Employment Tracer Study of Technology Education University Graduates in Anambra State

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ABSTRACT

This employment tracer study of technology education university graduates' career trajectories in Anambra State, specifically examined the employment status, sectoral absorption, and career challenges of technology education graduates from Nnamdi Azikiwe University, Awka, between 2010/2011 and 2019/2020. Adopting a descriptive research design, data were collected from the entire population of 195 graduates using a validated and reliable questionnaire (Cronbach's α = 0.824–0.887) distributed via Google Forms. Data analysis was done using descriptive statistics with the help of SPSS version 25. Findings indicated that employment outcomes varied by specialization: Electrical/Electronic Technology graduates were predominantly wage-employed, Building/Woodwork Technology graduates were mostly self-employed, and Mechanical/Automobile Technology graduates exhibited mixed outcomes. Recent cohorts (2016/2017–2019/2020) recorded higher employment rates, with most initial jobs found in the private sector, particularly in educational institutions, industrial firms, and entrepreneurial ventures. Lead times to employment ranged from immediate placement to over a year, with significant challenges including job scarcity, skill–job mismatch, delayed academic documentation, and limited financial resources for job search. The study concluded that specialization, graduation year, and sectoral dynamics significantly influenced employability, with private sector absorption and entrepreneurship playing key roles. It recommended specialization-specific job fairs, strengthened industry–academia linkages, curriculum audits, timely academic documentation, and structured graduate tracking systems to improve school-to-work transitions and align training with labour market demands.

Keywords: Employment, tracer study, technology education, graduates.

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INTRODUCTION

University education plays a pivotal role in fostering sustainable human capital development, community engagement, and economic growth (United States Agency for International Development, 2020). As institutions designed to prepare students for the labour market, universities serve as hubs for intellectual development, research, and professional training across various disciplines (Alemu, 2018; Trystan, 2019). Governments depend on these institutions not only to supply skilled manpower but also to generate knowledge and innovation to address societal and global challenges (United Nations Educational, Scientific and Cultural Organization, 2021). In recent decades, the emphasis on practical skills in university curricula has intensified, aligning academic

training with labour market demands (Josephine & Bokime, 2018). Among the various academic disciplines, technology education stands out as a strategic tool for equipping graduates with both technical expertise and employability skills necessary for meaningful participation in the modern workforce.

Technology education, recognized globally as a driver of economic growth, focuses on imparting occupational and entrepreneurial skills that reduce unemployment, poverty, and social challenges (Aselebe & Alayande, 2022). It combines hands-on training with theoretical knowledge to produce graduates who are adaptable, innovative, and ready for both self-employment and paid work (Bello & Muhammad, 2021; Olowe, 2023). In Nigeria, technology education programmes are designed to prepare both educators and industry professionals by prioritizing applied knowledge and practical skills (Josephine & Bokime, 2018). The National Universities Commission (NUC, 2023) outlines objectives that include fostering entrepreneurship, promoting technical self-reliance, and cultivating leadership qualities among graduates. Meeting these objectives requires a strong alignment between the skills imparted during training and those demanded by the labour market, an alignment that can only be validated through systematic graduate feedback mechanisms.

Graduate tracer studies have become a valuable tool for assessing the effectiveness of higher education programmes in preparing students for professional life (Badiru & Wahome, 2016; Basil et al., 2020). Such studies track graduates' employment outcomes, career progression, and the relevance of their training, providing evidence-based feedback for curriculum enhancement. While the NUC mandates universities to conduct tracer studies as part of quality assurance, in Anambra State, particularly within technology education programmes, such studies are either not systematically undertaken or are performed merely to meet accreditation requirements without producing actionable insights. This gap in rigorous, data-driven feedback limits the ability of universities to refine curricula in line with industry needs, thereby risking the production of graduates whose skills do not meet employer expectations.

Against this backdrop, the present study seeks to conduct an employment tracer study on technology education university graduates' career trajectories in Anambra State. It aims to provide empirical evidence on the employment status of graduates by specialization and graduation year, the sectors, and establishments in which they find work, the time taken to secure initial employment, and the challenges faced in job searching. Specifically, the study addresses the following research questions:

(1) What is the employment status of technology education university graduates based on their areas of specialization?
(2) What is the employment rate according to their respective years of graduation?
(3) In which establishments do these graduates secure their initial employment?
(4) What sectors of the economy absorb these graduates initially?
(5) What is the lead time before they obtain their first job?
(6) What are the difficulties encountered by technology education university graduates when searching for initial employment?

METHODS

The study adopted a descriptive research design to systematically collect and analyze data on the career trajectories and employment skills of technology education graduates from Nnamdi Azikiwe University, Awka, Anambra State, as per Nworgu (2015). This design was chosen to explore factual data regarding graduates' employment profiles for an informed curriculum improvement. The population comprised 195 graduates from the Department of Industrial Technology Education (regular students) who graduated between the 2010/2011 and 2019/2020 academic sessions. A census sampling technique was employed, involving data collection from every member of this manageable population (Nwanguma, 2024). Data was collected using a questionnaire adapted from Sharma and Bhattarai (2022) rated on a 5-point Likert scale (Strongly Agree to Strongly Disagree). The questionnaire's validity was established by Sharma and Bhattarai (2022) through content and convergent validity checks, with a panel of five experts rating items as relevant or very relevant and correlation values exceeding the critical Pearson coefficient of 0.24. The instrument was revalidated by panel of three experts and the validity was confirmed. Reliability was established using Cronbach's alpha, yielding values between 0.824 and 0.887, indicating high internal consistency (Cohen et al., 2018). At the end, 171 responses were received representing 87.69% was collected via Google Forms, distributed through WhatsApp to graduates' contacts obtained from the departmental and alumni relations offices, with responses collected within one week. Data analysis was conducted using SPSS version 25, employing descriptive statistics (frequency, percentage, ranking, mean, and standard deviation) to address research questions. The standard deviation assessed response consistency, with values below 1 indicating tightly grouped responses and values ≥1 suggesting dispersed opinions (Healey, 2018).

RESEARCH RESULTS

Employment Status of Technology Education University Graduates Based on Their Respective Areas of Specialization

The data presented in Table 1 shows the distribution of employment status across three areas of specialization. Building/Woodwork Technology has the highest number of self-employed individuals (55) and a moderate number of wage-employed (19), with very few unemployed (2), indicating strong self-employment opportunities in this field. Electrical/Electronic Technology has the highest number of wage-employed individuals (39) and fewer self-employed (19), with no unemployment reported, suggesting this specialization is more aligned with formal employment. Mechanical Automobile Technology has a more balanced distribution with fewer self-employed (10), a moderate number of wage-employed (15), but notably the highest unemployment (12), highlighting potential challenges in job availability for this group. Overall, self-employment is most common in Building/Woodwork, wage employment in Electrical/Electronic, and unemployment is most prevalent in Mechanical Automobile Technology.

Table 1: Employment status based on their respective areas of specialization

Area of Specialization	Self Employed	Wage Employed	Unemployed	Total
Building/Woodwork Technology	55	19	2	76
Electrical/Electronic Technology	19	39	0	58

Mechanical Automobile Technology	10	15	12	37
Total	**84**	**73**	**14**	**171**

Employment Rate of Technology Education University Graduates Based on Their Respective Years of Graduation

The data shown in Table 2 outlined the employment rate of graduates from the University Technology Education Programme across different graduation years from 2010 to 2020. Overall, out of 171 graduates, 84 are self-employed, 73 are wage-employed, and 14 are unemployed. The highest number of graduates was in 2019-2020, with a significant proportion (31) being self-employed, indicating a strong entrepreneurial trend in recent cohorts. Earlier years like 2013-2014 show a higher unemployment rate (8 unemployed), whereas some cohorts such as 2016-2017 have balanced employment with a high number of both self-employed (19) and wage-employed (21) graduates. This suggests that recent graduates are more likely to engage in self-employment or wage employment, while unemployment tends to be higher in some middle years. Overall, self-employment slightly surpasses wage employment, reflecting a potential preference or necessity for entrepreneurship among these graduates.

Table 2: Employment rate based on respective years of graduation

Year of Graduation	Self Employed	Wage Employed	Unemployed	Total
2010/2011	9	2	0	11
2011/2012	4	8	0	12
2012/2013	0	0	2	2
2013/2014	5	0	8	13
2014/2015	4	13	1	18
2015/2016	6	0	0	6
2016/2017	19	21	0	40
2017/2018	1	10	0	11
2018/2019	5	0	0	5
2019/2020	31	19	3	53
Total	**84**	**73**	**14**	**171**

Establishments Technology Education University Graduates obtained their Initial Employment

The data presented in Table 3 indicates that university graduates in Anambra State predominantly secured their initial employment in entrepreneurship ventures at 41.5% and educational establishments at 35.1% of the total placements. This is followed by industrial establishments at 23.4%. These figures suggest a significant inclination towards self-employment and educational sectors, reflecting the state's emphasis on skill development and vocational training. In terms of ranking, majority of the respondents (41.5%) began with entrepreneurship, making it the highest-ranked option (Rank 1), followed by educational establishments at 35.1% (Rank 2), and industrial establishments at 23.4% (Rank 3).

Table 3: Establishments of Initial Employment

Establishment	Frequency	Percent	Cumulative Percent	Rank

Industrial Establishment	40	23.4%	23.4%	3
Educational Establishment	60	35.1%	58.5%	2
Entrepreneurship	71	41.5%	100.0%	1
Total	**171**	**100.0**		

Sector of the Economy Technology Education University Graduates Obtained their Initial Employment

The data shown in Table 4 indicated that most respondents, 74.9%, obtained their initial employment in the private sector, while only 25.1% started in the public sector. This indicates a strong preference or greater availability of job opportunities in the private sector for initial employment among the surveyed group. Overall, the data suggests that the private sector plays a dominant role in providing first-time employment compared to the public sector. In terms of ranking, most respondents initially found employment in the private sector, which ranks first with 74.9%, while the public sector ranks second with only 25.1%, indicating a strong preference or availability of jobs in the private sector at the start of their careers.

Table 4: Sectors of the economy of initial employment

Sector of Initial Employment	Frequency	Percent	Rank
Public Sector	43	25.1%	2
Private Sector	128	74.9%	1
Total	**171**	**100%**	

Lead Time Before Technology Education University Graduates Obtained Their Initial Employment

The data presented in Table 5 outlined the distribution of how long it took respondents to secure initial employment after graduation. The largest group, comprising 28.1%, reported taking more than one year to find a job, indicating potential challenges in the job market or other factors delaying employment. About 22.2% found employment within one year, while 19.3% secured jobs within three months, suggesting a smaller but significant portion transitioned quickly into the workforce. Only 5.8% obtained employment within six months, and 24.6% indicated the question was not applicable to them, possibly due to continuing education or other reasons. Overall, the data suggest that for many graduates, securing employment can be a prolonged process, with a substantial number facing delays beyond a year. In the area of ranking, majority of respondents (28.1%) secured their first job more than a year after graduation, ranking it first, followed by 24.6% who reported employment status as not applicable (rank 2). Employment within one year ranked third (22.2%), while within three months and six months ranked fourth (19.3%) and fifth (5.8%) respectively, indicating a generally delayed employment trend among respondents.

Table 5: Lead time before obtaining initial employment

Lead Time	Frequency	Percent	Rank
Within three months after graduation	33	19.3%	4
Within six months after graduation	10	5.8%	5
Within one year after graduation	38	22.2%	3
More than one year after graduation	48	28.1%	1

Not applicable	42	24.6%	2
Total	171	100.0%	

Difficulties Encountered by Technology Education University Graduates When Searching for Initial Employment

Table 6 highlights various difficulties faced by individuals when searching for initial employment, with the most common challenge being the lack of immediate vacancies, affecting over half (50.3%) of the respondents. Other significant obstacles include jobs not aligning with their field of specialization (17%) and a mismatch in acquired skills (8.2%), indicating a gap between job market demands and candidates' qualifications. Delays in issuing results after graduation and in mobilization for mandatory national service each affected 5.8% of respondents, potentially prolonging the job search process. Financial constraints and emotional readiness were less frequently cited but still notable barriers, impacting 6.4% and 2.3% respectively. Overall, these findings suggest that structural issues within the job market, skill mismatches, and transitional delays collectively contribute to the difficulties new graduates face in securing employment. The ranking also reveals that the most significant difficulty faced by respondents in securing initial employment is the lack of immediate vacancies (50.3%), followed by the unavailability of jobs aligned with their field of specialization (17.0%) and a mismatch in acquired skills (8.2%). Lesser challenges include financial constraints for job hunting (6.4%) and delays in result issuance or national service mobilization (both 5.8%), while emotional unpreparedness (2.3%) and difficulties in passing job interviews (4.1%) ranked lowest.

Table 6: Difficulties encountered when searching for initial employment

Difficulties Encountered	Frequency	Percent	R
Delay in issuance of results after graduation	10	5.8	5
Delay in mobilization for the mandatory one year of national service	10	5.8	5
No immediate vacancy	86	50.3	1
Passing job interview	7	4.1	6
Available jobs are not in line with the field of specialization	29	17.0	2
Mismatch in skills acquired	14	8.2	3
Lack of financial support for job hunting	11	6.4	4
Not emotionally ready	4	2.3	7
Total	**171**	**100.0**	

DISCUSSION

The findings of this study in research question one revealed that the employment status of technology education graduates in Anambra State varies notably depending on their area of specialization. Graduates who specialized in Building/Woodwork Technology are predominantly self-employed, suggesting strong entrepreneurial engagement in that field. In contrast, those who studied Electrical/Electronic Technology are more likely to be wage-employed, indicating higher absorption into salaried positions, possibly in the public or private sectors. Meanwhile, Mechanical/Automobile Technology graduates exhibit a more balanced distribution among self-employment, wage employment, and unemployment, pointing to more variable employment outcomes and potential challenges in securing consistent job opportunities within that specialization. Overall, the findings suggest that the field of specialization significantly influences the type of employment graduates secure post-graduation. The findings of Balingbing (2023) align with that of this study by reinforcing the influence of specialization on employment outcomes

among technology education graduates. Balingbing's study supports the current results by showing that many graduates secure roles aligned with their technical backgrounds, particularly in industry sectors that do not require licensure, like the trend seen among Electrical/Electronic Technology graduates in the present study who are largely wage-employed. This highlights a demand for such skills in the job market.

The findings of the second research question of this study revealed that employment outcomes for technology education graduates in Anambra State vary significantly depending on the year of graduation. While some graduates experienced high levels of wage or self-employment shortly after graduation, others had more mixed outcomes, with periods where unemployment was notably present. Recent graduates, particularly those of 2019/2020 academic session generally show strong employment rates, suggesting possible improvements in job market alignment or programme effectiveness. However, fluctuations in employment types across years also indicate that external economic conditions or institutional support may have played a role in shaping these outcomes. Overall, the findings suggest a trend of growing employment among more recent graduates. The findings of Albina and Sumagaysay (2020) support the results of the current study by demonstrating a strong employment rate among technology-related programme graduates, many of whom found jobs closely related to their field of study shortly after graduation. This aligns with the observed trend in Anambra State, where recent technology education graduates, particularly from 2016/2017-2019/2020, showed higher levels of employment, suggesting an improving relevance of academic programmes to labour market needs.

The findings of the third research question of this study revealed that technology education graduates from universities in Anambra State initially found employment across three primary sectors: industrial establishments, educational institutions, and entrepreneurial ventures. A notable proportion of these graduates entered entrepreneurship, reflecting a strong trend toward self-reliance and the practical application of vocational skills acquired during their education. Meanwhile, a substantial number began their careers in the education sector, suggesting a demand for technical educators and perhaps a continued connection with academia. The presence of graduates in industrial settings, while smaller, also highlights opportunities within the manufacturing or production industries. Overall, the findings underscore a diverse employment landscape shaped by both personal initiative and institutional opportunities. The findings of Balingbing (2023) align closely with that of the present study, particularly in employment alignment with graduates' fields of study and the sectors they enter after graduation. The author highlighted that a substantial number of technology education graduates secure positions within educational institutions and industry roles, reflecting a practical application of their technical training. Balingbing's observation that many graduates found employment in companies valuing technical competencies, without requiring licensure, mirrors the present study's indication of graduate placement in industrial establishments. Overall, both studies emphasize the relevance of the technical education curriculum to actual job roles, reinforcing the importance of skill-based learning in shaping employment outcomes.

The findings of the fourth research question of this study revealed that most technology education university graduates in Anambra State secured their first jobs in the private sector rather than the public sector. This trend suggests that the private sector offers more immediate opportunities for employment or is more accessible to new graduates. It may also reflect differences in recruitment practices, availability of roles, or the speed at which private organizations absorb new talent compared to public institutions. Overall, the findings highlight the pivotal role of the private sector in shaping the early career paths of graduates in the field of technology education within the region. The findings of Albina and Sumagaysay (2020) align closely with the study with that of this study

as they found that most graduates of technology education were employed relatively quickly after graduation, often in positions related to their field of study mostly in the private sector. This suggests that graduates can transition effectively into the workforce, particularly in the private sectors that value their specialized skills, reinforcing the idea that the private sector plays a key role in providing timely and relevant employment opportunities for new graduates.

The findings of the fifth research question of this study revealed that a varied lead time before technology education graduates in Anambra State secure their initial employment. While some graduates find employment relatively soon after graduation, a significant portion experience a delay, taking up to or beyond a year to obtain their first job. Additionally, a notable number of respondents indicated that the question about lead time was not applicable to them, suggesting diverse circumstances affecting their transition into the workforce. Overall, the findings point to a range of experiences regarding how quickly graduates enter employment after completing their studies. The findings of the present study align closely with those of Albina and Sumagaysay (2020), who also observed that many education technology graduates secured employment within a year or less of graduation. Additionally, the findings of Balingbing (2023) supports this trend, showing that a majority of Bachelor of Technical Teacher Education (BTTE) graduates obtained jobs related to their specialization soon after graduation, especially in industry sectors that value technical expertise. However, the present study also echoes concerns raised by Onaga (2020), where despite possessing relevant skills, a notable segment of Building/Woodwork Technology Education (BWTE) graduates experienced delayed employment or were not represented in the workforce, possibly due to systemic barriers such as economic challenges or misalignment between academic training and labour market demands. This convergence of findings underscores the complex interplay between graduate readiness, market expectations, and employment timelines.

From the analysis of the sixth research question of this study, it was found that technology education university graduates in Anambra State face several challenges when seeking their first job after graduation. The most reported difficulty was the unavailability of immediate job openings, which significantly hinders their entry into the workforce. Another major issue was the lack of alignment between available jobs and the graduates' fields of specialization, pointing to a mismatch between educational outcomes and labour market demands. Graduates also cited challenges such as delays in the issuance of academic results and in their mobilization for national service, both of which can stall the job search process. Other less common but notable difficulties included a lack of financial resources for job hunting, emotional unpreparedness, and the struggle to succeed in job interviews. These findings highlight a combination of systemic, institutional, and personal barriers affecting the employment of graduates in the region. The findings of Onaga (2020) align closely with that of this study by highlighting the disconnect between the skills acquired during university training and the demands of the job market. The author emphasizes that despite graduates possessing technical or entrepreneurial skills, many face difficulty transitioning into employment due to factors such as industry expectations, economic barriers, and insufficient practical alignment between academic training and job requirements. Onaga's identification of issues like fear of failure, economic constraints, and client bias toward cheaper labour mirrors challenges such as the lack of immediate vacancies, skill mismatch, and misalignment between available jobs and graduates' areas of specialization found by the present study.

Recommendations

Based on the findings of this study, the following recommendations were made:

1. State and Federal Ministries of Education & Ministry of Labour, should organize specialization-specific job fairs, incentivize private sector hiring in technical fields, and support SME funding expos for entrepreneurship-heavy graduates.
2. Universities and industry managers and professionals should conduct regular curriculum audits, integrate employability modules, and strengthen industry-linked internships with priority recruitment agreements.
3. Universities and administrative bodies like the National Youth Service Corps (NYSC), should enforce timely release of results and mobilization, digitize graduate verification, and streamline transcript processing to reduce delays in job entry.
4. Universities and Alumni networks, should provide mandatory job readiness training, create career advisory units, offer micro-grants for job search expenses, and run mentorship programmes linking new graduates with experienced professionals.

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