



In addition to responses to the survey questionnaire, additional data are gathered by unstructured personal interviews for the four selected Industry /Stakeholder managers, and Colleges principals. Participating Industry managers were asked to evaluate the Building Construction Program whether it was adjusted to their needs by relating to the world of work, and whether the graduates from the department fits successfully the challenges in the job market.



## CHAPTER III

### ANALYSIS AND INTERPRETATION

This part deals with the analysis and interpretation of data that were collected through questionnaire and interview to realize the purpose of the study.

The collected data were subjected to necessary statistical techniques according to their nature as mentioned in the earlier chapter and the result has been presented in this chapter in five sections. Section-I deals with background information about the selected sample subjects; Section-II deals with Content Evaluation of Building Construction Program in TVET as perceived by trainers and trainees; Section-III deals with Input Evaluation of Building Construction Program in TVET as perceived by trainers and trainees; Process Evaluation of Building Construction Program in TVET as perceived by trainers and trainees are presented in Section- IV; Section-V deals with Product Evaluation of Building Construction program in TVET as perceived by trainers, and result of interview schedule for college principals and construction industry managers have been presented in section-VI.

#### ***Section I: - Background Information about the Respondents***

**Table No. 3.1. Description of respondents by their sex and age**

| No.      | Description    | Trainers  |            | Trainees   |            |
|----------|----------------|-----------|------------|------------|------------|
|          |                | No.       | %          | No.        | %          |
| <b>1</b> | Sex            |           |            |            |            |
|          | - Male         | 26        | 86.67      | 100        | 76.92      |
|          | - Female       | 4         | 13.33      | 30         | 13.08      |
|          | <b>Total</b>   | <b>30</b> | <b>100</b> | <b>130</b> | <b>100</b> |
| <b>2</b> | Age            |           |            |            |            |
|          | 15-20          | -         | -          | 115        | 88.46      |
|          | 21-25          | 1         | 3.85       | 15         | 11.54      |
|          | 26-30          | 20        | 66.67      | -          | -          |
|          | 31-35          | 3         | 10         | -          | -          |
|          | Above 35 years | 6         | 20         | -          | -          |
|          | <b>Total</b>   | <b>30</b> | <b>100</b> | <b>130</b> | <b>100</b> |



As it can be seen from Table No. 3.1, 86.67% of the trainers are males and 13.33% are females, and with regard to trainees 76.92% are males and 13.08% are females. Regarding age group, 3.85% of trainers are between 21-25, 61.54% between 26-30, 11.54% between 31-35, and 23.07% of them are above 35 years of age. And finally, concerning TVET College trainees in the selected sample the majority i.e. 88.46% belong to the age group between 15-20 years of age and the rest 11.54% belong to the age group of 21-25 years of age.

**Table No. 3.2 Respondents description by their qualification, service year, and field of study**

| No.      | Items                        | Respondents |     |          |       |
|----------|------------------------------|-------------|-----|----------|-------|
|          |                              | Principals  |     | Trainers |       |
|          |                              | No.         | %   | No.      | %     |
| <b>1</b> | <b>Qualification</b>         |             |     |          |       |
|          | 12+3                         | -           | -   | 4        | 15.38 |
|          | B.Sc/ B.A / B.Ed             | 1           | 20  | 26       | 84.62 |
|          | M.Sc/M.A                     | 4           | 80  | -        | -     |
|          | <b>Total</b>                 | 5           | 100 | 30       | 100   |
| <b>2</b> | <b>Service Year</b>          |             |     |          |       |
|          | <5                           | -           | -   | 5        | 19.23 |
|          | 6-10                         | -           | -   | 19       | 57.69 |
|          | 11-20                        | 3           | 60  | 3        | 11.54 |
|          | Above 21                     | 2           | 40  | 3        | 11.54 |
|          | <b>Total</b>                 | 5           | 100 | 30       | 100   |
| <b>3</b> | <b>Field of Study</b>        |             |     |          |       |
|          | - Technology                 | -           | -   | 26       | 84.62 |
|          | - Natural Science            | 1           | 20  | -        | -     |
|          | - Engineering                | 2           | 40  | 4        | 15.38 |
|          | - Management                 | -           | -   | -        | -     |
|          | - Educational administration | 2           | 40  | -        | -     |
|          | <b>Total</b>                 | 5           | 100 | 30       | 100   |

Trainers and College Principals were required to state their qualification, service year and their field of specialization. The findings regarding their qualifications demonstrated as 80% of the college principals are M.Sc holders while 20% of them are B.Sc/B.A holders. 15.38% of the Trainers are 12+3 Advanced Diploma holders while 84.62% of them are B.Sc/B.Ed holders.



Service year in the training Colleges also one of the items presented to the trainers. In this regard, 19.23% of the trainers have less than five years of service, 57.69% of trainers have 6-10 years of service, 11.54% of trainers have 11-20 years of service, and 11.54% of trainers have served 21 years and above.

As it is clearly stated in the above Table No. 3.2, 15.38% trainers are graduates of Engineering and 84.62% are graduates of Technology fields at various educational levels. Concerning College Principals 20% are graduates of Natural science 40% are graduates of Engineering, and 40% are graduates of Educational Administration.

In general, majority of trainers i.e. 57.69% have 6-10 years of experience, while 19.23% of trainers have experience below five years and 11.54% have experience of 11-20 years. This figure depicts small service year. The same small proportion of trainers i.e. 11.54% has 20-year experience and above. The conclusion is that the majority of trainers have less training experience.

With regard to their qualifications, 84.62% of the trainers fulfilled the Educational requirements as per Ministry of Education's standard (MOE: 1994), which states trainers ought to have a minimum of first degree to be trainer in the TVET colleges.

## ***Section II: - Results with regard to Content Evaluation of Building Construction Program in TVET***

It is an attempt made to evaluate the adequacy of the course content as per theory, practice and field experiment given to the trainees taking into consideration the identification of needs, the course objectives as perceived by the trainees and trainers, analyzing the situation, describe and define the actual and desired conditions, and value of stated goals. Respondents were asked to indicate 'Yes' or 'No' for each item asked. In each of the tables below the chi-square test has been computed and for the frequencies less than five in each cell Yates's correction has been used to test whether there was a significant perception difference between trainers and trainees.



**Table No. 3.3 Response of trainers and trainees awareness on the objectives of Building Construction Program in TVET**

| No | Questions                                                                                                                                                                    | Respondents | Options      |             | Observed<br>chi-square<br>value $\chi^2$ at<br>df=1,<br>$\alpha=0.05$ |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|--------------|-------------|-----------------------------------------------------------------------|
|    |                                                                                                                                                                              |             | Yes<br>f (%) | No<br>f (%) |                                                                       |
| 1  | Trainers/Trainees clearly know the specific objectives of TVET Program, which is stated by MOE in 1994                                                                       | Trainers    | 29(96.67)    | 1(3.33)     | 23.17*                                                                |
|    |                                                                                                                                                                              | Trainees    | 63(48.46)    | 67(51.54)   |                                                                       |
| 2  | Statement of instructional objectives in building construction program is:                                                                                                   |             |              |             |                                                                       |
|    | - Clear and understandable                                                                                                                                                   | Trainers    | 28(93.33)    | 2(6.67)     | 13.03*                                                                |
|    |                                                                                                                                                                              | Trainees    | 76(58.46)    | 54(41.54)   |                                                                       |
|    | - Found to be the same with what you thought to be                                                                                                                           | Trainers    | 27(90)       | 3(10)       | 22.78*                                                                |
|    |                                                                                                                                                                              | Trainees    | 75(57.69)    | 55(42.31)   |                                                                       |
|    | - Constructed in a way that they would reflect the major aspects of the occupation                                                                                           | Trainers    | 28(93.33)    | 2(6.67)     | 15.76*                                                                |
|    |                                                                                                                                                                              | Trainees    | 76(58.46)    | 54(41.54)   |                                                                       |
|    | - Constructed in a way that they would reflect meaningful use in life                                                                                                        | Trainers    | 5(16.67)     | 25(83.33)   | 16.41*                                                                |
|    |                                                                                                                                                                              | Trainees    | 75(57.69)    | 55(42.31)   |                                                                       |
| 3  | The objectives stated for building construction program are adjusted fully by using the present existing training materials, tools, machines and equipment in your institute | Trainers    | 5(16.67)     | 25(83.33)   | 16.41*                                                                |
|    |                                                                                                                                                                              | Trainees    | 75(57.69)    | 55(42.31)   |                                                                       |

*N.B -Figures in the parenthesis is percentage*

*- \*- Indicates that the figure is significant*

Trainers and trainees were required to give information on the specific objectives of Building Construction Program in TVET. The results on Table No. 3.3 showed information whether the trainers and trainees were aware of the specific objectives of the program and whether the objectives of the program were fully adjusted on the basis of the existing materials, tools, machines, and equipment in the colleges. Hence, the information revealed that 96.67% of the trainers were aware of the specific objectives of Building Construction Program, and 48.46% of



the trainees confirmed that they knew about the specific objectives of TVET program whereas 51.54% of the trainees responded the other way round.

The findings disclosed that while majority of trainees didn't know about the specific objectives of TVET program, almost all of the trainers knew about it.

Pertaining to the statement of instructional objectives, 93.33% of the trainers responded positively that the instructional objectives of the program was clear and understandable, constructed in a way that it would reflect the major aspects of the occupation. Whilst, 83.33% the trainers perceived negatively that the instructional objectives were not constructed in a way that it would reflect meaningful use in life of the trainees. The same proportion of respondents replied negatively to the statement -Building Construction program were adjusted fully by using the existing training materials, tools, machines and equipment in the colleges. 58.46%, 57.69%, 58.46%, and 57.69% of the trainees responded positively that the instructional objectives of the program was clear and understandable, found to be the same with they thought to be, constructed in a way that it would reflect the major aspects of the occupation and it was constructed in a way that it would reflect meaningful use in life of them respectively. 41.54%, 42.31%, 41.54%, and 42.31% of the trainees responded 'NO' for the item that the objectives stated for building construction program were adjusted fully by using the present existing training materials, tools, machines and equipment in their institute. 42.31% of the trainers responded 'NO' while 57.69% responded 'YES' for the aforementioned item.

Further the chi-square test result demonstrated significant difference between trainers and trainees with regard to knowledge of specific objectives of TVET program stated by MOE ( $\chi^2 = 23.17$ ), clarity and understandability of instructional objectives ( $\chi^2 = 13.03$ ), with regard to their perception about found to be that same with what they thought to be ( $\chi^2 = 22.78$ ), it was constructed in a way that they would reflect the major aspect of the occupation ( $\chi^2 = 15.76$ ), it was constructed in a way that they would reflect meaningful use in life ( $\chi^2 = 16.41$ ), and for that it was adjusted fully by using the present existing training materials, tools, machines and equipments in their college ( $\chi^2 = 16.41$ ).



Generally, the findings revealed that all of the trainers perceived the instructional objectives in Building Construction program positively except that it was constructed in a way that they would reflect meaningful use in life. Differently, not few trainees perceived the instructional objectives negatively. And it was clearly seen that there was a significant difference between trainers' and trainees' knowledge.

**Table No. 3.4 Response of the trainers and trainees on the adequacy of the training time of each main course**

| No. | Questions                                                                                           | Respondents | Options      |             | Observed chi-square value $\chi^2$ at df =1, $\alpha=0.05$ |
|-----|-----------------------------------------------------------------------------------------------------|-------------|--------------|-------------|------------------------------------------------------------|
|     |                                                                                                     |             | YES<br>f (%) | NO<br>f (%) |                                                            |
| 1   | There are sufficient practical & theoretical time to achieve the objectives of the following course |             |              |             |                                                            |
|     | - Foundation setting-out                                                                            | Trainers    | 29(96.67)    | 1(3.33)     | 1.31(ns)                                                   |
|     |                                                                                                     | Trainees    | 129(99.23)   | 1(0.77)     |                                                            |
|     | - Form work and Scaffolding construction,                                                           | Trainers    | 29(96.67)    | 1(3.33)     | 0.11(ns)                                                   |
|     |                                                                                                     | Trainees    | 127(97.69)   | 3(2.31)     |                                                            |
|     | - Reinforcement work                                                                                | Trainers    | 28(93.33)    | 2(6.67)     | 0.47(ns)                                                   |
|     |                                                                                                     | Trainees    | 125(96.15)   | 5(3.85)     |                                                            |
|     | - Masonry work.                                                                                     | Trainers    | 29(96.67)    | 1(3.33)     | 0.21(ns)                                                   |
|     |                                                                                                     | Trainees    | 123(94.62)   | 7(5.38)     |                                                            |
|     | - Concrete Structure                                                                                | Trainers    | 28(93.33)    | 2(6.67)     | 0.01(ns)                                                   |
|     |                                                                                                     | Trainees    | 122(93.85)   | 8(6.15)     |                                                            |
|     | - Roof and Roof covering                                                                            | Trainers    | 28(93.33)    | 2(6.67)     | 1.54(ns)                                                   |
|     |                                                                                                     | Trainees    | 127(97.69)   | 3(2.31)     |                                                            |
|     | - Finishing                                                                                         | Trainers    | 28(93.33)    | 2(6.67)     | 0.08(ns)                                                   |
|     |                                                                                                     | Trainees    | 123(94.62)   | 7(5.38)     |                                                            |
|     | - Water Supply                                                                                      | Trainers    | 28(93.33)    | 2(6.67)     | 0.22(ns)                                                   |
|     |                                                                                                     | Trainees    | 124(95.38)   | 6(4.62)     |                                                            |
|     | - Glass and Glazing                                                                                 | Trainers    | 29(96.67)    | 1(3.33)     | 0.36(ns)                                                   |
|     |                                                                                                     | Trainees    | 122(93.85)   | 8(6.15)     |                                                            |
|     | - Quantity Surveying                                                                                | Trainers    | 28(93.33)    | 2(6.66)     | 0.002(ns)                                                  |
|     |                                                                                                     | Trainees    | 121(93.08)   | 9(6.92)     |                                                            |
|     | - Constructing floor and wall coverings                                                             | Trainers    | 28(93.33)    | 2(6.67)     | 0.04(ns)                                                   |
|     |                                                                                                     | Trainees    | 120(92.31)   | 10(7.69)    |                                                            |

*N.B- Figures in the parenthesis are percentage*

*- ns: - implies figures is not significant*



An attempt was made to find out which course had shortage of training time while its implementation in the colleges to achieve its objectives. With this regard, results in Table no. 3.4 showed that according to the trainers and trainees perception all the major courses had adequate allotted training time to achieve its objective.

The chi-square test result of each item was less than its critical value 3.84. Therefore, these showed that there is no significant perception difference between trainers and trainees on the adequacy of practical & theoretical time for each course to achieve the objectives.

In general, the findings revealed that trainees and trainers had the same perception that all the major courses in the program contained adequate training time to achieve the specific objectives of programs.



**Table No. 3.5 Response on the values of the major courses whether it equips the trainees with necessary and adequate skills and knowledge to be employed in any construction project.**

| No. | Questions                                                                                                                                                     | Respondents | Options      |             | Observed chi-square value $\chi^2$ at df =1, $\alpha=0.05$ |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|--------------|-------------|------------------------------------------------------------|
|     |                                                                                                                                                               |             | YES<br>f (%) | NO<br>f (%) |                                                            |
| 1   | The skills and knowledge that the trainees have taken in each course equips them to be employed as a technician in any construction project in the area of: - |             |              |             |                                                            |
|     | - Foundation setting-out                                                                                                                                      | Trainers    | 29(96.67)    | 1(3.33)     | 2.83(ns)                                                   |
|     |                                                                                                                                                               | Trainees    | 111(85.38)   | 19(14.62)   |                                                            |
|     | - Form work and Scaffolding construction,                                                                                                                     | Trainers    | 28(93.33)    | 2(6.67)     | 1.52(ns)                                                   |
|     |                                                                                                                                                               | Trainees    | 105(80.77)   | 19(14.62)   |                                                            |
|     | - Reinforcement work                                                                                                                                          | Trainers    | 29(96.67)    | 1(3.33)     | 2.83(ns)                                                   |
|     |                                                                                                                                                               | Trainees    | 111(85.38)   | 19(14.62)   |                                                            |
|     | - Masonry work.                                                                                                                                               | Trainers    | 28(93.33)    | 2(6.67)     | 0.61(ns)                                                   |
|     |                                                                                                                                                               | Trainees    | 115(88.46)   | 15(11.51)   |                                                            |
|     | - Concrete Structure                                                                                                                                          | Trainers    | 27(90)       | 3(10)       | 0.01(ns)                                                   |
|     |                                                                                                                                                               | Trainees    | 116(89.23)   | 14(1.77)    |                                                            |
|     | - Roof and Roof covering                                                                                                                                      | Trainers    | 29(96.33)    | 1(3.33)     | 1.58(ns)                                                   |
|     |                                                                                                                                                               | Trainees    | 116(89.23)   | 14(10.77)   |                                                            |
|     | - Finishing                                                                                                                                                   | Trainers    | 28(93.33)    | 2(6.67)     | 0.45(ns)                                                   |
|     |                                                                                                                                                               | Trainees    | 116(89.23)   | 14(10.77)   |                                                            |
|     | - Water Supply                                                                                                                                                | Trainers    | 27(90)       | 3(10)       | 0.02(ns)                                                   |
|     |                                                                                                                                                               | Trainees    | 118(90.77)   | 12(9.23)    |                                                            |
|     | - Glass and Glazing                                                                                                                                           | Trainers    | 28(93.33)    | 2(6.67)     | 0.61(ns)                                                   |
|     |                                                                                                                                                               | Trainees    | 115(88.46)   | 15(11.54)   |                                                            |
|     | - Quantity Surveying                                                                                                                                          | Trainers    | 27(90)       | 3(10)       | 0.18(ns)                                                   |
|     |                                                                                                                                                               | Trainees    | 120(92.31)   | 10(7.69)    |                                                            |
|     | - Constructing floor and wall coverings                                                                                                                       | Trainers    | 29(96.67)    | 1(3.33)     | 0.53(ns)                                                   |
|     |                                                                                                                                                               | Trainees    | 121(93.08)   | 9(6.92)     |                                                            |
| 2   | The skills & knowledge that the trainees have learned in the program enable them to work in the job market as a sub-contractor                                | Trainers    | 28(93.33)    | 2(6.67)     | 0.45(ns)                                                   |
|     |                                                                                                                                                               | Trainees    | 116(89.23)   | 14(10.77)   |                                                            |

*N.B Figures in the parenthesis are percentage  
- ns: - implies figures is not significant*



Table No. 3.5 depicts, trainers and trainees response on the values of the major courses i.e. whether it equips the trainees with necessary and adequate skills and knowledge to be employed in any construction project or not. The results showed that out of sampled trainers 96.67%, 93.33%, 96.67%, 93.33%, 90%, 96.67%, 93.33%, 90%, 93.33%, 90%, and 96.67% responded 'YES' on the values of the major courses i.e. Foundation setting-out, Formwork & scaffolding, Reinforcement work, Masonry work, Concrete structure, Roof & Roof coverings, Finishing, Water supply, Glass & Glazing, Quantity surveying, and Constructing floor & wall coverings respectively, as to equip trainees with necessary and adequate skills and knowledge to be employed in any construction projects as a contractor or sub-contractor. On the contrary, only 3.33%, 6.67%, 3.33%, 6.67%, 10%, 3.33%, 6.67%, 10%, 6.67%, 10%, and 3.33% of the trainers responded 'NO'. Concerning the trainees 85.38%, 80.77%, 85.38%, 88.46%, 89.23%, 89.23%, 89.23%, 90.77%, 88.46%, 92.30%, 93.08% of the them responded 'YES' to the items while only 14.62%, 14.62%, 14.62%, 11.54%, 10.77%, 10.77%, 10.77%, 9.24%, 11.54%, 7.69%, 6.93% of the sample trainees responded 'NO' on the values of the listed major courses, respectively. For the question presented to trainers and trainees whether the skills & knowledge that the trainees have learned in the program enable them to work in the job market as a sub-contractor, 93.33% of the trainers and 89.23% of the trainees responded positively.

The chi-square test observed value of each item on Table No. 3.5 is less than the critical value (3.84) for each item. Therefore, there is no significant perception difference between trainees and trainers with regard to the stated item.

This showed that trainees perceived that the skills and knowledge that they took in each course equipped them to be employed as a technician in any construction project as a contractor or sub-contractor.



**Table No. 3.6 Values given by trainers and trainees on the importance of common courses and supportive courses**

| No. | Questions                                                                       | Respondents | Options      |             | Observed chi-square value<br>$\chi^2$ at df=1,<br>$\alpha=0.05$ |
|-----|---------------------------------------------------------------------------------|-------------|--------------|-------------|-----------------------------------------------------------------|
|     |                                                                                 |             | YES<br>f (%) | NO<br>f (%) |                                                                 |
| 1   | The following common courses to the Building Construction Program are important |             |              |             |                                                                 |
|     | English                                                                         | Trainers    | 29(96.67)    | 1(3.33)     | 0.11(ns)                                                        |
|     |                                                                                 | Trainees    | 127(97.69)   | 3(2.31)     |                                                                 |
|     | Civics                                                                          | Trainers    | 29(96.67)    | 1(3.33)     | 0.43(ns)                                                        |
|     |                                                                                 | Trainees    | 128(98.46)   | 2(1.54)     |                                                                 |
|     | Mathematics                                                                     | Trainers    | 29(96.67)    | 1(3.33)     | 1.28(ns)                                                        |
|     |                                                                                 | Trainees    | 129(99.23)   | 1(0.77)     |                                                                 |
|     | Entrepreneurship                                                                | Trainers    | 29(96.67)    | 1(3.33)     | 0.11(ns)                                                        |
|     |                                                                                 | Trainees    | 127(97.69)   | 3(2.31)     |                                                                 |
|     | Information Technology                                                          | Trainers    | 29(96.67)    | 1(3.33)     | 0.43(ns)                                                        |
|     |                                                                                 | Trainees    | 128(98.46)   | 2(1.54)     |                                                                 |
|     | Technical Drawing                                                               | Trainers    | 29(96.67)    | 1(3.33)     | 1.28(ns)                                                        |
|     |                                                                                 | Trainees    | 129(99.23)   | 1(0.77)     |                                                                 |
|     | Building Drawing                                                                | Trainers    | 29(96.67)    | 1(3.33)     | 1.28(ns)                                                        |
|     |                                                                                 | Trainees    | 129(99.23)   | 1(0.77)     |                                                                 |
|     | Building Materials                                                              | Trainers    | 29(96.67)    | 1(3.33)     | 0.11(ns)                                                        |
|     |                                                                                 | Trainees    | 127(97.69)   | 3(2.31)     |                                                                 |
|     | Soil Mechanics                                                                  | Trainers    | 29(96.67)    | 1(3.33)     | 0.43(ns)                                                        |
|     |                                                                                 | Trainees    | 128(98.46)   | 2(1.54)     |                                                                 |

*N.B Figures in the parenthesis are percentage  
- ns: - implies figures is not significant*

As it can be seen from Table No. 3.6, a question was presented to the trainers and trainees indicating the importance of listed common courses. In this regard, out of 30 selected trainers, 96.67%, 96.67%, 96.67%, 96.67%, 96.67%, 96.67%, 96.67%, and 96.67% responded positively. Only less than 4% of the trainers responded negatively. And out of 130 sampled trainees, 97.70%, 98.46%, 99.23%, 97.70%, 99.23%, 99.23%, 99.23%, 97.69%, and 98.46% responded positively.



With regard to the importance of common courses in the program, chi-square test was computed and as it can be seen from the result in Table No. 3.6 the value of each item is less than the critical value 3.84. This showed that there is no significant value meaning there is no significant perception difference between trainers and trainees.

### **Section III: - Results with regard to Input Evaluation of Building Construction Program in TVET**

**Table No. 3.7 Trainers participation in the development of Building Construction Curriculum in TVET & its usefulness**

| No | Items                                                                                                                                     | Respondents | Options      |             | Observed chi-square value $\chi^2$ at df=1, $\alpha=0.05$ |
|----|-------------------------------------------------------------------------------------------------------------------------------------------|-------------|--------------|-------------|-----------------------------------------------------------|
|    |                                                                                                                                           |             | Yes<br>f (%) | No<br>f (%) |                                                           |
| 1  | The curriculum guide is useful in promoting the training process as intended                                                              | Trainers    | 22(73.33)    | 8(26.67)    | 6.57(*)                                                   |
| 2  | Trainers have taken part in the curriculum development process of Building Construction program in TVET                                   | Trainers    | 10(33.33)    | 20(66.67)   | 3.37(ns)                                                  |
| 3  | Trainers take part in the development of Building Construction Curriculum is in setting objectives and content while it was being drafted | Trainers    | 24(80)       | 6(20)       | 10.84(*)                                                  |

*N.B Figures in the parenthesis are percentage*

*- ns: - implies that it is not significant*

*- \*: - Implies that it is significant*

Trainers were presented with question focused on whether they had participated on curriculum development process and which part they took while it was being drafted. Accordingly, it was found that 73.33% of the trainers responded positively on the usefulness of the curriculum guide in promoting the program. On the contrary, 26.67% of the trainers responded negatively. Besides, 66.67% of them responded positively that they had part in the development of Building Construction curriculum. On the contrary, 33.33% of trainers responded negatively. But, 80% of



them responded negatively that their part was in setting objectives and content while it was being drafted.

Further, for each of the table chi-square test was computed and for the item "if the curriculum guide was useful" a chi-square of  $(\chi^2) = 6.57$  was found, and for the item "trainers take part in the development of Building Construction curriculum is in setting objectives and content while it was being drafted" a chi-square of  $(\chi^2) = 10.84$  was found showing a significant difference for both the items. For the item "trainers have taken part in curriculum development process in TVET" a chi-square of  $(\chi^2) = 3.37$  was found revealing no significant difference.

The findings revealed, as perceived by the trainers the curriculum guide, which is presented by MOE is not helpful in promoting the TVET program. And even if trainers had taken part in curriculum development process of the Building Construction program, it was not in setting objectives and content while it was being drafted.



**Table No. 3.8 Trainers and Trainees Perception with Regard to Input of the Program**

| No. | Questions                                                                                                            | Respondent | Options      |             | Observed chi-square value $\chi^2$ at df=1, $\alpha=0.05$ |
|-----|----------------------------------------------------------------------------------------------------------------------|------------|--------------|-------------|-----------------------------------------------------------|
|     |                                                                                                                      |            | YES<br>f (%) | NO<br>f (%) |                                                           |
| 1   | There are enough qualified trainers in Building construction Program                                                 | Trainers   | 29(96.67)    | 1(3.33)     | 0.02(ns)                                                  |
|     |                                                                                                                      | Trainees   | 125(96.15)   | 5(3.85)     |                                                           |
| 2   | The trainees assigned in the Building Construction Program are according to their interest                           | Trainers   | 8(26.67)     | 22(73.33)   | 14.84(*)                                                  |
|     |                                                                                                                      | Trainees   | 6(4.62)      | 124(95.38)  |                                                           |
| 3   | The trainees are ready to acquire practical and theoretical knowledge                                                | Trainers   | 10(33.33)    | 20(66.67)   | 65.26(*)                                                  |
|     |                                                                                                                      | Trainees   | 123(94.62)   | 7(5.38)     |                                                           |
| 4   | The trainees assigned in the building construction are ready for advancement through TVET                            | Trainers   | 10(33.33)    | 20(66.66)   | 21.56(*)                                                  |
|     |                                                                                                                      | Trainees   | 100(76.92)   | 30(23.08)   |                                                           |
| 5   | Trainees those joining Building Construction program are well informed about demand of the program in the job market | Trainers   | 29(96.67)    | 1(3.33)     | 9.62(*)                                                   |
|     |                                                                                                                      | Trainees   | 90(69.23)    | 40(30.77)   |                                                           |
| 6   | Trainees join this program because they think that:                                                                  |            |              |             |                                                           |
|     | - it is the easiest way for securing employment                                                                      | Trainers   | 29(96.67)    | 1(3.33)     | 16.26(*)                                                  |
|     |                                                                                                                      | Trainees   | 75(57.69)    | 55(42.31)   |                                                           |
|     | - it is the easiest way for joining higher education                                                                 | Trainers   | 1(3.33)      | 29(96.67)   | 0.02(ns)                                                  |
|     |                                                                                                                      | Trainees   | 5(3.85)      | 125(96.15)  |                                                           |
|     | - they like it                                                                                                       | Trainers   | 6(20)        | 24(80)      | 29.50(*)                                                  |
|     |                                                                                                                      | Trainees   | 95(73.08)    | 35(26.92)   |                                                           |
|     | - they are in capable of joining academic stream                                                                     | Trainers   | 29(96.67)    | 1(3.33)     | 16.26(*)                                                  |
|     |                                                                                                                      | Trainees   | 75(57.69)    | 55(42.31)   |                                                           |

*N.B Figures in the parenthesis are percentage*

*- ns : - implies that it is not significant*

*- \* : - implies that it is significant*



In an attempt to evaluate Building Construction program that refers to input, six questions were presented to trainers and trainees. The first question is whether there were enough qualified trainers in Building Construction program. To this item, 96.67% of the trainers and 94.72% of the trainees responded positively. On the other hand 3.33% and 3.85% of trainers and trainees responded negatively respectively.

A question was presented to the trainees and trainers whether the trainees assigned in Building Construction Program were according to their interest. To this end, 73.33% of the trainers responded 'NO'. On the contrary, 26.67% of trainers responded 'YES'. On the other hand 95.39% of the trainees responded negatively that they were assigned in the program according to their interest. As it can be seen from the chi-square value there is significant perception difference between the respondents.

Attempt was made to find out whether trainees admitted to the colleges were informed about demand of the program in the job market. To this end, 96.67% of the trainers responded positively. 69.24% of trainees, however, responded negatively to the item posed above. The rest 30.76% of the trainees responded positively. To this end there was no significant difference was obtained in perception between trainees and trainers.

With regard to trainees joining this program, 96.67% of the trainers and 57.69% of the trainees responded 'YES', whereas 44.31% of the trainees responded negatively to the item if trainees join this program because they thought it was the easiest way for securing employment. The chi-square computed depicted that there is a significant difference between trainees and trainers. 96.67% of the trainers and 96.15% of the trainees responded negatively that they join the program because it was the easiest way to join higher education respectively. For this question there is no significant perception difference in both the respondents. 80% of the trainers, and 26.92% of the trainees, responded negatively that the trainees join this program because they liked it. On the other hand 73.08% of the trainees responded 'YES'. 96.67% of the trainers and 57.69% of the trainees responded 'YES', that trainees join this program because they are not capable enough to join academic stream. On the contrary, 44.31% of the trainees responded



negatively. On this regard, as the chi-square value revealed that, there is significance perception difference between the respondents.

The observed chi-square test values of item 1, 5, and 6.2 are less than the critical chi-square value (3.84). And this showed that there are no significance values. The observed chi-square test values of Item number 2, 3, 4, 6.1, 6.3, and 6.4 exceed the critical chi-square value. And this demonstrated that there are significance values, meaning that there is significant perception difference between trainees and trainers.

Generally, the findings revealed that both the respondents replied that there are qualified trainers in their college to carry out the program objectives. The trainees, in their perception, were not assigned for the program according to their interest. And it was clearly seen that there is a significant perception difference between the respondents. 26.67% of the trainers responded that they were assigned in the program according to their interest. As the analysis revealed that trainees are ready to acquire practical and theoretical knowledge, as to their response, but there is a significant perception difference with trainers that 66.67% of them responded negatively that trainees are not ready. All the above findings are a great barrier to overcome the difficulties in meeting the objective of the program.

Trainees who join this program as to the respondents response; they were well informed about the demand in the job market with no significant perception difference between trainers and trainees. And this would be useful to overcome the difficulties in meeting program objectives.



**Table No. 3.9 Trainers and Trainees perception on different Inputs that are given to the  
Implementation of the program**

| No. | Questions                                                                                                                     | Respondents | Options      |             | Observed chi-square value $\chi^2$ at<br>df =1, $\alpha=0.05$ |
|-----|-------------------------------------------------------------------------------------------------------------------------------|-------------|--------------|-------------|---------------------------------------------------------------|
|     |                                                                                                                               |             | YES<br>f (%) | NO<br>f (%) |                                                               |
| 1   | There are sufficient reference materials in the college for the courses                                                       |             |              |             |                                                               |
|     | - Foundation setting-out                                                                                                      | Trainers    | 1(3.33)      | 29(96.67)   | 0.10(ns)                                                      |
|     |                                                                                                                               | Trainees    | 3(2.31)      | 127(97.69)  |                                                               |
|     | - Form work and Scaffolding construction,                                                                                     | Trainers    | 1(3.33)      | 29(96.67)   | 0.43(ns)                                                      |
|     |                                                                                                                               | Trainees    | 2(1.54)      | 128(98.46)  |                                                               |
|     | - Reinforcement work                                                                                                          | Trainers    | 1(3.33)      | 29(96.67)   | 0.005(ns)                                                     |
|     |                                                                                                                               | Trainees    | 4(3.08)      | 126(96.92)  |                                                               |
|     | - Masonry work.                                                                                                               | Trainers    | 1(3.33)      | 29(96.67)   | 0.43(ns)                                                      |
|     |                                                                                                                               | Trainees    | 2(1.54)      | 128(98.46)  |                                                               |
|     | - Concrete Structure                                                                                                          | Trainers    | 1(3.33)      | 29(96.67)   | 0.10(ns)                                                      |
|     |                                                                                                                               | Trainees    | 3(2.31)      | 127(97.69)  |                                                               |
|     | - Roof and Roof covering                                                                                                      | Trainers    | 1(3.33)      | 29(96.67)   | 0.09(ns)                                                      |
|     |                                                                                                                               | Trainees    | 2(1.54)      | 128(98.46)  |                                                               |
|     | - Finishing                                                                                                                   | Trainers    | 1(3.33)      | 29(96.67)   | 0.09(ns)                                                      |
|     |                                                                                                                               | Trainees    | 6(4.62)      | 124(95.38)  |                                                               |
|     | - Water Supply                                                                                                                | Trainers    | 1(3.33)      | 29(96.67)   | 0.10(ns)                                                      |
|     |                                                                                                                               | Trainees    | 3(2.31)      | 127(97.69)  |                                                               |
|     | - Glass and Glazing                                                                                                           | Trainers    | 1(3.33)      | 29(96.67)   | 0.02(ns)                                                      |
|     |                                                                                                                               | Trainees    | 5(3.85)      | 125(96.15)  |                                                               |
|     | - Quantity Surveying                                                                                                          | Trainers    | 1(3.33)      | 29(96.67)   | 2.45(ns)                                                      |
|     |                                                                                                                               | Trainees    | 10(7.69)     | 120(92.31)  |                                                               |
|     | - Constructing floor and wall coverings                                                                                       | Trainers    | 3(10)        | 27(90)      | 0.58(ns)                                                      |
|     |                                                                                                                               | Trainees    | 20(15.38)    | 110(84.62)  |                                                               |
| 2   | The reference materials or text books are useful and up-to-date to you in promoting the teaching-learning process as intended | Trainers    | 5(16.67)     | 25(83.33)   | 0.03(ns)                                                      |
|     |                                                                                                                               | Trainees    | 20(15.38)    | 110(84.62)  |                                                               |

*N.B Figures in the parenthesis are percentage  
- ns: - implies that it is not significant*



In an attempt made to know the availability and adequacy of sufficient reference materials for each of the courses in the program, different questions were presented to trainers and trainees. As shown in Table 3.9 the findings revealed that almost all of the respondents responded that in each courses there are no sufficient reference materials for upgrading trainees skills and knowledge and to reach the program objectives. Few of trainees and trainers perceived that there are sufficient reference materials in the colleges. On the contrary, 96.67% of the trainers and 84.62% of the trainees responded negatively.

The chi-square test observed value of each item is less than the critical chi-square value of each item (3.84). Therefore, it can be interpreted that there is no significant perception difference between trainees and trainers on the availability of reference materials and its up-to-date ness to promote teaching-learning process as intended.



**Table 3.10 Trainers and Trainees perception on different Input that is given to the Implementation of the program**

| No. | Questions                                                                                                     | Respondents | Options      |             | Observed chi-square value $\chi^2$ at df=1, $\alpha=0.05$ |
|-----|---------------------------------------------------------------------------------------------------------------|-------------|--------------|-------------|-----------------------------------------------------------|
|     |                                                                                                               |             | YES<br>f (%) | NO<br>f (%) |                                                           |
| 1   | The instructional materials, tools, machines, and equipment are adequately available for each of the courses: |             |              |             |                                                           |
|     | - Foundation setting-out                                                                                      | Trainers    | 20(66.67)    | 10(33.33)   | 21.56(*)                                                  |
|     |                                                                                                               | Trainees    | 30(23.07)    | 100(76.92)  |                                                           |
|     | - Form work and Scaffolding construction,                                                                     | Trainers    | 17(56.67)    | 13(43.33)   | 57.34(*)                                                  |
|     |                                                                                                               | Trainees    | 5(3.85)      | 125(96.15)  |                                                           |
|     | - Reinforcement work                                                                                          | Trainers    | 20(66.67)    | 10(33.33)   | 61.82(*)                                                  |
|     |                                                                                                               | Trainees    | 8(6.15)      | 122(93.85)  |                                                           |
|     | - Masonry work.                                                                                               | Trainers    | 17(56.67)    | 13(43.33)   | 53.65(*)                                                  |
|     |                                                                                                               | Trainees    | 6(4.62)      | 124(95.38)  |                                                           |
|     | - Concrete Structure                                                                                          | Trainers    | 20(66.67)    | 10(33.33)   | 81.99(*)                                                  |
|     |                                                                                                               | Trainees    | 3(2.31)      | 127(97.69)  |                                                           |
|     | - Roof and Roof covering                                                                                      | Trainers    | 17(56.67)    | 13(43.33)   | 57.34(*)                                                  |
|     |                                                                                                               | Trainees    | 5(3.85)      | 125(96.15)  |                                                           |
|     | - Finishing                                                                                                   | Trainers    | 23(76.67)    | 7(23.33)    | 89.53(*)                                                  |
|     |                                                                                                               | Trainees    | 5(3.85)      | 125(96.15)  |                                                           |
|     | - Water Supply                                                                                                | Trainers    | 8(26.67)     | 22(73.33)   | 12.99(*)                                                  |
|     |                                                                                                               | Trainees    | 7(5.38)      | 123(94.62)  |                                                           |
|     | - Glass and Glazing                                                                                           | Trainers    | 10(33.34)    | 20(66.66)   | 24.95(*)                                                  |
|     |                                                                                                               | Trainees    | 5(3.85)      | 125(96.15)  |                                                           |
|     | - Quantity Surveying                                                                                          | Trainers    | 5(16.67)     | 25(83.33)   | 6.84(*)                                                   |
|     |                                                                                                               | Trainees    | 5(3.85)      | 125(96.15)  |                                                           |
|     | - Constructing floor and wall coverings                                                                       | Trainers    | 17(56.67)    | 13(43.33)   | 57.34(*)                                                  |
|     |                                                                                                               | Trainees    | 5(3.85)      | 125(96.15)  |                                                           |

*N.B Figures in the parenthesis are percentage*

*- \* : - implies that it is significant*

The last question to evaluate input in Building Construction Program was presented to trainers and trainees. On this regard, 33.33%, 43.33%, 43.33%, 33.33%, 43.33%, 23.33, 73.33%, 16.67%, and 83.33% of the trainers, and 26.92%, 96.15%, 93.85%, 95.38%, 97.69%, 96.15%, 96.15%,



94.61%, 96.15%, 19.20%, 96.15% of the trainees responded negatively on the availability of instructional materials, tools, machines, and equipment adequately for each of the courses Foundation setting-out, Formwork & scaffolding, Reinforcement worker, Masonry worker, Concrete structure, Roof & roof coverings, Finishing, Water supply, Glass & Glazing, Quantity surveying, & Constructing floor & wall coverings respectively. The rest of trainers and trainees, which are few in number, responded positively.

The chi-square test observed value of each item exceeds the chi-square critical value (3.84). Therefore, there is a significant perception difference between trainers and trainees on the adequacy and availability of instructional materials, tools, machines, and equipment for each of the courses.



#### Section IV: - Results with regard to Process Evaluation of Building Construction Program in TVET

**Table 3.11 Trainers and Trainees perception on the apprenticeship program**

| No. | Questions                                                                                                                                                             | Respondent | Options      |             | Observed chi-square value $\chi^2$ at df=1, $\alpha=0.05$ |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------|-------------|-----------------------------------------------------------|
|     |                                                                                                                                                                       |            | YES<br>f (%) | NO<br>f (%) |                                                           |
| 1   | The apprenticeship program is one of the major program of Building Construction, which is useful in equipping the trainees with the practical aspects of the training | Trainers   | 30(100)      | 0(0)        | 5.26(*)                                                   |
|     |                                                                                                                                                                       | Trainees   | 110(84.62)   | 20(15.38)   |                                                           |
| 2   | The apprenticeship program intended to implement at the end of each academic year is sufficient to link skills gain at the colleges to the world of work              | Trainers   | 1(3.33)      | 29(96.67)   | 3.09(ns)                                                  |
|     |                                                                                                                                                                       | Trainees   | 20(15.38)    | 110(84.62)  |                                                           |

*N.B Figures in the parenthesis are percentage*

*- ns : - implies that it is not significant*

*- \* : - implies that it is significant*

A question was presented to trainers and trainees to find out about the usefulness and adequacy of apprenticeship program. The majority of trainees 84.62% and 100% of the trainers responded positively that the apprenticeship program is one of the major components of the Building Construction program to equip trainees' practical skills. While 15.38% of the trainees, responded negatively.

And the next question that was presented to trainers and trainees was about whether the apprenticeship program implemented at the end of each academic year is sufficient to link skills gain at the colleges to the world of work. Again the majority of trainers, 96.66% and 84.62% of the trainees responded negatively. On the contrary, 3.33% of the trainers and 15.38% of the trainees responded positively.



In this regard chi-square test observed value for the first item  $\chi^2 = 5.26$  exceeds the critical value 3.84. Therefore, it can be interpreted that there is significant perception difference between the trainers and trainees. And for the second item, observed chi-square value ( $\chi^2 = 3.09$ ) less than the critical value 3.84. Thus, there is no significant perception difference between trainers and trainees.

Generally, the findings revealed according to the respondents that the apprenticeship program is one of the major components of Building Construction program useful in equipping the trainees with the practical aspects of the training and majority of respondents respond that the apprenticeship program intended to be implemented at the end of each academic year is not sufficient to link skills gain at the colleges to the world of work. And it creates a gap between actual program operation during implementation stage and the original design of the program.



**Table 3.12 Trainers and Trainees perception on the Process of the Building Construction Program**

| No. | Questions                                                                                                                                                                   | Respondent | Options      |             | Observed chi-square value $\chi^2$ at df =1, $\alpha=0.05$ |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------|-------------|------------------------------------------------------------|
|     |                                                                                                                                                                             |            | YES<br>f (%) | NO<br>f (%) |                                                            |
| 1   | Trainers have interest of training in TVET (particularly in Building Construction)                                                                                          | Trainers   | 17(56.67)    | 13(43.33)   | 3.83(ns)                                                   |
|     |                                                                                                                                                                             | Trainees   | 97(74.61)    | 33(25.39)   |                                                            |
| 2   | Trainers uses all the allotted time effectively both for practice and theory to enable trainees to work in the job market                                                   | Trainers   | 21(70)       | 9(30)       | 0.37(ns)                                                   |
|     |                                                                                                                                                                             | Trainees   | 98(75.39)    | 32(24.61)   |                                                            |
| 3   | Trainee-centered methods like workshop practice and project work need to be given due consideration as to the objectives of the program that is 70% practice and 30% theory | Trainers   | 24(80)       | 6(20)       | 0.61(ns)                                                   |
|     |                                                                                                                                                                             | Trainees   | 95(73.08)    | 35(26.92)   |                                                            |
| 4   | The evaluation system in school training is continuous assessment for practical and theoretical exam for the theoretical courses                                            | Trainers   | 6(20)        | 24(80)      | 0.38(ns)                                                   |
|     |                                                                                                                                                                             | Trainees   | 20(15.38)    | 110(84.62)  |                                                            |
| 5   | Practical projects are useful to create problem solving capabilities and creativity among the trainees                                                                      | Trainers   | 29(96.67)    | 1(3.33)     | 0.09(ns)                                                   |
|     |                                                                                                                                                                             | Trainees   | 124(95.38)   | 6(4.62)     |                                                            |
| 6   | There is a link between your college and construction industries                                                                                                            | Trainers   | 1(3.33)      | 29(96.67)   | 0.02(ns)                                                   |
|     |                                                                                                                                                                             | Trainees   | 5(3.85)      | 125(96.15)  |                                                            |

*N.B Figures in the parenthesis are percentage*

*- ns: - implies that it is not significant*

As shown in Table 3.12, a question was presented to trainers and trainees to indicate whether trainers have interest in TVET. Accordingly, 56.67% of the trainers and 74.62% of the trainees indicated that they had interest in TVET. On the contrary, 43.33% of the trainers and 25.39% of the trainees indicated negatively. The next question that was presented to the trainees and the trainers to evaluate process of the program was to know whether trainers uses all the allotted time



effectively both for practice and theory to enable trainees to work in the job market. On this regard 70% of the trainers and 95.39% of the trainees responded positively. On the other way round 30% of the trainers and 24.62% of the trainees responded negatively.

For the question that were presented to the trainers and trainees on the usefulness of practical projects to create problem solving capacity and the trainee-centered methods like workshop practice and project work need to be given due consideration as to the objectives of the program that is 70% practice and 30% theory, 96.67% of the trainers and 95.39% of the trainees responded positively. For the question, "the evaluation system in school training is continuous assessment for practical and theoretical exam for the theoretical courses" 80% of the trainers and 84.62% of the trainees responded negatively. On the other hand 20% of the trainers and 15.38% of the trainees responded positively.

The last question presented to both trainers and trainees was to know whether there is a link between their college and construction industries. 96.67% of the trainers and 96.15% of the trainees responded negatively. On the contrary, only 3.85% of the trainees responded positively.

The chi-square test observed value of each item is less than the critical chi-square value of each item (3.84). Therefore, it showed that, trainers and trainees do not have significant perception difference.

Generally, the findings on the evaluation of the Building Construction Program with regard to Process; Trainers have interest in the Building Construction Program in TVET and trainers use all the allotted time for practical and theoretical work to achieve the planned objectives of the program. On this regard, it is clearly indicated that the teaching-learning process was conducted accordingly. As to the response of trainers and trainees, practical projects in school training were useful to fill the skill gap between the training in school training and to work in the world of work. On the contrary, the findings on the trainee-centered method, that is 70% practice and 30% theory, and the evaluation system in each college, even if the trainee-centered method is implemented according to the planned objectives, i.e. 70% practice and 30% theory, the evaluation system used by the trainers is not continuous assessment in practical works. On this



regard, the researcher found that the evaluation system in the sample TVET colleges is not according to the curriculum. Finally, according to the information gathered from the trainers and trainees, there is not link between their college and construction industries, which are the consumers of their graduates. So, this shows that there is a gap between the employee and TVET colleges.



**Section V: - Results with regard to Product evaluation of Building Construction Program in TVET**

**Table 3.13 Trainers perception on the Product of the Building Construction Program**

| No. | Questions                                                                                                                                                        | Respondent | Options      |             | Observed chi-square value $\chi^2$ at df =1, $\alpha=0.05$ |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------|-------------|------------------------------------------------------------|
|     |                                                                                                                                                                  |            | YES<br>f (%) | NO<br>f (%) |                                                            |
| 1   | After completion of the program the trainees are capable enough to establish their own building materials production center to work with                         | Trainers   | 5(16.67)     | 25(83.34)   | 13.33(*)                                                   |
| 2   | The skills and knowledge that the trainees have learned in the institute will enable them to work in actual work                                                 | Trainers   | 25(83.33)    | 5(16.67)    | 13.33(*)                                                   |
| 3   | The knowledge and skills that the students acquire from the institute will enable them to adjust to whatever new skill and knowledge available in the work area. | Trainers   | 27(90)       | 3(10)       | 19.24(*)                                                   |
| 4   | The technician can work as a sub-contractor and a contractor after completing the building construction courses like:                                            |            |              |             |                                                            |
|     | - Foundation setting-out                                                                                                                                         | Trainers   | 22(73.33)    | 8(26.67)    | 6.53(*)                                                    |
|     | - Form work and Scaffolding construction,                                                                                                                        | Trainers   | 21(70)       | 9(30)       | 4.80(*)                                                    |
|     | - Reinforcement work                                                                                                                                             | Trainers   | 21(70)       | 9(30)       | 4.80(*)                                                    |
|     | - Masonry work.                                                                                                                                                  | Trainers   | 25(83.33)    | 5(16.67)    | 13.33(*)                                                   |
|     | - Concrete Structure                                                                                                                                             | Trainers   | 23(76.67)    | 7(23.33)    | 19.22(*)                                                   |
|     | - Roof and Roof covering                                                                                                                                         | Trainers   | 23(76.67)    | 7(23.33)    | 19.22(*)                                                   |
|     | - Finishing                                                                                                                                                      | Trainers   | 23(76.67)    | 7(23.33)    | 19.22(*)                                                   |
|     | - Water Supply                                                                                                                                                   | Trainers   | 22(73.33)    | 8(26.67)    | 6.53(*)                                                    |
|     | - Glass and Glazing                                                                                                                                              | Trainers   | 22(73.33)    | 8(26.67)    | 6.53(*)                                                    |
|     | - Quantity Surveying                                                                                                                                             | Trainers   | 24(80)       | 6(20)       | 10.80(*)                                                   |
|     | - Constructing floor and wall coverings                                                                                                                          | Trainers   | 22(73.33)    | 8(26.67)    | 6.53(*)                                                    |

*N.B Figures in the parenthesis are percentage  
- \*: - implies that it is significant*



As shown in Table 3.13, trainers were presented with a question in association with trainees' skills and knowledge to work in the actual work situation. Accordingly, 83.33% of the trainers responded positively that the skills and knowledge that the trainees acquire from the colleges enable them to work in actual work. Only 16.67% of the trainers responded negatively. For questions that were presented to trainers to indicate whether the trainees are capable enough to establish their own building materials production center to work with after completion of the program, 73.34% of the trainers responded negatively. On the other hand 16.67% of the trainers responded positively. For the question presented to trainers whether the knowledge and skills that the trainees acquire from the institute will enable them to adjust to whatever new skill and knowledge available in the work area, 90% of them responded positively.

The last question that was presented to trainers is to indicate whether the building technician can work as a sub-contractor and a contractor after completing the courses the majority of the trainers responded positively.

Further, in the above table the chi-square test has been done and for the frequencies less than five in each cell Yates's correction has been used to test whether the items are significant. On this regard all the question are significant.

Generally, the findings revealed that the trainees who graduate from the building construction program are not capable enough to establish building materials production center to work with. The skills and know ledges that the graduates acquire from the colleges as perceived by trainers, enable the trainees to work in actual work. On this regard, the program met its objectives. And also the perception of trainers indicates that graduates of the program/building construction technician can work as a sub-contractor and contractor on any building construction project. But, on the contrary, some of trainers perceive that they cannot work as a sub-contractor and a contractor in building construction project.



## **Section –VI Analysis of Interview questions From Industry Managers and College Principals**

Five of the college principals and four construction industry managers were presented interview, and the result were presented in this section as follows:

75% of Construction Industries Manager and 100% of College Principals were aware of the general and specific objectives of Building Construction program in TVET that was stated by MOE in 1994. only 25% of the Managers were not aware of it. 50% of the interviewed construction industries managers and 20% of the college principals respond that the Building Construction program was not adjusted in line with the objectives of TVET stated in Ethiopian Education Policy in 1994. They stated that the program restrict the skills and knowledge of the trainees, when we compare with the objectives. And 50% of the interviewed construction industry managers and 80% of college principals suggests that the Building Construction program was adjusted in line with the specific objectives of TVET by MOE in Ethiopian Education Policy in 1994. For the question, whether there is sufficient allotted budget for the training in Building Construction Program or not, 100% of college principals respond positively that there was enough budget for the training by the government or owners of the private colleges. For the question presented to college principals, how do you evaluate the availability and adequacy of reference materials, raw materials, and qualified trainers in your college to achieve the objectives of the program, 80% of them respond that the availability of reference materials was not adequate in their college, but all of the interviewed college principals respond positively that the availability of raw materials and qualified trainers in their college were so much satisfactory to achieve the objectives of the program. On the contrary, 20% of college principals respond that the availability of reference materials in their college in Building Construction program was adequate to achieve the objectives of the program. The next question that was presented to college principals was, does your college have a link with that of the construction industries, 80% of the college principals respond positively that their college had a link with the consumers of the graduates, and 20% of them respond negatively that their colleges did not have a link with the construction industries only at the time of apprenticeship program. A question presented to



both construction industry managers and college principals was, do you think that the needs of the industries are met by Building Construction graduates? 100% of the industry managers respond negatively that they did not satisfy with the program graduates. And they suggest that the program has to do with us and the trainees has to have enough apprenticeship time not only once in a year but at least four times a year to link the skills and knowledge that they learn in colleges with the real world of work and in addition to this they suggest that at the time of developing the training curriculum for the program, the construction industries had to have part in selecting the content and objective of the program as our need since we are the consumers of the graduates. But, even if they disagree on their satisfaction by the graduated technician, they did not deny that the knowledge and skills that the graduates acquire from the colleges enable them to adjust to whatever new skill and knowledge available in the work area. And 100% of college principals respond that they thought that the graduates have taken necessary skills and knowledge in their college to work with actual work area and as they said the college had prepare apprenticeship program for them to introduce the world of work, due to these reason they were confident enough that the need of construction industries were met by the graduates of the of building construction technicians. In addition to these the college principals suggest that, if there were an access to use dual training system, meaning that if the training were conducted both in the colleges and in the industries, the graduates may have better skills and knowledge than previous to satisfy the needs of the industry full. For the question, what do you suggest for the betterment of the building construction program to satisfy the needs of the industry, all of the interviewed construction industries respond that the program has to develop according to the needs of the industries and the actual fact of the countries need and economy. The college principals also suggests that the trainees has to assign in the program according to their interest to satisfy the needs of the industry, because if the trainees assign in the department with out their interest they will not ready to acquire practical skills and knowledge given by the colleges and they will not capable enough to satisfy the needs of the industry. And also the training has to conduct both in the colleges and in the industries to aware the trainees the real world of work. Finally, the college principals recommend that the responsible body have to prepare up-to-date reference materials for the program. The last question presented only for the construction industry managers was, how do you evaluate the overall skills and knowledge of building construction graduates from



TVET colleges. Majority of the construction industry managers respond the same ideas that the building construction technicians graduated from TVET colleges lacks confidence to work in real projects, but they do not consume much time to cope up with. Then after, the technicians can work in any construction project as a foreman. But, some of the technicians have no interest to work as foreman in construction projects; they prefer to work in the office rather than construction site. Finally, most of them suggest that it is better to give work ethics for the graduates before they assign in construction projects to have respect for any type of work.



## CHAPTER IV

### MAIN FINDINGS AND DISCUSSION

#### 4.1 Main Findings and Discussions with regard to Content Evaluation of building construction program

The majority of the trainers 96.67%, 75% of Construction Industry Managers, and all of the College principals clearly know the specific objectives of TVET that were stated by MOE. Out of the sampled trainees only 48.46% know it. As far as the statement of instructional objectives is concerned all of the trainers, and not less than 57.69% of the trainees perceived positively while 42.31% of them perceived negatively. But 83.3% of the trainers and 57.69% of the trainees perceived that the statement of instructional objectives is not constructed in a way that they would reflect meaning full use in life. But, even if the implementers and stakeholders know the objectives, the trainees' awareness minimal. This may be due to the fact that trainers have a chance to participate in different awareness creation workshops about the objectives, but trainees do not.

Majority of the trainers 83.33% and 42.31% of the trainees perceived that the objectives stated for Building Construction Program is not fully adjusted by using the present existing training materials, tools, machines, and equipment in their college. And 57.69% of the trainees perceived positively. In this case there is a significant perception difference between trainees and trainers. This indicated that there is information gap between the implementers of the program in the colleges and the person who were in charge of developing the objectives of the program.

Majority of the trainers and trainees with out significant perception difference responded that the entire major courses in Building Construction Program have adequate training time to achieve the specific objectives.



Both the trainers and trainees themselves perceived that the skills and knowledge that the trainees have taken in each course equips them to employee as a technician in any construction project as a contractor or sub-contractor.

As it can be seen from the findings there was no significant perception difference between the trainers and trainees they all agree on the importance of common and supportive courses to Building Construction Program.

The curriculum guide that was presented by MOE is less helpful in promoting the training program as intended, as perceived by the trainers. This may be because the curriculum may not be adjusted with the existing training materials in TVET colleges.

66.67% of the trainers responded positively that they have taken part in the curriculum development process of Building Construction Program in TVET. But, 80% of them responded that even if they had part in curriculum development process, it was not in setting objectives and content while it was being drafted.

#### **4.2 Main Findings and Discussions with regard to Input Evaluation of Building Construction program**

All of the trainers and 96.15% of the trainees indicated that there are enough qualified trainers in their college.

73.33% of the trainers and 95.38% of the trainees responded that trainees are not assigned in Building Construction program according to their interest.

With significant perception difference 33.33% of the trainers and 94.62% of the trainees responded that trainees are ready to acquire practical and theoretical knowledge in the program.



But, 66.67% of the trainers perceived negatively that they are not ready. This may be due to the fact that trainers do not understand trainee's activities in delivering the courses.

Majority of the respondents of the trainers and 69.23% of the trainees responded positively that trainees joining this program are well informed about the demand of the program in the job market.

Majority of the respondents responded positively that trainees join this program because they thought that it was the easiest way for securing employment. All of the trainers, and 96.15% of the trainees, responded negatively that trainees join the program because it was the easiest way for joining higher education, with no significant perception difference. Majority of the trainers and trainees responded positively that trainees join this program because they were not capable enough to join academic stream.

Majority of both respondents without significant perception difference responded negatively on the availability of reference materials and its up-to-date ness to promote teaching learning process as intended.

Concerning the availability of the instructional materials, tools, machines, and equipment for the course Foundation setting-out, Formwork & scaffold construction, Reinforcement work, Masonry construction, Concrete structure, Roof & roof coverings, Finishing, and Floor & wall coverings in the program, majority of the trainers and trainees responded negatively and positively, respectively. And there is a significant perception difference between the respondents. This shows that even if there are adequate instructional materials, trainees do not have information and they do not use it, this may be the reason why there is a significant perception difference between trainers and trainees.



#### **4.3 Main Findings and Discussions with regard to Process Evaluation of building construction program**

All the trainers and 84.62% of the trainees responded that the apprenticeship program is one of the major components of the program useful in equipping the trainees with practical aspects of the training. In this case there is a significant perception difference between the respondents. This may be because trainees assigned for apprenticeship may not do relevant work with their field of specialization.

Majority of the respondents with out significant perception difference responded negatively that the apprenticeship program intended to implement at the end of each academic year is sufficient to link skills gain at the colleges to the world of work.

For the question presented to both respondents, without significant perception difference both of them responded positively that trainers have interest of training in TVET, particularly in Building Construction. On the contrary, 43.33% of trainers, and 25.39% of trainees, respond negatively.

As to the respondents response majority of them responded positively that trainers use all the allotted time effectively for the training and training method /trainee-centered/ is as the objectives of the program.

80% of the trainers and 84.62% of the trainees responded negatively that the evaluation system in school training is continuous assessment for practical work. And also there was negative response on the question that there is a link between their college and construction industries. In these regard there is no significant perception difference between trainers and trainees. The reason may be to implement continuous assessment it needs more materials and small class size. But, these may not be true in most TVET College in Addis Ababa.



All of the trainers and 95.38% of the trainees responded that practical projects are useful to create problem solving capabilities and creativity among the trainees. In this regard, there is no significant perception difference between the respondents.

#### **4.4 Main Findings and Discussions with regard to Product Evaluation of building construction program**

As far as product evaluation is concerned, the findings revealed that the trainees who graduate from the Building Construction Program are not capable enough to establish building materials production center to work with. This may be due to the fact that there is less work done to equip trainees with this skill. The skills and knowledge that the graduates acquire from the colleges as perceived by trainers, enable the trainees to work in actual work. On this regard, the program met its objectives. And also the perception of trainers indicates that graduates of the program/building construction technician can work as a sub-contractor and contractor on any building construction project. But, on the contrary, some of trainers perceive that they cannot work as a sub-contractor and a contractor in building construction project.

#### **4.5 Main Findings and Discussions of Interview questions result**

According to the response to the interview questions, 50% of the interviewed Construction Industries Managers and 20% of the College Principals responded that the Building Construction program is not adjusted in line with the objectives of TVET stated in Ethiopian Education Policy in 1994. And 50% of the interviewed Construction Industry Managers and 80% of the College Principals suggested that the Building Construction program should be adjusted in line with the specific objectives of TVET by MOE in Ethiopian Education Policy (1994).

All of the College Principals responded positively that there are enough budgets for the training by the government or owners of the private colleges.

Majority of the principals responded that the availability of reference materials are not adequate in their college, but all of the interviewed College Principals responded positively that the



availability of raw materials and qualified trainers in their college are satisfactory to achieve the objectives of the program.

Three of the college principals responded positively that their college has a link with the consumers of the graduates, and the rest of them responded negatively that their colleges do not have a link with the construction industries only at the time of apprenticeship program.

All of the construction industry managers responded negatively that they do not satisfy with the program graduates. But, even if they disagree on their satisfaction by the graduated technician, they do not deny that the knowledge and skills that the graduates acquire from the colleges enable them to adjust to whatever new skill and knowledge available in the work area in short period of time. And all of college principals thought that the graduates have taken necessary skills and knowledge in their college to work with actual work area.

All of the interviewed construction industries responded that the program has to develop according to the needs of the industries and the need and economy of countries. The college principals also suggests that the trainees should be assigned in the program according to their interest to satisfy the needs of the industry, because if the trainees assign in the department without their interest they lack readiness to acquire practical skills and knowledge given by the colleges and they will not capable enough to satisfy the needs of the industry. And also the training should conduct both in the colleges and in the industries to aware the trainees the real world of work. Finally, the college principals recommend that the responsible body should prepare up-to-date reference materials for the program.

Majority of the construction industry managers responded the same ideas that the building construction technicians graduated from TVET colleges' lacks confidence to work in real projects, but they do not consume much time to cope up with. Then after, the technicians can work in any construction project as a foreman. But, some of the technicians have no interest to work as foreman in construction projects; they prefer to work in the office rather than construction site. Finally, most of them suggested that it should be better to give work ethics for the graduates before they assign in construction projects to have respect for any type of work.



## CHAPTER V

### SUMMARY, CONCLUSION AND SUGGESTIONS

#### 5.1 Summary

As it is already stated, the major objective of any educational system is to cultivate the individual's capacity for problem solving and adaptability to the environment by developing the necessary knowledge, ability, attitude and skill. This is so with an assumption that the person will be able to participate in an all rounded way in the community and contribute to the over all development of the society where they live in.

One of the objectives of education in Ethiopia then, is to satisfy the country's need for skilled manpower by providing training in various skills and at different levels. Hence the areas, according to the strategy set, (1994: 90) have been given special attention and action priority is focus on TVET (Technical and Vocational Education and Training). The strategy that is followed so that the necessary education out come is achieved, in addition to conventional one is providing TVET (Technical and Vocational Education and Training).

In revising the scarcely available materials concerned with the status and the overall situations of Technical and Vocational Education and Training in Ethiopia, one can understand that there is less work done in the field. The problems appear more serious when it comes to the Technical and Vocational Institutes and Colleges and to the curriculum of Technical and Vocational Education and Training.

The purpose of the study was to Evaluate of Building Construction Program in TVET by using one of the contemporary approaches of Program evaluation -the CIPP model- that refers to *Content*- in terms of course objectives and content of the courses; *Input*- in terms of the availability and adequacy of reference materials, interested and well trained trainers, raw materials, and the trainers part in developing the curriculum; *Process*- in terms of assessing the real gap between actual program operation during implementation stage and the original design; and *Product*- in terms of the evaluation of outcomes in relation to the program's objectives and



the skills & knowledge of trainees acquire from the colleges as perceived by trainers, trainees, principals, and construction industries.

In order to gather necessary information, appropriate data collection procedures are employed. Questionnaires and Interview were prepared and administered from 130 trainees, 30 trainers, five College Principals, and four Construction Industry Managers. The collected data is analyzed through percentage, and to see whether there is a significant perception difference between trainees and trainers, chi-square is done and for those frequencies that are less than five Yates's correction has been made. The data, collected through interviewing and questionnaires are organized, analyzed and discussed. The method of analysis was descriptive.

## **5.2 Conclusions**

### **5.2.1 Conclusion with regard to Content Evaluation of Building Construction Program:**

Statement of instructional objectives in building construction program are clear & understandable, found to be the same with what they thought to be, and construct in a way that they would reflect the major aspects of the occupation

Majority of the Trainers, Construction Industry Mangers, and College Principals and below 50% of the Trainees clearly know the specific objectives of TVET in general and Building Construction in particular. Majority of the trainees do not know it. According to majority of the trainers and some of the trainees who know about the objective, the objectives stated for Building Construction program is not fully adjusted by using the present existing training materials, tools, machines, and equipment in TVET colleges.

Theoretical knowledge, practical skills, and field experiments given to the trainees are concerned with the identification of their need. All the major courses as perceived by the trainees and trainers in Building Construction program have adequate training time for practical skills and theoretical knowledge to achieve the specific objectives of the program. The practical skills and



theoretical knowledge that the trainees have taken in each major course equip them adequately to employee as a technician in any construction projects.

As to the Ethiopian Education and Training Policy stipulates that there are general and specific objectives of each TVET programs. According to these objectives curriculum was developed to implement. The curriculum, which was delivered by MOE, is not fully adjusted with the present existing training materials, tools, machines, and equipment in TVET colleges.

#### **5.2.2 Conclusion with regard to Input Evaluation of Building Construction Program:**

Even if the trainers have taken part in Building Construction Curriculum development process, it is not in setting the objectives and content while it was being drafted. And the curriculum guide that is delivered by MOE is not fully helpful in promoting the training program as intended. There are enough qualified trainers in each TVET colleges. Even if trainees assigned in Building Construction program are not according to their interest, they are ready to acquire practical skills and theoretical knowledge in the program as to the perception of majority of the trainees. This may be after joining the program they may develop interest. But, majority of the trainers perceive differently. It is clearly seen that there is a perception difference between them. The Education and Training Policy stipulates that one of the objectives of TVET program is to train youngsters who can be employed in various industries and who can create their own small level enterprises. To meet these objectives one has to select and train persons who have interest and capability to grasp the skills and knowledge associated with the field of study.

Trainees join this program are well informed about the demand of the program in the job market. As indicated in the findings the reason why trainees join this program was that it is the easiest way for securing employment and they are not capable enough to join higher education.

There are less up-to-date reference materials. And the availability of instructional materials, tools, machines, and equipment for the course Foundation setting-out, Formwork & scaffold construction, Reinforcement work, Masonry construction, Concrete Structure, Roof construction,



Finishing, and Floor & wall covering are available as perceived by the trainers. But the trainees perceive differently. The reverse is true for the course Water supply, Glass & glazing, and Quantity surveying & specification as perceived by both the respondents. This shows that there is a perception difference between trainers and trainees in this regard. The raw materials that are delivered by the colleges for the program are adequate enough to achieve the objectives of each course in the program.

### **5.2.3 Conclusion with regard to Process Evaluation of Building Construction Program:**

The apprenticeship program is one of the major components of the program useful in equipping trainees with practical aspects of the training. But, the apprenticeship program intended to implement at the end of academic year is not sufficient to link skills gain at the college to the world of work.

Trainers have interest of training in TVET particularly in Building Construction Program; they use all the allotted time effectively for the training and the training method/trainee-centered method is conducted according to the objectives of the program. But, the evaluation system in school training is not continuous assessment for practical works as the intention of the objectives.

The practical project work is useful to create problem solving capabilities and creativity among the trainees. And it has its own contribution to fill the real gap between the training in school and the world of work. The building Construction program graduates are not capable enough to establish building materials production center. But, other skills and knowledge that the trainees have learned in the college enable them to work in actual work, and they can work as a sub-contractor and contractor in any construction project. On this regard, the program met its objectives.

In general, as perceived by the stake holders/ construction industries and the college principals, the Building construction program is adjusted in line with the objectives of TVET. And there are enough budgets for the training in government TVET colleges and there is some problem in non-government TVET colleges.



As to the Ethiopian Education and Training Policy for each job area, recommended project works and apprenticeship training time has been allotted in order to help the trainees improve their practical skills. But, this is not true in TVET colleges of Addis Ababa.

The objectives of the program stipulate that the evaluation system consists of practical continuous assessment and theoretical final examination. But, the existing evaluation system is appears to be not as the objectives in TVET colleges.

To fill the skill gap of the trainees that have taken by their school training and the actual world of work and to tune the curriculum according to the need of the industry, the TVET colleges should have a link with the industry. And this also useful to implement the training both in school and in the actual work area.

#### **5.2.4 Conclusion with regard to Product Evaluation of Building Construction Program**

Graduates of the program are not capable enough to establish building materials production center to work with. Other skills and knowledge that the trainees have learned in the colleges enable them to work in actual work, and they can work as a sub-contractor and contractor in any construction projects. The skills and knowledge of the graduates of the program do not satisfy construction industries need. This is due to the program that it did not design according to the need of the industries. Most of the building construction program graduates lack confidence to work in actual projects.

### **5.3 Suggestions**

Based on the findings of the study, in order to overcome the problems associated with the Building Construction Program in TVET, the researcher would like to forward the following suggestions:



The numbers of female trainees in Building Construction program are minimal. This may be due to cultural factors. So that orientation should be given to especially female candidates before they have given to chose different programs and also the responsible body should assign female trainees in this program. All the trainees should be oriented about the objectives of the overall TVET program before they join it.

The curriculum should be adjusted with the existing training materials, tools, machines, and equipment in TVET College to achieve the stated goals. In developing the curriculum the MOE should give part for the trainers in setting the objectives and content while it was drafted. And the MOE should equip TVET Colleges with relevant training materials, tools, machines, and equipment for each of the courses in Building Construction Program, and MOE needs to do their level best to prepare sufficient relevant reference materials and text books in appropriate quality to meet the objectives.

The Education Bureau should assign trainees according to their interest in each of the program. As the findings revealed that majority of trainees assigned in TVET program, it is not because of their interest, rather it is because of that they were not capable enough to join academic stream. The researcher doubts that the TVET program might be a program that has a collection of trainees who have less capacity, and this may develop inferiority complex on the trainees who are already in. So, the researcher strongly suggests let all the graduates of Grade-10 have a chance to choose TVET program and assign according to their interest, this may develop attitudinal change of the society, trainers and trainees themselves over the program.

The apprenticeship program is one of the major components of the program to equip trainees with practical aspects of the training, to link skills gain at TVET colleges with the actual world of work, and to develop trainees self-confidence on their job area. But, TVET Colleges in Addis Ababa assign trainees for apprenticeship program once in a year or at the end of the overall program. In this regard, the researcher strongly suggests that TVET colleges should assign trainees for apprenticeship after completing each course in the program or it should be better to apply a dual system, meaning that the training should give both in the colleges and in the industries.



The module for major courses in Building construction Program are designed in such a way that the trainees will spend 30% of the allotted time in gaining theoretical knowledge and 70% in doing practical works and for each course there are recommended project works. This shows that trainees devote much of their time at the field. In this regard, the trainees should be evaluated mostly at the fieldwork in doing practical works and project works. To this end, continuous assessment is better to follow their progress individually. But, to implement continuous assessment, even if the system is better for skill training, it consumes much time and economy. So that, the researcher suggests that overcome the problems the class size should be small and sufficient budgets should be allotted and can implement the system.

From the findings it is clearly seen that the link between TVET colleges and construction industries is less. But, there should be a strong link between TVET Colleges and construction industries to familiarize trainees with new technologies.



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## **APPENDIX-I**

### **ADDIS ABABA UNIVERSITY**

### **SCHOOL OF GRADUATE STUDIES**

Department of Measurement and Evaluation

### **Questionnaire for Building Construction Trainers**

I would like to express my heartiest appreciation to you for taking your time and completing the following questionnaire. This questionnaire is designed for a research thesis under the title "Building Construction Program Evaluation".

The purpose of this questionnaire is to gather information to evaluate the Building Construction Program in Technical and Vocational Education and Training in terms of its Content, Input, Process and Product /what is there and what should be/.

It is hoped that the findings of the study will be helpful to Curriculum Developers, Researchers, and those Institute Personals who are involved in offering courses in TVET.

For each of the questions, you are kindly requested to indicate your response according to the directions given in each of the parts.

Directions:

- No need of writing your name
- Put "X" marks in the box where alternative answers are given
- Your urgent reply be wondered



## Section I

1. Name of the College: -----
2. Sex:        Male ☐                                  Female ☐
3. Age:        -20-25 ☐        -26-30 ☐        -31-35 ☐        -above 35 ☐
4. Qualification: - 12+3 ☐        B.Sc/B.A/B.ED ☐        M.Sc/M.A ☐
- Any other, specify-----
5. Service year: 1-5 ☐        6-10 ☐        11-15 ☐        above 16 years ☐

## Section II

### Questionnaire to Evaluate Content of the Building Construction Program in TVET

| No. | Item                                                                                                                                                                           | Yes | No |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|
| 1   | Trainers clearly know the specific objectives of TVET program, which are stated by the MOE in 1994                                                                             |     |    |
| 2   | Statement of instructional objectives in building construction program is:                                                                                                     |     |    |
|     | - Clear and understandable                                                                                                                                                     |     |    |
|     | - Found to be the same with what you thought to be                                                                                                                             |     |    |
|     | - Constructed in a way that they would reflect the major aspects of the occupation                                                                                             |     |    |
|     | - Constructed in a way that they would reflect meaningful use in life                                                                                                          |     |    |
|     | - Consistent with what you know in your previous grades                                                                                                                        |     |    |
| 3   | The objectives stated for building construction program can be attuned fully by using the present existing training materials, tools, machines and equipment in your institute |     |    |
| 4   | There are sufficient practical & theoretical time to achieve the objectives of the following course                                                                            |     |    |
|     | - Foundation setting-out                                                                                                                                                       |     |    |
|     | - Form work and Scaffolding construction,                                                                                                                                      |     |    |
|     | - Reinforcement work                                                                                                                                                           |     |    |



|   |                                                                                                                                      |  |  |
|---|--------------------------------------------------------------------------------------------------------------------------------------|--|--|
|   | - Masonry work.                                                                                                                      |  |  |
|   | - Concrete Structure                                                                                                                 |  |  |
|   | - Roof and Roof covering                                                                                                             |  |  |
|   | - Finishing                                                                                                                          |  |  |
|   | - Water Supply                                                                                                                       |  |  |
|   | - Glass and Glazing                                                                                                                  |  |  |
|   | - Quantity Surveying                                                                                                                 |  |  |
|   | - Constructing floor and wall coverings                                                                                              |  |  |
| 5 | The skills and knowledge that the trainees have learned in the Program enable trainees to work in the job market as a sub-contractor |  |  |
| 6 | The course that the trainees have taken equips them to employee as technician in any construction project in the area of: -          |  |  |
|   | - Foundation setting-out,                                                                                                            |  |  |
|   | - Form work and Scaffolding construction                                                                                             |  |  |
|   | - Reinforcement work                                                                                                                 |  |  |
|   | - Masonry work.                                                                                                                      |  |  |
|   | - Concrete Structure                                                                                                                 |  |  |
|   | - Roof and Roof covering                                                                                                             |  |  |
|   | - Finishing                                                                                                                          |  |  |
|   | - Water Supply                                                                                                                       |  |  |
|   | - Glass and Glazing                                                                                                                  |  |  |
|   | - Quantity Surveying                                                                                                                 |  |  |
|   | - Constructing floor and wall coverings                                                                                              |  |  |
| 7 | The following common courses to the Building construction program are important: -                                                   |  |  |
|   | - English                                                                                                                            |  |  |
|   | - Civics                                                                                                                             |  |  |
|   | - Mathematics                                                                                                                        |  |  |
|   | - Entrepreneurship                                                                                                                   |  |  |
|   | - Information Technology                                                                                                             |  |  |



|    |                                                                                                                                                |  |  |
|----|------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
|    | - Technical Drawing                                                                                                                            |  |  |
|    | - Building Drawing                                                                                                                             |  |  |
|    | - Building Materials                                                                                                                           |  |  |
|    | - Soil Mechanics                                                                                                                               |  |  |
| 8  | The duration of the training in the following courses is adequate                                                                              |  |  |
|    | - Foundation setting-out                                                                                                                       |  |  |
|    | - Form work and Scaffolding construction,                                                                                                      |  |  |
|    | - Reinforcement work                                                                                                                           |  |  |
|    | - Masonry work.                                                                                                                                |  |  |
|    | - Concrete Structure                                                                                                                           |  |  |
|    | - Roof and Roof covering                                                                                                                       |  |  |
|    | - Finishing                                                                                                                                    |  |  |
|    | - Water Supply                                                                                                                                 |  |  |
|    | - Glass and Glazing                                                                                                                            |  |  |
|    | - Quantity Surveying                                                                                                                           |  |  |
|    | - Constructing floor and wall coverings                                                                                                        |  |  |
| 9  | The curriculum guide is useful in promoting the training process as intended                                                                   |  |  |
| 10 | Trainers have taken part in the curriculum development of Building Construction Program in TVET.                                               |  |  |
| 11 | Trainers' part in the curriculum development of Building Construction process is in setting objectives and Content while it was being drafted. |  |  |
| 12 | There are sufficient reference materials in the institute for the courses                                                                      |  |  |
|    | - Foundation setting-out                                                                                                                       |  |  |
|    | - Form work and Scaffolding construction,                                                                                                      |  |  |
|    | - Reinforcement work                                                                                                                           |  |  |
|    | - Masonry work.                                                                                                                                |  |  |
|    | - Concrete Structure                                                                                                                           |  |  |
|    | - Roof and Roof covering                                                                                                                       |  |  |
|    | - Finishing                                                                                                                                    |  |  |



|    |                                                                                                                               |  |  |
|----|-------------------------------------------------------------------------------------------------------------------------------|--|--|
|    | - Water Supply                                                                                                                |  |  |
|    | - Glass and Glazing                                                                                                           |  |  |
|    | - Quantity Surveying                                                                                                          |  |  |
|    | - Constructing floor and wall coverings                                                                                       |  |  |
| 13 | The reference materials or text books are useful and up-to-date to you in promoting the teaching-learning process as intended |  |  |
| 14 | The instructional materials, tools, machineries and equipment are adequately available for each course.                       |  |  |
|    | - Foundation setting-out                                                                                                      |  |  |
|    | - Form work and Scaffolding construction,                                                                                     |  |  |
|    | - Reinforcement work                                                                                                          |  |  |
|    | - Masonry work.                                                                                                               |  |  |
|    | - Concrete Structure                                                                                                          |  |  |
|    | - Roof and Roof covering                                                                                                      |  |  |
|    | - Finishing                                                                                                                   |  |  |
|    | - Water Supply                                                                                                                |  |  |
|    | - Glass and Glazing                                                                                                           |  |  |
|    | - Quantity Surveying                                                                                                          |  |  |
|    | - Constructing floor and wall coverings                                                                                       |  |  |
| 15 | There are enough qualified trainers in building construction program                                                          |  |  |
| 16 | The trainees are ready to acquire practical and theoretical knowledge                                                         |  |  |
| 17 | The trainees assigned in building construction program are according to their interest                                        |  |  |
| 18 | The trainees assigned in the department are ready for advancement through TVET                                                |  |  |
| 19 | Trainees join this program because they think that:                                                                           |  |  |
|    | - It is the easiest way for securing employment:                                                                              |  |  |
|    | - It is the easiest way for joining higher education                                                                          |  |  |
|    | - They like it                                                                                                                |  |  |
|    | - They are in capable of joining academic stream                                                                              |  |  |



|    |                                                                                                                                                                             |  |  |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| 20 | Trainees those joining the building construction program are well informed about demand of the program in the job market                                                    |  |  |
| 21 | Trainers have interest of training in TVET (particularly Building Construction?)                                                                                            |  |  |
| 22 | The apprenticeship program is one of the major components of Building construction program useful in equipping the students with the practical aspects of the training      |  |  |
| 23 | Trainer uses all the allotted time effectively both for practice and theory work to enable the trainees to work in the job market                                           |  |  |
| 24 | The apprenticeship program intended to be implemented at the end of each academic year is sufficient to link skills gain at the institute to the world of work              |  |  |
| 25 | Trainee-centered methods like workshop practice and project work need to be given due consideration as to the objective of the program that is 70% practice and 30% theory- |  |  |
| 26 | The evaluation system in school training is continuous assessment for practical and theoretical exam for the theoretical courses                                            |  |  |
| 27 | Practical projects are useful to create problem solving capability and creativity among the trainees                                                                        |  |  |
| 28 | There is a link between your college and construction industries.                                                                                                           |  |  |
| 29 | After completion of the program the trainees are capable enough to establish their own building materials production center to work with                                    |  |  |
| 30 | The skills and knowledge that the trainees have learned in the institute will enable them to work in actual work                                                            |  |  |
| 31 | The knowledge and skills that the students acquire from the institute will enable them to adjust to whatever new skill and knowledge available in the work area.            |  |  |
| 32 | The technician can work as a sub-contractor and a contractor after completing the building construction courses like:                                                       |  |  |
|    | - Foundation setting-out                                                                                                                                                    |  |  |
|    | - Form work and Scaffolding construction,                                                                                                                                   |  |  |



|                                         |  |  |
|-----------------------------------------|--|--|
| - Reinforcement work                    |  |  |
| - Masonry work.                         |  |  |
| - Concrete Structure                    |  |  |
| - Roof and Roof covering                |  |  |
| - Finishing                             |  |  |
| - Water Supply                          |  |  |
| - Glass and Glazing                     |  |  |
| - Quantity Surveying                    |  |  |
| - Constructing floor and wall coverings |  |  |



## **Appendix-II**

### **ADDIS ABABA UNIVERSITY**

#### **SCHOOL OF GRADUATE STUDIES**

##### **Department of Measurement and Evaluation Questionnaire for Building Construction Trainees**

I would like to express my heartiest appreciation to you for taking your time and completing the following questionnaire. This questionnaire is designed for a research thesis under the title "Building Construction Program Evaluation".

The purpose of this questionnaire is to gather information to evaluate the Building Construction Program in Technical and Vocational Education and Training in terms of its Content, Input, Process and Product /what is there and what should be/.

It is hoped that the findings of the study will be helpful to Curriculum Developers, Researchers, and those Institute Personals who are involved in offering courses in TVET.

For each of the questions, you are kindly requested to indicate your response according to the directions given in each of the parts.

Directions:

- No need of writing your name
- Put "X" marks in the box where alternative answers are given
- Your urgent reply be wondered



## Section I

1. Sex            Male ☐                                  Female ☐
2. Age - 15-20 ☐                                  20-25 ☐                                  -above 26 ☐
3. Name of the college: -----

## Section II

### Questionnaire to Evaluate Content, Input, Process, and Product of the Building Construction Program in TVET

| No. | Item                                                                                                                                                                           | Yes | No |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|
| 1   | Trainees clearly know the specific objectives of TVET program, which are stated by the MOE in 1994.                                                                            |     |    |
| 2   | Statement of instructional objectives in building construction program is:                                                                                                     |     |    |
|     | - Clear and understandable                                                                                                                                                     |     |    |
|     | - Found to be the same with what you thought to be                                                                                                                             |     |    |
|     | - Constructed in a way that they would reflect the major aspects of the occupation                                                                                             |     |    |
|     | - Constructed in a way that they would reflect meaningful use in life                                                                                                          |     |    |
|     | - Consistent with what you know in your previous grades                                                                                                                        |     |    |
| 3   | The objectives stated for building construction program can be attuned fully by using the present existing training materials, tools, machines and equipment in your institute |     |    |
| 4   | There are sufficient practical& theoretical time to achieve the objectives of the following course                                                                             |     |    |
|     | - Foundation setting-out                                                                                                                                                       |     |    |
|     | - Form work and Scaffolding construction,                                                                                                                                      |     |    |
|     | - Reinforcement work                                                                                                                                                           |     |    |
|     | - Masonry work.                                                                                                                                                                |     |    |
|     | - Concrete Structure                                                                                                                                                           |     |    |
|     | - Roof and Roof covering                                                                                                                                                       |     |    |



|   |                                                                                                                                           |  |  |
|---|-------------------------------------------------------------------------------------------------------------------------------------------|--|--|
|   | - Finishing                                                                                                                               |  |  |
|   | - Water Supply                                                                                                                            |  |  |
|   | - Glass and Glazing                                                                                                                       |  |  |
|   | - Quantity Surveying                                                                                                                      |  |  |
|   | - Constructing floor and wall coverings                                                                                                   |  |  |
| 5 | The skills and knowledge that the trainees have learned in the Program enable trainees to work in the job market as a sub-contractor      |  |  |
| 6 | The skills and knowledge that the trainees have taken equips them to employee as technician in any construction project in the area of: - |  |  |
|   | - Foundation setting-out,                                                                                                                 |  |  |
|   | - Form work and Scaffolding construction                                                                                                  |  |  |
|   | - Reinforcement work                                                                                                                      |  |  |
|   | - Masonry work.                                                                                                                           |  |  |
|   | - Concrete Structure                                                                                                                      |  |  |
|   | - Roof and Roof covering                                                                                                                  |  |  |
|   | - Finishing                                                                                                                               |  |  |
|   | - Water Supply                                                                                                                            |  |  |
|   | - Glass and Glazing                                                                                                                       |  |  |
|   | - Quantity Surveying                                                                                                                      |  |  |
|   | - Constructing floor and wall coverings                                                                                                   |  |  |
| 7 | Do you agree with the importance of the following common courses to the Building construction program: -                                  |  |  |
|   | - English                                                                                                                                 |  |  |
|   | - Civics                                                                                                                                  |  |  |
|   | - Mathematics                                                                                                                             |  |  |
|   | - Entrepreneurship                                                                                                                        |  |  |
|   | - Information Technology                                                                                                                  |  |  |
|   | - Technical Drawing                                                                                                                       |  |  |
|   | - Building Drawing                                                                                                                        |  |  |
|   | - Building Materials                                                                                                                      |  |  |



|    |                                                                                                                               |  |  |
|----|-------------------------------------------------------------------------------------------------------------------------------|--|--|
|    | - Soil Mechanics                                                                                                              |  |  |
| 8  | The duration of the training in the following courses is adequate                                                             |  |  |
|    | - Foundation setting-out                                                                                                      |  |  |
|    | - Form work and Scaffolding construction,                                                                                     |  |  |
|    | - Reinforcement work                                                                                                          |  |  |
|    | - Masonry work.                                                                                                               |  |  |
|    | - Concrete Structure                                                                                                          |  |  |
|    | - Roof and Roof covering                                                                                                      |  |  |
|    | - Finishing                                                                                                                   |  |  |
|    | - Water Supply                                                                                                                |  |  |
|    | - Glass and Glazing                                                                                                           |  |  |
|    | - Quantity Surveying                                                                                                          |  |  |
|    | - Constructing floor and wall coverings                                                                                       |  |  |
| 9  | Services given to the trainees by the institute are sufficient                                                                |  |  |
| 10 | There are sufficient reference materials in the institute for the courses                                                     |  |  |
|    | - Foundation setting-out                                                                                                      |  |  |
|    | - Form work and Scaffolding construction,                                                                                     |  |  |
|    | - Reinforcement work                                                                                                          |  |  |
|    | - Masonry work.                                                                                                               |  |  |
|    | - Concrete Structure                                                                                                          |  |  |
|    | - Roof and Roof covering                                                                                                      |  |  |
|    | - Finishing                                                                                                                   |  |  |
|    | - Water Supply                                                                                                                |  |  |
|    | - Glass and Glazing                                                                                                           |  |  |
|    | - Quantity Surveying                                                                                                          |  |  |
|    | - Constructing floor and wall coverings                                                                                       |  |  |
| 11 | The reference materials or text books are useful and up-to-date to you in promoting the teaching-learning process as intended |  |  |



|    |                                                                                                                                                                        |  |  |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| 12 | The instructional materials, tools, machineries and equipment are adequately available for each course.                                                                |  |  |
|    | - Foundation setting-out                                                                                                                                               |  |  |
|    | - Form work and Scaffolding construction,                                                                                                                              |  |  |
|    | - Reinforcement work                                                                                                                                                   |  |  |
|    | - Masonry work.                                                                                                                                                        |  |  |
|    | - Concrete Structure                                                                                                                                                   |  |  |
|    | - Roof and Roof covering                                                                                                                                               |  |  |
|    | - Finishing                                                                                                                                                            |  |  |
|    | - Water Supply                                                                                                                                                         |  |  |
|    | - Glass and Glazing                                                                                                                                                    |  |  |
|    | - Quantity Surveying                                                                                                                                                   |  |  |
|    | - Constructing floor and wall coverings                                                                                                                                |  |  |
| 13 | There are enough qualified trainers in building construction program                                                                                                   |  |  |
| 14 | The trainees are ready to acquire practical and theoretical knowledge                                                                                                  |  |  |
| 15 | The trainees assigned in building construction program are according to their interest                                                                                 |  |  |
| 16 | The trainees assigned in the department are ready for advancement through TVET                                                                                         |  |  |
| 17 | Trainees join this program because they think that:                                                                                                                    |  |  |
|    | - It is the easiest way for securing employment:                                                                                                                       |  |  |
|    | - It is the easiest way for joining higher education                                                                                                                   |  |  |
|    | - They like it                                                                                                                                                         |  |  |
|    | - They are in capable of joining academic stream                                                                                                                       |  |  |
| 18 | Trainees those joining the building construction program are well informed about demand of the program in the job market                                               |  |  |
| 19 | Trainers have interest of training in TVET (particularly Building Construction?)                                                                                       |  |  |
| 20 | The apprenticeship program is one of the major components of Building construction program useful in equipping the students with the practical aspects of the training |  |  |



|    |                                                                                                                                                                             |  |  |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| 21 | Trainer uses all the allotted time effectively both for practice and theory work to enable the trainees to work in the job market                                           |  |  |
| 22 | The apprenticeship program intended to be implemented at the end of each academic year is sufficient to link skills gain at the institute to the world of work              |  |  |
| 23 | Trainee-centered methods like workshop practice and project work need to be given due consideration as to the objective of the program that is 70% practice and 30% theory- |  |  |
| 24 | The evaluation system in school training is continuous assessment for practical and theoretical exam for the theoretical courses                                            |  |  |
| 25 | Practical projects are useful to create problem solving capability and creativity among the trainees                                                                        |  |  |
| 26 | There is a link between your college and construction industries.                                                                                                           |  |  |



## **Appendix-III**

### **Addis Ababa University School of Graduate Studies**

#### **Department of Measurement and Evaluation**

#### ***Interview Guide for the College Principals***

1. Are you aware of the General and Specific objectives of the Building Construction Program in Ethiopian TVET that is stated by the MOE in 1994?
2. Do you think that the Building Construction Program is in line with the objective of TVET stated in 1994 Ethiopian Education Policy?
3. Is there sufficient allotted budget for the training?
4. How do you evaluate the availability and adequacy of reference materials, raw materials, and qualified trainers to achieve the objective of the program?
5. Does your College have a link with that of the Construction Industries, which are the consumers of the graduates?
6. What do you suggest for the betterment of the Building Construction Program to satisfy the needs of the Industry?
7. How do you evaluate the over all skill and knowledge of Building Technician graduated from TVET Colleges?