# Assessment of Quality of Education at the School of Civil & Environmental Engineering – AAiT Using Modified HEQAM – KAU Model

Tewodros Gemechu*

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**Abstract:** The purpose of this study was to assess the quality of education at the School of Civil and Environmental Engineering. It does so by using a modified HEQAM-KAU model which constitutes 7 core variables, namely, Curriculum, Academic Staff, Career prospect, Infrastructure, E-Services, Library services, and Administrative services. The study engaged a combination of qualitative and quantitative approaches using closed questionnaire and semi structured interview. A descriptive type of research design was used due to the reason that this research method describes the characteristic of the phenomenon studied. Quantitative and qualitative data were collected from 125 students and 38 instructors. The model used in this study revealed that the quality of education offered at the Civil Engineering undergraduate program of the School of Civil and Environmental Engineering was found to be medium from the perspective of the sample population that participated in the study. Based on individual analysis of main variables at the core of the assessment model, the major hindrances were identified as poor administrative services, inferior E-services and gloomy career prospect. As the findings indicate, there is a strong need to improve the institution's links with business through internship and other programs to increase employment opportunities. It has also been suggested that University-Industry Linkage Office should be led by a qualified professional who specialized in the area as opposed to any academic staff. Similar suggestion has also been forwarded regarding the Office of External Relations, which, on paper, is tasked with sowing fruitful relations with other academic and research establishments in order to facilitate opportunities to continue studies abroad. Finally, it has been recommended that the school should form an internal quality assessment unit and plan periodic quality assessments on its own as part of improving the quality assurance efforts.

**Key words**: Higher Education, Quality, Quality Assessment, HEQAM-KAU

* Lecturer, School of Civil and Environmental Engineering, Addis Ababa Institute of Technology, Addis Ababa University, Email: tewodros.gemechu@aau.edu.et

## Introduction

### *Background*

Ethiopia has made a tremendous advance in access to higher education over the past decade. This rapid expansion, however, has raised concerns about quality. Many students are entering universities with a low level of academic preparation and a weak mastery of English. Qualified faculty are in short supply, especially in science and technology (World Bank Group, 2017). Keeping the quality of education and the institutes while increasing enrolments has been the dilemma for all higher education institutions. (Sileshi, 2016).

Addis Ababa University was stablished on 20 March 1950. It currently has 25 Faculties and more than 50,000 students. It offers over 36 UG and 220 PG degree programs, out of which, in the latter, 69 are PhD and 151 are masters. The Faculty of Technology, formerly known as the College of Engineering, was established as part of the University in 1953. Initially, it offered only a two-year Pre-engineering programme but two years later, in 1955, it introduced a four-year degree program in Civil Engineering. The School of Civil Engineering is thus the oldest school in the Faculty of Technology and now has over fifty years of experience in training, research and community service.

The first batch of Civil Engineering students graduated with B.Sc. degree in July 1958 after four years of training. In 1959, the duration of the training was raised to five years and lasted until 1976 when the program was set again to four years. During the period from 1959/60 to 2008/09, it is estimated that more than 2,000 undergraduate and 425 postgraduate students obtained their B.Sc. and M.Sc. degrees in Civil Engineering respectively in the regular programme. Graduates from the Extension Programme during the same period are estimated at 1,000 in B.Sc. and 2,500 in Advanced Diploma in Civil Engineering. The last two years (2018 and 2019), however, have shown a significant decline in Civil Engineering preference among the pre-engineering students.

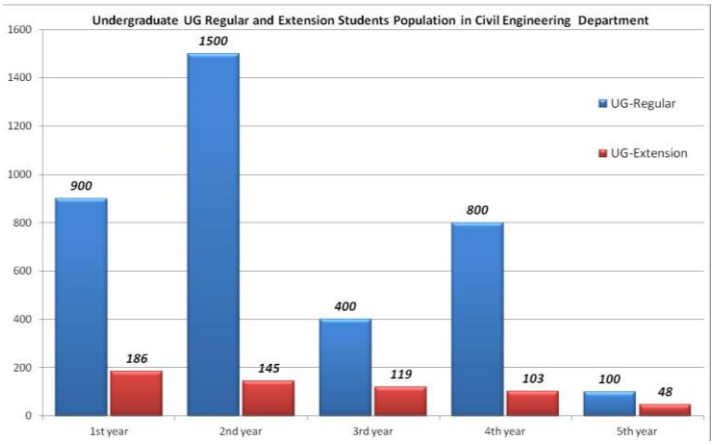


**Figure 1 Number of student during the 2014/15 G.C academic year**

According to official records of the School of Civil & Environmental Engineering, the number of students that joined the School during the years of 2015, 2016, 2017, 2018 and 2019 was 300, 200, 72, 51 and 32 respectively. The number of entrants seems to dwindle perhaps in response to the recent lack of job opportunity for new graduates in the industry or due to the 'decline' in the quality of education. This makes the assessment of quality of Engineering education, particularly that of Civil and Environmental Engineering of paramount importance.

*Statement of the Problem*

Notable research has been conducted in the area of quality assurance in Ethiopian higher education such as those Tadesse (2014), Tamrat (2020), Addamu (2012), Akalu (2014) and Saketa (2014). However, there is a massive gap in researches addressing quality assessment of higher education institutions in Ethiopia especially of that of the government ones. The most prominent study by Wariyo (2019) analyzed the Ethiopian Higher Education quality assessment model in line with another country and showed that "*there is" in Ethiopia "a shortage of diverse research findings that use a variety of models to assess the*

*quality of higher education"* Moreover, the studies lack specificity and potential for practical implementation. This study will bridge this massive gap by producing targeted assessment output which can be used by the School of Civil and Environmental Engineering as an input for its efforts to alleviate the level of education quality.

There has been a tacit consensus that as government pressures for more expansion; universities struggled with dwindling per student budgetary allocations, shortage of qualified staff, and inadequate supply of much needed inputs and the erosion of their autonomy. This line of thought is also corroborated by research such as one by Akalu (2014). Now that undergraduate admissions have stabilized and in some cases even dramatically declined, this researcher believes that it is time to question the tacit consensus. This study on the School of Civil and Environmental Engineering, AAiT-AAU will shed light on the matter by zeroing in on the specific stream of Civil Engineering undergraduate studies.

*Research Questions*

Based on the above stated problems, the study addresses the following research questions.

1. What is the current level of quality of education at the School of Civil and Environmental Engineering, AAiT-AAU?

2. What are the major hindrances to quality of education at the School of Civil and Environmental Engineering, AAiT-AAU?

*Objectives of the Study*

This research aims to assess the current state of the quality of education of the undergraduate program at the School of Civil and Environmental Engineering.

More specifically, it intends to:

- Assess the current level of quality of education at the School of Civil and Environmental Engineering, AAiT-AAU
- Determine the major hindrances to quality of education at the School of Civil and Environmental Engineering, AAiT-AAU

*Significance of the Study*

The main rationale for this study is to assess the quality of education. Therefore, the outcome of this study mainly benefits AAiT in general and the undergraduate program of Civil and Environmental Engineering in particular. It shall help the institute to visualize and understand the level of education at one of its most important departments. It will pave the way on how to address issues related to quality of education through provision of a fresh perspective. Since the researcher is an academic member of the aforementioned school, the findings of this study would help to make concrete recommendations to the undergraduate program of Civil and Environmental Engineering. Finally, the study will serve as a reference for other researchers who conduct research in this area.

*Scope of the Study*

The study focused on the assessment of the quality of undergraduate Civil Engineering Education in AAiT-AAU by considering inputs and processes in the education system. The scope of this study is confined to the undergraduate program in Civil and Environmental Engineering at the Addis Ababa Institute of Technology. The study does not address issues related to budgeting and finance such as research funding, appropriateness of human resource wages and appropriateness of facility funding. It also does not investigate issues related to academic autonomy and educational policy of higher institutions.

## Literature Review

### Theoretical Literature Review

*Higher Education Quality Assessment Models*

Earlier researchers who studied higher education quality services emphasized academic issues more than managerial issues; concentrated on effective course delivery mechanisms and the quality of courses and teaching. Table 1 shows a brief of quality models that have been used to evaluate higher education in some well-known universities.

**Table 1 Higher education service quality models**

| Authors | Year | Purpose of the Used Model |
|---|---|---|
| M. S. Owlia & E. M. Aspinall | 1996 | To present a new framework for dimension of quality in higher education |
| R. F. Waugh | 2001 | To propose a model for university administration quality |
| M. Lalovic | 2002 | To present an ABET assessment model using Six Sigma methodology for assessment in education |
| S. Lagrosen, R. S. Hashemi and M. Leitner | 2004 | To examine the dimensions that constitute quality in higher education and to compare these with the dimensions of quality that have been developed in general service quality research |
| Z. Yang, L. Yan-ping and T. Jie | 2006 | To design a model that is suitable to evaluate service quality of Chinese higher education using Sevqual |
| M. Tsinidou, V. Gerogiannis and P. Fitsilis | 2010 | To identify quality determinants for provision of education by higher education institutions in Greece and to measure their relative importance from the students' points of view |
| A. R. Arokiasamy | 2012 | To configure the importance of maintaining service quality in higher education industry |
| A. Y. Noaman, A. H. M. Ragab, A. G. Fayoumi, A. M. Khedra and A. I. Madbouly | 2013 | To develop a model for assessment of higher education quality standards at King Abdulaziz University (KAU) |

*Source: Noaman et al., (2013)*

## Higher Education Quality Assessment Model (HEQAM-KAU)

The HEQAM model developed by Noaman, A. Y., Ragab, A. H., Fayoumi, A. G., Khedra, A. M., & Madbouly, A. I. was introduced in 2013 at the King Abdulhaziz University, Saudi Arabia. This model consists of eight sub criteria and 53 alternatives. The main criteria include curriculum, staff, career prospects, infrastructure, e-services, administrative services, library services and location. This model was primarily used in KAU for the purpose of assessing educational quality in the kingdom of Saudi Arabia. The main advantage of this model is that it assigns a quality weight for all 8 sub-criteria and 53 alternatives respectively. Figure 2 below illustrates the HEQAM- KAU model.

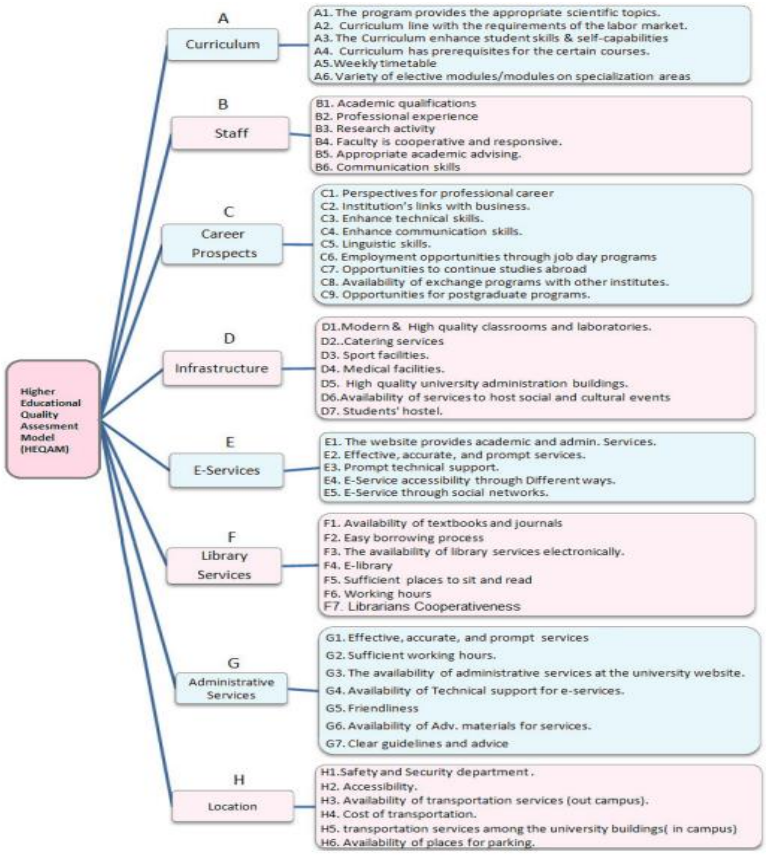


*Figure 2 HEQAM Model taken from* A.Y Noaman et al., (2013)

## Empirical Literature Review

*Quality Assessment in Ethiopian Higher Education Institutions*

Quite a number of researchers conducted studies on issues related to education quality in Ethiopian higher education institutions. A study by Tadesse (2013) has indicated that Jimma University has made its level best to enhance the quality of education through the implementation of continuous assessment, active learning approach, e-learning, remedial and affirmative action and application of community-based training. The study highlights that there is a variation among colleges and institutes in their performance. The researcher employed cross-sectional survey method with a target population that span from students to teachers and department heads to units of student support services. Even though the study was conducted based on the HERQA audit model, which fundamentally constitutes ten focus areas, the researcher opted to exclude three of them, namely, student progression and graduate outcomes as well as research and outreach activities with the argument that they can be implied by emphasizing on the inputs and processes. However, the researcher fails to objectively illustrate this line of argument in his analysis and conclusion.

An institution-based cross-sectional study was also carried out on Arba Minch College of Health Sciences (AMCHS) students and staff from all departments to assess the quality of education and its associated factors for the future improvement in the study site. This research used eight criteria to measure educational quality. They were curriculum, workers (staffs), e-services, library, administrative services, location, career, and resources adapted from different higher education assessment models. The researchers calculated the mean and standard deviation to assess the quality of education and weighted the score out of eight (best quality). They scaled scores of 3.5 or above to be good and those below 3.5 to be poor. Table 2 below shows the result of the research findings.

**Table 2 Descriptive statistics showing quality of education at AMCHS in 2017**

| No. | Variables | Mean | Standard Deviation | Educational quality |
|---|---|---|---|---|
| 1 | Curriculum | 3.18 | 1.17 | Poor |
| 2 | Staff equipping students sufficiently | 3.00 | 1.13 | Poor |
| 3 | Administration | 2.59 | 1.22 | Poor |
| 4 | Reading places | 2.31 | 1.11 | Poor |
| 5 | E-services | 2.56 | 1.06 | Poor |
| 6 | Resource | 2.98 | 1.04 | Poor |
| 7 | Location | 3.14 | 1.07 | Poor |
| 8 | Career | 3.24 | 1.15 | Poor |
| | **Average** | **2.87** | **1.12** | **Poor** |

*Source: Gilano and Hailegebreal (2021)*

According to Gilano and Hailegebreal (2021) accessibility; friendliness of staffs to each other and students; availability of clear guideline of conduct; presence of effective, accurate, and promotive services; high standard administrative buildings; availability of standard catering service; availability of standard laboratories; communication, and exchanges with similar level colleges in the region; weekly timetable; weekly load; and distance and some socio-demographic factors were associated with poor quality of education.

*Quality in the Context of Civil Engineering Education*

The quality aspect in Civil Engineering Education is not only linked with employment situation of the undergraduate mid-level professionals but also with a strong sense of responsibility and accountability to avoid risks and causalities of civil construction infrastructures. Engineering Education provisions generally include scientific and mathematical theory, engineering applications, design, communication skills, problem

solving skills, etc. The emphasis and magnitude of the proportion in these elements, however, kept changing over time in the past as well as at present (Lattuca et al., 2012).

*Studies on Civil Engineering Education Quality*

A study was conducted by the Ethiopian Association of Civil Engineers (2018) on Civil Engineering Education Quality and Employment Opportunities in Ethiopia to specifically examine the link between Civil Engineering Education and labor market in the country. A mixed-methods approach incorporating qualitative and quantitative research methods were used for quality education. A sample of 100 academic staff, 15 Academic leaders and 365 final year Civil Engineering students were taken from 16 sampled universities. The researchers applied a tracer study, with its own sampled size, as a research design for assessing the employability of graduates of Civil Engineering, with a sample size of 400 Engineering graduates of 2014/15 cohorts using Tarot formula. Four employers – one public and three private – and 11 scholars in the field of Civil Engineering and 5 senior level professionals working in the industry were targeted for the study. Data and information was gathered through pilot tested questionnaires, semi-structured interviews and document analysis.

The findings of the study showed that the quality of Civil Engineering Education was low when compared to international standard and produced graduates of low competence resulting in high unemployment (Ethiopian Association of Civil Engineers (EACE), 2018).

**Methodology**

*Research Design*

The research used mixed methods approach because, according to Johnson, Onwuegbuzie, & Turner (2007), it will incorporate the diverse perspectives, qualitative and quantitative viewpoints, data collection,

and analysis and reference techniques. A carefully crafted qualitative and quantitative research methods. i.e., participants' interviews and survey questionnaires have allowed the researcher to build on the strength of each method of data collection. This minimizes the weaknesses of the individual approaches and increases both the validity and reliability of the study.

*Variables*

This study used independent and dependent variables. The independent variables were curriculum, staff, career prospects, infrastructure, e-services, library services, and administration services. The dependent variable was the quality of education.

*Data collection*

The data for the study were obtained from both primary and secondary sources. The primary data were gathered through questionnaire and interviews. Literature review of related works were also used to collect secondary data for the study. The questionnaires were designed in a systematic way to address issues the researcher believed contributed to the quality of undergraduate education in Civil Engineering. They were designed to address issues regarding curriculum, staff, career prospects, infrastructure, e-services, library services and administrative services. The researcher used questions with 5-Point-Likert scale to understand respondents' degree of agreement with each statement. Interviews were also used to collect basic and fundamental issues regarding the quality of education in Civil Engineering because interviews can help to get clear answers, otherwise pose further questions or ask follow-up questions.

*Population and Sampling*

The target population for the study included students and instructors in the undergraduate program of Civil and Environmental Engineering. The setting was chosen due to convenience for the researcher.

*Sampling Method and Sample Sizes*

To determine the number of sample student respondents for this study, a formula developed by Kothari (2004:179) was used as a sample size determination tool. Since, this formula has been practically tested and used by scholars for more than four decades, the researcher considered the formula to correctly determine the appropriate sample size for this study.

$$n = \frac{Z^2 * p * q}{(e^2(N-1)) + (Z^2 * p * q)}$$

Where:

n= the required sample size

$Z^2$ = is the abscissa of the normal curve that cuts off an area α at the tails (1- α equals the desired confidence level. The value for Z is found in statistical tables, which contain the area under the normal curve. e.g., Z=1.96 at 95%confidence level; and $Z^2$ =3.841).
N= the population size (180)

P= the population proportion (assumed to be 0.5 since this would provide the maximum sample size)
q= 1-p
e = is the desired level of precision or margin of error (5% error or 0.05)

Thus;

$$\frac{3.841 * 0.5 * (1 - 0.5) * 180}{(0.05^2 (180 - 1)) + (3.841 * 0.5 * (1 - 0.5)} = 123$$

Based on this, the required sample size for the study came to be **123**

*Methods of Data Analysis*

In this study, the data analysis followed two different paths depending on the data collected. The first was transcribing the data collected from interviews and questionnaires then identifying key concepts, and finally aggregating similar concepts into key challenges. Another approach focused on the severity of the challenges identified by the first analysis. Here, scaled data from the questionnaire and interviews were analyzed. In order to analyze the data, first, a data entry template was designed in Statistical Package for Social Sciences (SPSS) V 23 to enter the data. Then, the collected data were encoded and entered onto the template providing a complete computer assisted database of the study. Following that, the data were cleaned for accuracy and analyzed using descriptive statistical methods. Frequency distribution tables including percentages, mean and standard deviation were used to describe the findings of the analysis.

Using the combination of qualitative and quantitative design can improve the assessment study by ensuring the limitations of one type of data are balanced by the strength of another. Qualitative data were analyzed and highlighted for in-depth interview understanding of phenomena and for making recommendations. Generally, both qualitative and quantitative data analyses were integrated to supplement one another.

*Validity and Reliability*

According to Standards for Educational and Psychological Testing (1985), validity "refers to the appropriateness, meaningfulness, and usefulness of the specific inferences made from test scores. In this research the validity was ensured by collecting data from different sources such as Civil Engineering students from year 2 up to year 5, Alumni, and Instructors. In order to minimize bias, variables were given equal opportunity from the list.

The reliability of instruments of data collection was tested using Cronbach Alpha and utilizing SPSS version 23. According to George and Malery (2003) alpha value greater than 0.7 is acceptable. The Alpha value of our instruments was 0.956 indicating they were internally consistent and reliable. Table 3 below shows this.

**Table 3 Reliability Statistics**

| | **Reliability Statistics** | |
|---|---|---|
| Variables | Cronbach's Alpha | N of Items |
| Curriculum | 0.730 | 6 |
| Academic Staff | 0.814 | 6 |
| Career Prospect | 0.917 | 9 |
| Infrastructure | 0.893 | 7 |
| E- Services | 0.895 | 5 |
| Library Services | 0.809 | 7 |
| Administrative Services | 0.908 | 7 |
| **Total** | **0.956** | **47** |

**Results and Discussions**

*Modified HEQAM-KAU Model*

The HERQA quality audit manual primarily focuses on highlighting strengths and weaknesses of the institution in question with regard to the ten focus areas and does not have a specific model to measure the

quality level quantitatively. This is where the HEQAM- KAU model comes in handy. As depicted in the table below, it assigns specific values to core elements of the assessment and results in a final quantitative assessment output. However, it falls short of specifying whether the final assessment falls in range of high medium and low quality levels. That is why the researcher attempted to couple the HEQAM-KAU model with that of mean score interpretation range set by the Educational Planning and Research Division (EPRD) of MoE shown in Table 4. This range was used as a reference to grade the quality level of the 7 variables used in the modified HEQAM-KAU model based on their mean scores.

**Table 4 Interpretation of Mean Score**

| Mean Score | Interpretation of Mean Score |
|---|---|
| 1.00 - 1.79 | Very Low |
| 1.80 - 2.59 | Low |
| 2.60 - 3.39 | Medium |
| 3.40 - 4.19 | High |
| 4.20 - 5.00 | Very High |

Source: Educational Planning and Research Division (EPRD), MoE, 2006

Several of the sub-components require a wider research, which in practice demands the expertise of transportation engineers and transport economists, for example, availability of transportation services out of campus, cost of transportation, and availability of places for parking. Therefore, the researcher opted to exclude location as an assessment variable and adjusted the weights of the other inputs accordingly. Table 5 indicates the original and adjusted weight score for the HEQAM-KAU Model.

**Table 5 Modified Version of the HEQAM-KAU Weight Score**

| Criteria | Weight in % (Original) | Weight in % (Modified) |
|---|---|---|
| Curriculum | 19.7 | 20.9 |
| Staff | 17.3 | 18.4 |
| Career prospects | 15.9 | 16.9 |
| Infrastructure | 12.7 | 13.5 |
| E-services | 11.7 | 12.4 |
| Library services | 9.8 | 10.4 |
| Administrative services | 7.3 | 7.8 |
| Location | 5.9 | - |
| **Total weight %** | **100** | **100** |

Source – HEQAM-KAU model (modified by the researcher)

*Students' Perspective*

In order to collect the primary data, 150 questionnaires were distributed to students and Alumni. Among them, 125 (83%) were properly filled in and returned.

Table 6 indicates the current year of education for the respondents. From the table, majority of the respondents (113), were found to be from year 3, 4, and 5. This implies the study included more students that are senior.

**Table 3 Current year of education**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Alumni | 7 | 5.6 | 5.6 | 5.6 |
| | Year 2 | 5 | 4.0 | 4.0 | 9.6 |
| | Year 3 | 31 | 24.8 | 24.8 | 34.4 |
| | Year 4 | 31 | 24.8 | 24.8 | 59.2 |
| | Year 5 | 51 | 40.8 | 40.8 | 100 |
| | Total | 125 | 100.0 | 100.0 | |

As shown in Table 7, 75.2% of respondents were male and 24.8% were female. This indicates that the number of male respondents are higher than the number of female respondents on the sampled school.

**Table 4 Sex of respondents**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Female | 31 | 24.8 | 24.8 | 24.8 |
| | Male | 94 | 75.2 | 75.2 | 100 |
| | Total | 125 | 100.0 | 100.0 | |

Source: Own Survey, 2021

According to the data presented in Table 8, 114 respondents were between the age of 18-25 years which implies that they are mature enough to make personal judgements and respond to the questionnaire.

**Table 5 Age of respondents**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | > 25 | 11 | 8.8 | 8.8 | 8.8 |
| | 18 - 21 | 39 | 31.2 | 31.2 | 40.0 |
| | 22 - 25 | 75 | 60.0 | 60.0 | 100 |
| | Total | 125 | 100.0 | 100.0 | |

Source: Own Survey, 2021

Table 9 indicates that 121 of the respondents, were natural science students at secondary school and went for this field of studies as their first choice. This shows most respondents are interested in science and Engineering fields, which can be used as an evidence that the study addressed the right demography.

*Was natural science stream your first choice in secondary school?*

**Table 6 Information on respondents' first field of choice at secondary school**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | No | 4 | 3.2 | 3.2 | 3.2 |
| | Yes | 121 | 96.8 | 96.8 | 100 |
| | Total | 125 | 100.0 | 100.0 | |

Source: Own Survey, 2021

Table 10 further indicates that 79.2% (99) of the respondents had Engineering as their first choice when they applied for higher education. This implies that only one in five students initially considered other fields of study than Engineering and this is a significant positive improvement from those 3% students who had no other option but initially join natural science stream against their will. The effect of involuntary assignment by the government trickles down to program level with its own effect on the motivation of students.

*Was engineering your first choice when applying for higher education?*

**Table 7 Information on respondents' first field of choice when applying for higher education**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | No | 26 | 20.8 | 20.8 | 20.8 |
| | Yes | 99 | 79.2 | 79.2 | 100 |
| | Total | 125 | 100.0 | 100.0 | |

Source: Own Survey, 2021

According to the findings in Table11, 74.4 % (93) respondents stated that Addis Ababa Institute of Technology was their first choice for higher education. It implies that AAiT is among the top priority for students joining higher education.

*Was Addis Ababa Institute of Technology your first choice for higher education?*

**Table 8 Information on whether or not AAiT was respondents' first choice for higher education**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | No | 32 | 25.6 | 25.6 | 25.6 |
| | Yes | 93 | 74.4 | 74.4 | 100 |
| | Total | 125 | 100.0 | 100.0 | |

Source: Own Survey, 2021

Table 12 below shows that for 84% (105) of the respondents, Civil Engineering was their first choice after the pre engineering semester. This means that they joined the Department with interest. This data actually weakens the extreme tacit consensus that majority of the

students join Civil Engineering against their will. An unofficial statistic by AAiT shows that in 2019, only 6% of pre-engineering students put Civil Engineering as their first choice. After given a second chance, this number rose up to 33%.

*Was Civil Engineering your first choice after the pre-engineering semester?*

**Table 9 Information on whether or not Civil Engineering was the respondents' first choice after completing the pre-engineering semester**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | No | 20 | 16.0 | 16.0 | 16.0 |
| | Yes | 105 | 84.0 | 84.0 | 100 |
| | Total | 125 | 100.0 | 100.0 | |

Source: Own Survey, 2021

*Students' Perspective on Curriculum*

Curriculum is a fundamental and dominant element in higher education compared to the fringe activities required by administration and governance.

In this section, six sub-variables related to curriculum were presented to the respondents. 65.6% (82) agreed that the program provides appropriate scientific topics. The result from the second variable reveals that only 41.6% (52) of the respondents agreed that the curriculum was in line with the requirement of the labor market, which indicates that there was a concern about future employability. Some 53 respondents (42.4%) agreed that the curriculum enhances students' skills and self-capabilities, which also contributes to the concern for unemployment. With regard to the next sub-variable, 97 of them (77.6%) agreed that the curriculum has pre-requisite courses. Further, 95 (76%) agreed on the existence of weekly timetable and 79 (63.2%) said that a variety of

elective modules are available on specialization areas. From the average mean score of 3.62, we can conclude that the curriculum is of high quality. Table 13 below reflects this.

**Table 10 Assessment of quality of the curriculum**

| | SD | | D | | N | | A | | SA | | Mean | SD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | F | % | F | % | F | % | F | % | F | % | | |
| The program provides appropriate scientific topics. | 3 | 2.4 | 7 | 5.6 | 33 | 26.4 | 52 | 41.6 | 30 | 24 | 3.79 | 0.95 |
| Curriculum is in line with the requirements of the labor market. | 8 | 6.4 | 24 | 19.2 | 41 | 32.8 | 46 | 36.8 | 6 | 4.8 | 3.14 | 0.99 |
| The curriculum enhances students skills and self-capabilities. | 14 | 11.2 | 16 | 12.8 | 42 | 33.6 | 40 | 32 | 13 | 10.4 | 3.18 | 1.136 |
| The curriculum has prerequisites for certain courses. | 1 | 0.8 | 5 | 4 | 22 | 17.6 | 64 | 51.2 | 33 | 26.4 | 3.98 | 0.82 |
| Weekly timetable is available. | 1 | 0.8 | 9 | 7.2 | 20 | 16 | 54 | 43.2 | 41 | 32.8 | 4.00 | 0.9 |
| Variety of elective modules are available on specialization areas. | 4 | 3.2 | 8 | 6.4 | 34 | 27.2 | 49 | 39.2 | 30 | 24 | 3.74 | 0.99 |
| **Average Mean** | | | | | | | | | | | **3.62** | |

Source: Own survey, 2021

The general positive attitude towards the curriculum implies that the program provides appropriate scientific topics and that it enhances students' skills and self-capabilities. Students feel that the availability of variety of elective modules in different specialization areas gives them the chance to explore diversified career paths. The fact that only 41.6% students feel the curriculum is line with the requirements of the labor market is a precursor to their perception towards job availability. This implies that Civil Engineering curriculum still remains inadequate to address the need and requirements of the labor market in the industry.

*Students' Perspective on Academic Staff*

This section covers six key sub-variables used to assess the quality of academic staff. Around 75.2 % (94) of the respondents agreed that lectures have the appropriate academic qualification while 65.6 % (82) believed lecturers have appropriate professional experience. This implies that the education is delivered by qualified staff having good professional experience. Responses by 43.2% of the subjects on the third sub-variable indicate that 43.2% of the lecturers are not adequately engaged in research activities, which can highly contribute to poor quality of education. Furthermore, 48.8% of the respondents felt the faculty is cooperative and responsive while 50.4% agreed to the fact that academic advising was available at the school.

In response to the last sub-variable meant to check if lecturers have appropriate communication skills, (80) 64% agreed that they do. This shows that the communication skills need some improvement. Based on the average mean score of 3.52 for all sub-variables, we can conclude that the quality of academic staff is high. Table 14 indicates the result of the assessment.

**Table 11 Assessment of quality of the academic staff**

| | SD | | D | | N | | A | | SA | | Mean | SD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | F | % | F | % | F | % | F | % | F | % | | |
| Lecturers have appropriate academic qualification. | 1 | 0.8 | 4 | 3.2 | 26 | 20.8 | 56 | 44.8 | 38 | 30.4 | 4.01 | 0.85 |
| Lecturers have appropriate professional experience. | 1 | 0.8 | 12 | 9.6 | 30 | 24 | 59 | 47.2 | 23 | 18.4 | 3.73 | 0.90 |
| Lecturers are appropriately engaged in research activities. | 6 | 4.8 | 19 | 15.2 | 46 | 36.8 | 37 | 29.6 | 17 | 13.6 | 3.32 | 1.04 |
| Faculty is cooperative and responsive. | 22 | 17.6 | 11 | 8.8 | 31 | 24.8 | 42 | 33.6 | 19 | 15.2 | 3.20 | 1.31 |
| Appropriate academic advising is available. | 13 | 10.4 | 14 | 11.2 | 35 | 28 | 45 | 36 | 18 | 14.4 | 3.33 | 1.17 |
| Lecturers have appropriate communication skills. | 6 | 4.8 | 15 | 12 | 24 | 19.2 | 64 | 51.2 | 16 | 12.8 | 3.55 | 1.02 |
| **Average Mean** | | | | | | | | | | | **3.52** | |

Source: Own survey, 2021

This indicates that majority of the students have confidence in the capacity/qualification of their instructors. However, behavioral aspects need more scrutiny since staff cooperation and responsiveness were rated low. The implication of this can cascade down to students' interest and negatively affect motivation for specific courses.

*Students' Perspective on Career Prospect*

In this section, nine sub-variables were used to assess career prospect of the program. Less than 50 percent of respondents agreed that prospect for professional career was promising. while 43.2% were neutral on whether or not the school has adequate link with businesses. The second sub-variable investigated whether AAiT's link with business was adequate and 30.4% (38) said it was while 43.2% (54) stood neutral. However, 26.4% (33) believed it was not adequate. The third sub-variable focused on whether or not the program enhanced technical skills for the job market. About 40.8% (51) were positive; 31.2% (39) were neutral; and 35% (28) were negative about the question. The fourth sub-variable raised whether or not the program enhanced communication skills for the job market and 37.6% (47) were positive that it did it while 36.8% (46) remained neutral. About 25.6% (32) were negative. The fifth sub-variable checks whether the program enhances linguistic skills for the job market. Respondents' reaction to the issue shows that 32% (40) believed it enhanced linguistic skills while 40.8% (51) were neutral. Some 27.4% (34) expressed disagreement. The sixth sub-variable assesses whether employment opportunities are available through daily job programs. 4.8% (6) strongly agreed while 21.6% (27) agreed to it. Further, 40% (50) of the respondents were neutral while 20.8 % (26) disagreed and 12.8 % (16) strongly disagreed. The seventh sub-variable was to check if opportunities to continue studies abroad are available. Some 9.6% (12) strongly agreed and 30.4% (38) agreed that there is a chance. While 31.2% (39) were neutral, 16% (20) disagreed and 12.8 % (16) strongly disagreed to the existence of such an opportunity. The next sub-variable was about the availability of exchange programs with other institutes. 38.6% (47) positively responded while 33.6% (42) stood neutral. The remaining 28.8% (36) answered negatively. The last sub-variable attempted to assesses the opportunity for graduate program. In this regard, 48% (60) said there is while 34.4 (43) were neutral. The remaining 17.6% (22) responded negatively. Based on the average mean score of 3.12, we can conclude

that the quality assessment on career prospect is medium. Table 14 shows the details of the above assessment.

**Table 12 Quality assessment on career prospect**

| | SD | | D | | N | | A | | SA | | Mean | SD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | F | % | F | % | F | % | F | % | F | % | | |
| Prospect for professional career is promising. | 8 | 6.4 | 16 | 12.8 | 45 | 36 | 42 | 33.6 | 14 | 11.2 | 3.30 | 1.041 |
| AAiT's link with businesses is adequate. | 7 | 5.6 | 26 | 20.8 | 54 | 43.2 | 31 | 24.8 | 7 | 5.6 | 3.04 | 0.954 |
| The program enhances technical skills for the job market. | 13 | 10.4 | 22 | 17.6 | 39 | 31.2 | 38 | 30.4 | 13 | 10.4 | 3.13 | 1.143 |
| The program enhances communication skills for the job market. | 7 | 5.6 | 25 | 20 | 46 | 36.8 | 37 | 29.6 | 10 | 8 | 3.14 | 1.014 |
| The program enhances linguistic skills for the job market. | 8 | 6.4 | 26 | 20.8 | 51 | 40.8 | 33 | 26.4 | 7 | 5.6 | 3.04 | 0.979 |
| Employment opportunities are available through daily job programs. | 16 | 12.8 | 26 | 20.8 | 50 | 40 | 27 | 21.6 | 6 | 4.8 | 2.85 | 1.055 |
| Opportunities to continue studies abroad are available. | 16 | 12.8 | 20 | 16 | 39 | 31.2 | 38 | 30.4 | 12 | 9.6 | 3.08 | 1.168 |
| Exchange programs with other institutes are available. | 21 | 16.8 | 15 | 12 | 42 | 33.6 | 35 | 28 | 12 | 9.6 | 3.02 | 1.211 |
| Opportunities for graduate program are available. | 3 | 2.4 | 19 | 15.2 | 43 | 34.4 | 38 | 30.4 | 22 | 17.6 | 3.46 | 1.028 |
| **Average Mean** | | | | | | | | | | | **3.12** | |

Source: Own survey, 2021

These imply that there is somehow gloomy prospect for professional career. The fact that students believe AAiT's link with businesses is not adequate implies that the much needed support of the institution is minimal or outright non-existent in helping graduates secure job after graduation.

*Students' Perspective on Infrastructure*

This section presents seven sub-variables the first of which assessed if the classrooms and laboratories were modern and of high quality. In response to this, 30.4% (38) of the respondents reacted positively while 46.4% (58) respondents stood neutral. About 23.2 % (29) were negative about the quality. The next sub-variable was about the quality of their catering service. In their response, 48.8% (61) of the respondents were positive whereas 27.2%(34) were neutral. On the other extreme, 24% (30) respondents stood negative. The third sub-variable was about the quality of sports facilities to which 40% (50) respondents reacted positively and 26.4% (33) stood neutral. Those who believed the sports facilities were not of high quality made 36.6% (42).

The fourth sub-variable was about the quality of medical facilities in the institute. Some 46.5% (58) of the respondents rated the facilities positively while 18.4% (23) stood neutral. However, 35.2% (44) rated it negatively. The fifth sub-variable checks the quality of university administration buildings. Some 32.8% (41) respondents had a positive rating while 42.4% (53) were neutral. The remaining 24.8% (31) were negative. The sixth sub-variable assessed the availability of resources to host social and cultural events. Some 29.6% (37) respondents were positive about this while 34.4% (43) were neutral. About 36% (45) were negative. The last sub-variable was on the availability of students' hostel or dorms and 43.2% (54) responded positively while 28.8% (36) stood neutral. Those who responded negatively account for 28% (35). Altogether, the average mean score of 3.04 for this category shows that the quality of infrastructure in the institute is medium. Table 15 shows this.

**Table 13 Quality assessment on infrastructure**

| The Institute has high quality: | SD | | D | | N | | A | | SA | | Mean | SD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | F | % | F | % | F | % | F | % | F | % | | |
| classrooms and laboratories. | 5 | 4 | 24 | 19.2 | 58 | 46.4 | 32 | 25.6 | 6 | 4.8 | 3.08 | 0.89 |
| catering services. | 12 | 9.6 | 18 | 14.4 | 34 | 27.2 | 53 | 42.4 | 8 | 6.4 | 3.22 | 1.08 |
| sport facilities. | 25 | 20 | 17 | 13.6 | 33 | 26.4 | 40 | 32 | 10 | 8 | 2.94 | 1.26 |
| medical facilities. | 17 | 13.6 | 27 | 21.6 | 23 | 18.4 | 47 | 37.6 | 11 | 8.8 | 3.06 | 1.22 |
| high quality university admin. Buildings. | 8 | 6.4 | 23 | 18.4 | 53 | 42.4 | 29 | 23.2 | 12 | 9.6 | 3.11 | 1.03 |
| resources to host social and cultural events. | 22 | 17.6 | 23 | 18.4 | 43 | 34.4 | 30 | 24 | 7 | 5.6 | 2.82 | 1.15 |
| students' hostels or dorms. | 20 | 16 | 15 | 12 | 36 | 28.8 | 43 | 34.4 | 11 | 8.8 | 3.08 | 1.21 |
| **Average Mean** | | | | | | | | | | | **3.04** | |

Source: Own survey, 2021

The average rating implies students have higher expectation regarding infrastructure since AAU is regarded as one of the most well-structured HEI in the country.

*Students' Perspective on E-Services*

This section presents the quality assessment on e-services. The first sub-variable checked if the website adequately provides academic and administrative services. Responses received showed that 39.2% (49) of the respondents were positive about the quality of the services while 41.6% (52) were neutral. However, 19.2% (24) were not positive about

the issue. The second sub-variable assessed whether the e-service delivers effective accurate and prompt support and responses showed that 29.6% (37) were positive while 41.6% (52) were neutral. The remaining 28.8% (36) were negative about the quality in this regard. The third point was if the e-service provided prompt technical support and 21.6% (27) said it did while 52.8% (66) stood neutral. About 40.8% (51) said it didn't. The fourth one was to find out if the e-service provided accessible backings in different ways. Some 24.8% (31) of the respondents generally agreed while 28.8% (34) disagreed. About 46.4 % (58) remained neutral. The last sub-variable in this category was to check whether e-services create connections through social networks. Responses revealed that 30.4% (38) of the respondents reacted positively while 42.4% (53) stood neutral. Some 27.2% (34) responded negatively. The average mean score (3.03) would generally lead to the conclusion that the quality of e-service at the institute is medium. Table 16 below shows this.

**Table 14 Quality assessment on e-services**

| The e-service provides: | SD | | D | | N | | A | | SA | | Mean | SD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | F | % | F | % | F | % | F | % | F | % | | |
| academic and administrative services. | 3 | 2.4 | 21 | 16.8 | 52 | 41.6 | 31 | 24.8 | 18 | 14.4 | 3.32 | 0.99 |
| effective, accurate and prompt support. | 5 | 4 | 31 | 24.8 | 52 | 41.6 | 29 | 23.2 | 8 | 6.4 | 3.03 | 0.95 |
| prompt technical support. | 10 | 8 | 41 | 32.8 | 47 | 37.6 | 19 | 15.2 | 8 | 6.4 | 2.79 | 1.07 |
| accessible backings in different ways. | 10 | 8 | 26 | 20.8 | 58 | 46.4 | 23 | 18.4 | 8 | 6.4 | 2.94 | 0.99 |
| connections through social networks. | 11 | 8.8 | 23 | 18.4 | 53 | 42.4 | 26 | 20.8 | 12 | 9.6 | 3.04 | 1.06 |
| **Average Mean** | | | | | | | | | | | **3.03** | |

Source: Own survey, 2021

This implies that e-services require a major makeover. This includes diversifying accessibility of e-services through different ways including social networks, provision of effective, accurate and prompt services including technical support.

*Students' Perspective on the Quality of Library Services*

The next main variable assessed was the quality of library services using eight sub-variables. The first sub-variable was the availability of textbooks and journals. Some 76.8% (96) of the respondents were positive about the presence of necessary books and journals while 18.4% (23) were neutral. Only 4.8% (8) were negative in their response. The second sub-variable was if they have an easy borrowing system. About 65.6% (82) of the respondents said their borrowing system was easy whereas 24.8%(31) stood neutral. The remaining 9.6% (12) did not think the system was easy. The third sub-variable enquired if the library has e-services and 60.8% (76) agreed to the fact that it does whereas 22.4% (28) did not make a decision. About 16.8% (21) responded that the library did not have such a service. Following this was a sub-variable that assessed if the institute has an e-library. To this question, 53.6% (67) respondents answered positively while 25.6% (32) stood neutral. The rest 16% (20) of the respondents believed that the institute did not have an e-library. The fifth sub-variable assessed whether or not there is sufficient place to sit and read. About 69.6% (87) respondents said there was; 16.8% (21) were neutral; and 13.6%(17) said there was no enough place to sit. The next variable was if the working hours were adequate/suitable. Some 79.2% (99) of the respondents were positive whereas 15.2% (19) were neutral. The remaining 5.6% (7) respondents were negative saying the working hours of the institute were not adequate/suitable. The last sub-variable was if the library has cooperative librarians. In response to this, 80.8% (101) respondents said it has while 13.6% (17) stood neutral. The remaining 5.6% (7) respondents said it does not have cooperative librarians. Table 18 below shows this.

**Table 15 Quality assessment on library services**

| The library has: | SD | | D | | N | | A | | SA | | Mean | SD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | F | % | F | % | F | % | F | % | F | % | | |
| textbooks and journals. | 2 | 1.6 | 4 | 3.2 | 23 | 18.4 | 54 | 43.2 | 42 | 33.6 | 4.04 | 0.89 |
| an easy borrowing system. | 5 | 4 | 7 | 5.6 | 31 | 24.8 | 57 | 45.6 | 25 | 20 | 3.72 | 0.98 |
| e-services. | 7 | 5.6 | 14 | 11.2 | 28 | 22.4 | 49 | 39.2 | 27 | 21.6 | 3.60 | 1.11 |
| e-library system. | 6 | 4.8 | 20 | 16 | 32 | 25.6 | 46 | 36.8 | 21 | 16.8 | 3.45 | 1.10 |
| sufficient place to sit and read. | 6 | 4.8 | 11 | 8.8 | 21 | 16.8 | 50 | 40 | 37 | 29.6 | 3.81 | 1.11 |
| adequate/suitable working hours. | 3 | 2.4 | 4 | 3.2 | 19 | 15.2 | 51 | 40.8 | 48 | 38.4 | 4.10 | 0.94 |
| cooperative librarians. | 4 | 3.2 | 3 | 2.4 | 17 | 13.6 | 61 | 48.8 | 40 | 32 | 4.04 | 0.92 |
| **Average mean** | | | | | | | | | | | **3.82** | |

Source: Own survey, 2021

Predominantly a large number of students indicated that the library service is of excellent quality especially in the context of undergraduate education. This is manifested through abundant availability of textbooks and journals, easy borrowing process, availability of services electronically, electronic repository and e-library, sufficient space to sit and read, ample working hours, cooperation of librarians, etc. This implies that students are more or less satisfied with the library of the institute which will have its own contribution to the quality of education.

*Students' Perspective on the Quality of Administrative Services*

This section presents the quality of administrative services using seven sub-variables. The first sub-variable enquired if the administrative services were effective, accurate and prompt. Responses revealed that

28.8% (36) of the respondents were positive about this while 39.2% (49) were neutral. On the other hand, 32% (40) of the respondents were negative. The second sub-variable assessed whether or not there were sufficient working hours and 38.4 (48) said there were while 35.2%(44) were neutral in this regard. Some 28.4 (33) said the working hours were not sufficient. The third sub-variable checked if administrative services were available on the institute's website. About 20% (25) of the respondents reacted affirmatively; 42.4% (53) stood neutral; and 37.6% (47) reacted negatively. The fourth one asked if technical support is available for e-services. Some 16% (20) confirmed its availability; 43.2% (54) its unavailability; and 40.8% (51) remained neutral. The fifth sub-variable checked if administrative services were friendly and 19.3% (24) respondents agreed they were. Some 46.4% (58) were neutral but the remaining 34.4% (43) were negative about this. The next one asked if advertising materials for the administrative services were available. About 12.8% (16) said there were but 46.4% (58) said there weren't. The remaining 40.8% (51) were neutral on this issue. The last sub-variable assessed whether there were clear guidelines and advice. Some 24% (30) of the respondents said there were; 38.4% (48) stood neutral; and 37.6%(47) said there weren't. A look at the average mean score of 2.77 of all the sub-variables tells that the quality of the administrative services was medium. Table 19 below shows this.

**Table 16 Quality assessment on administrative services**

| | SD | | D | | N | | A | | SA | | Mean | SD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | F | % | F | % | F | % | F | % | F | % | | |
| The administrative services are effective, accurate and prompt. | 13 | 10.4 | 27 | 21.6 | 49 | 39.2 | 30 | 24 | 6 | 4.8 | 2.91 | 1.03 |
| The institute provides sufficient working hours. | 12 | 9.6 | 21 | 16.8 | 44 | 35.2 | 34 | 27.2 | 14 | 11.2 | 3.14 | 1.12 |
| Administrative services are available on the institute's website. | 17 | 13.6 | 30 | 24 | 53 | 42.4 | 20 | 16 | 5 | 4 | 2.73 | 1.02 |
| Technical support is available for e-services. | 19 | 15.2 | 35 | 28 | 51 | 40.8 | 16 | 12.8 | 4 | 3.2 | 2.61 | 0.99 |
| Administrative services are friendly. | 20 | 16 | 23 | 18.4 | 58 | 46.4 | 22 | 17.6 | 2 | 1.6 | 2.70 | 0.99 |
| Advertising materials are available for the services. | 21 | 16.8 | 37 | 29.6 | 51 | 40.8 | 10 | 8 | 6 | 4.8 | 2.54 | 1.02 |
| Clear guidelines and advice are available. | 20 | 16 | 27 | 21.6 | 48 | 38.4 | 23 | 18.4 | 7 | 5.6 | 2.76 | 1.10 |
| **Average Mean** | | | | | | | | | | | **2.77** | |

Source: Own survey, 2021

The administrative services scored lower rating across the board. This implies that the problem is chronic and needs immediate attention through provision of effective, accurate and prompt services. The insufficient working hours and low friendliness of administrative services are major hindrances to the quality of education that cannot be ignored.

*Instructors' Perspective*

Out of the 65 instructors involved in undergraduate education, 38 of them were interviewed which makes 58.46% sample size. Close to half (47.4%) of the instructors interviewed for the study have been serving at the School for a period of 5-10 years while a third have less than five years.

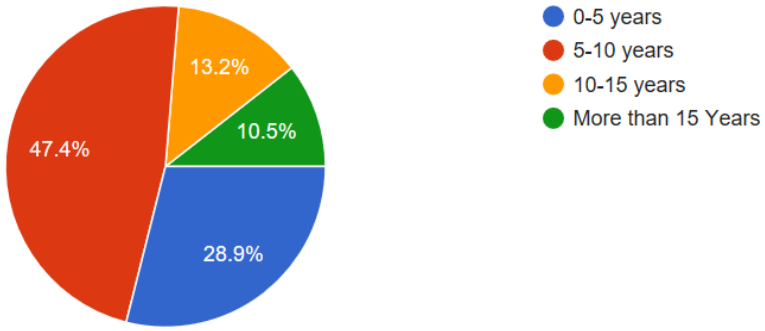


**Figure 3 Year of Service for the Academic Staff**

Source: Own survey, 2021

The academic rank of the instructors on duty has been summarized in the Table 19 below, along with the expected tasks for each level.

**Table 17 Instructors' academic rank and expected tasks**

| Academic Rank | Quantity | Expected Tasks |
|---|---|---|
| Laboratory Technician | 10 | - Are in charge of laboratory practices. |
| Assistant Lecturer | 11 | - Assist in delivering tutorials. |
| Lecturer | 44 | - Deliver lectures to undergraduate students.<br>- Deliver tutorials for postgraduate students.<br>- Advise undergraduate students on final year projects. |
| Assistant Professor | 18 | - Deliver lectures for postgraduate students.<br>- Advise postgraduate MSc students on thesis work. |
| Associate Professor | 12 | - Deliver lectures for postgraduate students.<br>- Advise postgraduate MSc students on thesis work.<br>- Advise PhD students on their research. |
| Professor | 6 | - Deliver lectures for postgraduate students.<br>- Advise postgraduate MSc students on thesis work.<br>- Advise PhD students on their research. |
| **Total** | **101** | |

*Source: (Office of the Academic Standards and Quality Enhancement, AAU, 2020)*

### *Instructors' Perspective on Curriculum*

The interviewees were asked semi-structured questions regarding their perspective on the current curriculum. Overwhelming number of instructors were in agreement stating that the program provided appropriate scientific topics, and that it enhanced student skills and self-capabilities. However, they shared their concerns about the curriculum being in line with the requirements of the labor market. They stated that the issue needed its own independent study and that it should be one of the focus areas the School should focus on.

*Instructors' Perspective on Staff*

The next question was on the currently available academic staff in the program. Again, there was a common positive consensus among the interviewees regarding academic qualifications, professional experience, academic advising and communication skills. Many of the instructors agree that there is a room for development when it comes to research activities. The respondents were then asked what defines the quality of their class lecture delivery. Most of them identified the top three factors as proper preparation of lecture materials, student evaluation mechanism, and instructor's enthusiasm.

Questions were also raised regarding generic teaching-learning activities in which they were asked if they were comfortable with the current student assessment system in place. Most instructors (42.1%) were not comfortable with the way continuous assessments are conducted in the School and they believe that it missed the objective of the course. The research showed that most of the respondents (75%) were comfortable having assistant lecturers working with them. However, those who were not comfortable said that the assistant lecturers might be inadequate in delivering courses. The research showed that most of the instructors are willing to use a lecture note prepared by others in the same field while a few (15.8%) preferred to prepare their own lecture notes. But most (92.1%) said they prepared their own course outline, notes, handouts, practice, exercises, textbooks, slide notes, lab experiments etc. based on the resources available in the institute.

Most respondents believe they provide timely and frequent feedback on thesis, tests, assignments, projects, etc. Those who do not give timely and frequent feedback relate the problem with large class size and heavy workload.

When asked if a teacher should give the same course year after year, most of them (52.6%) disagreed. They believe a teacher should give

different courses to broaden his knowledge. Some respondents believe if a teacher prefers to teach one course only, it shows he is reluctant and does not want to make any extra effort to update himself. One of the reasons given by 15.8% of respondents who thought otherwise was that the instructor would become an expert in the course and will develop new assignments and projects instead of wasting his time preparing lecture materials.

*Instructors' Perspective on Career Prospects*

Most instructors are of the opinion that enhanced technical, communication and linguistic skills prepare the students for a better professional career. However, there is a strong need to improve the institution's links with business though job-day programs to increase employment opportunities. It has been suggested that University-Industry Linkage Office be led by a qualified professional who has specialized in the area as opposed to being offered to any academic staff as an administrative position. Similar suggestion has been forwarded regarding the Office of External Relations which, on paper, is tasked with sowing fruitful relations with other academic and research establishments in order to facilitate opportunities to pursue studies abroad.

*Instructors' Perspective on Infrastructure*

Interviewees were asked regarding infrastructure in the context of Civil Engineering undergraduate program. Overwhelming majority said that classrooms, laboratories, sport facilities, administrative offices, and spaces for cultural events were more than adequate. However, most were skeptical regarding the quality of services provided at the student lounge. Even though a lot of revamping has taken place on the space, most are of the opinion that the quality of service needs serious overhaul.

One of the most crucial issue raised by many is the need for improved computational facility. The main problem in this regard is lack of availability of relevant software. This was supported by the instructors who said there is no relevant licensed software at the school. This is a very big problem for researchers who try to publish their research outputs in journals as most of them use cracked software for their research. This in turn reduces the motivation of both the academic staff and the students to conduct quality researches.

*Instructors' Perspective on E-Services*

Mixed responses were acquired with regard to e-services made available as part of the program. These responses range widely from not being aware of the existence of e-services to that of full utilization. The School has its own website as part of the larger AAiT webpage where important announcements are made to students, academic staffs and administrative staffs alike. It has been pointed out that the website lacks dynamism and user friendliness. Registration, course adding and dropping, and similar requests are effectively handled by an online information management system.

*Instructors' Perspective on Library Services*

Predominantly large number of instructors have indicated that the library service is of excellent quality especially in the context of undergraduate education. This is manifested through abundant availability of textbooks and journals, easy borrowing process, availability of services electronically, electronic repository and e-library, sufficient space to sit and read, ample working hours, cooperativeness of librarians, etc.

*Instructors' Perspective on Administrative Services*

Most interviewees shied away from providing clear-cut responses to questions regarding administrative staff. Several of them simply stated that there is a room for development but failed to disclose specific areas

when probed for further information. The researcher found this to be bizarre considering that most of them did not hold back vividly commenting on academic staffs i.e. their colleagues.

*Discussion Using Modified HEQAM-KAU Model*

In this section, the outputs of statistical analysis of data collected through questionnaire filled by students are reported. The data have been fed into the modified HEQAM-KAU quality matrix and results for each of the seven sub-variables were individually rated. After that the combined rating of all the sub-variables has been determined using the weights assigned by the model. Results were then compared with that of qualitative data analysis outputs gathered by interviewing the instructors.

**Table 18 Quality assessment matrix for modified HEQAM-KAU model**

| No. | Main Variable | Sub-variable | Mean Score | Average Mean | Quality Rating |
|---|---|---|---|---|---|
| 1 | Curriculum (20.9 %) | 1. The program provides appropriate scientific topics. | 3.79 | 3.62 | High |
| | | 2. Curriculum is line with the requirements of the labor market. | 3.14 | | |
| | | 3. The curriculum enhances students' skills and self-capabilities. | 3.18 | | |
| | | 4. The curriculum has prerequisites for certain courses. | 3.98 | | |
| | | 5. Weekly timetable is available. | 4.00 | | |
| | | 6. Variety of elective modules are available on specialization areas. | 3.74 | | |
| 2 | Staff (18.4 %) | 1. Lecturers have appropriate academic qualification. | 4.01 | 3.52 | High |
| | | 2. Lecturers have appropriate professional experience. | 3.73 | | |
| | | 3. Lecturers are appropriately engaged in research activities. | 3.32 | | |
| | | 4. Faculty is cooperative and responsive. | 3.20 | | |
| | | 5. Appropriate academic advising is available. | 3.33 | | |
| | | 6. Lecturers have appropriate communication skills. | 3.55 | | |
| 3 | Career Prospect (16.9 %) | 1. Prospect for professional career is promising. | 3.30 | 3.11 | Medium |
| | | 2. AAiT's link with businesses is adequate. | 3.04 | | |
| | | 3. The program enhances technical skills for the job market. | 3.13 | | |
| | | 4. The program enhances communication skills for the job market. | 3.14 | | |

| | | | | | |
|---|---|---|---|---|---|
| | | 5. The program enhances linguistic skills for the job market. | 3.04 | | |
| | | 6. Employment opportunities are available through job day programs. | 2.85 | | |
| | | 7. Opportunities to continue studies abroad are available. | 3.08 | | |
| | | 8. Exchange programs with other institutes are available. | 3.02 | | |
| | | 9. There are opportunities for graduate program. | 3.46 | | |
| 4 | Infrastructure (13.55%) | 1. Modern and high quality classrooms and laboratories are available. | 3.08 | | |
| | | 2. Catering services are of high quality. | 3.22 | | |
| | | 3. There are high quality sport facilities. | 2.94 | | |
| | | 4. Medical facilities are of high quality. | 3.06 | 3.04 | Medium |
| | | 5. High quality university admin buildings are available. | 3.11 | | |
| | | 6. Services are available to host social and cultural events. | 2.82 | | |
| | | 7. The are students' hostels/dorms. | 3.08 | | |
| 5 | E-Services (12.4%) | 1. The website provides academic and admin services. | 3.32 | | |
| | | 2. Effective accurate and prompt services are there. | 3.03 | 3.02 | Medium |
| | | 3. Prompt technical support is available. | 2.79 | | |
| | | 4. E- Service is accessible through different ways. | 2.94 | | |
| | | 5. E- services through social networks are available. | 3.04 | | |
| 6 | Library Services (10.4%) | 1. Availability of textbooks and journals | 4.04 | | |
| | | 2. Easy borrowing process | 3.72 | | |
| | | 3. The availability of library services electronically | 3.60 | | |
| | | 4. E-library | 3.45 | | |
| | | 5. Sufficient place to sit and read | 3.8 | 3.82 | High |
| | | 6. Adequate/suitable working hours | 4.10 | | |

| | | | | | |
|---|---|---|---|---|---|
| | | 7. Librarian cooperativeness | 4.04 | | |
| 7 | Administrative Services (7.8%) | 1. Effective, accurate and prompt services | 2.91 | | |
| | | 2. Sufficient working hours | 3.14 | | |
| | | 3. The availability of admin services on the university website. | 2.73 | | |
| | | 4. Availability of technical support for E-Services | 2.61 | 2.77 | Medium |
| | | 5. Friendliness | 2.70 | | |
| | | 6. Availability of advertising materials for the services | 2.54 | | |
| | | 7. Clear Guidelines and advices | 2.76 | | |
| **Weighted Mean** | | | | **3.34** | |

Source: Own result, 2021

Based on the perspective of students, the quality of education of Civil Engineering undergraduate program at the School of Civil and Environmental Engineering was found to be 3.34 on the modified HEQAM-KAU model. This amounts to medium overall quality. However, it is important to point out that this result is on the boundary between medium and high quality.

From the perspective of curriculum, the school/program scored 3.62, which falls in the range of high quality. This result is also corroborated by the qualitative data analysis output which resulted from the semi structured interview with instructors. Overwhelming number of the instructors stated that the program provides appropriate scientific topics, and that it enhances student skills and self-capabilities. Similarly, they aired their concerns about the curriculum not being in line with the requirements of the labor market, which was also reflected in the fact that this issue was rated as the lowest amongst the 6 sub-variables assessed.

Concerning staff, assessment result revealed a score of 3.52, which again falls within the range of high quality. This is consistent with the fact that there was a common positive consensus among the interviewees regarding academic qualifications, professional experience, academic

advising and communications skills of instructors. Many of the instructors agreed that there is a room for development when it comes to research activities. This last remark is also in line with the qualitative data output which rated the engagement of lecturers in research activities as medium.

Regarding career prospect, results of interviews with instructors show that enhanced technical, communication and linguistic skills prepare the students for a better professional career. However, there is a strong need to improve the institution's links with business through job-day programs or others to increase employment opportunities. This is substantiated by the output of quantitative analysis, which showed an overall score of 3.11 (medium quality rating) for the issue - the lowest point was attributed to the sub-variable "Availability of employment opportunities through job day programs" and "Adequacy of AAiT's link with businesses."

When it comes to infrastructure, overwhelming majority of the instructors approved that classrooms, laboratories, sport facilities, administrative offices, and spaces for cultural events were more than adequate. However, results of the quantitative analysis depict a different picture where overall infrastructure has been rated to be of medium quality (3.04 overall score). This discrepancy between the opinions of students and instructors can be explained by basic expectations of both parties. This is to mean that the instructors have a bigger picture of the issue through exposure to higher postgraduate studies and researches which enabled them to make an objective assessment of rendered facilities. On the other hand, the researcher believes that students form their opinion based on their intuition and expectation from a highly reputable HEI like Addis Ababa Institute of Technology. The researcher concludes that the quality of infrastructure is of acceptable quality based on follow up questions raised with instructors during the semi-structured interview.

Both the instructors and students have stated that, e-services require a major makeover. This include diversifying accessibility of e-services through different ways including social networks and provision of effective accurate and prompt services including technical support. The two parties agreed that registration, course adding and dropping, and similar requests are effectively handled by an online information management system. The aforementioned statements are reinforced by the output of the quantitative data analysis which showed an overall quality grading of 3.02 (Medium).

Predominantly a large number of instructors indicated that the library service is of excellent quality especially in the context of undergraduate education. This is manifested through abundant availability of textbooks and journals, easy borrowing process, availability of services electronically, electronic repository and e-library, sufficient space and environment to sit and read, ample working hours, cooperativeness of librarians, etc. This is also validated by the quantitative data where library services scored an overall mean score of 3.82 (highest among the 7 main variables).

Administrative services scored the lowest (2.77) in the quality analysis matrix. This is primarily attributed to very low quality score obtained from availability of advertising materials for admin services, availability of technical support for e-services, friendliness, clear guideline and advices, and general availability of administrative services. It is imperative to point out that this final comment is solely based on the output of quantitative analysis since most interviewees shied away from providing clear-cut responses to questions regarding administrative staff. Several of them simply stated that there is a room for development but failed to disclose specific areas when probed for further information.

## Conclusion and Recommendations

*Conclusion*

Based on the data gathered and analyses conducted during the research, the following conclusions are drawn:

- The quality of education in the Civil Engineering program at Addis Ababa Institute of Technology (AAiT) is rated to be of medium quality on the modified HEQAM-KAU model for the sample that has been investigated.
- The overall impression on the curriculum is positive since it has been identified that the curriculum provides appropriate scientific topics that enhance student skills and self-capabilities.
- The academic staff in the Civil Engineering program is deemed adequate with the appropriate number of staff to properly administer the program. There should be a strong policy in place to encourage the academic staff to conduct research regularly. An important issue raised by the instructors regarding the academic staff is the reluctance and lack of motivation for doing enough researches in the field of Civil Engineering. Even if the staff are encouraged orally, the instructors interviewed suggested that there should be a policy in place to encourage academic staff to conduct researches regularly.
- The study revealed that enhanced technical, communication and linguistic skills prepare the students for a better professional career. However, there is a strong need to improve the institution's links with business through internship programs to increase employment opportunities.
- Major infrastructures such as classrooms, laboratories, sport facilities, administrative offices, and spaces for cultural events were more than adequate. Most of the interviewees, however, were skeptical about the quality of services provided at the student lounge. Even though a lot of revamping has taken place, most are of the opinion that the quality of service still needs a

serious overhaul. The lack of relevant software at the school's computational facilities is another big problem, which students and academic staff face to conduct quality researches that can be published in journals. The school should thus find ways to acquire licensed software, establish computational facilities and also prepare training secessions on relevant software needed for the program.

- Profound improvements are required in e-services, including diversifying accessibility of e-services through different ways including social networks and provision of effective, accurate and prompt services including technical support.
- The library service has been identified as one of the strongest components. This is manifested through abundantly available textbooks and journals, easy borrowing process, available electronic services, electronic repository and e-library, sufficient space and environment to sit and read, ample working hours, and cooperative librarians.
- Administrative service has been identified as the weakest component. This is indicated by the very low score given to availability of advertising materials for administrative services, availability of technical support for e-services, friendliness, clear guideline and advice, and general availability of administrative services.

*Recommendations*

Based on the findings from the study, the researcher recommends the following

- The quality of education in the Civil Engineering program at Addis Ababa Institute of Technology needs to be assessed both by an internal and external quality audit team. The assessment should include input, process and output elements.

- Even if the overall impression on the curriculum is positive, the school needs to advance its status by further improving and revising the curriculum in line with the job market.
- There should be a strong policy in place to encourage the academic staff to conduct research regularly.
- The school should devise a mechanism to increase the institution's links with business through internship programs to increase employment opportunities.
- Major infrastructures such as classrooms, laboratories, sport facilities, administrative offices, and spaces for cultural events and students lounge need serious overhaul.
- The school should find a way to acquire licensed software and it should also establish computational facilities.
- Profound improvements are required in e-services, including diversifying accessibility of e-services through different ways including social networks, provision of effective, accurate and prompt services including technical support.
- The school should share best practices of the library services to other units to contribute to the overall quality of education.
- Administrative services need to deeply work and address areas such as availability of advertising materials for administrative services, availability of technical support for e-services, friendliness, clear guideline and advice and general availability of admin services.

Further research is recommended on the following issues:

- Incorporating graduate programs to get a full picture of quality of education in the school of civil and environmental engineering at Addis Ababa Institute of Technology
- Suggesting practical intervention solutions to issues identified in this research.

The School of Civil and Environmental Engineering at AAiT-AAU does not have an organized body/unit specifically established for the purpose

of quality assurance and graduates' employability that encourages major stakeholders to play a role proactively. The system was so weak that the major stakeholders were not sure when and how to involve.

There is thus a strong need to improve the institution's links with business though internship programs which help graduates to be equipped with skills necessary for the job market and increase their employment opportunities. It has been suggested that University-Industry Linkage Office be led by a qualified professional who specialized in the area. A similar suggestion is forwarded regarding the Office of External Relations, which is tasked with forging fruitful relations with other academic and research establishments in order to facilitate more opportunities.

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