Tracer Study Report on "**Manufacturing Technology Graduates of Ethiopian Technical University**": *Results and Findings of Two years*

Submitted to: World Bank- EASTRIP

Submitted by:

Research and Community Service Directorate
Ethiopian Technical University

Addis Ababa, Ethiopia

June, 2021

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Contents

EXECUTIVE SUMMARY

Objective: The objective of this tracer study was to investigate the quality, relevance, and effectiveness of manufacturing (tool and die) technology training being delivered at the Ethiopian Technical University in equipping graduates with the necessary skills to secure employment and performing their job successfully in the world of work.

Methodology: A cross-sectional descriptive survey was employed. Both quantitative and qualitative data were collected. Graduates and their corresponding employers were considered as potential sources of the data needed for the tracer study. Accordingly, a census of all the total 45 graduates of manufacturing technology was planned to be involved in this tracer study. But this tracer study was able to contact 40 graduates making the response rate of the study to be 88.9% which is tolerable. In addition to the graduates, all the employers of the graduates were considered. In fact, the employers of all the graduates were TVET institutions and TVET agencies. Hence, from each organization, up to three persons (deans, associate deans, and department heads) were interviewed to increase the accuracy of the information they provided. The collected data were analyzed using both quantitative and qualitative techniques. The quantitative data were analyzed using descriptive statistical methods such as frequency and percentage, mean, standard deviation, standard scores, diagrams, and graphs, and SPSS version 25 was used to perform these analyses. The qualitative data were analyzed using thematic analysis.

Results: Of the total 40 traced graduates, most (87.5%) graduates were males and the remaining 12.5% were females. All (100%) of them are employed in *government organizations permanently* as *full-time* employees. Concerning to media of employment, 33.8% of graduates used regular job vacancy notices through *print and electronic media (Newspaper /Television/Radio) advertisements* to find their job. Besides, the same number (33.8%) of the graduates got employed through industry linkages during training (e.g., apprenticeship, on-the-job training) which is compliant with the nature of TVET institutions. In terms of the degree of relation between course work and job, 95.0% of the traced graduates agreed that their present work is related to the course they followed at the Ethiopian Technical University. The graduates also identified the first most required aspect for performing their job is *theoretical and practical knowledge* as mentioned by the majority (90.0%) of the graduates. The second most required aspect revealed by 55.0% of the traced graduates is *practical job-related skills* like the use of tools, equipment, and machinery. On the other hand, employers' first five most important factors to be considered in recruiting graduates are *field of study*, the *main focus of subject area/specialization*, *results of*

recruitments tests, *practical experience acquired during course of study*, and *communication skills*. Looking at the further training need, 95.0% of the traced graduates would like to participate in further training courses (weekend or evening classes, short courses) in the future. And 67.0% of employers reported that their organizations have experienced problems finding graduates with the skills that they need. Accordingly, three-fourth (75%) of the employers indicated that graduates need to learn *some additional skills* and another 34.1% of the respondents said that graduates need *serious skills upgrading* to start working.

Conclusions and Recommendations: The finding of this tracer study indicates that only a few female graduates are there. Hence, it is better for the Ethiopian Technical University to have gender consideration during admission in the future so as to have more female trainees enroll for the future. The top two required skills for performing the job of the traced graduates are *theoretical and practical knowledge*, and *practical job-related skills*. Therefore, the training program at the Ethiopian Technical University should concentrate on theoretical and practical knowledge, and practical job-related skills. The overwhelming majority of the traced graduates did not participate in any training because of three major reasons: absence of opportunity, absence of relevant course, and not begin able to pay for the training. But they would like to take further training and most of the employers indicated that the graduates need additional training. Thus, the university is expected to organize a sufficient number of training opportunities in relevant areas of manufacturing technology free of charge. Graduates had the lowest satisfaction in terms of *income and benefits*. This is a clear indication that the graduates are highly dissatisfied with their job in terms of their income and benefits. The concerned bodies should have to consider this. Graduates and employers suggested the training to be and focus more on the *practical skills*. Graduates also recommended the *curriculum* to be revised, the *course composition* to be reviewed, and the *quality trainers* to be improved. In general, it is recommended for the university to strengthen the University-Industry Linkage department and develop the practical industrial capacity of trainers. The university should work closely with employers in order to prepare its graduates for employment. There is a need to liaise with employers so as to reduce the gap between the level of training at the university level and the requirements of the employers. As a result, the Ethiopian Technical University should work with employers who are the consumers of its graduates. This will make the training in the university labor market demand-driven.

Keywords: Die, Manufacturing, Precision Tool.

ACRONYMS

CoE: Center of Excellence

EASTRIP: East Africa Skills for Transformation and Regional Integration Project

EIA: Environmental Impact Assessment

ENAO: Ethiopian National Accreditation Office

ESHS: Environment, Social, Health and Safety

FTA: Federal TVET Agency

ETU: Ethiopian Technical University

FTVETI: Federal Technical and Vocational Education and Training Institute

GBV: Gender Based Violence

HEI: Higher Education Institution

HERQA: Higher Education Relevance Quality Agency

IDA: International Development Agency

ILO: International Labour Organization

KII: Key Informant Interview

MoSHE: Ministry of Science and Higher Education

MSE: Medium and Small Enterprises

PESTEL: Political, Economic, Social, Technological, Environmental, and Legal

SME: Small and Micro Enterprise

SNNP: Southern Nations, Nationalities and People

SWOT: Strength, Weakness, Opportunities, and Threats

ToR-Term of Reference

TVET: Technical and Vocational Education and Training

1. INTRODUCTION

1.1. Background

Graduate Tracer Study (GTS) is becoming a commonly recognized practice worldwide. Graduate tracer studies are concerned about showing the status of graduates from higher education institutions (HEIs) worldwide spurred by the need to give careful consideration to how graduates view the experiences they underwent during their study and their transition to the job market. A study from Sandhaas and Winkler in 2011 shows that statistics from TVET agencies in Ethiopia on the where-about of TVET graduates as well as any other studies or reports undertaken do not exist. Without the availability of reliable statistical data of labor demand indicators and the TVET sector graduates' employability, it makes it difficult to statically measure the impact of the TVET graduates on the eradication of poverty in the country. As Kingombe in 2012 reported that labor statistics and market indicators are essential tools for formulation and implementation of policy measures in the TVET effectiveness.

If HEIs are to improve their teaching and training of graduates, the precedence should be to learn and garner improvements from graduates' nuanced experiences. It is since the 20th Century that Universities started to conducting tracer studies for the purpose of accrediting their study programs, explaining the link between study programs and the job market, showing uniqueness and positioning of individual universities, and enabling universities and institutions managing higher education in their respective countries make informed and evidence-based decisions about improvements and quality education and services in higher education (Schomburg, 2011).

Similarly, a few Colleges and Universities in Ethiopia started conducting tracer studies with the same purpose. However, most educational universities in Ethiopia are not in a position to conduct tracer studies for the purpose of achieving quality and relevance. It is a common trend that most higher learning institutions have homogeneous programs, and most programs were also opened without consulting the needs of the demand side. The employability of the graduates and the acceptance they have by the employer side has not been properly addressed. Furthermore, the labor market context of the industry sector in Ethiopia needs continuous and intensive tracer study due to its dynamic nature.

The industry sector in Ethiopia has still been a promising area of national development in Ethiopia. The Ethiopian manufacturing sector is big in Ethiopia because of the booming

infrastructure and industrial development, but the industry suffers from the availability of competent human resources in tool and dies-making practices and approaches that impede growth and development (Oqubay et al, 2019).

Tool and Die technologies are precision types of technologies in order to produce new quality products. The CoE on Precision Tool and Die Making is one of the identified priority sectors to offer skills development programs for TVET trainers and industry practitioners. The need for the creation and establishment of a center of excellence in priority technology occupations in the Federal TVET Institute and Satellite Colleges becomes necessary to provide quality TVET programs based on international standard practices.

The Precision Tool and Die Making Technology Center of Excellence aims to improve the competitiveness of the industries and SMEs engaged in the manufacturing sector particularly in precision tool and die making technology by developing their capacity through quality training. This, in turn, bridges the gap between the demand and the supply of a trained workforce to the industry. It will also intensify the research & development program that would benefit the manufacturing sector by increasing competitiveness in global and local markets in terms of cost and quality. As the Center of Excellence in Precision Tool and Die Making, the expectation is high particularly in providing a new set of standards for training and development of TVET trainers and industry practitioners.

Diversifying undergraduate and postgraduate programs is also one of the priorities for Federal TVET Institute in the aim to be upgraded itself as a Technical University that catches the attention of students, professors, researchers, and partners from all over the world. Studies have shown the diversity of gaps in the TVET sector in the country, with a horizontal and vertical mismatch between the training provided and the existing needs in manufacturing technology, with an important weight in the scarcity in access and equity in the sector. Such as, De Gobbi, M.S. (2006/1) has studied the labor market flexibility and employment and income security in Ethiopia, which shows the uncertainty of the labor market demand gap with respect the availability.

Educan foundation (2009) has published the learn for work scholkland program which seems the stepping stop for the newly developed document to fill the gaps of the labor market demand and the labor skill and knowledge. Teklehaimanot Haileselassie (2002) has reported the challenge of TVET in Ethiopia due to the misconceptions of the employers and the peoples at large towards the TVET graduated individuals with the fact that most students who enrolled to TVET College were those who did not get the university entrance result. An

invaluable synthesis report from the world bank in 2007 with respect to the challenges and prospects of the labor market in Ethiopia emphasizes the indicators and trends of the labor market. This report shade light on the way to address the challenges whereby advocating the labor market is an urgent issue and it recommends that education and training of training sectors shall be relevant and employable. Birhane Sime Geressu, (2017), in his article about the impact of competency-based training on employability of technical and vocational graduates in Ethiopia has reported that as per the result of detailed data analysis, inadequate allocation of relevant resources (shortage of teaching materials especially in occupational standards newly developed); scarcity of quality academic and support staff; increased enrolment and insufficient industrial internship bases have affected the successful implementation of competency-based training. He also mentioned that these situations also affect TVET colleges not to produce competent graduates who have required employability skills, knowledge, and ability that consequentially lead to graduate unemployment and dissatisfaction of different categories of stakeholders. Moreover, he emphasized that his qualitative data revealed that some employed graduates were not able to demonstrate employability skills, knowledge into the job. he concluded that the low competence of TVET colleges to measure the actual skills needed in the labor market and predicting the number of graduates required from TVET colleges in terms of occupational categories, are hindering the effective utilization of market opportunities and causes the fragile implementation of competency-based learning. Within the framework of this Project, a Precision Tool and Die Making Technology Center of Excellence is launched under the Federal TVET Institute to upgrade the existing facilities and bring to international standards the CoE will receive support. The Strategic Investment Plan calls on the CoE teachers to improve their skills and proficiency beyond old technology practices and experiences and for the future teachers to prepare and learn using the latest new cutting-edge technologies to improve teaching and learning skills for the benefit of TVET students and labor market.

The topic is needed to develop and establish the foundations to deliver Tracer Study as a way to trace the performance of graduates in manufacturing technology practices in a more efficient way and at minimum costs. In this regard, the proposed tracer study comes at a time when the disparity between the training provided and the existing needs clarification in order to understand the real demand and supply for the labor market, so that to address the relevance and quality issues and take the right track to the appropriate response with qualified skilled labor in these both growing economic sectors and contribute to the necessary relevance, quality, access, and equity.

Considering these backdrops, the Tracer Study provides, therefore, feedback for improvements in the TVET Institute training program and approach, a broad range of aspects of employment and work as well as the relevance of different educational pathways to employments in manufacturing technology sectors.

1.2. Statement of the Problem

Different countries are trying to create closer synergies between the needs and purposes of their education training systems, the local and regional labor markets, and their national economies. This is largely a result of an international consensus which, though contested, argues that people and organizations need to embrace new skills and knowledge at regular periods in order to meet the challenges of a much more dynamic and unstable economic climate (Unwin, 2003). Such developments ask important questions of national education systems in terms of curriculum content, teaching and learning processes, skills acquisition, and expertise of educational professionals. In an environment where there is a lack of a systematic and accurate examination of employment outcomes of vocational training graduates such as is the case in Botswana, it is difficult to establish any synergy between the economy and labor markets. In such cases, tracer studies could be used as a means of maintaining curriculum relevance and providing targeted benefits to graduates to enhance the marketability of vocational programs. Adequate knowledge on employment outcomes of vocational training graduates could assist in formulating policy towards combating some social problems such as unemployment.

However, this trend is not found to be true in Ethiopia as there is huge feedback between the needs of the market and the training programs. Similarly, as Sandhaas and Winkler (2011) also reported, there is a very poor practice of conducting tracer studies to evaluate the quality of graduates and the satisfaction level of employers on the programs delivered by TVET institutions. This gap has been increasing the employment rate of graduates and affecting institutions' chances of self-assessment with regard to program relevance and quality.

Therefore, there is an alarming need of conducting tracer studies by individual institutions so as to know the employability of their graduates and the satisfaction of employers so as to plan effective interventions on the training delivery content and method to make sure that it is up to date and parallel per the labor market demand.

1.3. Objectives

1.3.1. General Objective

The general objective of this tracer study was to investigate the quality, relevance, and effectiveness of manufacturing (tool and die) technology training being delivered at the Ethiopian Technical University in equipping graduates with the necessary skills to secure employment and performing their job successfully in the world of work.

1.3.2. Specific Objectives

- To assess the employability of manufacturing technology graduates of Ethiopian Technical University.
- To examine how relevant the study programs of manufacturing technology to the present work/job of graduates.
- The attitudes of manufacturing technology graduates themselves regarding job quality, relevance, and effectiveness of their education in securing employment.
- To identify the required skills of employers in recruiting manufacturing technology graduates.
- To assess the perception of employers on the quality of manufacturing technology graduates' knowledge, skills, and attitude with regard to the job they are functioning.

1.4. Scope

This tracer study was focused on the manufacturing technology graduates of Ethiopian Technical University in the past 2 consecutive Ethiopian academic years (2019 and 2020). All the regular program graduates were considered. Since the Ethiopian Technical University has been providing manufacturing technology training to students who come from all the regional states of the country and all the regional TVET colleges provide a similar training program, this tracer study addressed all previous trainees of ETU.

1.5. Significance of the Study

This tracer study constituted one form of an empirical study that can provide valuable information for evaluating the results of the education and training of a manufacturing Technology at the Ethiopian Technical University. This information can be used for further development of the department in the context of quality assurance. The study proposed solutions which could enable the university to get information about the possible deficits in

Manufacturing Technology programs, and serve as a basis for future curriculum planning and revision activities of the programs.

2. METHODOLOGY

2.1. Study Design

A cross-sectional descriptive survey was employed. In order to come up with comprehensive information, a mixed-methods approach was used. That is, both quantitative and qualitative data were collected. Such an approach has the advantages of enabling triangulation and provide a more complete understanding of the problems related to the study condition and employment of the manufacturing technology graduates of Ethiopian Technical University. The triangulation used in this study involved the use of both quantitative and qualitative data sources (data triangulation) and the use of uni-variable and multivariable methods (methodological triangulation).

2.2. Study Period

This study was conducted in 2021. The required data were collected from May 17-28, 2021.

2.3. Study Population

This tracer study concentrated on graduates of manufacturing technology from the Ethiopian Technical University. Accordingly, two different populations (graduates, and employers) were considered as potential sources of the data needed in this tracer study. Hence, the first population of the study comprised all manufacturing technology graduates of the past two years. There was a total of 45 graduates of manufacturing technology of which 18 graduated in 2018/19. Accordingly, a census of the total 45 graduates was planned to be involved in this tracer study.

The second population consisted of all employer organizations of the respective manufacturing technology graduates were considered. In fact, almost all the employers of the graduates were TVET institutions. Hence, up to three persons (deans, associate deans, department heads) were involved.

2.4. Variables of the Study

As there were two different study populations targeted in this tracer study, both the dependent and independent variables in each group were identified as follows.

2.4.1. Dependent Variables

In this tracer study, 4 variables were considered as the primary interest to be determined as an outcome of graduates' data. These were:

- the level of employability of the graduates of manufacturing technology;
- the relevance of training attended at ETU;
- the level of graduates' job satisfaction; and
- graduates' view on the study conditions and provisions.

From the side of employers' data, there were 3 outcome variables. These were:

- employers' recruitment and selection criteria of graduates of manufacturing technology;
- the level of satisfaction of employers by the manufacturing technology graduates; and
- skill shortages.

2.4.2. Independent Variables

The independent variables represent characteristics (including demographics and backgrounds) related to graduates of manufacturing technology; and employer organizations.

Graduates' data: The independent variables were characteristics related to graduates of manufacturing technology.

- Gender (Male, Female),
- Age (years)
- Marital status (Single, Married, Divorced, Other)
- Year of graduation (2018/19, 2019/20)
- Level of qualification (BSc, MSc)

Employers' data: The independent variables included personal information (including demographics and backgrounds) of persons in a certain role/ position in the employer organizations and their working industry sector.

- Gender (Male, Female),
- Age (years)
- Marital status (Single, Married, Divorced, Other)
- Education level (Diploma or below, BSc/BA/BEd, MSc/MA/Med, PhD)
- Field of study (Manufacturing, Leather & Leather Products Technology, Other)

- Position (Director, Deputy Director, Dean/Associate Dean, Department/Section Head, Other)
- Industry sector of the organization (Manufacturing, Education and Training, Other)

2.5. Data Collection Instruments

Two different kinds of questionnaires were designed and used to collect data from three different study populations; manufacturing technology graduates; and employers of graduates. The questionnaires comprised both closed-ended and open-ended questions.

The questionnaires contained questions related to the employability of the manufacturing technology graduates; the relevance of the training at ETU; the job satisfaction of graduates; the study conditions and provisions of manufacturing technology departments at ETU; employers' recruitment procedures and selection criteria of graduates, and satisfaction of employers by the graduates.

Specifically, the graduates' questionnaire had 6 parts (Part I – Demographic Information, Part II - Employment Status, Part III - Relevance of Training, Part IV - Job Satisfaction, Part V - Relationship between Study and Employment, and Part VI - Comments and Recommendations). There was a total of 72 questions in which the number of questions in each part respectively were 11, 12, 9, 12, 26, and 2.

The employers' questionnaire had 4 parts (Part I - Demographic Information, Part II - Identification of the Organization, Part III - Recruitment Procedures and Satisfaction, and Part IV - Comments and Recommendations). The number of questions in each part was 6, 5, 38, and 2, respectively, which made the total number of questions to be 51.

2.6. Data Quality Control

A number of quality control mechanisms were employed to ensure the quality of the data. First, the data collection instruments (questionnaire and interview guides) were designed in such a way that they do not allow direct and straightforward inconsistencies. Second, 10 data collections were recruited and trained. Besides, there were 5 supervisors to be assigned for facilitating and monitoring the data collection process. Each supervisor was assigned to 2 data collectors and the day-to-day operations of the two data collectors were closely supervised by the same. Third, the collected data were checked daily by the supervisors for its consistency. When issues such as missing values, inconsistent responses, or implausible numbers are discovered, immediate feedback was given to the respective data collectors and then make corrections by contacting the corresponding respondent again. Fourth, 5 data

encoders were hired and trained for entering the data into a computer program. Then, further cleaning and the analyses were done using SPSS version 25 statistical software.

2.7. Data Analysis

The collected data were analyzed using both quantitative and qualitative techniques. The data obtained through the closed-ended part of the questionnaires were quantitatively analyzed using descriptive statistical methods such as frequency and percentage, mean, standard deviation, standard scores, diagrams, and graphs.

The open-ended parts of the questionnaires (qualitative data) were analyzed using thematic analysis. First, codes were developed and applied**.** Next, themes, patterns, and relationships were identified**.** Last, the data were summarized**.** Finally, the basic findings were presented in verbatim qualitative statements where appropriate.

2.8. Ethical Considerations

This study was carried in line with permission and a written approval letter obtained from the Ethiopian Technical University Ethical Review Board. Thus, a specific official letter of request to participate in the study was written for each of the two target populations (graduates and employers). The letter described the objectives of the study and then requested their consent to participate. Besides, before starting the interview, each interviewer explained to the respondents that the objective of the tracer study was to improve the study program of the manufacturing technology department and, more specifically, to revise the curricula so it prepares graduates better for the world of work. Through this process, those who participated in the study were after obtaining their oral consent (according to their willingness). Also, it was notified that the study would not cause any physical or psychological harm to the graduates. Besides, it was assured for the respondents that their responses will be kept confidential.

As giving appropriate credit to the use of a scholar's idea is mandatory, all the materials belonging to another person or organization are duly acknowledged. The researchers are also committed to reporting the study findings completely and honestly.

2.9. Dissemination of Results

The draft version of the research report will be presented to the ESTRIP members for discussion and validation. Then after incorporating the comments and suggestions to be obtained from the validation workshop, this final version of the report is prepared. The report will also be published in a proceeding form.

3. RESULTS

The tracer survey focused on manufacturing technology graduates of Ethiopian Technical University. All the traced graduates are based in TVET institutions and agencies in eight regions of the country. Therefore, the data that comes from both the graduates and employers are analyzed, and the results and findings are presented in the following subsection of this chapter.

3.1. Graduates' Findings

Initially, it was proposed in this tracer study to consider all the 45 manufacturing technology graduates. But, the exact location of 5 graduates could not be known and the mobile number they provided when joining the Ethiopian Technical University was not working. Hence, the overall response rate of this tracer study became 88.9%.

3.1.1. Socio-Demographic Characteristics

This section describes graduates' socio-demographic information, gender, civil status, age, year of graduation, and the number of children. Table 1 presents the frequency distribution of the socio-demographic characteristics of the graduates.

Table 1: The socio-demographic characteristics of traced graduates

Characteristics		**Number of graduates**	**Percentage (%)**
Gender	Male	35	87.5
	Female	5	12.5
Civil Status	Single	14	35.0
	Married	26	65.0
Age (years)	Below 25	1	2.5
	Between 25-34	31	77.5
	Between 35-44	8	20.0
	Above 44	0	0.0
Year of graduation	2019	17	42.5
	2020	23	57.5
Total		40	61.5

Of the total 40 graduates involved in this tracer study, most (87.5%) graduates are males and the remaining 5 (12.5%) of them are females.

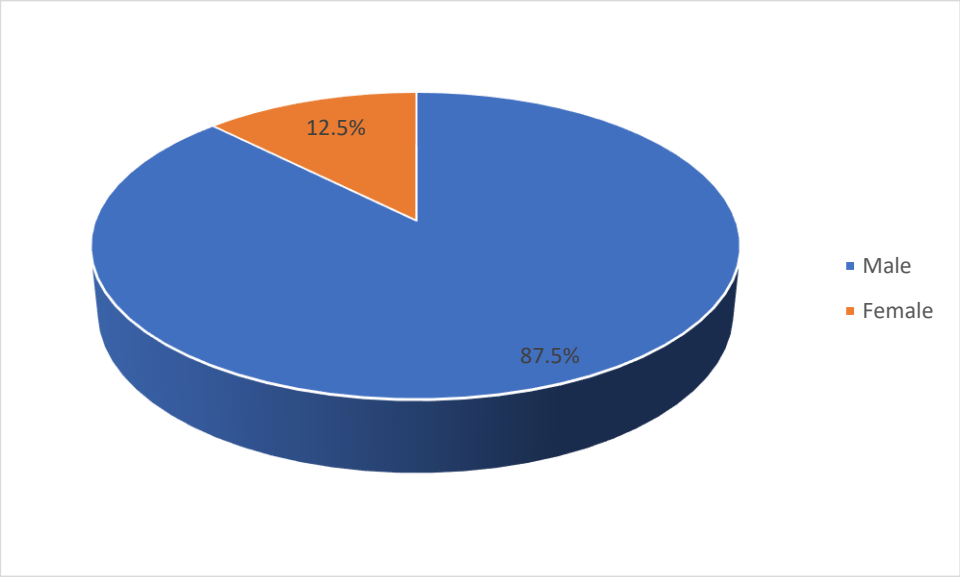

Figure 1: The gender combination of traced graduates

Also, 14 (35.0%) of the graduates were single while most 26 (65.0%) were married at the time of the interview. Besides, more than three-fourth (77.5%) of the graduates were between the age of 25-34 years as can be seen from Table 1 and Figure 2. But there is no graduate whose age is greater than 44 years.

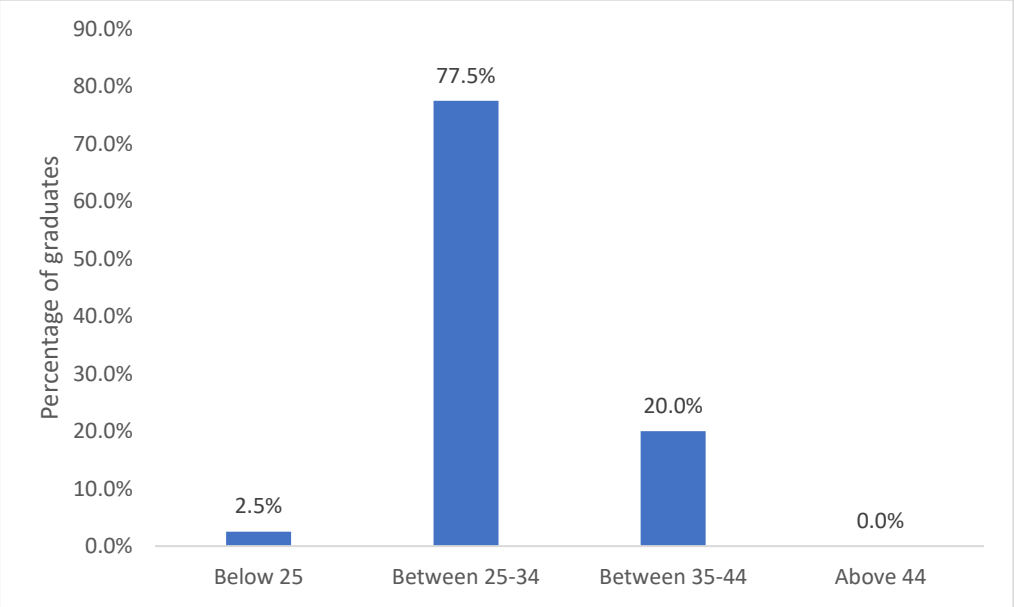

Figure 2: The age of traced graduates

Looking at the graduation years, 17 (42.5%) and 23 (57.5%) of the graduates were graduated in 2019 and 2020, respectively.

3.1.2. Employability of Graduates

Below, the distribution of the characteristics related to the employability of the traced graduates is explained. In particular, the findings of the type of employment, employment status, industry sector the graduates are working, the region they are working, the duration they took to find their job after graduation, and the means (media) used to find a job are examined.

3.1.2.1. Employment Condition

All the 40 (100%) graduates of both male and female are employed in government organizations on a permanent basis as full-time (40 hours per week) employees within six months after graduation.

Table 2: The employment characteristics of traced graduates

		Count	**%**
Type of employment	Employed in a government organization	40	100.0
	Self-employed with employees	0	0.0
	Self-employed without employees	0	0.0
	Neither employed nor self-employed	0	0.0
Employment status	Permanent	40	100.0
	Temporary	0	0.0
	Contractual	0	0.0
	Part-time	0	0.0
Working hours	Mean ± SD	40 ± 0	
Industry sector	Manufacturing	0	0.0
	Construction	0	0.0
	Wholesale and retail trade	0	0.0
	Transportation and storage	0	0.0
	Education and training	38	95.0
	Other	2	5.0

Concerning the sector of employment, 38 (95.0%) of the graduates are working in the Education and Training sector (that is, in TVET institutions) whereas only 2 (5.0%) of the graduates are working in other sectors (particularly in TVET agencies).

3.1.2.2. Employment per Region

Of all these graduates, most (35.0%) of the graduates are employed in Amhara region. And 30.0% and 12.5% of the graduates are employed in Oromia region and Addis Ababa city administration as presented in Table 3 and Figure 3.

Table 3: The number of traced graduates employed per region

Region	Number of graduates	Percentage (%)
Addis Ababa	5	12.5
Amhara	14	35.0
Benishangul	1	2.5
Dire Dawa	3	7.5
Harari	2	5.0
Oromia	12	30.0
Sidama	1	2.5
SNNPR	2	5.0

On the other side, only 1 graduate (2.5%) is working in the Benishangul-Gumuz region and another one (2.5%) is working in the Sidama region.

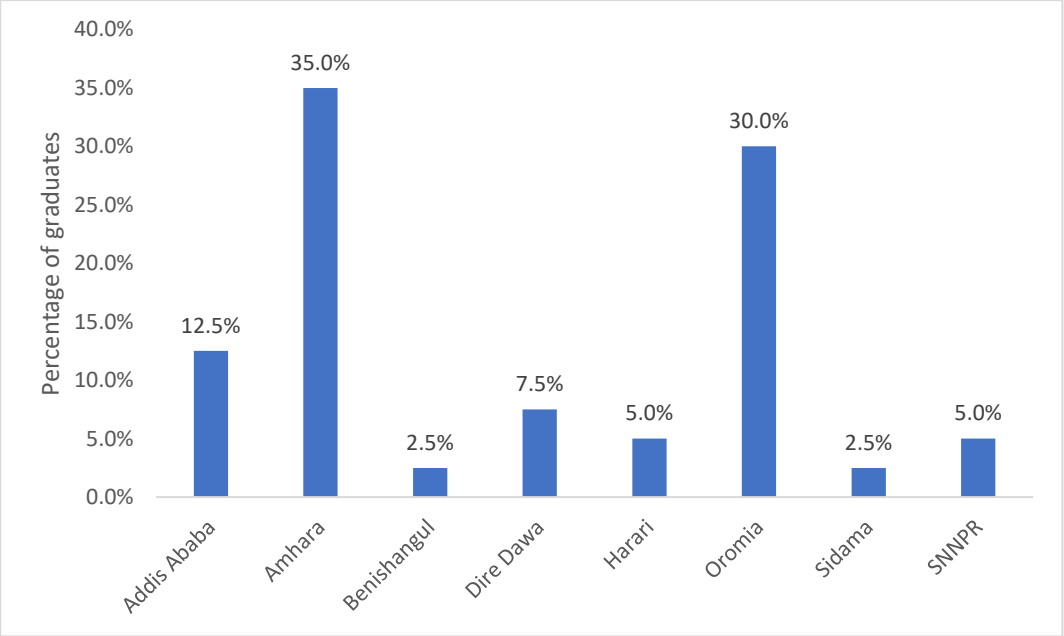

Figure 3: The regional employment distribution of traced graduates

3.1.2.3. Medias Used to Find their First Job

Table 5 shows the frequency distribution of the means that the manufacturing technology graduates used to find their first jobs.

Table 5: Media of employment used by traced graduates

	Yes		No	
	Count	**%**	**Count**	**%**
Newspaper /Television/Radio	12	30.0	28	70.0
Internet (e.g., government websites, company websites)	6	15.0	34	85.0
Relatives, friends or/and colleagues	9	22.5	31	77.5
Industry Linkages during training (e.g., apprenticeship, On the Job Training)	12	30.0	28	70.0
Referral/School Endorsement	5	12.5	35	87.5
Social networks (e.g., Facebook, LinkedIn)	1	2.5	39	97.5

Most (33.8%) of the graduates used printing and electronic media (Newspaper /Television/Radio) advertisements to find their first job. Besides, the same number (33.8%) of the graduates got employed through industry linkages during training (e.g., apprenticeship, on-the-job training) which is compliant with the nature of TVET institutions. And, about 22.5% of the graduates used their relatives, friends or/and colleagues to be employed.

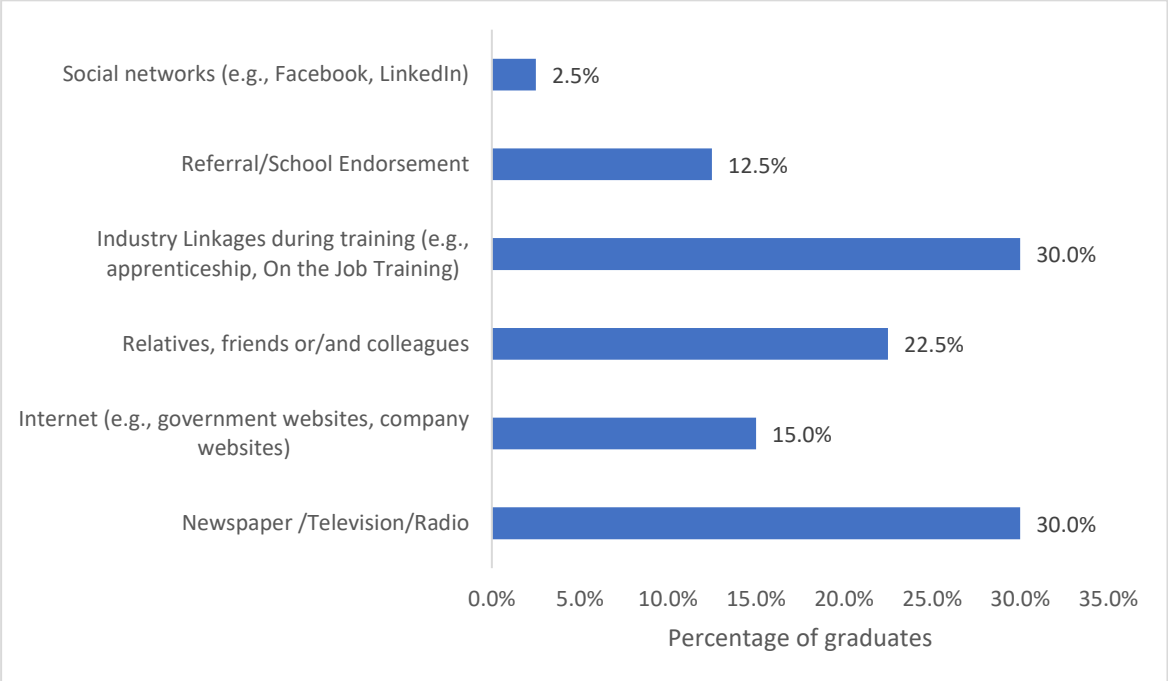

Figure 4: Media of employment used by traced graduates

Only 1 (2.5%) of the traced graduates used social networks like Facebook and LinkedIn as a means of employment.

3.1.3. The Relevance of Training and Skills Required

In this section, the relevance of training received by traced graduates in the manufacturing technology department at the Ethiopian Technical University is examined. It is also examined the relationship between the course and work, the important skills that are most helpful in performing their present job, and their previous experience and future need of participating in further training are assessed.

3.1.3.1. The Relation Between Course and Work

Of the total 40 graduates traced in this study, 38 (95.0%) of them believed that their present work is related to the course they followed at the Ethiopian Technical University. Of those graduates who believed the work and the course are related, half (50.0%) agreed that the degree of relation between the course and work is high. The remaining 39.5% and 10.5% of the graduates believed that their present work has a moderate and slight degree of relation with the course they followed in the university, respectively.

Table 6: The perception of traced graduates in the relation between the course and job

		Count	**%**
Present work related to course attended	Yes	38	95.0
	No	2	5.0
Rate of relation between course and work	Highly related	19	50.0
	Moderately related	15	39.5
	Slightly related	4	10.5
Rate of choosing again the same field of study	Not at all	2	5.0
	Some extent	4	10.0
	Great extent	15	37.5
	Very great extent	19	47.5

Looking back, if the graduates were free to choose again, 15 (37.5%) of the graduates would choose the same field of study to a great extent and most (47.5%) of the graduates would choose the same field of study to a very great extent.

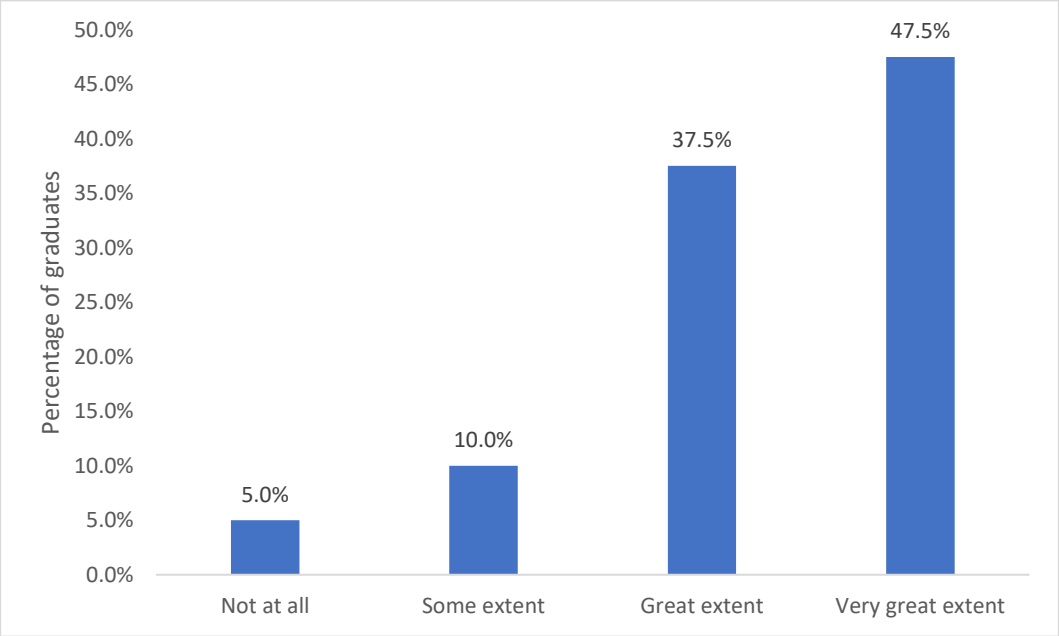

Figure 5: The extent of choosing the same field of study if graduates choose again

3.1.3.2. Required Areas for Performing the Job

In this tracer study, it is also tried to identify the areas of study (knowledge and skill) that helped the graduates in the performance at their present job, Table 7 and Figure 4. A majority (90.0%) of the graduates agreed that theoretical and practical knowledge related to their field of specialization helped them to perform their present job. The second required skill identified by the graduates is practical job-related skills (for example, the use of tools, equipment, and machinery) as identified by 22 (55.0%) of the graduates.

Table 7: The areas of skills that helped graduates to perform their current job

	Yes		No	
	Count	**%**	**Count**	**%**
Knowledge (theoretical and practical related to specialization)	36	90.0	4	10.0
Practical job-related skills (for example, use of tools, equipment, and machinery)	22	55.0	18	45.0
Communication skills (spoken and written)	19	47.5	21	52.5
ICT skills (use of computers)	15	37.5	25	62.5
Problem-solving skills (being able to analyze a problem and find creative solutions)	19	47.5	21	52.5

Work ethics (such as attendance at work, reliability, punctuality, teamwork)	17	42.5	23	57.5
Entrepreneurship skills (such as market research, business planning, financial management, leading)	18	45.0	22	55.0
Customer service skills (such as personal presentation, being polite, understanding a customer's needs)	15	37.5	25	62.5

Two skills (communication skills (spoken and written) and problem-solving skills (being able to analyze a problem and find creative solutions)) are ranked as third as they are helped 47.5% of the graduates to perform their current job. Entrepreneurship skills (such as market research, business planning, financial management, leading)) are ranked as fifth by 45.0% of the graduates for performing their present work.

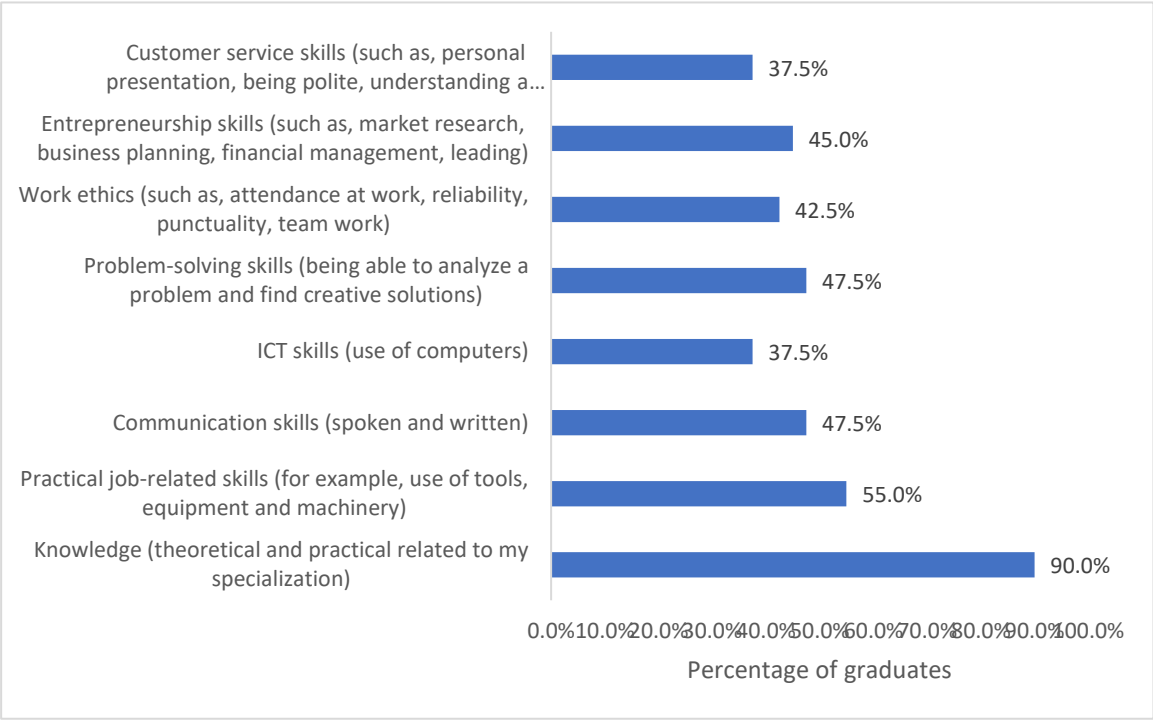

Figure 6: The areas of study that helped graduates to perform their current job

3.1.3.3. Participation in Further Training

Of all the graduates, only 16 (40.0%) of them participated in further training (weekend or evening classes, short courses) since they graduated. The type of courses graduates attended as part of further training include CNC machine, solid work, entrepreneurship, welding, kaizen, CAD, CAM and mining, camcad software, computer integrated manufacturing, concept development, electrical electronics, heat treatment, ICT training, material testing, mechatronics, management and TVET leadership, pattern integration software training, testing of material, thermodynamics, and international trade & investment management.

On the contrary, most (60.0%) of the graduates did not participate in any further training. The first three most common reasons for not participating in further training are the absence of training opportunities (35.0%), absence of relevant course (25.0%), and not begin able to pay for the training (25.0%).

Table 8: Participation of graduates in further training courses after graduation

		Count	%
Participated in further training	Yes	16	40.0
	No	24	60.0
Reason for not Participating in further training	No relevant course is available	5	25.0
	No need for further training	2	10.0
	No money to pay for	5	25.0
	Absence of opportunity	7	35.0
	Other (shortage of time, ..)	1	5.0
Want to attend training courses	Yes	38	95.0
	No	2	5.0

About 95% of the graduates would like to participate in further training courses (weekend or evening classes, short courses) in the future. This result indicates that almost all the graduates recognize the importance of further capacity and skill-building for promotion and career advancement.

3.1.4. The Level of Graduates' Job Satisfaction

Graduates were asked whether they are satisfied with their present job or not. Accordingly, 31 (77.5%) of them are satisfied with their current job. Besides to this, the graduates were also asked to what extent they are satisfied along 11 individual job satisfaction parameters on a five-point scale as 1=Not Satisfied, 2= Slightly Satisfied, 3=Moderately Satisfied, 4=Highly Satisfied, 5=Extremely Satisfied. The frequency distribution of the parameters is presented in Table 9.

Table 9: The extent of job satisfaction level of traced graduates

	(1)		(2)		(3)		(4)		(5)	
	Count	%	Count	%	Count	%	Count	%	Count	%
Interesting work tasks	3	7.5	1	2.5	14	35.0	13	32.5	9	22.5
Being able to work with some independence	3	7.5	7	17.5	14	35.0	10	25.0	6	15.0

Clear and regulated work tasks	2	5.0	11	27.5	7	17.5	15	37.5	5	12.5
Possibilities for applying what you learned when studying	4	10.0	2	5.0	9	22.5	18	45.0	7	17.5
Job security	1	2.5	9	22.5	8	20.0	13	32.5	9	22.5
Social status and recognition	1	2.5	6	15.0	7	17.5	19	47.5	7	17.5
Possibilities to put your own ideas into practice	1	2.5	4	10.0	10	25.0	14	35.0	11	27.5
Income and benefits	6	15.0	12	30.0	11	27.5	9	22.5	2	5.0
Good social climate / work setting	3	7.5	4	10.0	11	27.5	18	45.0	4	10.0
Good career advancement prospects	5	12.5	8	20.0	10	25.0	13	32.5	4	10.0
Being able to coordinate/supervise work	3	7.5	4	10.0	11	27.5	22	55.0	0	0.0

1=Not Satisfied 2= Slightly Satisfied, 3=Moderately Satisfied, 4=Highly Satisfied, 5=Extremely Satisfied.

Table 10 shows the mean scores of the 11 parameters of job satisfaction. *Possibilities to put your own ideas into practice*, *social status and recognition*, *interesting work tasks*, *Possibilities for applying what they learned when studying* and *job security* are the first five parameters from the first highest to the fifth-highest level of satisfaction.

Table 10: The mean job satisfaction levels of graduates

Items	**μ**	**σ**	**z**	**r**
Interesting work tasks	3.6	1.10	0.55	3rd
Being able to work with some independence	3.2	1.14	0.18	9th
Clear and regulated work tasks	3.3	1.15	0.26	8th
Possibilities for applying what you learned when studying	3.6	1.15	0.52	4th
Job security	3.5	1.15	0.43	5th
Social status and recognition	3.6	1.03	0.58	2nd
Possibilities to put your own ideas into practice	3.8	1.06	0.75	1st
Income and benefits	2.7	1.13	-0.27	11th
Good social climate / work setting	3.4	1.06	0.38	6th

Good career advancement prospects	3.1	1.21	0.08	10th
Being able to coordinate/supervise work	3.3	0.94	0.32	7th
Overall	**3.4**	**0.30**		

n=Count, μ=Mean, σ=Standard Deviation, z=Standard Score, r=Rank.

The mean score analyses of the 11 parameters of job satisfaction are also presented in Figure

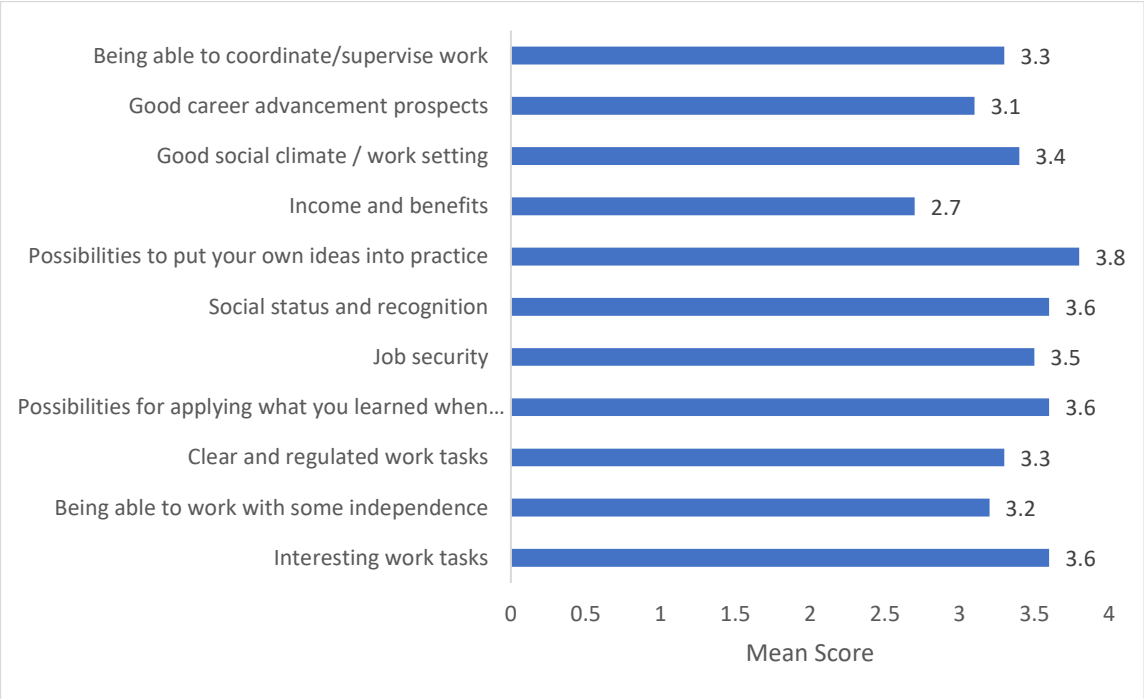

Figure 7: The level of job satisfaction of traced graduates

On the other hand, Table 10 and Figure 7 clearly show that the mean score of satisfaction associated with *income and benefits* is the lowest compared to the rest 11 parameters of job satisfaction. Specifically, the standard score of income and benefits is negative. This is an indication that the graduates are highly dissatisfied with their job especially in terms of their income and benefits.

3.1.5. Graduates' View on the Study Conditions and Provisions

The questionnaire designed for graduates also consisted of questions related to the teaching-learning conditions and provisions that the graduates experienced at the Ethiopian Technical

University. Such assessment of graduates' views towards their work and the course of study provides an opportunity to highlight some of the areas where the university should focus teaching-learning process.

There was a total of 26 factors considered for measuring the study conditions and provisions of the university and each item was rated on the five-point scale as 1=Bad, 2=Fair, 3=Good, 4=Very Good, 5=Excellent. The frequency distributions of the rating scales for all the 26 factors of the study conditions and provisions are presented in Table 10.

Table 10: The extent of graduates' view on the study conditions and provisions

	(1)		(2)		(3)		(4)		(5)	
	Count	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**
Theoretical training related to the occupation	0	0.0	2	5.0	13	32.5	20	50.0	5	12.5
Practical use of computers	1	2.5	8	20.0	9	22.5	20	50.0	2	5.0
Practical use of working tools	0	0.0	3	7.5	10	25.0	18	45.0	9	22.5
Practical use of machines and equipment	0	0.0	5	12.5	13	32.5	12	30.0	10	25.0
Practical use of materials and parts	1	2.5	7	17.5	9	22.5	14	35.0	9	22.5
Theory and practice of equipment maintenance	2	5.0	5	12.5	14	35.0	15	37.5	4	10.0
Understanding and producing drawings	4	10.0	2	5.0	11	27.5	13	32.5	10	25.0
Doing measurements at work	1	2.5	2	5.0	10	25.0	18	45.0	9	22.5
Use of written instructions and working guides	0	0.0	3	7.5	11	27.5	17	42.5	9	22.5
Communication	1	2.5	2	5.0	9	22.5	17	42.5	11	27.5
Working with other people	0	0.0	0	0.0	8	20.0	14	35.0	18	45.0
Knowledge of national laws	2	5.0	5	12.5	15	37.5	12	30.0	6	15.0
How to work in a safe way	0	0.0	1	2.5	12	30.0	18	45.0	9	22.5
How to do high quality work	1	2.5	3	7.5	11	27.5	18	45.0	7	17.5
Discipline and accuracy at work	0	0.0	1	2.5	4	10.0	20	50.0	15	37.5

How to start a business	3	7.5	9	22.5	17	42.5	6	15.0	5	12.5
General education subjects	0	0.0	4	10.0	11	27.5	19	47.5	6	15.0
Management of the institution	0	0.0	4	10.0	16	40.0	14	35.0	6	15.0
Standard of buildings, classrooms and workshops/labs	1	2.5	4	10.0	14	35.0	12	30.0	9	22.5
Recreational activities	1	2.5	6	15.0	16	40.0	15	37.5	2	5.0
Support from teachers	2	5.0	2	5.0	13	32.5	20	50.0	3	7.5
Competence of teachers	0	0.0	3	7.5	14	35.0	18	45.0	5	12.5
Teachers' experience of industry	3	7.5	7	17.5	12	30.0	15	37.5	3	7.5
Career's advice	2	5.0	5	12.5	16	40.0	14	35.0	3	7.5
Providing internship/industry-based training	2	5.0	9	22.5	12	30.0	13	32.5	4	10.0
Help in finding a job	7	17.5	7	17.5	9	22.5	12	30.0	5	12.5

1=Bad, 2=Fair, 3=Good, 4=Very Good, 5=Excellent.

The mean scores of the items are also presented in Table 11 and Figure 8. Accordingly, the first five items that the graduates have the highest positive experiences on are *discipline and accuracy at work, working with other people, how to work safely, practical use of working tools,* and *theoretical training related to the occupation*. On the contrary, the top five lowest experiences are *help in finding a job, how to start a business, Teachers' experience of the industry, providing internship/industry-based training, Theory and practice of equipment maintenance,* and other items presented in Table 11.

Table 11: Graduates' view on the study conditions and provisions of each field of study

Items	**μ**	**σ**	**z**	**r**
Theoretical training related to the occupation	3.7	0.76	0.9	4th
Practical use of computers	3.4	0.95	0.4	18th
Practical use of working tools	3.8	0.87	0.9	4th
Practical use of machines and equipment	3.7	1.00	0.7	11th
Practical use of materials and parts	3.6	1.11	0.5	16th
Theory and practice of equipment maintenance	3.4	1.00	0.3	20th

Understanding and producing drawings	3.6	1.22	0.5	16th
Doing measurements at work	3.8	0.94	0.9	4th
Use of written instructions and working guides	3.8	0.88	0.9	4th
Communication	3.9	0.97	0.9	4th
Working with other people	4.3	0.78	1.6	2nd
Knowledge of national laws	3.4	1.05	0.4	18th
How to work in a safe way	3.9	0.79	1.1	3rd
How to do high quality work	3.7	0.94	0.7	11th
Discipline and accuracy at work	4.2	0.73	1.7	1st
How to start a business	3.0	1.10	0.0	25th
General education subjects	3.7	0.86	0.8	9th
Management of the institution	3.6	0.88	0.6	13th
Standard of buildings, classrooms and workshops/labs	3.6	1.03	0.6	14th
Recreational activities	3.3	0.88	0.3	20th
Support from teachers	3.5	0.91	0.6	14th
Competence of teachers	3.6	0.81	0.8	9th
Teachers' experience of industry	3.2	1.07	0.2	23rd
Careers advice	3.3	0.96	0.3	20th
Providing internship/industry-based training	3.2	1.07	0.2	23rd
Help in finding a job	3.0	1.31	0.0	25th
Overall	**3.6**	**0.32**		

μ=Mean, σ=Standard Deviation, z=Standard Score, r=Rank.

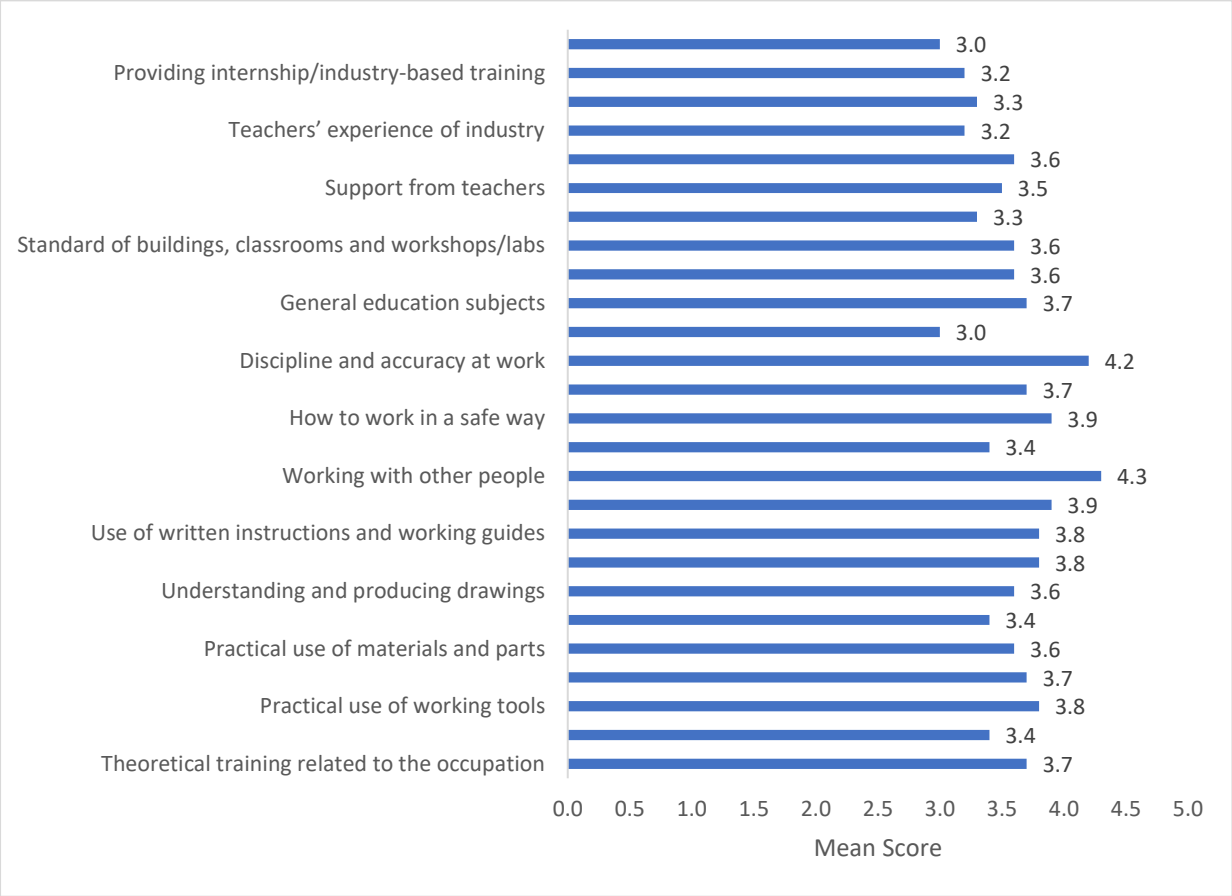

Figure 8: Means scores of graduates' views on the study conditions and provisions at the ETU

3.1.6. Graduates Comments and Suggestions

Graduates were also asked to put their concerns about any changes that they would recommend for the Ethiopian Technical University study programs of manufacturing technology. The major points raised in the order of the frequencies of the graduates from high to low are categorized into four as practical training, curriculum development, course composition, and quality of trainer, and each aspect described below.

- **Practical Training**: Most courses are theoretical, there is no enough practical exercise. The theoretical training should be related to practical training especially drawing. The major courses must be involved with industries internship/apparent ship and the university should also work with industries in order to enhance practical skills. There is a shortage of machinery and equipment, and a shortage of raw materials. The workshops should be organized.
- **Curriculum**: The curriculum does not fit with TVET programs and is not related to the demand of the industries. Hence, the curriculum should be revised taking the

experience of old universities of the country and the graduate profile should be improved to make graduates participate in different industries and organizations

- **Course composition**: The influence of pedagogy courses is very high. They used more credit hours than the credit of major courses. Thus, major courses should have given sufficient credits and the credit hours for pedagogy courses should be minimized. Besides, new course subjects like computerized manufacturing courses should be included in the curriculum.
- **Quality of trainers**: Instructors have skill gaps and language problems. They can be skilled in the theoretical part but they lack the practical one. Hence, the competency of trainers should be examined carefully when hiring especially foreigners. It is better to build the capacity of local staff instead of using foreigners. Besides, experienced technicians should be hired for giving practical training.

3.2. Findings from Employers' Perspective

This section provides the basic findings on the level of employers' satisfaction with regards to the skills and performance level of graduates of manufacturing technology. It also examines an assessment of the effectiveness, relevance, and outcomes of the training process of the program in the world of work from the employers' perspective.

3.2.1. Employers Involved and Number of Interviews

As described earlier in the previous chapter, all the graduates are employed in government organizations. Particularly, the traced graduates are employed in 41 different organizations of which 39 are TVET institutions and the remaining 2 are TVET agencies. Of these employing organizations, 7 of them are found in Addis Ababa city administration, 12 in Amhara region, 1 in Assosa region, 2 in Dire Dawa city administration, 2 in Harari, 13 in Oromia region, 2 in Sidama region, and 2 in SNNP region.

From each employing institution, up to three persons who have some position in the institution or agency were interviewed. Basically, the interviews are made with the deans or associate deans, and department heads of each TVET institution. The reason for increasing the number of interviewees from each employing organization is for the purpose of increasing the accuracy of measuring the effectiveness and relevance of training of manufacturing technology.

Therefore, a total of 88 respondents were interviewed from all 41 employing organizations as presented in Table 12.

Table 12: Number of respondents who participated from each TVET institution and agencies

		Position			Total
		Director/ Deputy Director	**Dean/ Associate Dean**	**Dep't/ Section Head**	
Addis Ababa	Arada Manufacturing College	0	1	1	2
	Entoto PTC	0	1	2	3
	Federal TVET Agency	0	0	1	1
	General Wingate PTC	0	1	2	3
	Lideta Manufacturing College	0	1	2	3
	Misrak PTC	0	1	2	3
	Yeka Industrial College	0	1	1	2
Amhara	Addis Zemen TVET College	0	1	1	2
	Bahir Dar PTC	0	1	1	2
	Debre Birhan PTC	0	1	2	3
	Debre Markos PTC	0	1	1	2
	Debre Tabor PTC	0	1	1	2
	Durbete PTC	0	1	1	2
	Injibara PTC	0	1	1	2
	Kemissie PTC	0	1	1	2
	Kombolcha PTC	0	0	1	1
	Mehal Meda TVET College	0	1	1	2
	W/ro Siheen PTC	0	1	1	2
	Woldia PTC	0	1	2	3
Assosa	Assosa PTC	0	1	1	2
Dire Dawa	Dire Dawa PTC	0	1	1	2
	Ethio-Italy PTC	0	1	1	2
Harari	Harar PTC	0	1	1	2
	Harari TVET Agency	1	0	0	1
Oromia	Arba Gugu TVET College	0	1	1	2
	Atlet Kenenisa PTC	0	1	2	3
	Bekoji PTC	0	1	1	2
	Diga TVET College	0	1	1	2
	Fiche PTC	0	1	1	2
	Gelan TVET College	0	1	1	2
	Gimbi PTC	0	1	1	2

	Gutte TVET College	0	1	1	2
	Jimma PTC	0	1	1	2
	Limu Gelila TVET College	0	1	1	2
	Modjo TVET College	0	1	2	3
	Nekemt TVET College	0	1	2	3
	Sebeta PTC	0	1	1	2
Sidama	Hawassa PTC	0	1	1	2
	Yirgalem TVET College	0	1	1	2
SNNP	Arba Minch PTC	0	1	1	2
	Boditi Industrial and Construction College	0	1	1	2
Total		1	38	49	88

The socio-demographic, educational and other background characteristics of the respondents interviewed from the TVET institutions and agencies are presented in Table 13.

3.2.2. Background Characteristics of Respondents

Of the 88 respondents representing the employing TVET institutions and agencies, 85 (96.3%) of them were males while only 3 (3.4%) were females. More than half (52.3%) of them were between the age of 25-34 years at the time of the interview.

Concerning to academic qualification, more than half (51.1%) were Bachelor's degree holders, 43.2% of them were Master's degree holders and there were 5 (5.7%) respondents who hold a diploma or below. But there are no individuals who hold a Ph.D. degree.

With regard to the administrative position of respondents, more than half (55.7%) of the interviewed individuals were department/section heads. And, 43.2% were deans or associate deans of the corresponding TVET institutions. From the TVET agencies' side, only 1 director/deputy director is interviewed.

Table 13: Socio-demographic and background characters of respondents

		Count	**%**
Sex	Male	85	96.6
	Female	3	3.4
Age	Between 25-34	46	52.3
	Between 35-44	32	36.4
	Above 44	10	11.4

Marital status	Single	18	20.5
	Married	70	79.5
Educational level	Diploma or below	5	5.7
	BSc/BA/BEd	45	51.1
	MSc/MA/Med	38	43.2
	PhD	0	0.0
Position	Director/Deputy Director	1	1.1
	Dean/Associate Dean	38	43.2
	Department/Section Head	49	55.7
Field of study	Manufacturing Technology	41	46.6
	Leather Technology	7	8.0
	Other	40	45.5

With respect to fields of study, 41 (46.6%) of the respondents were graduated in manufacturing technology, 7 (8.0%) were graduated in leather and leather products technology, and the rest 40 (45.5%) of the respondents (most of which are deans or associate deans) were graduated in other fields of study like agriculture, MIS, IT, construction, business management, TVET leadership, computer science, accounting, electrical communication, textile, MBA, project management, etc.

3.2.3. Employers' Recruitment and Selection Criteria

This section explains employers' methods of recruitment of graduates of manufacturing technology graduates, the important aspects the employers will consider when selecting candidate graduates, the level of satisfaction with the quality of training received by the graduates, the level of satisfaction of employers by the graduates' demonstration of their knowledge and skills, type of skill shortages employers face when recruiting graduates, problems observed in employed graduates, the type of training the employers would like for employed graduates, and suggestions and recommendation forwarded by employers about the study program of the university.

3.2.3.1. Method of Recruiting Graduates

The frequency distribution of the different kinds of procedures that the organizations use to recruit graduates of manufacturing technology are presented in Table 14 and Figure 7.

Table 14: Methods used by employers to recruit graduates for employment

	Yes	**No**

	Count	%	Count	%
Advertisements of vacancies in newspapers (such as daily papers)	50	56.8	38	43.2
Advertisements in the Internet	15	17.0	73	83.0
Internal advertisements of vacancies	24	27.3	64	72.7
Direct application by graduates	18	20.5	70	79.5
Personal contacts to graduates	15	17.0	73	83.0
Private employment agencies	3	3.4	85	96.6
Other	7	8.0	81	92.0

As presented in both the table and figure, 56.8% of the respondents believed that they used *advertisements of vacancies in newspapers (such as daily papers)* to recruit graduates and 27.3% of them believed that they use *Internal advertisements of vacancies*.

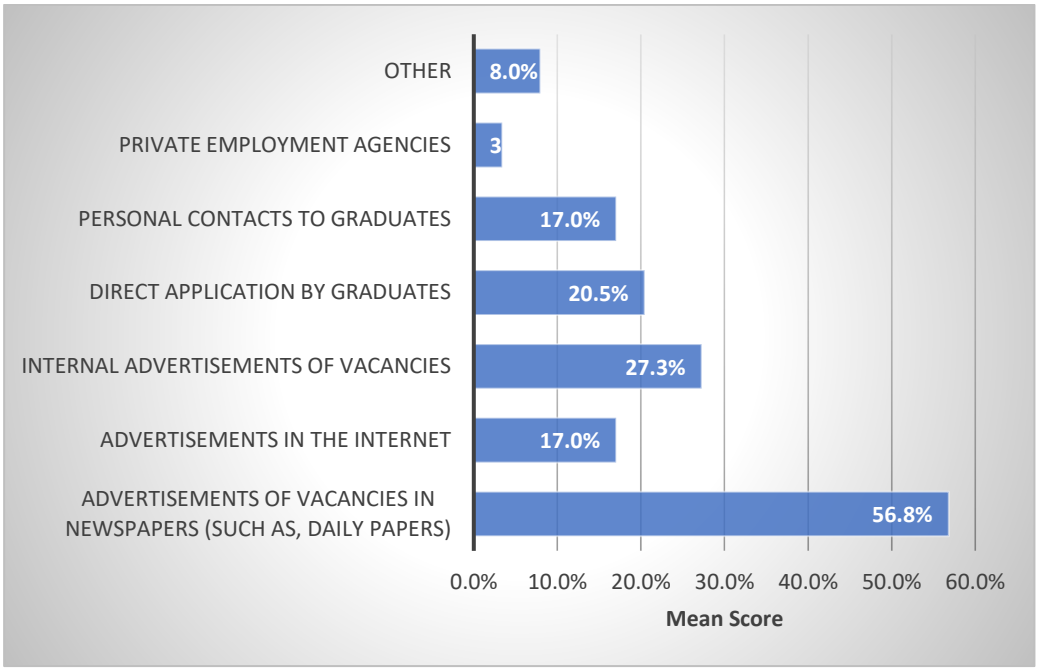

Figure 9: The methods used by the TVET institutions and agencies to recruit graduates

3.2.3.2. Important Aspects for Selecting Graduate Candidates

Employers were also asked to rate how important in general they consider different recruitment aspects for selecting graduates for employment on a five-point scale: 1=Not at all important, 2=Somewhat Important, 3=Important, 4=Very Important, 5=Extremely Important, Table 15 and Figure 9.

The first five factors that are most important from the employers' perspective to recruiting graduates are *field of study*, the *main focus of subject area/specialization*, *results of recruitments tests*, *Practical experience acquired during course of study*, and *Communication skills*.

Table 15: Importance of factors considered by employers to select graduates for employment

	(1)		(2)		(3)		(4)		(5)		Summary			
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**μ**	**Σ**	**z**	**r**
Field of study	0	0.0	0	0.0	5	5.7	33	37.5	50	56.8	4.5	0.61	2.5	1st
Main focus of subject area/specialization	0	0.0	0	0.0	8	9.1	44	50.0	36	40.9	4.3	0.64	2.1	2nd
Grades of examinations at the TVET Institute	4	4.5	0	0.0	16	18.2	46	52.3	22	25.0	3.9	0.92	1.0	5th
Practical experience acquired during course of study	2	2.3	3	3.4	18	20.5	35	39.8	30	34.1	4.0	0.95	1.1	4th
Reputation of TVET Institute	8	9.1	5	5.7	30	34.1	28	31.8	17	19.3	3.5	1.14	0.4	10th
Recommendations/references from third persons	13	14.8	16	18.2	21	23.9	29	33.0	9	10.2	3.1	1.24	0.0	11th
Results of recruitments tests	0	0.0	0	0.0	14	15.9	40	45.5	34	38.6	4.2	0.71	1.7	3rd
Communication skills	1	1.1	5	5.7	23	26.1	31	35.2	28	31.8	3.9	0.95	1.0	5th
Personal presentation	2	2.3	7	8.0	23	26.1	39	44.3	17	19.3	3.7	0.95	0.7	7th
Personality and behavior	3	3.4	7	8.0	21	23.9	36	40.9	21	23.9	3.7	1.02	0.7	7th
Candidate's own world view	2	2.3	12	13.6	25	28.4	32	36.4	17	19.3	3.6	1.03	0.6	9th
Overall											**3.9**	**0.40**		

n=Count, μ=Mean, σ=Standard Deviation, z=Standard Score, r=Rank.

But, recommendations/references from third persons and the reputation of the institute have not that much importance in recruiting graduates for employment.

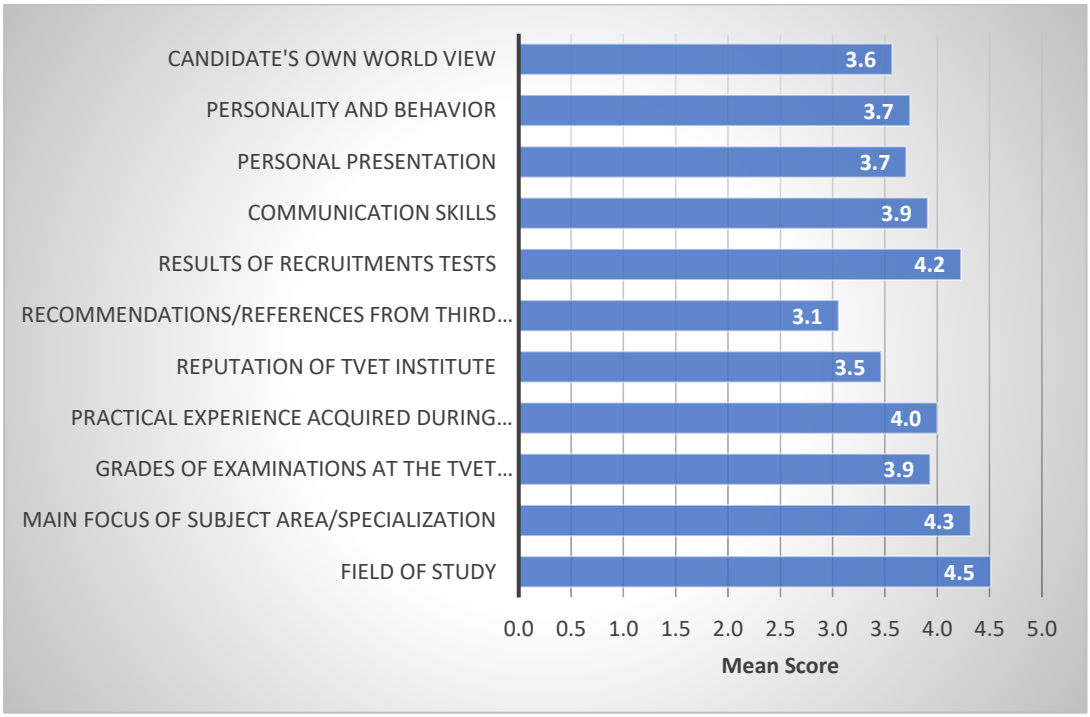

Figure 8: Mean score of factors considered by employers to select graduates for employment

3.2.4. The Level of Satisfaction of Employers

3.2.4.1. Overall Satisfaction of Employers

Overall, most (39.8%) of the respondents are satisfied by the quality of training received by the graduates of manufacturing technology at the Ethiopian Technical University, Figure 9.

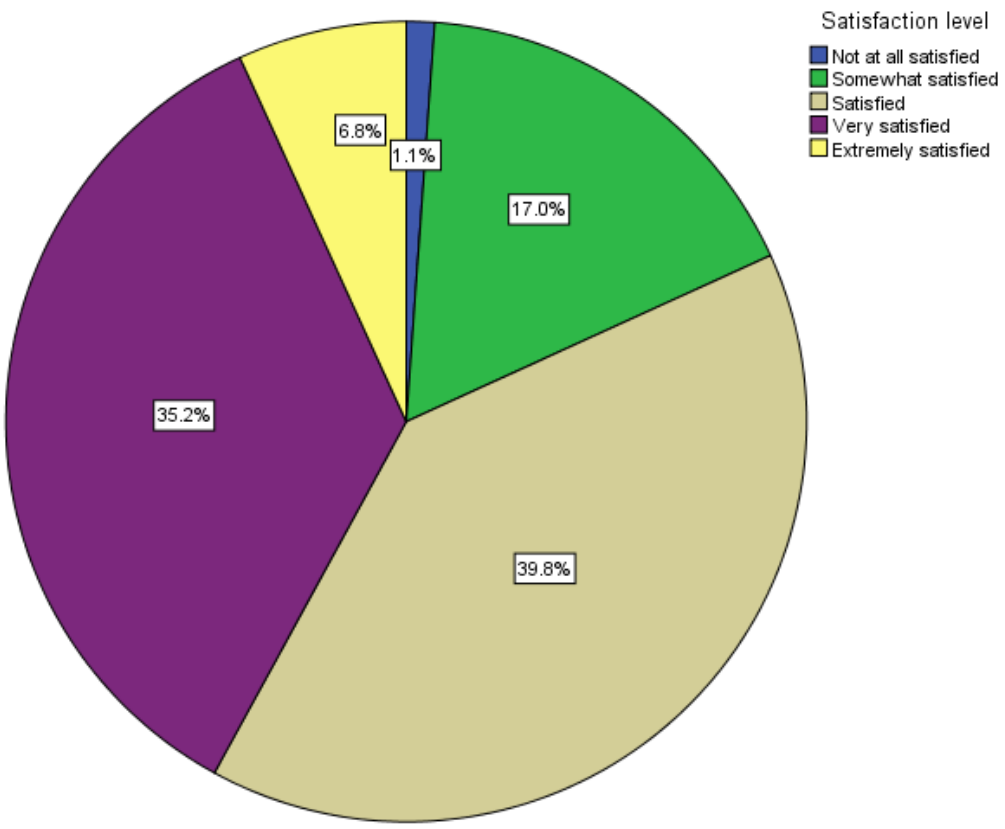

Figure 11: Overall satisfaction of employers by the quality of graduates training

Also, 35.2% and 39.8% of the respondents were very and extremely satisfied by the quality of graduates, respectively.

3.2.4.2. Satisfaction by Graduates' Knowledge and Skills

Employers were also asked to what extent they are satisfied with the manufacturing technology graduates' demonstration of 17 different aspects related to knowledge and skill. Each factor was rated on a five-point scale as 1=Not at all satisfied, 2=Somewhat satisfied, 3=Satisfied, 4=Very satisfied, 5=Extremely satisfied.

The frequencies of the rating scale and the mean, standard deviation, and standard score (z-score) of each factor is rated in Table 16. The first five factors that the employers were in the highest level of satisfaction are *Working with other people*, *Theoretical training related to the occupation*, *Discipline, and accuracy at work*, *Understanding and producing drawings*, and *how to work in a safe way*.

Table 16: Satisfaction of employers by employed graduates

	(1)		(2)		(3)		(4)		(5)		Summary			
	n	%	n	%	n	%	n	%	n	%	μ	σ	z	r

Theoretical training related to the occupation	1	1.1	9	10.2	26	29.5	38	43.2	14	15.9	3.6	0.91	0.7	2nd
Practical use of computers	7	8.0	21	23.9	25	28.4	27	30.7	8	9.1	3.1	1.11	0.1	14th
Practical use of working tools	2	2.3	8	9.1	28	31.8	39	44.3	11	12.5	3.6	0.91	0.6	4th
Practical use of machines and equipment	2	2.3	15	17.0	29	33.0	28	31.8	14	15.9	3.4	1.03	0.4	9th
Practical use of materials and parts	2	2.3	15	17.0	29	33.0	27	30.7	15	17.0	3.4	1.04	0.4	9th
Theory and practice of equipment maintenance	10	11.4	19	21.6	31	35.2	25	28.4	3	3.4	2.9	1.05	-0.1	16th
Understanding and producing drawings	4	4.5	19	21.6	21	23.9	34	38.6	10	11.4	3.3	1.08	0.3	12th
Doing measurements at work	1	1.1	12	13.6	24	27.3	35	39.8	16	18.2	3.6	0.98	0.6	4th
Use of written instructions and working guides	1	1.1	15	17.0	26	29.5	37	42.0	9	10.2	3.4	0.93	0.5	7th
Communication	1	1.1	12	13.6	28	31.8	36	40.9	11	12.5	3.5	0.92	0.5	7th
Working with other people	0	0.0	9	10.2	17	19.3	38	43.2	24	27.3	3.9	0.93	0.9	1st
Knowledge of the industry	5	5.7	17	19.3	31	35.2	30	34.1	5	5.7	3.1	0.99	0.1	14th
How to work in a safe way	1	1.1	11	12.5	24	27.3	43	48.9	9	10.2	3.5	0.88	0.6	4th
How to do high quality work	3	3.4	14	15.9	27	30.7	38	43.2	6	6.8	3.3	0.95	0.4	9th
Discipline and accuracy at work	2	2.3	10	11.4	21	23.9	32	36.4	23	26.1	3.7	1.05	0.7	2nd
How to start a business	11	12.5	30	34.1	23	26.1	18	20.5	6	6.8	2.8	1.13	-0.2	17th
General education subjects	3	3.4	18	20.5	32	36.4	30	34.1	5	5.7	3.2	0.94	0.2	13th

Overall											**3.4**	**0.29**		

1=Not at all satisfied, 2=Somewhat satisfied, 3=Satisfied, 4=Very satisfied, 5=Extremely satisfied, n=Count, μ=Mean, σ=Standard Deviation, z=Standard Score, r=Rank.

On the other hand, employers have the lowest level of satisfaction in the aspects of *How to start a business*, *Theory and practice of equipment maintenance*, *Practical use of computers*, *Knowledge of the industry*, and *General education subjects*.

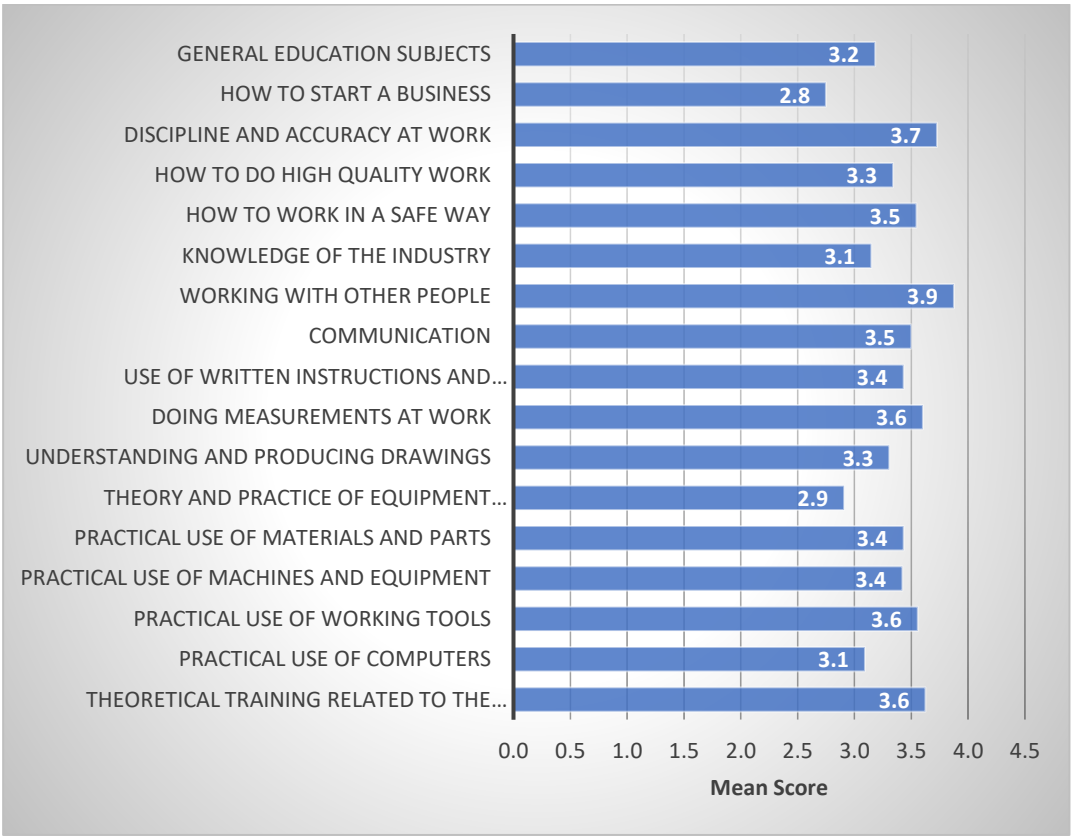

Figure 12: Mean satisfaction scores of employers by the graduates

3.2.5. Skill Shortages faced by Employers

Looking at to what extent employers face skills shortages, Table 17, among the graduates of manufacturing technology, the highest level of severity faced to recruit technicians/ engineers and supervisory/ management level graduates. But there is no difficulty of skill shortages in recruiting semi-skilled and skilled candidates.

Table 17: Skill shortages faced by employers to select graduates

	(1)		(2)		(3)		(4)		(5)		Summary			
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**μ**	**σ**	**z**	**r**
Semi-skilled	19	21.6	23	26.1	27	30.7	14	15.9	5	5.7	2.6	1.16	-0.4	4th
Skilled worker	8	9.1	24	27.3	30	34.1	23	26.1	3	3.4	2.9	1.01	-0.1	3rd

Technician/ engineer	4	4.5	19	21.6	24	27.3	29	33.0	12	13.6	3.3	1.10	0.3	1st
Supervisory/ management	6	6.8	20	22.7	19	21.6	32	36.4	11	12.5	3.3	1.15	0.2	2nd

1=Not at all severe, 2=Somewhat severe, 3=Severe, 4=Very severe, 5=Extremely severe, n=Count, μ=Mean, σ=Standard Deviation, z=Standard Score, r=Rank.

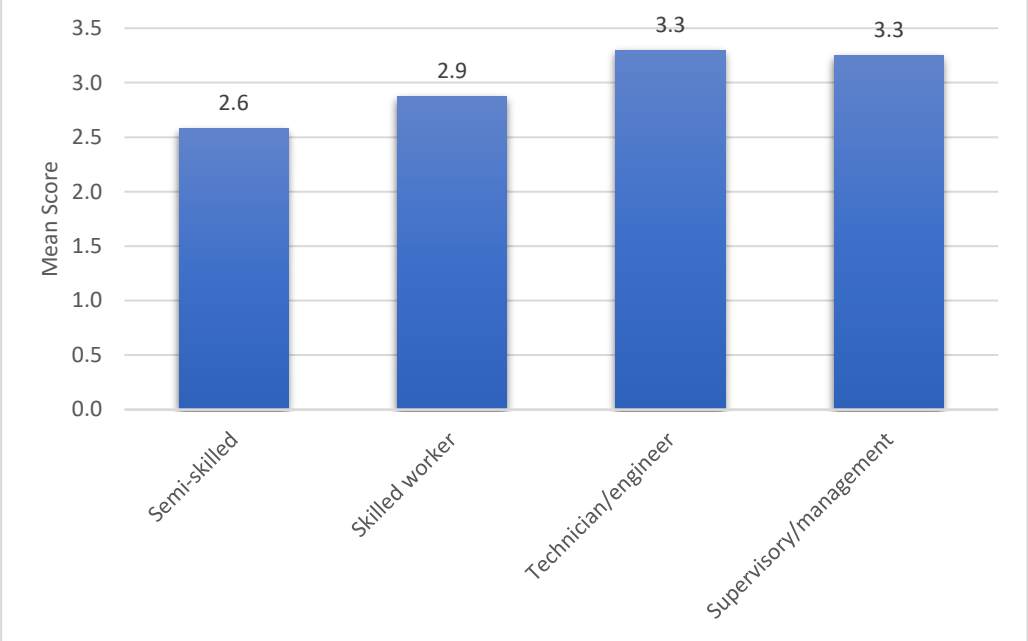

Figure 13: Skill shortages faced by employers to recruit graduates for employment

3.2.6. Training in Need by Employers

Employers also identified the need for additional training for graduates of manufacturing technology to do the work well in their company. About 75% of the respondents said that the graduates need to learn some additional skills and 34.1% of the respondents responded that the graduates need serious skills upgrading to start working.

Table 18: Training needs identified by employers for graduates

	Yes		No	
	Count	%	Count	%
Normally they are fully prepared to do the work well	9	10.2	79	89.8
They need only an introductory training	12	13.6	76	86.4
They need to learn some additional skills	66	75.0	22	25.0
They need serious skills upgrading to start working	30	34.1	58	65.9
They need completely new training	12	13.6	76	86.4

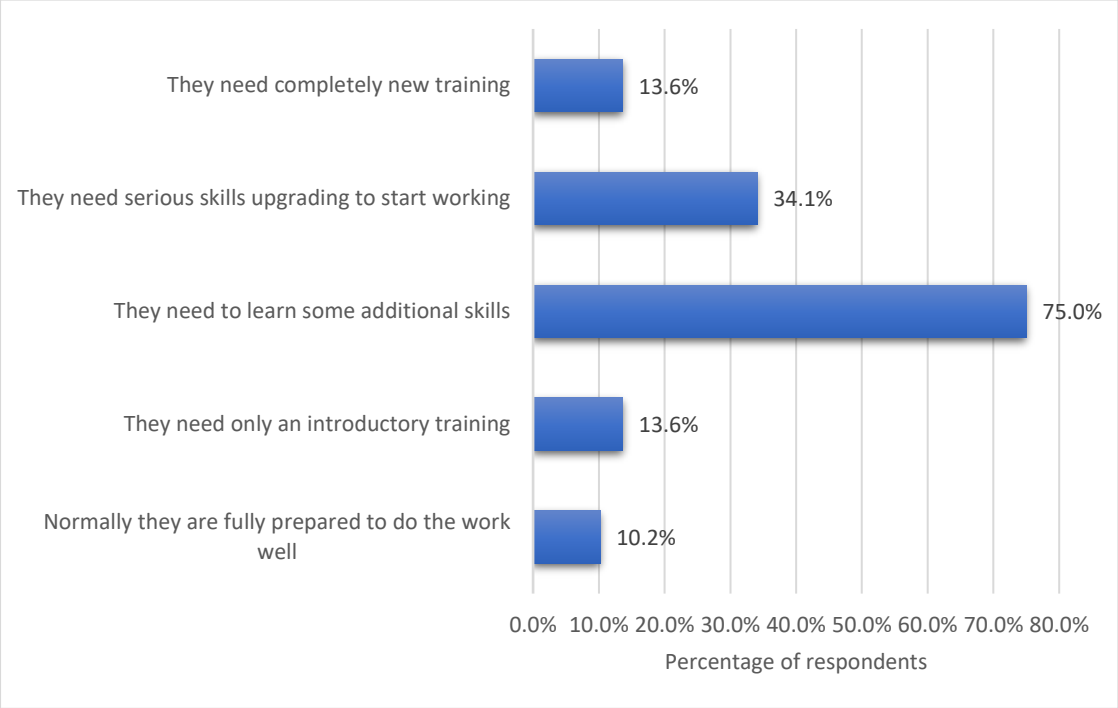

Figure 14: Training needs identified by employers for graduates

3.2.7. Problems Experienced by Employers

Of the total 88 respondents selected from the 41 employers, 59 (67.0%) of the respondents reported that their organizations have experienced problems finding graduates of manufacturing technology with the skills that they need. Some of the problems mentioned by the respondents were

- Practical skill gap problem,
- Lack of initiation for practical work,
- Technical skills problems including computer skills,
- New machine adaptability problem,
- Unable to produce a quality product,
- Lack of confidence,
- Unwillingness to work in TVET institutions and want to do other work in a better place other than teaching,
- Problem of giving attention to the TVET strategy
- Problem of communication skills,
- Life skill problems,
- Work discipline,
- Negative behavioral and attitudinal problems.

3.2.8. Employers' Comments and Suggestions

Employers also recommend the following important changes for the Ethiopian Technical University's program of study in the field of manufacturing technology

- Practical courses should be added
- The curriculum should be revised with the recent technologies.
- Computerized training should be included.
- Most of the competencies should be related to digitalization.
- Individual project-based training should be delivered.
- On-job short-term training should be given to all graduates.
- Satellite colleges should be established in other TVET institutions of the country.
- The TVET strategy attitude should be bold.
- Management of the university and the trainees should have a regular meeting.
- Better also to involved the regional TVET bureaus and agencies in some part of the study.

4. CONCLUSIONS AND RECOMMENDATIONS

The conclusions and recommendations from the basic findings of this tracer study are presented in two sub-sections below. The first is the conclusions and recommendations based on the graduates' perspective and the second one is from the employers' perspective.

4.1. Graduates' Perspective

- Most (87.5%) graduates are males whereas only 12.5% of the graduates are females. This result indicates that male dominance over females. It is necessary to consider having gender balance within the field of manufacturing technology. Hence, the Ethiopian Technical University should have gender consideration during admission so as to have more female trainees enroll for the future in the department.
- All (100%) of the graduates are working in government organizations on a permanent basis as full-time employees. Concerning the sector of employment, 38 (95.0%) of the graduates are working in the Education and Training sector (that is, in TVET institutions) whereas only 2 (5.0%) of the graduates are working in other sectors (particularly in TVET agencies).
- Looking at the change in employment, 82.5% of the graduates were still on their first job after graduation. Most (33.8%) of the graduates used regular job vacancy notices through print and electronic media (Newspaper /Television/Radio) advertisements to

find their job. Besides, the same number (33.8%) of the graduates got employed through industry linkages during training (e.g., apprenticeship, on-the-job training) which is compliant and the most popular means of securing employment for the TVET sector.

- In terms of the degree of relation between course work and job, 95.0% of the traced graduates agreed that their present work is related to the course they followed at the Ethiopian Technical University. But there were still 5% of graduates who did not agree that the presence of relation between the job they were doing and the course they took. Thus, it might be necessary to enhance the career guidance and counseling unit within the university especially for the manufacturing department.
- Concerning the required aspects that helped the graduates to perform their job at the time of the interview, the first most required is the theoretical and practical knowledge as mentioned by the majority (90.0%) of the graduates. The second most required aspect that is revealed by 55.0% of the traced graduates is practical job-related skills like the use of tools, equipment, and machinery. That is, the top two required skills for performing the job of manufacturing technology graduates are theoretical and practical knowledge, and practical job-related skills. Therefore, the training should concentrate on theoretical and practical knowledge, and practical job-related skills.
- Looking at the further training need of the traced graduates, 95.0% of the traced graduates would like to participate in further training courses (weekend or evening classes, short courses) in the future. This means that most graduates recognize the importance of further capacity and skill-building. But, when their experience of training participation in the past is examined, only 40.0% of them participated since they graduated. Thus, the overwhelming majority did not participate in any training because of three major reasons: absence of opportunity, absence of relevant course, and not begin able to pay for the training. This result indicates that, since the Ethiopian Technical University is the only technical university in the country, it might be taken as one of the major functions of the university to capacitate these graduates. Therefore, the university is expected to organize a sufficient number of training opportunities in relevant areas of manufacturing technology free of charge.
- Of all the traced graduates, 77.5% are generally satisfied with their current job. Concerning the specific job satisfaction parameters, the first top-five aspects that the graduates have a higher level of satisfaction are *possibilities to put their own ideas into practice, social status and recognition, interesting work tasks, possibilities for*

applying what they learned when studying, and *job security*. On the contrary, the satisfaction level of the graduates is the lowest of all in terms of *income and benefits*. This is an indication that the graduates are highly dissatisfied with their job in terms of their income and benefits.

- The first top five areas of study that graduates have the highest positive experiences at the Ethiopian Technical University are *discipline and accuracy at work, working with other people, how to work safely*, *practical use of working tools*, and *theoretical training related to the occupation*. On the other hand, the top five lowest experiences of graduates are observed in *help in finding a job*, *how to start a business*, *teachers' experience of the industry*, *providing internship/industry-based training*, *theory and practice of equipment maintenance*. These are indications that graduates are not satisfied in terms of securing employment. That is, graduates believed that their experience in the university does not help them for being employed in different organizations or for starting their own business (self-employment). Graduates are also dissatisfied with the industrial experience trainers and the university's p*rovision of internship/industry-based training*. Hence, these findings highlight that the university should focus on graduates to secure employment either to be employed somewhere or to start their own business (self-employed). In addition, the university should work in exposing both trainers and graduates to practical industrial experiences. Therefore, it is recommended for the university to strengthen the University-Industry Linkage department and develop the practical industrial capacity of trainers.
- Overall, the traced graduates suggested the training to be and focus more on the practical skills. They also recommended the curriculum to be revised, the course composition to be reviewed, and the quality trainers to be improved.

4.2. Employers' Perspective

- Of the different media of announcements for calling candidate graduate employees, most (56.8%) of the respondents believed that they used regular *job vacancy advertisements of vacancies in newspapers (such as daily papers)* to recruit graduates. Hence, graduates are recommended to search and look for the common newspapers that might post different vacancy announcements.
- The first five most important factors that employers consider in recruiting graduates are *field of study*, the *main focus of subject area/specialization*, *results of recruitments tests*, *Practical experience acquired during course of study*, and *Communication skills*. But employers give the least important aspect considerations for

recommendations/references from third persons and the *reputation of the institute* in recruiting graduates for employment. Therefore, the Ethiopian Technical University should work closely with employers in order to prepare its graduates for employment.

- The first five most important drivers for employers' highest level of satisfaction by the graduates are *working with other people*, *Theoretical training related to the occupation*, *Discipline, and accuracy at work*, *Understanding and producing drawings*, and *how to work in a safe way*. On the other hand, employers have the lowest level of satisfaction in the aspects of *How to start a business*, *Theory and practice of equipment maintenance*, *Practical use of computers*, *Knowledge of the industry,* and *General education subjects*. This indicates that practical training should be enhanced to encompass skills such as practical use of working tools, theory and practice of equipment maintenance as these are important to employers. The finding also indicates there is a need to offer additional training on some common courses like entrepreneurship, mathematics, and computer science/information technology.
- On the need for additional training of graduates, three-fourth (75%) of the respondents indicated that graduates need to learn some additional skills. Also, another 34.1% of the respondents said that graduates need serious skills upgrading to start working. There is a need to liaise with employers so as to reduce the gap between the level of training at the university level and the requirements of the employers.
- Of all the respondents in the employing organizations, 67.0% of them reported that their organizations have experienced problems finding graduates of manufacturing technology with the skills that they need. Some of the challenges they faced are practical skill gap problem, technical and communication skills problem, lack of confidence, behavioral and attitudinal problems towards TVET. As a result, the Ethiopian Technical University should work with employers who are the consumers of its graduates. This will make the training in the university labor market-driven.

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ANNEX

Annex 1: Questionnaire for Graduates

Dear Graduate,

This is a very important piece of research which will help to improve the work of Ethiopian Technical University (formerly known as Federal TVET Institute) in the future. We would really appreciate your support. This is not a commercial marketing exercise.

The Ethiopian Technical University is doing this tracer study on "**Manufacturing, and Leather & Leather Products Technology Graduates**" to find out what happened to you after you completed your long-term or short-term studies in. Did you find a job or are you still looking for a job, did your studies prepare you well for the workplace, and do you use the knowledge and skills you have learned during your studies?

The core objective of the survey is to improve the study programmes of **Manufacturing, and Leather & Leather Products Technology** departments and, more specifically, to revise the curricula so it prepares graduates better for the world of work.

Your information will be treated in strict confidence. The results will be published in such a way that identification of individual persons is excluded.

Results of this survey will be published on the website of the university but without your identity being revealed.

On your request we will send you a PDF version of the report with the main results of the survey.

Overview of the Questionnaire Content

Section I - Demographic Information

Section II - Employment Status

Section III - Relevance of Training

Section IV - Job Satisfaction

Section V - Relationship between Study and Employment

Section VI - Comments and Recommendations

Direction: Please encircle the code that corresponds to your answer.

SECTION I – DEMOGRAPHIC INFORMATION

1. Name: _____
2. Gender: 1) Male 2) Female
3. Civil Status 1) Single 2) Married 3) Divorced 4) Other
4. Age (yr) 1) Below 25 2) Between 25-35 3) Between 35-44 4) Above 44

5. If you have children, please state how many: _____

6. Region: _____

7. City: _____

8. Mobile (*in case we need to ask you any further questions*): _____

9. Year of Graduation: 1) 2011 EC 2) 2012 EC

10. Level of Qualification Attained: 1) BSc 2) MSc

11. Subject studied: 1) Manufacturing 2) Leather 3) Other, _____

SECTION II - EMPLOYMENT STATUS

1. What is your present employment status?
   1) Employed
   2) Self-employed with employees
   3) Self-employed without employees
   4) Neither employed nor self-employed (*go to Q 12*)
2. If you are employed, what is the status of your employment?
   1) Permanent 2) Temporary 3) Contractual 4) Part-time
3. State number of working hours per week: _____
4. Name of your current employer: _____
5. Address of your employer:
   5.1 Region: _____
   5.2 City: _____
   5.3 Telephone: _____
6. In what industry sector are you working in?
   1) Manufacturing
   2) Construction
   3) Wholesale and retail trade
   4) Transportation and storage
   5) Education and Training
   6) Other, please specify: _____
7. Is this your first job after graduating? 1) Yes (*go to Q 8*) 2) No (*go to Q 9*)
8. How long did it take you to find your present job?
   1) 0-3 months
   2) 4-6 months
   3) 7-9 months
   4) 10-12 months

5) More than a year

9. How long did it take you to find your first job after graduating (You do not need to answer if this is your first job)?
    1) 0-3 months
    2) 4-6 months
    3) 7-9 months
    4) 10-12 months
    5) More than a year
10. How much is your salary (per month) of your present job?

1) Below Birr 3500 2) Birr 3500 –5000 3) Birr 5000 – 8000 4) Birr 8000 and above

11. In what way did you find your job? (*Select all that apply*)
    1) Newspaper /Television/Radio
    2) Internet (e.g., government websites, company websites)
    3) Relatives, friends or/and colleagues
    4) Industry Linkages during training (e.g., apprenticeship, On the Job Training)
    5) Referral/School Endorsement
    6) Social networks (e.g., Facebook, LinkedIn)
12. If you are not employed, please select the reason (s). (*Select all that apply*)
    1) Further study
    2) Family concerns
    3) Opted not to look for a job
    4) Unsuccessful application
    5) Lost previous job
    6) No job opportunity in the desired field
    7) Other reasons, please specify: _____

SECTION III - RELEVANCE OF TRAINING

1. Is your present work, or, in case you are unemployed, the last job you held since graduation, related to the course you followed at the Ethiopian Technical University (formerly known as Federal TVET Institute)? 1) Yes (*go to Q 2*)
   2) No (*go to Q 3*)
2. If your response for the previous question, Q1, is **YES**, how relevant was your study at Ethiopian Technical University (formerly known as Federal TVET Institute) to your present work or your last job?

1) Highly Related 2) Moderately Related 3) Slightly Related

3. If your response for the previous question, Q1, is **NO**, what are the reason/s?
    1) I didn't find a job opportunity related to my course of study
    2) I found something not related which had better salary and benefits
    3) Health Related Reason
    4) The workplace is close to where I live
    5) Others, please specify: _____
4. Looking back, if you were free to choose again to what extent would you probably choose the same field of study?
    1) I will not choose that field
    2) I will choose it to some extent
    3) I will choose it to a great extent
    4) I will choose it to a very great extent
5. Which of the following areas of study helped you perform in your present job? (*Select all that apply*)
    1) Knowledge (*theoretical and practical related to my specialization*)
    2) Practical job-related skills (*for example, use of tools, equipment and machinery*)
    3) Communication skills (*spoken and written*)
    4) ICT skills (*use of computers*)
    5) Problem-solving skills (*being able to analyze a problem and find creative solutions*)
    6) Work ethics (*such as, attendance at work, reliability, punctuality, team work*)
    7) Entrepreneurship skills (*such as, market research, business planning, financial management, leading others*)
    8) Customer service skills (*such as, personal presentation, being polite, understanding a customer's needs and being able to meet these*)
6. Did you participate in further training (*university, evening classes, short courses*) since you graduated? 1) Yes (*go to Q 7*) 2) No (*go to Q 8*)
7. Please describe the type of course: _____
8. If **NO**, why not?
    1) No relevant course available
    2) No need for further training
    3) No money to pay for training
    4) No opportunity for training
    5) Others, please specify: _____

9. Would you like to attend further training courses? 1) Yes 2) No

SECTION IV - JOB SATISFACTION

1. Are you satisfied with your present job? 1) Yes 2) No
2. To what extent are you satisfied with the following aspects on a five-point scale: **1=Not Satisfied, 2= Low Satisfaction, 3=Moderately Satisfied, 4=Highly Satisfied, 5=Very High Satisfaction**.

Job Satisfaction	**Satisfaction level**				
	1	**2**	**3**	**4**	**5**
2.1. Interesting work tasks	1	2	3	4	5
2.2. Being able to work with some independence	1	2	3	4	5
2.3. Clear and regulated work tasks	1	2	3	4	5
2.4. Possibilities for applying what you learned when studying	1	2	3	4	5
2.5. Job security	1	2	3	4	5
2.6. Social status and recognition	1	2	3	4	5
2.7. Possibilities to put your own ideas into practice	1	2	3	4	5
2.8. Income and benefits	1	2	3	4	5
2.9. Good social climate / work setting	1	2	3	4	5
2.10. Good career advancement prospects	1	2	3	4	5
2.11. Being able to coordinate/supervise work	1	2	3	4	5

SECTION V - RELATIONSHIP BETWEEN STUDY AND EMPLOYMENT

1. Based on your present work, how would you rate the study conditions and provisions you experienced at Ethiopian Technical University (formerly known Federal TVET Institute)? Please respond to each factor on the five-point scale: **1=Bad, 2=Fair, 3=Good, 4=Very Good, 5=Excellent**.

Study Conditions and Provisions	**Rating scale**				
	1	**2**	**3**	**4**	**5**
1.1. Theoretical training related to the occupation	1	2	3	4	5
1.2. Practical use of computers	1	2	3	4	5
1.3. Practical use of working tools	1	2	3	4	5
1.4. Practical use of machines and equipment	1	2	3	4	5

1.5. Practical use of materials and parts	1	2	3	4	5
1.6. Theory and practice of equipment maintenance	1	2	3	4	5
1.7. Understanding and producing drawings	1	2	3	4	5
1.8. Doing measurements at work	1	2	3	4	5
1.9. Use of written instructions and working guides	1	2	3	4	5
1.10.Communication	1	2	3	4	5
1.11.Working with other people	1	2	3	4	5
1.12.Knowledge of national laws	1	2	3	4	5
1.13.How to work in a safe way	1	2	3	4	5
1.14.How to do high quality work	1	2	3	4	5
1.15.Discipline and accuracy at work	1	2	3	4	5
1.16.How to start a business	1	2	3	4	5
1.17.General education subjects	1	2	3	4	5
1.18.Management of the institution	1	2	3	4	5
1.19.Standard of buildings, classrooms and workshops/labs	1	2	3	4	5
1.20.Recreational activities	1	2	3	4	5
1.21.Support from teachers	1	2	3	4	5
1.22.Competence of teachers	1	2	3	4	5
1.23.Teachers' experience of industry	1	2	3	4	5
1.24.Careers advice	1	2	3	4	5
1.25.Providing internship/industry-based training	1	2	3	4	5
1.26.Help in finding a job	1	2	3	4	5

SECTION VI - COMMENTS AND RECOMMENDATIONS

1. Are there any changes you would recommend for your previous university (Ethiopian Technical University)'s study/ programme of **Manufacturing, and Leather & Leather Products Technology**?

Please specify:

_____

_____

_____

_____

_____

2. Do you have any comments/suggestions regarding this survey?

Please specify:

_____

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Thank you for your cooperation!

Annex 2: Questionnaire for Employers

Dear Employer,

This is a very important piece of research which will help to improve the work of Ethiopian Technical University (formerly known as Federal TVET Institute) in the future. We would really appreciate your support. This is not a commercial marketing exercise.

The Ethiopian Technical University is doing this tracer study on "**Manufacturing, and Leather & Leather Products Technology Graduates**" and would like to find out what happened to them after they completed their studies.

Did they find a job in your company/organization, did their studies prepare them well for the workplace, and do they use the knowledge and skills they have learned during their studies?

The core objectives of the survey are mainly to improve the study programmes of **Manufacturing, and Leather & Leather Products Technology** and, more specifically, to revise the curricula.

Your information will be treated in strict confidence. The results will be published in such a way that identification of individual persons is excluded. No information will be shared with government agencies or commercial organizations.

Results of this survey will be published on the website of the university but without your identity being revealed.

Thank you very much in advance for your kind support.

Yours Sincerely,

Overview of the content of the questionnaire

Section I**:** Demographic Information

Section II**:** Identification of the Company/Organization

Section III: Recruitment Procedures and Recruitment Criteria

Section IV: Comments and Recommendations

Direction: Please encircle the code that corresponds to your answer.

Section I: Demographic Information

1. Sex: 1) Male 2) Female
2. Age (years): _____
3. Marital Status: 1) Single 2) Married 3) Divorced 4) Other
4. Education Level:
    1) Diploma or below
    2) BSc/BA/BEd
    3) MSc/MA/MEd
    4) PhD
5. Which of the options below best describes your role/ position in the company/ organization?
    1) Director/Chief Executive Officer
    2) Deputy Director/ Executive Officer
    3) Dean/Associate Dean
    4) Human Resource Manager
    5) Department/Section Head
    6) Section Supervisor
    7) Other (please specify): _____

Section II: Identification of the Company/Organization

1. Name of company/ organization: _____
2. Region: _____
3. Town: _____
4. Telephone: _____
5. Industry sector of the organization/company?
    1) Manufacturing
    2) Construction

3) Wholesale and retail trade
4) Transportation and storage
5) Education and Training
6) Other, please specify: _____

Section III: Recruitment Procedures and Selection Criteria

1. What kind of procedures does the company/organization use to recruit graduates of **Manufacturing, and Leather & Leather Products Technology**? *(Select all that apply)*
    1) Advertisements of vacancies in newspapers (*such as, daily papers, special periodicals*)
    2) Advertisements in the Internet
    3) Internal advertisements of vacancies
    4) Direct application by graduates
    5) Personal contacts to graduates
    6) Private employment agencies
    7) Other (please specify): _____
2. How many graduates of **Manufacturing, and Leather & Leather Products Technology** have you employed from Ethiopian Technical University (formerly known as Federal TVET Institute)?
    2.1. Manufacturing: _____
    2.2. Leather: _____
3. How important in general are the following aspects for the recruitment of **Manufacturing, and Leather & Leather Products Technology Graduates**? Please respond to each factor on the five-point scale: **1=Not at all important, 2=Somewhat Important, 3=Important, 4=Very Important, 5=Extremely Important.**

Aspects of recruitment	**Rate of Importance**				
	1	**2**	**3**	**4**	**5**
3.1. Field of study	1	2	3	4	5
3.2. Main focus of subject area/specialization	1	2	3	4	5
3.3. Grades of examinations at the TVET Institute	1	2	3	4	5

3.4. Practical experience acquired during course of study	1	2	3	4	5
3.5. Reputation of TVET Institute	1	2	3	4	5
3.6. Recommendations/references from third persons	1	2	3	4	5
3.7. Results of recruitments tests	1	2	3	4	5
3.8. Communication skills	1	2	3	4	5
3.9. Personal presentation	1	2	3	4	5
3.10. Personality and behavior	1	2	3	4	5
3.11. Candidate's own world view	1	2	3	4	5

4. How satisfied are you with the quality of training received by the **graduates of Manufacturing, and Leather & Leather Products Technology**?
    1) Not at all satisfied
    2) Somewhat satisfied
    3) Satisfied
    4) Very satisfied
    5) Extremely satisfied
5. Do **graduates of Manufacturing, and Leather & Leather Products Technology** need additional training to do their work well in your company? *(Select all that apply)*
    1) Normally they are fully prepared to do the work well
    2) They need only an introductory training
    3) They need to learn some additional skills
    4) They need serious skills upgrading to start working
    5) They need completely new training
6. To what extent are you satisfied with by the **Manufacturing, and Leather & Leather Products Technology Graduates**' demonstration of the following aspects? Please respond to each factor on the five-point scale: **1=Not at all satisfied, 2=Somewhat satisfied, 3=Satisfied, 4=Very satisfied, 5=Extremely satisfied**.

Knowledge and skill aspects	**Rate of satisfaction**

	1	2	3	4	5
6.1. Theoretical training related to the occupation	1	2	3	4	5
6.2. Practical use of computers	1	2	3	4	5
6.3. Practical use of working tools	1	2	3	4	5
6.4. Practical use of machines and equipment	1	2	3	4	5
6.5. Practical use of materials and parts	1	2	3	4	5
6.6. Theory and practice of equipment maintenance	1	2	3	4	5
6.7. Understanding and producing drawings	1	2	3	4	5
6.8. Doing measurements at work	1	2	3	4	5
6.9. Use of written instructions and working guides	1	2	3	4	5
6.10. Communication	1	2	3	4	5
6.11. Working with other people	1	2	3	4	5
6.12. Knowledge of the industry	1	2	3	4	5
6.13. How to work in a safe way	1	2	3	4	5
6.14. How to do high quality work	1	2	3	4	5
6.15. Discipline and accuracy at work	1	2	3	4	5
6.16. How to start a business	1	2	3	4	5
6.17. General education subjects	1	2	3	4	5

7. To what extent are the following skills shortages most severe in the **Graduates of Manufacturing, and Leather & Leather Products Technology**? **1=Not severe at all, 2=Somewhat severe, 3=Severe, 4=Very severe, 5=Extremely severe**.

Skills level	Skill shortages severity

	1	2	3	4	5
Semi-skilled	1	2	3	4	5
Skilled worker	1	2	3	4	5
Technician/engineer	1	2	3	4	5
Supervisory/management	1	2	3	4	5

8. Has your company ever experienced problems finding graduates of **Manufacturing, and Leather & Leather Products Technology** with the skills that you need?

   1) Yes 2) No

9. If your answer is **Yes** for the previous question, Section III – Q8, please list some of the problems you encountered?

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Section IV: Comments and Recommendations

1. What important changes would you recommend for the Ethiopian Technical University (formerly known as Federal TVET Institute)'s programme of study in the field of **Manufacturing, and Leather & Leather Products Technology**?

Please specify:

_____

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_____

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2. What comments/suggestions regarding this survey would you like to make?

Please specify:

_____

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Thank you very much for completing this questionnaire.