THE UNITED REPUBLIC OF TANZANIA

MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY

ARUSHA TECHNICAL COLLEGE

Graduate Tracer Study Report, June 2025

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Abbreviations and Acronyms

ATC	Arusha Technical College
EASTRIP	East Africa Skills for Transformation and Regional Integration Project
GTZ	German Foundation for Technical Co-operation
ILO	International Labour Organization
KRETRC	Kikuletwa Renewable Energy Training and Research Centre
NACTVET	National Council for Technical and Vocational Education and Training
NTA	National Technical Awards
NVA	National Vocational Awards
SPSS	Statistical Package for Social Sciences
TVET	Technical and Vocational Education and Training
UNEVOC	International Centre for Technical and Vocational Education and Training (UNESCO-UNEVOC)
UNESCO	United Nations Educational, Scientific and Cultural Organization
URT	United Republic of Tanzania

Executive Summary

ES 1: This tracer study evaluates employment outcomes, training relevance, and satisfaction levels among graduates of Arusha Technical College. The study aims to monitor and evaluate the quality and effectiveness of technical and vocational education training (TVET) programs offered at the College, particularly in relation to labor market demands and graduate employability. Conducted annually as part of the East Africa Skills for Transformation and Regional Integration Project (EASTRIP), this study specifically examines graduates from the academic year 2022/2023 across multiple technical and engineering disciplines.

ES 2: The study employed a descriptive survey research design, using structured questionnaires distributed both online and manually to achieve broad graduate participation. From a population of 666 graduates, responses from 586 individuals were obtained, representing an 88% response rate, significantly exceeding the minimum statistical threshold. Data were analyzed through quantitative techniques such as descriptive statistics and qualitative thematic content analysis to provide comprehensive insights.

ES 3: Six months after graduation, about 27.1% of graduates found formal employment, 12.5% engaged in self-employment, and 28.6% pursued further academic studies. Notably, employment outcomes revealed gender disparities, with male graduates more successful in securing formal and self-employment compared to their female counterparts, who often opted for further academic qualifications to enhance their employability.

ES 4: The majority of graduates secured employment primarily through online platforms and personal networks, predominantly in the public sector, specifically education, hospitality, and finance. Self-employed graduates commonly operated small-scale enterprises closely aligned with their fields of study but faced significant challenges, including limited access to startup capital and financial instability.

ES 5: Graduates highly valued practical, experiential training components, such as workshops and industry-based learning opportunities. However, they identified several concerns, including an excessive emphasis on theoretical instruction, inadequate practical resources, inconsistent teaching quality, and intense workload pressures.

ES 6: To address these findings, the study recommends expanding and modernizing practical training facilities, reforming curricula towards practical and industry-relevant content, and enhancing teaching quality through regular professional development. Additionally, strengthening industry linkages through structured internships and partnerships is vital. Entrepreneurial initiatives should be reinforced through targeted training and incubation programs, alongside facilitating access to startup capital. Improved digital infrastructure, enhanced graduate support services, and effective alumni tracking are recommended to boost graduate employability and align institutional resources with current labour market demands.

CHAPTER ONE

INTRODUCTION

1.1 Background of Arusha Technical College

The College was established in 1978 through an agreement of technical cooperation between the Government of the United Republic of Tanzania and the Government of the Federal Republic of Germany (FRG), which was also known as "West Germany". The German Foundation for Technical Co-operation (GTZ) was given the mandate to build and equip the college with the necessary facilities for habitation and training. By that time, the college was known by the name Technical College Arusha (TCA). The name Arusha Technical College (ATC) came into existence officially in March 2007 when the College was given autonomy through the Arusha Technical College Establishment Order No. 78 of March 2007 under the NACTE Act No. 9 of 1997, which was later revoked and replaced by the ATC Establishment Order GN 302, 2015. The core functions of the College are training, research, and consultancy. The College is registered and accredited by the National Council for Technical and Vocational Education and Training (NACTVET) to train technicians and engineers (NTA's level 4-8) and artisans (NVA level 1-3) on vocational education programmes.

The College recognises the quality of education as imperative to realizing its vision: "*A society with practical knowledge, skills and attributes for sustainable development*". In efforts to realize its vision and mission, ATC constantly and systematically monitors and evaluates the implementation of its mandated activities to ensure continuous quality improvement. Graduates' tracer study is among the tools for monitoring and evaluation.

Since 2018, the College has been conducting graduates tracer studies for all programmes that are offered at the College Main Campus and its campus of Kikuletwa Renewable Energy Training and Research Centre (KRETRC) through the East Africa Skills for Transformation and Regional Integration Project (EASTRIP). The project development objective is to increase access and improve the quality of TVET programs in selected regional flagship TVET institutes and support regional integration in East Africa. To realize this objective, the College is required to conduct a

tracer study annually and submit its evidence to independent verifiers as one of the project development-linked indicators (DLI).

1.2 Rationale of Graduate Tracer Study

As outlined in the EASTRIP project appraisal document and project operation manual, all TVET institutions are required to conduct tracer studies annually. These studies serve as a vital tool for evaluating training programmes and assessing the impact of innovations on labour market outcomes. Based on this background, the primary aim of this tracer study is to evaluate the employment outcomes of graduates from the TVET programmes offered at the College, including KRETRC, six months after graduation.

This study will play a crucial role in various aspects of educational planning and development. It will help assess the quality and effectiveness of educational programmes, enabling the College to identify areas for improvement and ensuring graduates are well-prepared for the job market. Graduate tracer studies also highlight the alignment between curriculum and industry needs, allowing the institution to make necessary adjustments, ultimately boosting students' competitiveness in the workforce. Furthermore, they support continuous improvement by gathering feedback from graduates, aiding in the enhancement of training methods, facilities, and career services.

The results of this tracer study will guide programme review and enhancement, and decision-making processes at the College.

1.3 Objectives

1.3.1 General objective

The general objective of this tracer study is to evaluate the employability status of graduates from TVET programmes offered at the College.

1.3.2 Specific Objectives

Specifically, this study aims to:

(i) Assess graduates' employment rates six (6) months after graduation.

(ii) To evaluate the relevance of training programmes to the labour market.

(iii) To evaluate overall satisfaction levels of graduates with their educational and training experiences.

1.4 Scope

This tracer study focused on graduates of long-term TVET programs offered at the College, as summarized in Table 1. It specifically targeted graduates from the December 2023 graduation ceremony.

Table 1. Programmes for the graduates of December 2023

S/N	Programme	NTA Level
1	Auto Electric and Electronics Engineering	4-6
2	Automotive Engineering	4-6
3	Civil and Highway Engineering	4-6
4	Civil and Irrigation Engineering	4-8
5	Civil Engineering	4-6
6	Computer Science	4-8
7	Electrical and Biomedical Engineering	4-8
8	Electrical and Hydropower Engineering	4-6
9	Electrical and Solar PV System Engineering	4-6
10	Electrical and Wind Energy Systems Engineering	4-6
11	Electrical Engineering	4-6
12	Electronics and Telecommunication Engineering	4-6
13	Heavy Duty Equipment Engineering	4-6
14	Information Technology	4-8
15	Laboratory Science and Technology	4-6
16	Mechanical and Bio-energy Engineering	4-6
17	Mechanical Engineering	4-6
18	Pipe Works, Oil and Gas Engineering	4-6
19	Electrical and Automation Engineering	7-8

1.5 Limitations of the Study

This study was conducted six months after graduation for a duration of 12 months. At this duration, many graduates were still transitioning into the workforce, especially in developing countries, including Tanzania. UNESCO-UNEVOC (2013) emphasises that TVET graduates often take more time to find stable or relevant employment, especially in developing economies.

Contacting graduates after only six months faced some difficulties due to outdated contact information. The College used the institutional database and alumni networks to increase the response rates and reliability of the tracer study.

CHAPTER TWO

METHODOLOGY

2.1 Research Design

This tracer study employed a descriptive survey research design to gather data on the employment status, competencies, and educational experiences of graduates. According to Creswell (2014), a descriptive survey design is used to obtain information that describes existing phenomena by asking individuals about their perceptions, behaviours, or outcomes. In tracer studies, this design enables institutions to describe:

- Employment status of graduates
- Relevance of training
- Graduate satisfaction level

Also, this design facilitates the collection of uniform data from large populations at relatively low cost and time (Millington, 2001). Results of the descriptive design inform improvement in training and assessment, and curriculum review.

2.2 Population and Sample

The population of this tracer study comprised 666 graduates from the Arusha Technical College and KRETRC who completed their studies in the academic year 2022/2023, across 19 academic programmes from NTA level 4-8. This included graduates from all academic departments, reflecting the institution's multidisciplinary academic profile.

This study employed census sampling techniques whereby all 666 graduates were targeted, recognizing the value of comprehensive feedback for institutional quality assurance and curriculum development. Within the target population, 79.9% (532) were males and 20.1% (134) were females. The College's graduation records provided the sample population.

Ultimately, the study collected data from 586 graduates, achieving a response rate of 88%, which exceeds the minimum requirement for statistical analysis according to Yamane's Formula. The minimum sample size for the population pf 666 graduates using Yamane's Formula at a 95% confidence level and a 5% margin of error (e = 0.05) was approximately 250 graduates hence, the response rate was statistically significant.

2.3 Data Collection Instruments and Procedures

Data collection for this tracer study was conducted for three months, from January to March 2025, utilizing a combination of online and manual methods to enhance the response rate and representativeness across academic disciplines. This approach helped the College to reach a large population of graduates.

A structured online questionnaire with closed-ended and open-ended questions was the primary tool for data collection. The questionnaire was developed using Google Forms, ensuring accessibility and ease of use. It was disseminated through multiple platforms, including:

- Official College email address
- Alumni social media groups (WhatsApp, Facebook)
- Official College website

To complement the online method and minimize non-response bias, especially for graduates with limited internet access, printed questionnaires were distributed through tracer study coordinators from each academic department.

To ensure data quality and consistency, the research team conducted:

- A pilot test with 30 graduates to validate the instrument,
- A brief orientation for departmental tracer studies coordinators on how to guide respondents,
- Real-time monitoring of response trends through the online platform dashboard.

In total, 586 responses were collected out of the target sample size of 666, achieving a response rate pf 88% which exceeded the minimum threshold required for statistical analysis.

2.4 Data Analysis

The data collected through the structured questionnaires were analyzed using a combination of quantitative and qualitative techniques to provide a comprehensive understanding of graduate outcomes. This dual approach aligns with internationally recognized best practices in tracer study methodology.

Closed-ended responses were first exported from the Google Forms platform into Microsoft Excel, then cleaned and coded for analysis using IBM SPSS Statistics Version 27. Descriptive statistical methods were applied, including:

- Frequencies and percentages
- Measures of central tendency
- Cross-tabulations
- Charts and graphs for visual interpretation

Open-ended responses, particularly those related to graduate suggestions, perceived skill gaps, and overall satisfaction, were subjected to thematic content analysis. Responses were read iteratively to identify recurring themes, coded manually, and grouped into categories

2.5 Ethical Considerations

The study was guided by principles of voluntary participation, informed consent, confidentiality, and data protection, consistent with international research ethics protocols and best practices observed at the College. The study adhered to ethical considerations as follows:

(a) Before participating in the survey, all graduates received a clear explanation of the study's objectives, procedures, and their rights as respondents. An informed consent form was embedded in the online and printed questionnaires, stating that participation was voluntary and could be withdrawn at any time without consequences.

(b) To ensure anonymity, no names or student identification numbers were requested in the questionnaire. Responses were coded, and all personally identifiable data were excluded from analysis and reporting. Confidentiality was strictly maintained throughout the research process, and data was only accessible to the core tracer study team.

2.6 Limitations of the Study

While this tracer study provides valuable insights into the employment status, skill relevance, and academic experiences of graduates, certain limitations were encountered during the tracer study process. Key limitations include the following:

(a) Outdated contact information. One of the key challenges faced was the inaccuracy or unavailability of up-to-date contact information for some graduates. A significant proportion of the contact details recorded at the time of graduation, particularly mobile numbers and email addresses, were no longer active. This was addressed by reaching out to known contacts for referral-based updates.

(b) Limited access through alumni social media networks. Despite efforts to leverage alumni social media groups (e.g., WhatsApp, Facebook), not all graduates were active or included in these platforms. To address gaps in alumni social media coverage, the tracer team diversified its communication strategies by using SMS blasts and posting on official College websites.

(c) Time constraints. The study was conducted within a limited time frame and with restricted personnel resources. This constrained the extent of data triangulation, follow-up efforts, and in-depth qualitative validation. The tracer study team prioritized automated data collection tools to address this limitation.

Despite these limitations, the study offers meaningful baseline data for institutional planning, curriculum review, and graduate support services.

CHAPTER THREE

RESULTS AND DISCUSSIONS

3.1 Demographic Information of Respondents

This section provides demographic information of the respondents including gender, age and programme of study.

3.1.1 Respondents by Gender

The findings of this tracer study revealed that a substantial number of participants, totaling 427 (72.9%), were males, while the remaining 159 (27.1%) identified as females, as shown in Figure 1. These findings highlight a persistent gender disparity in TVET education in Tanzania. The tracer study findings align with national and international evidence indicating that female participation in TVET remains significantly lower than that of males in Tanzania. This calls for stronger policy implementation, community sensitization, and institutional reforms to promote gender inclusiveness in TVET systems.

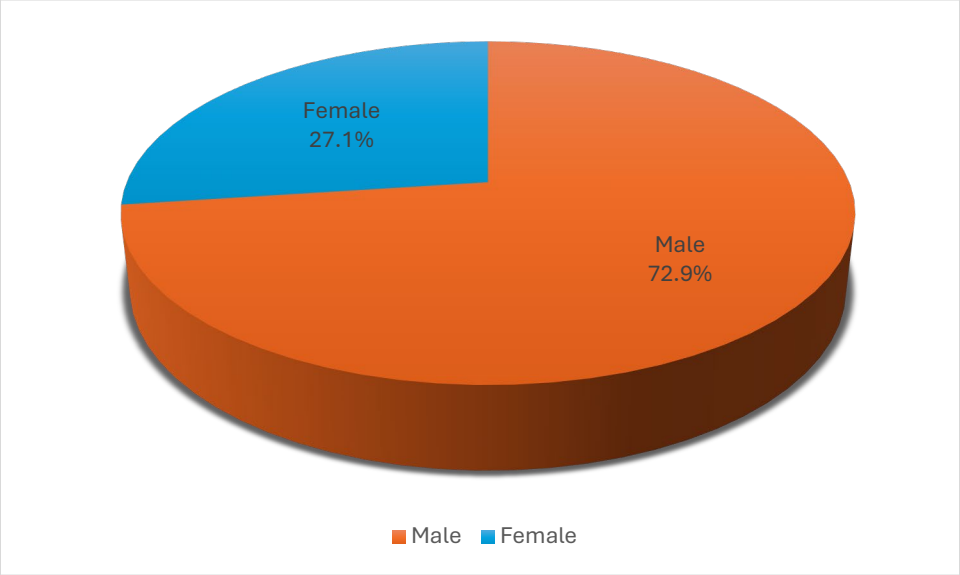

Figure 1. Percentages of respondents by gender

3.1.2 Respondents by Age

The findings revealed that 43.2% of the respondents were aged between 15-24 years, 51.6% were aged 24-34 years, while 5.2% were aged 35 and above as shown in Figure 2. The age distribution

indicates a predominantly youthful population among the respondents, with nearly 95% falling under the age of 35. This trend aligns with Tanzania's national demographic structure, where youth constitute a significant proportion of the labor force (United Republic of Tanzania, 2021).

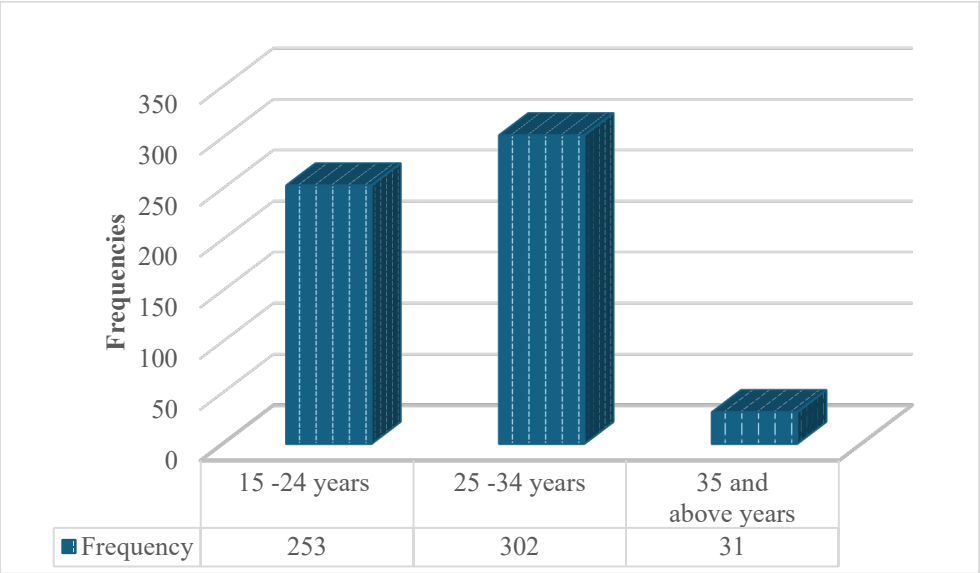

Figure 2. Respondents by age

3.1.3 Pre-Enrolment Status of Graduates

Before their enrollment at Arusha Technical College, a substantial majority of respondents (73.4%) had completed secondary education and were in a transitional phase awaiting admission to the College. Additionally, 11.5% were engaged in formal employment across various sectors including public institutions, private enterprises, and non-governmental organizations (NGOs). A further 8.9% were involved in self-employment activities, 3.6% participated in volunteer work, while 2.6% were undertaking internships as shown in Figure 3. The predominance of students transitioning directly from secondary school aligns with national trends reported in Tanzanian TVET studies, which highlight that many students view TVET as a viable alternative to university education, particularly when seeking practical skills and faster entry into the labor market (URT, 2021).

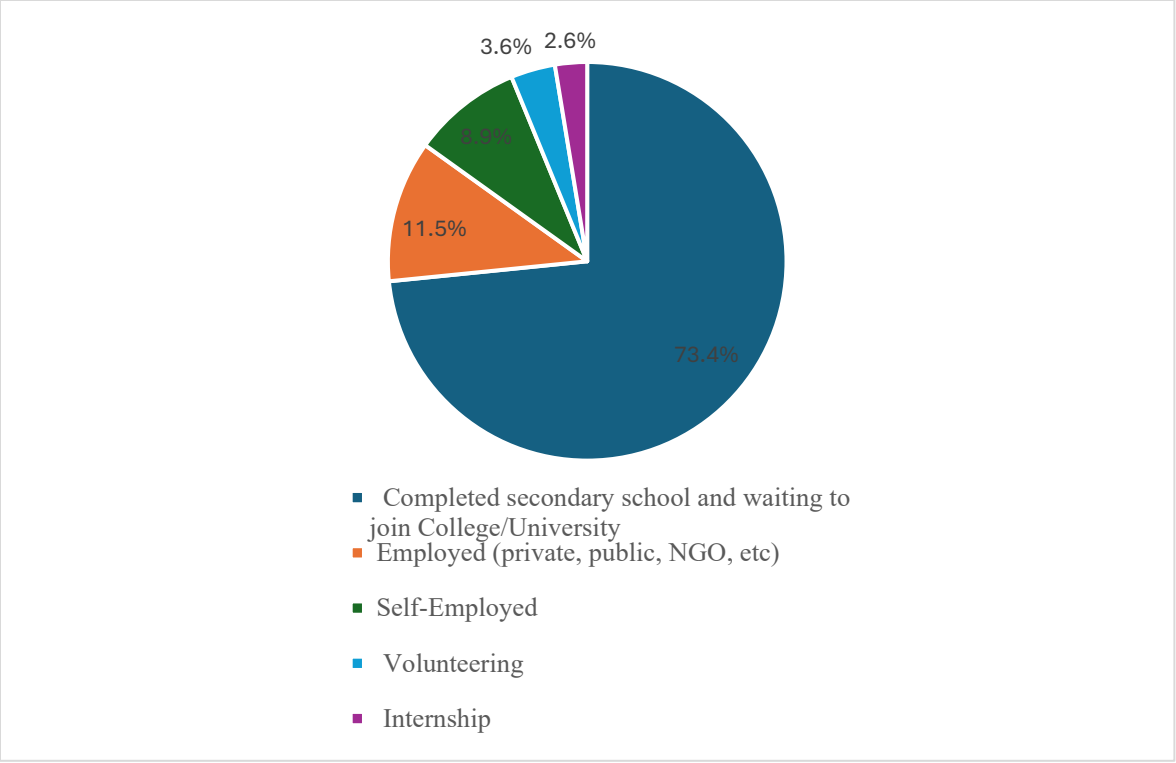

Figure 3. Pre-Entry status of graduates

3.2 Academic Information of the Respondents

3.2.1 Entry Qualifications of Graduates

The entry qualification data for graduates of Arusha Technical College shows that the majority (70.8%) were admitted with a Certificate of Secondary Education Examination (CSEE), indicating a strong reliance on direct entry from secondary education. A smaller proportion (21.9%) entered with an Ordinary Diploma (NTA Level 6), while very few had qualifications such as the Vocational Training Certificate (3.1%), Basic Technician Certificate (2.1%), or Higher Diploma (2.1%). Notably, no graduates entered with a Technician Certificate (NTA Level 5) as shown in Figure 4.

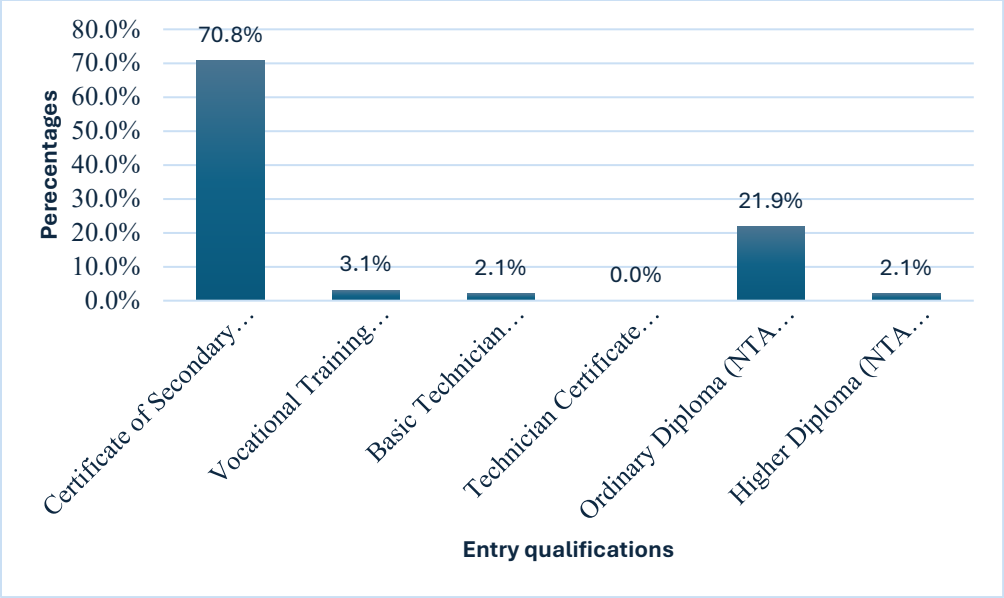

Figure 4. Percentages of respondents by their entry qualifications

3.2.2 Respondents by Level of Qualification

The findings indicate that the majority of graduates (74.0%) from the institution held an Ordinary Diploma (NTA Level 6), followed by 22.9% with a Bachelor's Degree (NTA Level 8), while minimal proportions held Basic Technician Certificate (0.5%), Technician Certificate (0.5%), and Higher Diploma (2.1%) as shown in Figure 5. This distribution reflects the primary focus of many Tanzanian TVET institutions on diploma-level training as a key strategy to equip learners with practical and employable skills (URT, 2021). The relatively high share of degree holders suggests increasing vertical mobility and alignment with the national vision for producing competent professionals for the labour market.

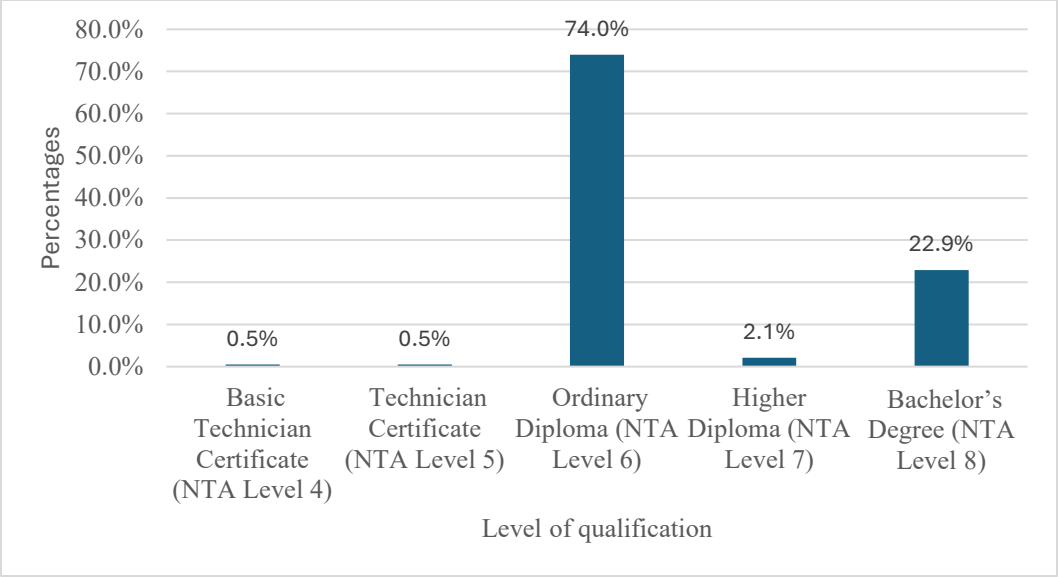

Figure 5. Percentages of respondents by their level of qualification

3.2.3 Time for Completing Studies

Figure 6 shows the percentage of respondents who finished their studies within the typical duration and those who did not. time and those who did not complete their studies within the usual length of time.

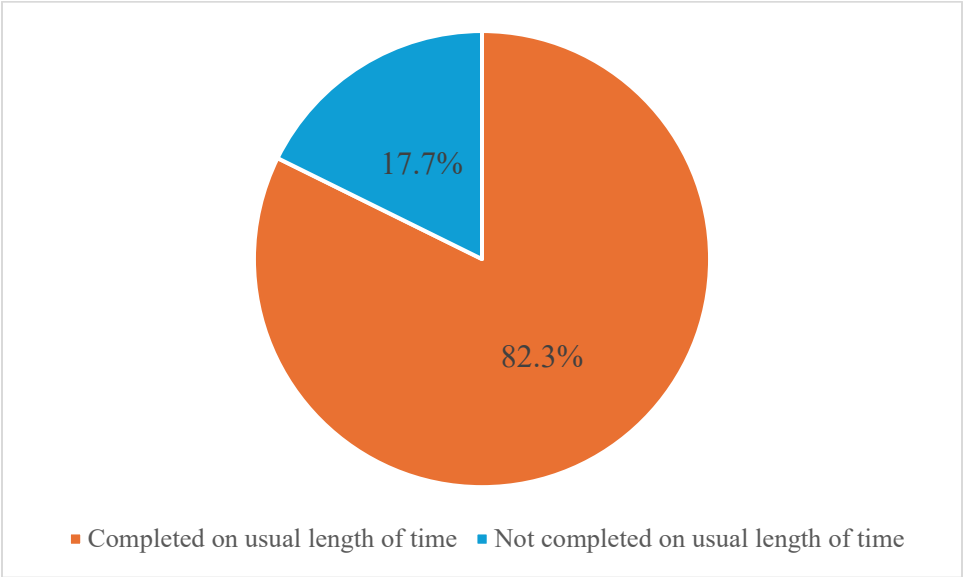

Figure 6. Percentages of respondents per time taken to complete their studies

The findings show that a significant majority of graduates (82.3%) completed their studies within the usual length of time, while 17.7% did not. This high completion rate within the expected

timeframe suggests effective academic planning, adequate student support systems, and proper alignment between curriculum delivery and institutional resources. According to Tinto (1993), timely completion is often linked to student integration into the academic and social systems of the institution, while Astin (1999) emphasizes the importance of student engagement and institutional commitment in influencing academic outcomes.

Among 104 (17.7%) respondents who did not complete their studies in their usual length of time, the most common reason was academic challenges (48.3%), followed by financial difficulties (17.2%) and personal matters (17.2%). A smaller proportion reported delays due to employment obligations (10.3%) and health-related issues (6.9%), while none cited family responsibilities, as shown in Table. These results are consistent with the literature, which identifies academic underperformance and financial constraints as major contributors to delayed graduation in higher and technical education (Tinto, 1993; UNESCO, 2018).

Table 2. Distribution of reasons for not completing studies within the usual length of time

Reason for not completing studies in the usual length of time	Frequency	Percentage
Had job	11	10.3%
Academic	50	48.3%
Financial	18	17.2%
Family responsibility	0	0.0%
Health-related	7	6.9%
Personal matters	18	17.2%

3.3 Employment Status of Graduates

3.3.1 Graduate Employment Rates Six Months After Graduation

The tracer study findings from 586 graduates reveal that six months after graduation, 27.1% were employed, 12.5% were self-employed, and 28.6% had pursued further academic studies as shown in Figure 7. These results indicate that slightly over a quarter of the graduates transitioned directly into formal employment, which aligns with patterns observed in TVET graduate employment across many African countries, where integration into the labour market is often gradual (AfDB,

2018). The 12.5% self-employment rate reflects the growing emphasis on entrepreneurship and self-reliance among TVET graduates, consistent with UNESCO's (2020) recommendation that TVET systems should incorporate entrepreneurial training to prepare learners for diverse labour market outcomes. The relatively high percentage (28.6%) pursuing further studies suggests a strong motivation for academic advancement, which may be driven by the desire to enhance employability, gain professional qualifications, or meet job market demands for higher-level competencies (ILO, 2021).

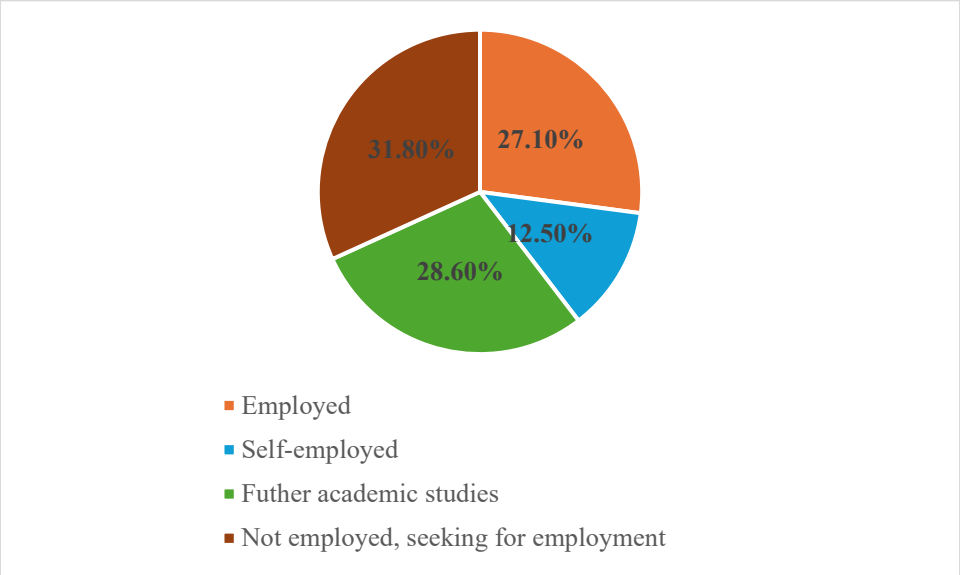

Figure 7. Status of graduate employment six months after graduation

3.3.2 Graduate Employment Rates Six Months After Graduation by Gender

The analysis of employment status by gender six months after graduation from Arusha Technical College reveals notable disparities. Male graduates had higher rates of both formal employment (31.4%) and self-employment (13.6%) compared to their female counterparts (15.4% and 9.6%, respectively), indicating that men are more successful in transitioning into the labor market. In contrast, a greater proportion of female graduates (42.3%) pursued further academic studies, suggesting a strategy to enhance their employability in response to limited job opportunities. Unemployment rates were relatively similar between genders, with 31.4% of males and 32.7% of females actively seeking work. These findings align with scholarly works that highlight persistent gender inequalities in TVET outcomes, driven by sociocultural norms, limited employer confidence in female technical graduates, and fewer opportunities for women in male-dominated sectors (Mushi & Urassa, 2020)

Table 3. Graduate employment rates six months after graduation by gender

Gender		Employed	Self-employed	Further academic studies	Not employed, seeking employment
Male	Count	134	58	101	134
	Percentage	31.4%	13.6%	23.6%	31.4%
Females	Count	24	15	67	52
	Percentage	15.4%	9.6%	42.3%	32.7%

3.3.3 Duration of Job Search

The findings indicate that 57.6% of employed graduates secured jobs within 0–6 months after graduation, while 25.4% found employment within 7–12 months, and 16.9% took over a year, as shown in Figure 8. The majority entering the labour market within six months is a positive sign of training relevance, as noted by the ILO (2020), which views this timeframe as a benchmark for successful transitions in developing economies. However, 42.3% of graduates facing delayed employment suggests challenges such as limited job openings and skills mismatch, as highlighted by AfDB (2018) and UNESCO-UNEVOC (2020). Those waiting over 12 months point to systemic barriers like weak employer linkages, lack of work experience, and insufficient career guidance. These findings highlight the necessity for improved career services, industry partnerships, and practical training components like internships in TVET programs.

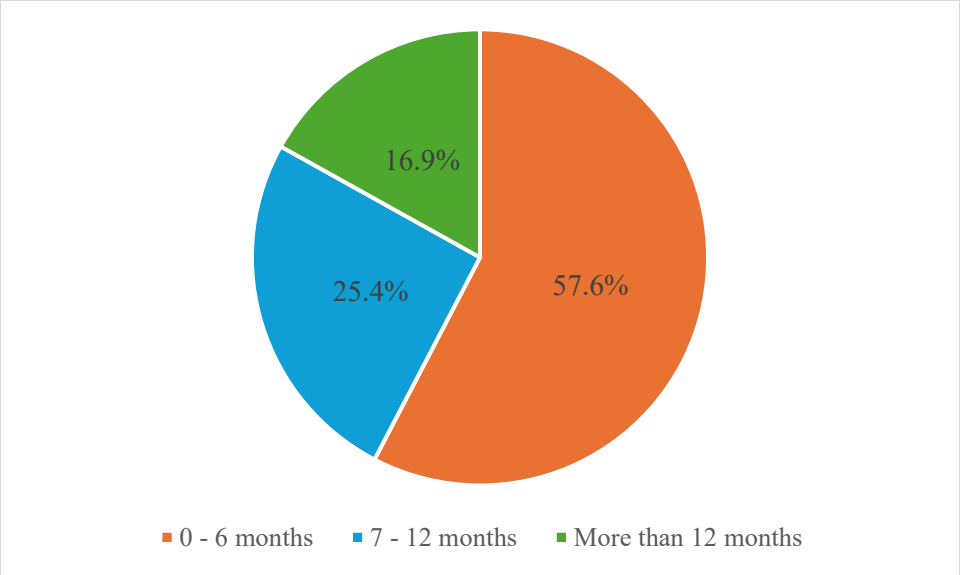

Figure 8. Duration of job search among employed graduates

3.3.4 Sources of Employment Information Among Employed Graduates

The findings show that over half of the employed graduates (51.7%) obtained employment information through internet and online job portals, making it the most dominant source, followed by advertisements in print media (19.0%) and personal connections through family and friends (19.0%), as shown in Table 4. This underscores the growing importance of digital platforms in modern job searching, consistent with ILO (2021) and World Bank (2020) reports that highlight digitalization as a key enabler of youth employment, particularly in urban and semi-urban areas. The role of personal network including, family, friends, and professional contacts, remains significant, reflecting the informal nature of many labour markets in Sub-Saharan Africa (AfDB, 2018). However, fewer graduates reported direct employer contact (1.7%), being approached by employers (3.4%), or using social media (1.7%), suggesting limited effectiveness or underutilization of these channels. These findings imply a need for TVET institutions to enhance digital literacy, job search training, and professional networking for graduates to improve employment outcomes. They also suggest that traditional media and informal referrals continue to play a complementary role in labor market entry.

Table 4. Sources of employment information among employed graduates

Source of employment information	Frequency	Percentage
Advertisements in a newspaper or other print media	30	19.0%
Internet and online job portals (e.g., government websites, company websites)	82	51.7%
Family, friends or relatives	30	19.0%
Approached the employer directly	3	1.7%
Approached by an employer	5	3.4%
Work contacts or networks	5	3.4%
Social media	3	1.7%

3.3.5 Number of Employers Contacted Before Getting Current Job

The data shows that 29.8% of graduates contacted two to four employers before finding their current job, 28.1% contacted only one, 22.8% reached out to more than four, and 19.3% did not contact any employers as shown in Figure 9. This indicates a proactive job search among graduates in a competitive labour market. The high percentage of graduates contacting multiple employers aligns with findings from the International Labour Organization (ILO, 2020), which highlight that young job seekers in developing economies often face difficulties due to limited job availability and skills mismatches. The 19.3% who did not contact employers may have been recruited through internships or referrals, emphasizing the need for strong institutional linkages and labor market information (UNESCO-UNEVOC, 2020). These insights point to the necessity for TVET institutions to provide job search strategies, employer engagement skills, and work-based learning opportunities to improve employability.

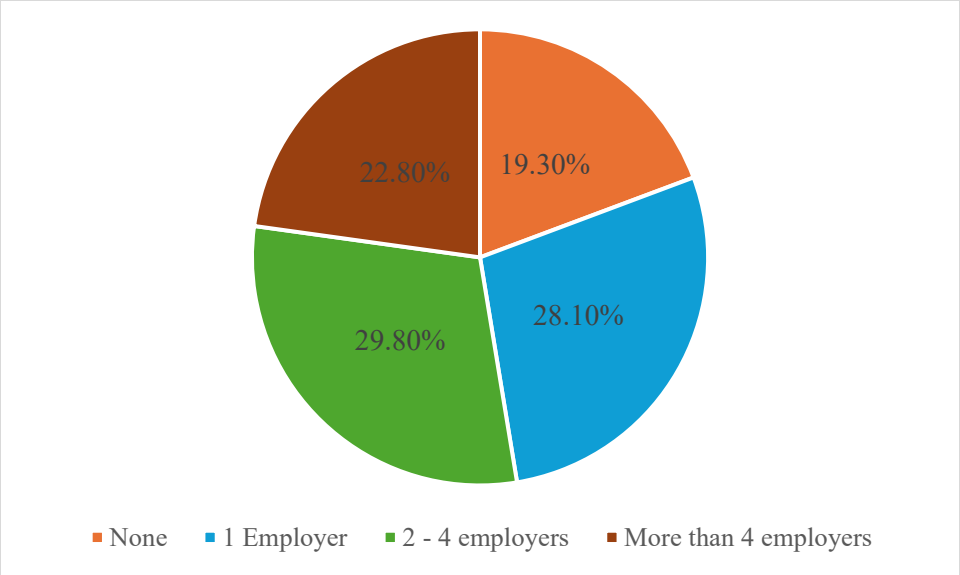

Figure 9. Number of employers contacted before getting the current job

3.3.6 Employment Status by Employer Category

The findings indicate that 72.9% of employed graduates work in the public sector, 25.4% in the private sector, 1.7% in international organizations, and none in non-governmental organizations (NGOs) as shown in Figure 10. This dominance of public sector employment reflects the traditional role of government as the primary employer of skilled labour in many developing countries, particularly in sectors such as education, health, and infrastructure (ILO, 2020). The relatively low absorption by the private sector suggests limited industrial capacity or a mismatch between graduate skills and private sector demands, as noted by AfDB (2018). The absence of graduates in NGOs may indicate weak linkages between TVET institutions and the civil society sector or a lack of awareness among graduates of career opportunities in NGOs. Furthermore, the minimal representation in international organizations underscores the need to enhance the global competitiveness of graduates through soft skills, language proficiency, and international exposure.

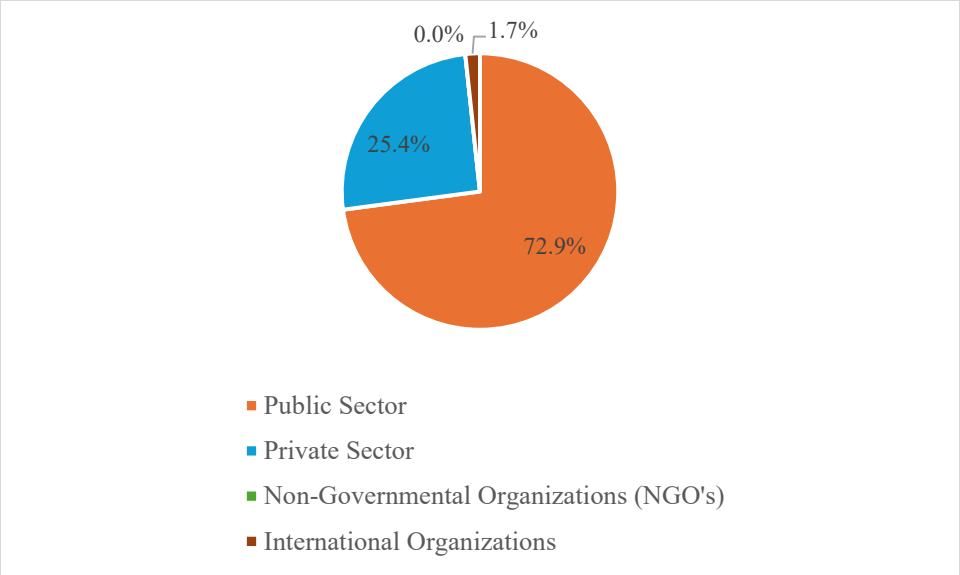

Figure 10. Employer category

3.3.7 Employment Status by Industry

The findings indicate that the majority of employed graduates are concentrated in the education sector (27.1%), followed closely by tourism and hospitality (22.9%) and finance services (22.9%) as shown in Figure 11. Smaller proportions are employed in research, agriculture, energy, oil and gas, insurance, and other sectors, each representing 4.2% or less. The prominence of the education sector suggests that many graduates may be working as technical instructors or education officers, which aligns with Tanzania's strategy of expanding technical and vocational training to support economic growth (URT, 2021). The strong representation in tourism, hospitality, and finance reflects the country's growing service economy, consistent with AfDB (2018), which notes that service-oriented sectors are increasingly becoming major employers of youth in Africa. Conversely, limited absorption in key productive sectors such as agriculture, energy, and manufacturing suggests a gap between graduate specialization and industry demand or limited industrial development. UNESCO (2020) emphasizes the importance of aligning TVET curricula with labour market needs to promote diversified employment across sectors. These findings highlight the need for stronger industry-academia linkages, sector-specific training programs, and incentives for graduate placement in underrepresented but economically strategic sectors.

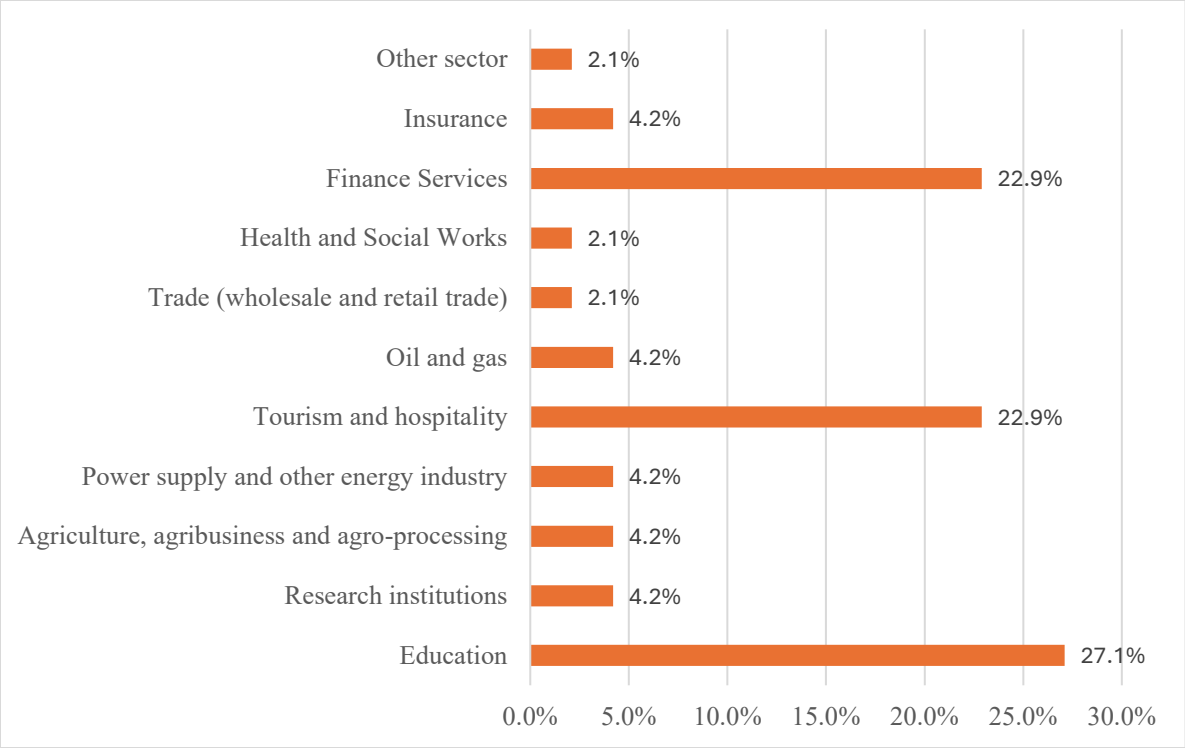

Figure 11. Employment status by industry

3.3.8 Type of Employment Contracts

The results show that a large majority (83.1%) of employed graduates are on permanent or full-time contracts, while 15.3% hold fixed-term contracts with defined start and end dates, and only 1.7% are on part-time contracts as shown in Figure 12. This high rate of full-time employment is a positive indicator of job stability and long-term engagement in the labour market, which is often associated with better income security, social protection, and career development opportunities (ILO, 2020). The relatively low proportion of part-time and fixed-term contracts suggests that most graduates are securing standard employment arrangements rather than precarious or informal jobs, a challenge that often affects youth in developing countries (World Bank, 2020). These findings may reflect the public sector's dominance as the main employer, where full-time contracts are more common.

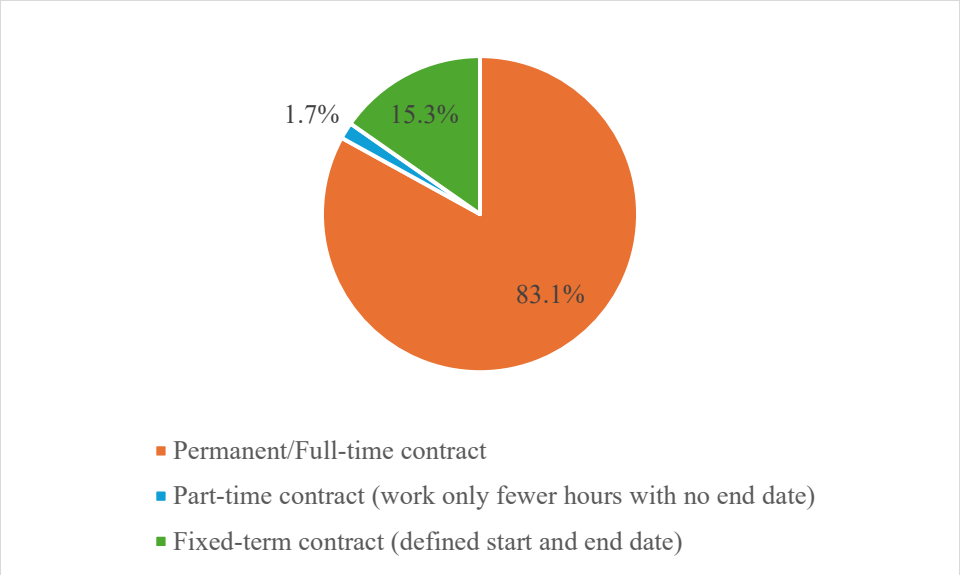

Figure 12. Types of employment contracts for employed graduates

3.3.9 Categories of Self-Employment

The findings indicate that the majority of self-employed graduates (61.1%) are solo entrepreneurs without employees, while 38.9% have established enterprises that employ others, as shown in Figure 13. This pattern reflects the early stages of entrepreneurial activity commonly observed among youth, where limited capital, market access, and managerial experience constrain business expansion (ILO, 2020). Solo self-employment often serves as a survival strategy or a transitional phase before scaling up, as highlighted by the African Development Bank (AfDB, 2018), which notes that many young entrepreneurs operate informally and face systemic barriers to growth. However, the significant proportion of graduates employing others (38.9%) is encouraging, as it demonstrates the potential of TVET graduates not only to create jobs for themselves but also to contribute to broader employment generation. According to UNESCO-UNEVOC (2020), embedding entrepreneurial skills in TVET programs is critical to fostering sustainable self-employment and enterprise development. These results underscore the importance of providing targeted support, including business incubation, financial access, and mentorship, to help graduates transition from solo ventures to job-creating enterprises.

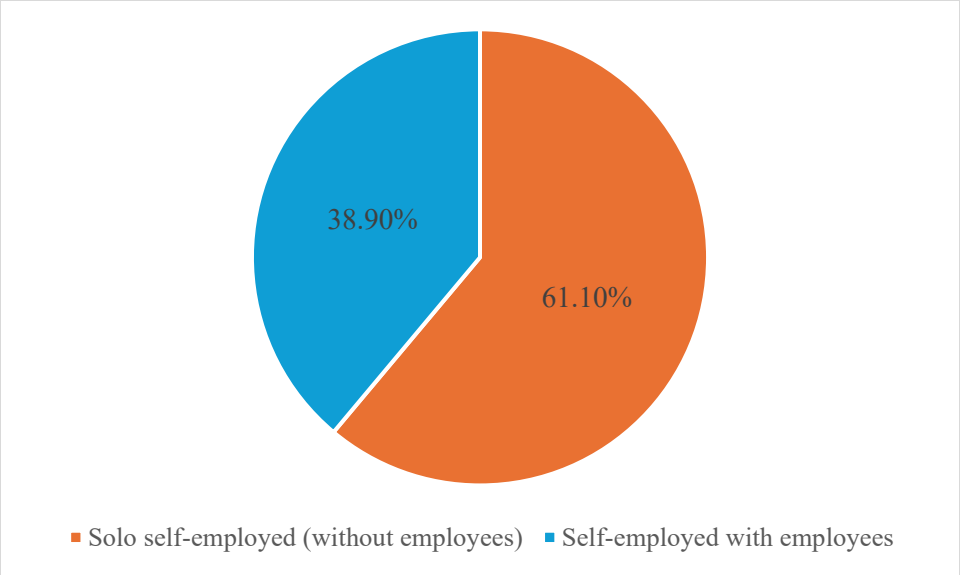

Figure 13. Categories of self-employment

3.3.10 Relationship Between Self-Employment and Field of Study

The findings show that 61.1% of self-employed graduates reported their business activities as closely related to their field of study, 27.8% indicated a somewhat related connection, while 11.1% stated there was no relation at all, as shown in Figure 14. This high level of alignment suggests that the skills and competencies acquired through TVET programs are generally relevant and applicable to entrepreneurial ventures, affirming the role of vocational education in equipping learners with practical, occupation-specific skills (UNESCO, 2020). The presence of graduates in self-employment activities unrelated to their field, however, reflects the flexible application of transferable skills such as communication, problem-solving, and basic technical knowledge, which are essential across industries (ILO, 2021). It may also point to labour market constraints or limited business opportunities within their original areas of training, compelling graduates to adapt or diversify.

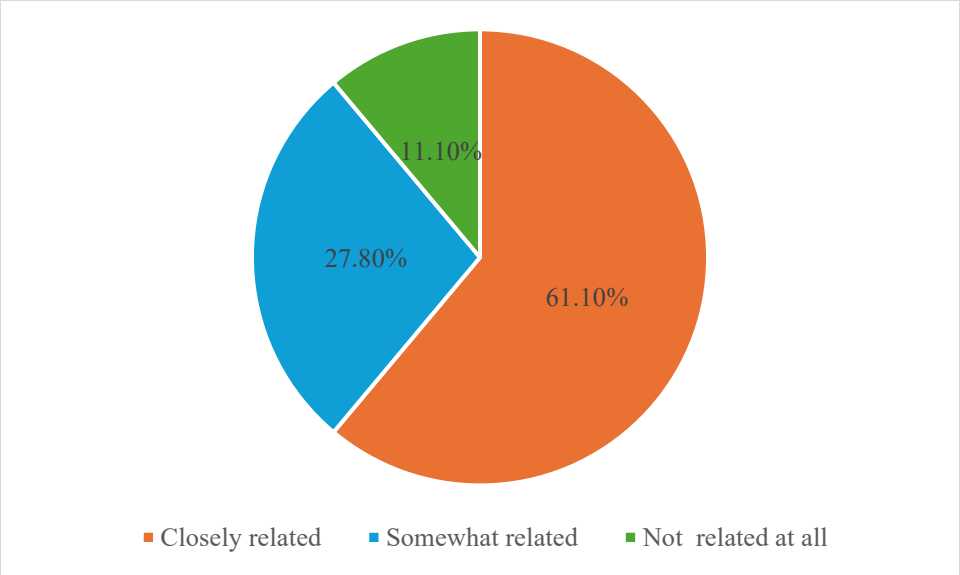

Figure 14. Relationship between self-employment and field of study

3.3.11 Challenges Faced in Self-Employment

The findings reveal that self-employed graduates face several interconnected challenges, with the most prominent being limited access to startup capital, financial instability, and income inconsistency. Many also reported a mismatch between the skills acquired during their studies and the practical demands of the job market, as well as inadequate exposure to advanced technologies. Additional barriers include a lack of equipment, high business operating costs such as rent, intense market competition, and the burden of managing all aspects of a business alone. These challenges highlight the need for improved curriculum relevance, greater access to financial and technical support, and stronger linkages between training institutions and industry to better prepare graduates for self-employment.

3.3.12 Alignment Between Academic Studies and Academic Background

The findings indicate that a vast majority of graduates (95.7%) reported that their further studies align with their educational background, while only 4.3% indicated misalignment, as shown in Figure 15. This high level of alignment suggests that the initial training provided by TVET or higher education institutions laid a solid foundation for academic progression and specialization. According to UNESCO (2020), alignment between educational background and further studies is critical for building coherent learning pathways and enhancing the relevance and effectiveness of tertiary education systems. It also reflects positively on the design of programs that facilitate

vertical academic mobility, allowing graduates to build upon prior knowledge and competencies.

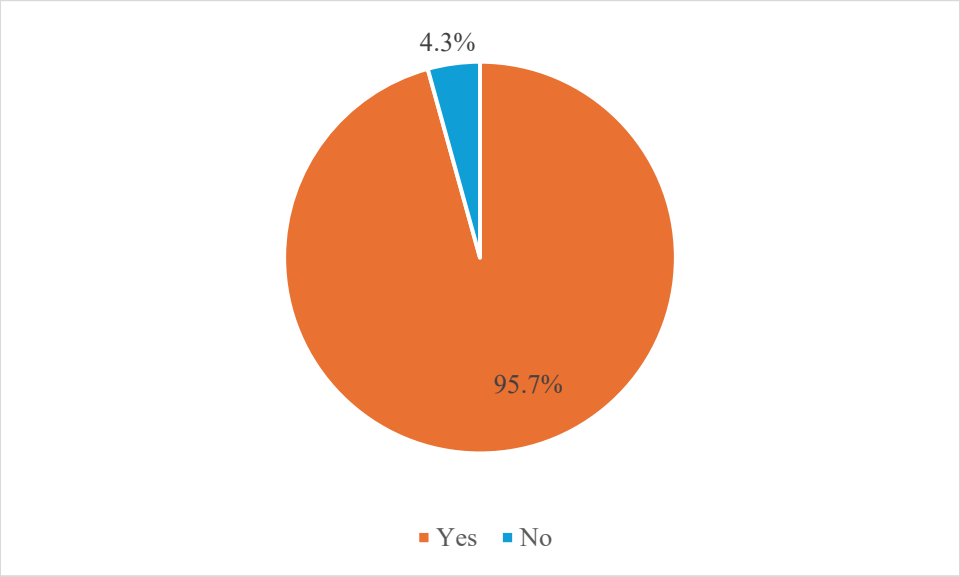

Figure 15. Alignment between the programme of further studies and academic background

3.3.13 Reasons for Pursuing Further Studies After Graduation

The findings indicate that the primary reason graduates pursued further studies after graduation was to acquire specialized knowledge or skills in a specific field, cited by 75.3% of respondents. This was followed by improving employability and job market competitiveness (60.2%), meeting industry requirements (40.9%), and increasing salary potential (18.3%). These results reflect a strong desire among graduates to deepen their technical expertise and adapt to evolving labor market demands, consistent with UNESCO (2020), which emphasizes the importance of continuous learning and specialization for career advancement in a knowledge-driven economy. The emphasis on employability and industry relevance also aligns with ILO (2021), which stresses that advanced qualifications can enhance youth access to quality jobs. The lower proportion citing salary improvement suggests that while financial benefits are a motivator, the pursuit of further studies is primarily driven by skills development and alignment with professional standards. These insights underscore the importance of offering flexible, market-relevant academic progression pathways to support lifelong learning and workforce adaptability.

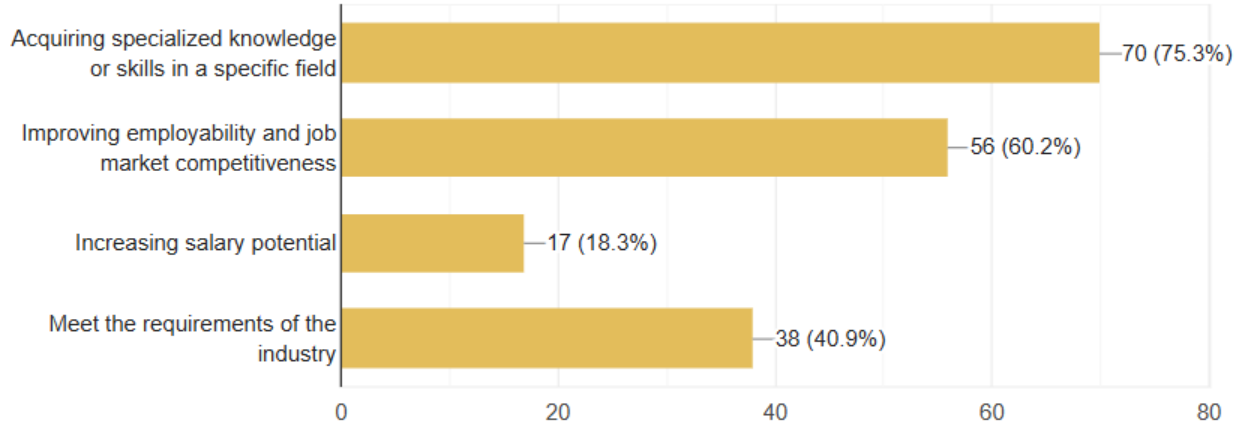

Figure 16. Reasons for pursuing further studies

3.4 Relevance of Training with Labour Market Demands

The findings indicate that graduates perceive a high demand in the labor market for practical job-related skills (Mean = 1.34), teamwork (1.32), communication (1.38), problem-solving (1.37), and time management (1.40), all falling close to the "very great extent" on the rating scale. In contrast, theoretical knowledge (Mean = 2.05), entrepreneurship (1.80), and mathematical skills (1.81) are rated slightly lower, though still considered important. These results underscore the labor market's prioritization of soft skills and applied competencies over purely theoretical knowledge, reflecting global trends highlighted by the International Labour Organization (ILO, 2021), which notes that 21st-century employability increasingly hinges on transferable skills such as collaboration, adaptability, and communication. UNESCO (2020) similarly emphasizes that technical and vocational education must focus on practical, job-relevant training to ensure graduates meet workforce needs. The relatively lower scores for competencies like working under pressure, leadership, and entrepreneurship suggest that while valued, these may be more situational or expected at advanced career stages. Overall, the findings highlight the need for TVET and higher education institutions to balance technical instruction with the development of soft and practical skills to enhance graduates' workplace readiness and long-term career success.

Table 5. Mean and standard deviations of the extent of relation training and labour market demands

	Mean	Std. Deviation
Theoretical job-related knowledge	2.05	0.95
Practical job-related skills	1.34	0.71
Work ethics, application of rules and regulations	1.54	0.77
Communication skills	1.38	0.69
Teamwork skills	1.32	0.67
Problem-solving skills	1.37	0.67
Creativity	1.43	0.74
Time management	1.4	0.71
Negotiation skills	1.64	0.82
Working under pressure	1.83	0.96
Working independently	1.71	0.87
Leadership and management skills	1.45	0.76
Mathematical skills	1.81	0.91
Entrepreneurship skills	1.8	0.91

3.5 Graduates' Satisfaction with Training

3.5.1 Aspects of their Training that Graduates Enjoyed Most

Graduates overwhelmingly valued the hands-on, experiential components of their programmes—most frequently citing workshop and laboratory sessions, industrial practical training, site work, and live project design (e.g., CAD, irrigation modelling, structural and machine system layouts) as the aspects they enjoyed most. They also highlighted the importance of using real equipment and software tools (AutoCAD, SolidWorks, PLC programming), collaborative teamwork on practical assignments, and clear, supportive instruction from patient, knowledgeable lecturers.

This emphasis on authentic practice reflects Kolb's (1984) experiential learning theory, which posits that concrete, active experimentation deepens understanding. These findings suggest that TVET programmes should continue to prioritize practical, project-based pedagogies and strong teacher facilitation to maximize student engagement and workplace readiness.

3.5.1 Aspects of their Most that Graduates Found Challenging

Graduates identified several interrelated challenges in their programmes, most notably an overemphasis on theoretical content at the expense of hands-on practice, insufficient access to essential facilities and equipment (e.g., computer labs, workshop tools, field-based training), and a heavy workload coupled with tight deadlines that strained their time-management capacities. They also reported inconsistencies in teaching quality and the inclusion of modules perceived as irrelevant to their core disciplines. These findings mirror UNESCO-UNEVOC's (2020) observation that TVET systems often suffer from a theory–practice gap that undermines skill transfer, and align with Kolb's (1984) experiential learning theory, which underscores the necessity of concrete, applied learning environments for effective knowledge acquisition. Moreover, Biggs and Tang's (2007) constructive alignment framework suggests that curricular misalignment between learning outcomes, teaching methods, and assessment tasks can exacerbate student disengagement and perceived irrelevance, highlighting the need for integrated, workplace-oriented pedagogies in technical education.

3.6 Graduates' Recommendations for Improving Training at the College

Graduates consistently reported that an overemphasis on theoretical instruction, coupled with insufficient access to practical facilities, equipment, and hands-on fieldwork, undermined their readiness for real-world engineering and technical tasks. They also cited heavy workloads with tight deadlines, inconsistent teaching quality, and the inclusion of modules perceived as irrelevant to their core disciplines as key frustrations. To address these gaps, the following recommendations were proposed:

(a) Expand and modernize practical training facilities—workshops, laboratories, and computer room and ensure up-to-date equipment and software are available.

(b) Rebalance the curriculum by reducing non-essential theoretical modules and enhancing competency-based, industry-aligned content.

(c) Strengthen teaching quality through professional development for instructors and clearer instructional guidelines.

(d) Increase structured industry engagement—internships, site visits, and study tours—through formal partnerships with employers.

(e) Improve digital infrastructure and learning resources by ensuring reliable internet access, updated textbooks, and e-learning tools.

(f) Adjust timetabling to allocate sufficient time for practical sessions and fieldwork, reducing student overload and supporting deeper learning.

CHAPTER FOUR

CONCLUSIONS AND RECOMMENDATIONS

4.1.Conclusions

This tracer study provides comprehensive insights into the employment outcomes, training relevance, and satisfaction levels of graduates from Arusha Technical College. Notably, six months post-graduation, approximately 27.1% of graduates secured formal employment, while 12.5% ventured into self-employment, and 28.6% pursued further academic studies. Employment disparities by gender were evident, with male graduates having higher rates of formal and self-employment, whereas female graduates predominantly pursued further studies, indicating a strategy to enhance employability amidst constrained job opportunities.

The majority of employed graduates found jobs within six months, predominantly through online platforms and personal networks. Employment was mainly concentrated in the public sector, notably in education, hospitality, and finance sectors, reflecting both sectoral demand and curriculum alignment. The predominance of full-time contracts suggests relative job security, particularly within the public sector.

Self-employed graduates primarily operated solo enterprises, often closely aligned with their fields of study. However, significant challenges persisted, including limited access to startup capital, financial instability, and skill gaps, underscoring the need for targeted entrepreneurial support.

Graduates expressed strong satisfaction with practical, hands-on components of their training, such as workshops and industry-based experiences. Nevertheless, they highlighted concerns over theoretical overload, limited practical resources, inconsistent teaching quality, and time management pressures

4.2.Recommendations

The results of this tracer study highlight a chance to enhance educational planning and development, ensuring that graduates are adequately equipped for the job market. To leverage these insights and improve graduates' employability, the following recommendations are suggested.

- Expanding and modernizing practical training facilities, including laboratories, workshops, and computer rooms, ensuring regular maintenance and updates to align with industry standards. Additionally, a curriculum reform is suggested to shift the focus towards more practical, competency-based, and industry-relevant training, minimizing theoretical overload and eliminating irrelevant modules.
- Improving teaching quality through continuous professional development programs for instructors, coupled with consistent instructional guidelines and regular monitoring, is essential. Strengthening industry-academia linkages by establishing structured internships, field visits, and formal agreements with industry stakeholders will enhance graduate employability.
- Entrepreneurial support initiatives should be introduced, including comprehensive entrepreneurial training and business incubation programs, alongside facilitating access to startup capital through collaborations with financial institutions. Graduate support services need enhancement through improved digital literacy and job search training, and effective alumni tracking systems.
- Lastly, institutional resource allocation should prioritize adequate scheduling for practical training sessions and investing in robust digital infrastructure, ensuring reliable internet access and contemporary e-learning resources. Implementing these recommendations will substantially improve graduate outcomes, enhance employability, and ensure the College remains responsive to evolving labor market demands.

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