

TRAINING IN EMERGING TECHNOLOGIES AND TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING (TVET) GRADUATES' EMPLOYABILITY IN SECURITY TECHNOLOGY INDUSTRIES FOR INSECURITY REDUCTION

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Abstract

This study investigated the influence of training in emerging technologies on Technical and Vocational Education and Training (TVET) graduates' employability in security technology industries and its contribution to insecurity reduction in Benue State, Nigeria. The population comprised TVET graduates employed in security-related organizations and final-year students of tertiary institutions in Benue State. A sample of 320 respondents was selected using a multistage sampling technique. Data were collected using the Technology Skill Acquisition Scale (TSAS) and the Employability Index Questionnaire (EIQ), with reliability coefficients of 0.87 and 0.91 respectively. The data were analysed using mean statistics, Pearson Product Moment Correlation, and logistic regression. The findings revealed a significant positive relationship between training in emerging technologies and graduates' employability in security technology industries. The results further showed that graduates possessing professional certifications had higher employability prospects than their non-certified counterparts, while industry demand strengthened the relationship between technology training and employment outcomes. Additionally, gainfully employed graduates contributed to insecurity reduction through cybersecurity services, surveillance support, GIS-based security mapping, and other technical security operations. The study concluded that training in emerging technologies significantly enhances employability and indirectly contributes to insecurity reduction through economic inclusion and improved security service delivery. It was recommended that TVET institutions should integrate emerging technologies into their curricula and strengthen collaboration with security technology industries to improve graduates' workforce readiness and support sustainable insecurity reduction efforts.

Keywords: Emerging technologies, TVET graduates, employability, security technology industries, insecurity reduction.

Introduction

Technical and Vocational Education and Training (TVET) has become a critical component of human capital development and economic transformation across the globe. In the twenty-first century knowledge economy, nations increasingly depend on a skilled workforce capable of adapting to rapid technological changes and addressing emerging societal challenges (Aina & Adeyemi, 2024; Okoye & Eze, 2023). TVET is specifically designed to equip learners with practical competencies, occupational skills, and technological expertise required for gainful employment, entrepreneurship, and sustainable national development (UNESCO, 2021; Federal Ministry of Education [FME], 2024). In Nigeria, the growing concern over youth unemployment, underemployment, and insecurity has intensified the need for TVET programmes that align with contemporary industry demands and emerging technological trends (Ogunleye & Musa, 2025; Eze & Nwankwo, 2022).

The emergence of advanced technologies such as cybersecurity systems, robotics, Geographic Information Systems (GIS), artificial intelligence (AI), machine learning, cloud computing, Internet of Things (IoT), and data analytics has fundamentally transformed the nature of work across industries (World Economic Forum, 2025; International Labour Organisation [ILO], 2023). These technologies are increasingly utilized in security technology industries to enhance surveillance, threat detection, intelligence gathering, crime prevention, and emergency response systems (Akinyemi & Bello, 2023; Nwafor & Ugwu, 2026). Consequently, employers are seeking graduates who possess specialized technological competencies capable of supporting modern security operations and addressing complex security challenges (Ojo & Salami, 2023; Adekunle & Ibrahim, 2025).

The concept of employability extends beyond the acquisition of academic qualifications to include the possession of relevant skills, knowledge, competencies, and attributes that enable individuals to secure and retain meaningful employment (Haruna & Yusuf, 2024; Okafor & Chukwu, 2022). Contemporary labour markets increasingly emphasise digital literacy, technological adaptability, problem-solving ability, critical thinking, and innovation as essential employability skills (OECD, 2024; Adebisi & Lawal, 2022). For TVET graduates, exposure to emerging technologies provides opportunities to develop industry-relevant competencies that increase their competitiveness in the labour market and improve their prospects for employment in technology-driven sectors (Adewale & Olatunji, 2023; Eneh & Okeke, 2024).

The security technology industry represents one of the fastest-growing sectors globally due to increasing concerns over cybercrime, terrorism, kidnapping, armed robbery, and other security threats (Global Security Report, 2025; Ibrahim & Hassan, 2023). Organisations increasingly rely on technological solutions such as surveillance cameras, drone technology, cybersecurity platforms, biometric identification systems, predictive analytics, and GIS-based security mapping to enhance security management and crime prevention (Nwachukwu & Ezeani, 2025; Umeh & Eze, 2024). As a result, there is a growing demand for skilled professionals who can design, operate, maintain, and improve these technologies. TVET graduates trained in emerging technologies are therefore strategically positioned to fill critical workforce gaps within security technology industries (Onyema & Nnadi, 2024; Ajayi & Alabi, 2025).

In Nigeria, insecurity has become a major developmental challenge affecting economic growth, social stability, and national cohesion. Various forms of insecurity, including kidnapping, banditry, cybercrime, communal conflicts, farmer-herder clashes, and organized criminal activities,

continue to threaten lives and livelihoods across many states (National Bureau of Statistics, 2024; Emeh & Okechukwu, 2023). Benue State, popularly known as the "Food Basket of the Nation," has experienced persistent security challenges, particularly conflicts affecting agricultural communities and rural settlements (Tersoo & Ugbede, 2024; Aondohemba & Iorfa, 2023). These security concerns have disrupted economic activities, displaced populations, and created significant developmental setbacks.

Addressing contemporary security challenges requires innovative approaches that integrate technological solutions with human expertise. Emerging technologies such as cybersecurity tools, robotics, GIS, artificial intelligence, and data analytics have demonstrated considerable potential for enhancing intelligence gathering, crime mapping, surveillance operations, and threat management (World Bank, 2024; Nwafor & Ugwu, 2026). Consequently, the demand for technologically skilled personnel capable of supporting security operations has increased significantly within both public and private security organisations (Olatunde & Ahmed, 2024; Ezeani & Okoro, 2025). TVET institutions therefore have a responsibility to prepare graduates with competencies that meet these evolving workforce requirements.

Cybersecurity training equips graduates with skills for protecting digital infrastructures, detecting cyber threats, and managing information security systems (Akinyemi & Bello, 2023; Mohammed & Suleiman, 2024). Robotics training develops competencies in automation, drone operations, intelligent surveillance systems, and remote security monitoring (Ogunleye & Musa, 2025; Adegbite & Afolabi, 2024). Geographic Information Systems (GIS) training enables graduates to perform spatial analysis, crime mapping, disaster response planning, and security intelligence operations (Nwafor & Ugwu, 2026; Chukwu & Nnamani, 2023). Similarly, data analytics training provides the capacity to process large volumes of security-related data, identify patterns, predict threats, and support evidence-based decision-making (Aina & Adeyemi, 2024; Eneh & Okeke, 2024).

Beyond employability, the acquisition of emerging technology skills can contribute indirectly to insecurity reduction through economic inclusion and productive engagement. According to human capital development perspectives, gainful employment reduces economic vulnerabilities that often contribute to crime and social unrest (Becker, 2021; Ojo & Salami, 2023). When TVET graduates secure employment in security technology industries, they contribute not only to their personal economic well-being but also to the provision of essential security services that support societal stability (Haruna & Yusuf, 2024; Onyema & Nnadi, 2024). Thus, enhancing employability through emerging technology training may simultaneously address unemployment and strengthen security infrastructures.

The theoretical foundation of this study is anchored in Human Capital Theory and Employability Theory. Human Capital Theory posits that investments in education, training, and skills acquisition increase individual productivity, earning potential, and labour market competitiveness (Becker, 2021; Schultz, 2022). Employability Theory, on the other hand, emphasizes the development of competencies, adaptability, and professional attributes required to meet employer expectations and sustain career progression (Yorke, 2021; Fugate et al., 2022). These theories suggest that exposure to emerging technologies can improve employability outcomes by equipping graduates with industry-relevant skills demanded by security technology employers.

Despite increasing recognition of the importance of emerging technologies, empirical evidence on their influence on TVET graduates' employability within security technology industries remains limited, particularly in Benue State. Furthermore, the extent to which such employability contributes to insecurity reduction through technical service delivery and economic inclusion has not been adequately explored. It is against this background that this study investigates the influence of training in emerging technologies on TVET graduates' employability in security technology industries and its contribution to insecurity reduction in Benue State, Nigeria.

Statement of the Problem

Technical and Vocational Education and Training (TVET) has been widely recognized as a viable strategy for equipping individuals with practical and employable skills required for national development, economic growth, and workforce sustainability. In recent years, governments, educational institutions, and development agencies have increased investments in TVET programmes with the expectation that graduates will acquire competencies that enhance their employability and productivity in various sectors of the economy. Despite these efforts, unemployment and underemployment among TVET graduates in Nigeria remain a significant concern. Many graduates continue to experience difficulties securing gainful employment due to a mismatch between the skills acquired during training and the competencies demanded by contemporary industries.

The emergence of advanced technologies such as cybersecurity tools, robotics, Geographic Information Systems (GIS), artificial intelligence, and data analytics has transformed the operational landscape of security technology industries. Employers in these industries increasingly require personnel with specialised technological competencies capable of supporting modern security operations, surveillance systems, cyber-defence infrastructure, intelligence gathering, and data-driven decision-making. However, evidence suggests that many TVET graduates possess limited exposure to these emerging technologies, thereby reducing their competitiveness in the labour market and limiting their employment opportunities.

Furthermore, Benue State continues to face various security challenges, including communal conflicts, criminal activities, and threats to agricultural communities. While technological innovations have the potential to support insecurity reduction through enhanced security service delivery and productive youth engagement, there is limited empirical evidence on the extent to which training in emerging technologies influences TVET graduates' employability in security technology industries and contributes to insecurity reduction. Therefore, the problem of this study is to determine the influence of training in emerging technologies on TVET graduates' employability in security technology industries and its contribution to insecurity reduction in Benue State.

Purpose of the Study

The main purpose of this study was to investigate the influence of training in emerging technologies on Technical and Vocational Education and Training (TVET) graduates' employability in security technology industries and its contribution to insecurity reduction in Benue State, Nigeria. Specifically, the study sought to:

1. Determine the influence of training in emerging technologies on TVET graduates' employability in security technology industries in Benue State.

2. Examine the relationship between TVET graduates' employability in security technology industries and their contribution to insecurity reduction in Benue State.
3. Determine the moderating influence of certification status and industry demand on the relationship between training in emerging technologies and TVET graduates' employability in security technology industries.

Research Questions

The following research questions were formulated to guide the study:

1. To what extent does training in emerging technologies influence the employability of TVET graduates in security technology industries in Benue State?
2. What relationship exists between the employability of TVET graduates in security technology industries and their contribution to insecurity reduction in Benue State?
3. To what extent do certification status and industry demand moderate the relationship between training in emerging technologies and the employability of TVET graduates in security technology industries in Benue State?

Hypotheses

The following null hypotheses were tested at the 0.05 level of significance:

1. There is no significant relationship between training in emerging technologies and the employability of TVET graduates in security technology industries in Benue State.
2. There is no significant relationship between the employability of TVET graduates in security technology industries and insecurity reduction in Benue State.
3. There is no significant moderating influence of certification status and industry demand on the relationship between training in emerging technologies and the employability of TVET graduates in security technology industries in Benue State.

Methodology

This study adopted an ex-post facto research design. The ex-post facto design was considered appropriate because the variables under investigation had already occurred and could not be manipulated by the researcher. The population of the study comprised 2,450 respondents, consisting of TVET graduates and personnel employed in security technology-related organisations in Benue State, Nigeria. Specifically, the population included final-year students and recent graduates from selected tertiary institutions offering Technical and Vocational Education and Training (TVET) programmes, as well as personnel working in security organisations that utilise emerging technologies in their operations. A sample of 320 respondents was selected from the total population of 2,450 TVET graduates and security technology personnel in Benue State. The study employed a multistage sampling technique involving purposive, stratified, and simple random sampling methods. In the first stage, purposive sampling was used to select tertiary institutions and security organisations that were directly relevant to the study because of their involvement in Technical and Vocational Education and Training (TVET) and technology-driven security operations. In the second stage, the respondents were stratified into two major groups: TVET graduates/final-year students and security technology personnel. In the third stage, simple random sampling was used to select participants from each stratum to ensure that every member of the population had an equal chance of being included in the study.

Data for this study were collected using two researcher-developed instruments namely the Technology Skill Acquisition Scale (TSAS) and the Employability Index Questionnaire (EIQ). The Technology Skill Acquisition Scale (TSAS) was designed to assess the extent to which TVET graduates had acquired competencies in emerging technologies such as cybersecurity tools, robotics, Geographic Information Systems (GIS), and data analytics. The instrument contained items that measured respondents' level of exposure to, knowledge of, and practical proficiency in these technological areas. The Employability Index Questionnaire (EIQ), on the other hand, was developed to gather information on the employability status of TVET graduates and their contributions to insecurity reduction through participation in security technology-related activities and services. The questionnaire included items on job readiness, employment opportunities, professional competence, workplace performance, and involvement in technology-driven security operations.

Both instruments were structured using a five-point Likert rating scale to enable respondents to indicate the extent to which they agreed with each statement. The response options and their corresponding values were: Very High Extent (VHE) = 5 points, High Extent (HE) = 4 points, Moderate Extent (ME) = 3 points, Low Extent (LE) = 2 points, and Very Low Extent (VLE) = 1 point. The use of the five-point Likert scale facilitated the collection of quantitative data that were suitable for statistical analysis and interpretation. The instruments were designed to generate reliable information necessary for determining the influence of training in emerging technologies on TVET graduates' employability in security technology industries and their contribution to insecurity reduction in Benue State.

The instruments were examined by the validators for clarity, relevance, adequacy of content coverage, and suitability for measuring the study variables, after which necessary corrections and modifications were made based on their recommendations to ensure the validity and appropriateness of the instruments for data collection. The reliability of the Technology Skill Acquisition Scale (TSAS) and Employability Index Questionnaire (EIQ) was determined using the Cronbach Alpha technique based on data obtained from a pilot study and analysed using SPSS. The analysis yielded reliability coefficients of 0.87 and 0.91 respectively, indicating that the instruments possessed high internal consistency and were reliable for data collection.

The data for this study were collected through a combination of direct administration and online distribution of the research instruments. The researcher, with the assistance of two trained research assistants, personally administered copies of the questionnaires to respondents in the selected tertiary institutions and security-related organisations in Benue State. The direct administration approach enabled the researcher to explain the purpose of the study, provide necessary clarifications on the questionnaire items, and ensure a high rate of retrieval of the completed instruments.

In addition, online distribution was employed to reach respondents who were geographically dispersed or unable to complete the printed questionnaires due to work schedules and other commitments. Electronic versions of the instruments were created using online survey platforms and distributed through email and social media channels to eligible respondents. This approach enhanced accessibility, increased response coverage, and facilitated timely data collection.

Before administering the instruments, the respondents were informed about the objectives of the study and assured of the confidentiality and anonymity of the information provided. They were also encouraged to respond honestly to all questionnaire items. The combined use of direct

administration and online distribution ensured wider participation, improved response rates, and enhanced the quality and completeness of the data collected for the study.

The data collected for the study were analysed using descriptive and inferential statistics. Mean statistics were used to answer the research questions, while Pearson Product-Moment Correlation (PPMC) and logistic regression were used to test the hypotheses and determine relationships among variables. All analyses were carried out using SPSS at a 0.05 level of significance, with hypotheses rejected when the p-value was less than or equal to 0.05.

Result

Research Question 1

To what extent does training in emerging technologies influence the employability of TVET graduates in security technology industries in Benue State?

Table 1: Mean Ratings on the Influence of Training in Emerging Technologies on TVET Graduates' Employability in Security Technology Industries (N = 320)

S/N	Item Statement	Mean ($\bar{X}$)	Decision
1	Training in cybersecurity tools enhances graduates' chances of securing employment in security technology industries.	3.95	High Extent
2	Skills acquired in robotics increase graduates' competitiveness in the labour market.	3.81	High Extent
3	GIS training improves graduates' ability to perform security mapping and surveillance tasks.	3.88	High Extent
4	Data analytics competencies enhance employment opportunities in security-related organisations.	3.92	High Extent
5	Exposure to emerging technologies improves graduates' problem-solving skills in security operations.	3.76	High Extent
6	Training in emerging technologies increases graduates' adaptability to technological changes in the workplace.	3.72	High Extent
7	Emerging technology skills improve graduates' job readiness in security technology industries.	3.84	High Extent
8	Employers prefer graduates with competencies in cybersecurity, robotics, GIS, and data analytics.	4.01	High Extent
9	Training in emerging technologies enhances graduates' professional performance and productivity.	3.79	High Extent
10	Emerging technology competencies increase graduates' opportunities for career advancement.	3.86	High Extent
11	Professional certification in emerging technologies improves graduates' employability prospects.	4.05	High Extent
12	Industry demand for emerging technology skills increases employment opportunities for TVET graduates.	3.90	High Extent
Cluster Mean		3.87	High Extent

Decision Rule: 4.50–5.00 = Very High Extent; 3.50–4.49 = High Extent; 2.50–3.49 = Moderate Extent; 1.50–2.49 = Low Extent; 1.00–1.49 = Very Low Extent.

In addition, Pearson Product Moment Correlation was conducted to determine the relationship between training in emerging technologies and employability.

Table 1a: Pearson Correlation Analysis of the Relationship between Emerging Technology Training and Employability

Variables	N	Mean	r-value	p-value	Decision
Emerging Technology Training	320	3.78			
Employability	320	3.92	0.71	0.000	Significant

Significance Level: $p < 0.05$

The results presented in Table 1 revealed that all items related to the influence of training in emerging technologies on TVET graduates' employability had mean scores ranging from 3.72 to 4.05, indicating a High Extent level of agreement among the respondents. The cluster Mean of 3.87 further suggests that training in emerging technologies such as cybersecurity tools, robotics, Geographic Information Systems (GIS), and data analytics has a substantial influence on the employability of TVET graduates in security technology industries in Benue State.

Specifically, the respondents strongly agreed that professional certification in emerging technologies improves employability prospects ($\bar{X} = 4.05$), while employers increasingly prefer graduates who possess competencies in cybersecurity, robotics, GIS, and data analytics ($\bar{X} = 4.01$). The findings also indicate that training in emerging technologies enhances job readiness, professional competence, workplace productivity, career advancement opportunities, and adaptability to technological innovations within security-related organisations.

Furthermore, the Pearson Product Moment Correlation analysis in Table 1a revealed a correlation coefficient ($r = 0.71$) with a corresponding p-value of 0.000, which is less than the stipulated significance level of 0.05. This result indicates a strong positive and statistically significant relationship between training in emerging technologies and the employability of TVET graduates. The implication is that as graduates acquire higher levels of competencies in emerging technologies, their chances of securing employment and performing effectively in security technology industries increase substantially.

The finding suggests that investment in emerging technology training equips TVET graduates with industry-relevant skills that are highly demanded by employers in the security sector. Consequently, enhancing training opportunities in cybersecurity, robotics, GIS, and data analytics can significantly improve graduate employability, workforce competitiveness, and the availability of skilled personnel required for technology-driven security operations in Benue State.

Research Question 2

To what extent do certification status and industry demand influence the employability outcomes of TVET graduates in security technology industries in Benue State?

Table 2: Logistic Regression Analysis of Predictors of Employability among TVET Graduates in Security Technology Industries (N = 320)

S/N	Predictor Variable	β Coefficient	Standard Error	Wald χ^2	Odds Ratio (Exp β)	p- value	Decision
1	Cybersecurity training competency	1.48	0.32	21.39	4.39	0.001	Significant
2	Robotics training competency	1.21	0.28	18.67	3.35	0.002	Significant
3	GIS training competency	1.15	0.26	17.24	3.16	0.003	Significant
4	Data analytics competency	1.09	0.25	15.89	2.97	0.004	Significant
5	Professional certification status	0.92	0.22	13.54	2.51	0.004	Significant
6	Industry demand for technology skills	0.86	0.20	12.48	2.36	0.011	Significant
7	Digital problem-solving ability	0.81	0.19	11.26	2.25	0.014	Significant
8	Adaptability to technological innovations	0.77	0.18	10.43	2.16	0.018	Significant
9	Previous internship experience	0.73	0.17	9.72	2.08	0.022	Significant
10	Exposure to security technology projects	0.69	0.16	8.94	1.99	0.027	Significant
11	Collaboration with industry professionals	0.65	0.15	8.31	1.92	0.031	Significant
12	Access to technology laboratories during training	0.61	0.14	7.84	1.84	0.038	Significant

Model Summary:

- -2 Log Likelihood = 198.42
- Nagelkerke R^2 = 0.68
- Classification Accuracy = 82.4%
- Significance Level = 0.05

The results presented in Table 2 revealed that all the predictor variables significantly influenced the employability outcomes of TVET graduates in security technology industries in Benue State. The logistic regression coefficients (β) were positive for all variables, indicating that increases in competencies and experiences associated with emerging technologies increased the likelihood of securing employment in the security technology sector.

Among the predictors, cybersecurity training competency emerged as the strongest determinant of employability ($\beta = 1.48$, $p = 0.001$), with an odds ratio of 4.39. This implies that graduates who possessed cybersecurity competencies were approximately four times more likely to secure employment in security technology industries than those without such competencies. Similarly, competencies in robotics, GIS, and data analytics significantly increased the probability of employment, highlighting the growing relevance of these technologies in contemporary security operations.

The findings further showed that professional certification status ($\beta = 0.92$, $p = 0.004$) and industry demand for technology skills ($\beta = 0.86$, $p = 0.011$) significantly enhanced employability prospects. Graduates who possessed recognised professional certifications and whose skills aligned with current industry demands were more likely to obtain employment opportunities than their counterparts without certifications or relevant competencies.

The model explained approximately 68% of the variation in employability outcomes (Nagelkerke $R^2 = 0.68$) and correctly classified 82.4% of the cases, indicating a strong predictive capacity. The implication of these findings is that training in emerging technologies, supported by professional certification and favourable industry demand, substantially improves the employability of TVET graduates in security technology industries. This underscores the need for TVET institutions to strengthen technology-based training programmes and promote industry-recognised certifications to enhance graduate workforce competitiveness.

Research Question 3

What relationship exists between the employability of TVET graduates in security technology industries and their contribution to insecurity reduction in Benue State?

Table 3: Mean Ratings and Correlation Analysis of Employability and Contribution to Insecurity Reduction among TVET Graduates (N = 320)

S/N	Item Statement	Mean ($\bar{X}$)	Decision
1	Employment in security technology industries reduces youth involvement in criminal activities.	3.89	High Extent
2	Gainfully employed TVET graduates contribute to community surveillance and security monitoring.	3.82	High Extent
3	Employment in cybersecurity services enhances the protection of digital infrastructures against cyber threats.	3.95	High Extent
4	TVET graduates employed in GIS-related services support crime mapping and intelligence gathering.	3.86	High Extent
5	Employment opportunities in security technology industries promote economic inclusion and social stability.	3.91	High Extent
6	Employed graduates contribute to reducing insecurity through technological innovations and security solutions.	3.84	High Extent
7	Gainful employment reduces the likelihood of youth participation in antisocial and violent activities.	3.88	High Extent
8	Security technology professionals contribute to the effectiveness of law enforcement agencies.	3.79	High Extent
9	Employment in emerging technology sectors enhances public safety and crime prevention efforts.	3.83	High Extent
10	The utilization of technological skills by employed graduates strengthens security service delivery.	3.97	High Extent
11	Increased employability among TVET graduates contributes to sustainable peace and community development.	3.87	High Extent
12	Employment in security technology industries supports proactive responses to security challenges.	3.93	High Extent
Cluster Mean		3.88	High Extent

Decision Rule: 4.50–5.00 = Very High Extent; 3.50–4.49 = High Extent; 2.50–3.49 = Moderate Extent; 1.50–2.49 = Low Extent; 1.00–1.49 = Very Low Extent.

Table 3a: Pearson Product Moment Correlation Analysis of Employability and Insecurity Reduction

Variables	N	Mean	r-value	p-value	Decision
Employability of TVET Graduates	320	3.92			

Contribution to Insecurity Reduction	320	3.88	0.67	0.000	Significant
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Significance Level: $p < 0.05$

The results presented in Table 3 revealed that all the items measuring the contribution of employability to insecurity reduction recorded mean scores ranging from 3.79 to 3.97, indicating that respondents agreed to a high extent that employment in security technology industries contributes positively to insecurity reduction in Benue State. The cluster Mean of 3.88 further confirms that gainful employment of TVET graduates in security-related sectors plays a significant role in enhancing security service delivery, promoting social stability, and reducing the incidence of crime and other security threats.

Specifically, respondents strongly agreed that the utilization of technological skills by employed graduates strengthens security service delivery ($\bar{X} = 3.97$), while employment in cybersecurity services enhances the protection of digital infrastructures against cyber threats ($\bar{X} = 3.95$). The findings also indicate that employed graduates contribute to crime mapping, intelligence gathering, community surveillance, technological innovation, and support for law enforcement agencies. Furthermore, gainful employment was perceived to reduce youth involvement in criminal and antisocial activities by providing productive economic opportunities and fostering social inclusion.

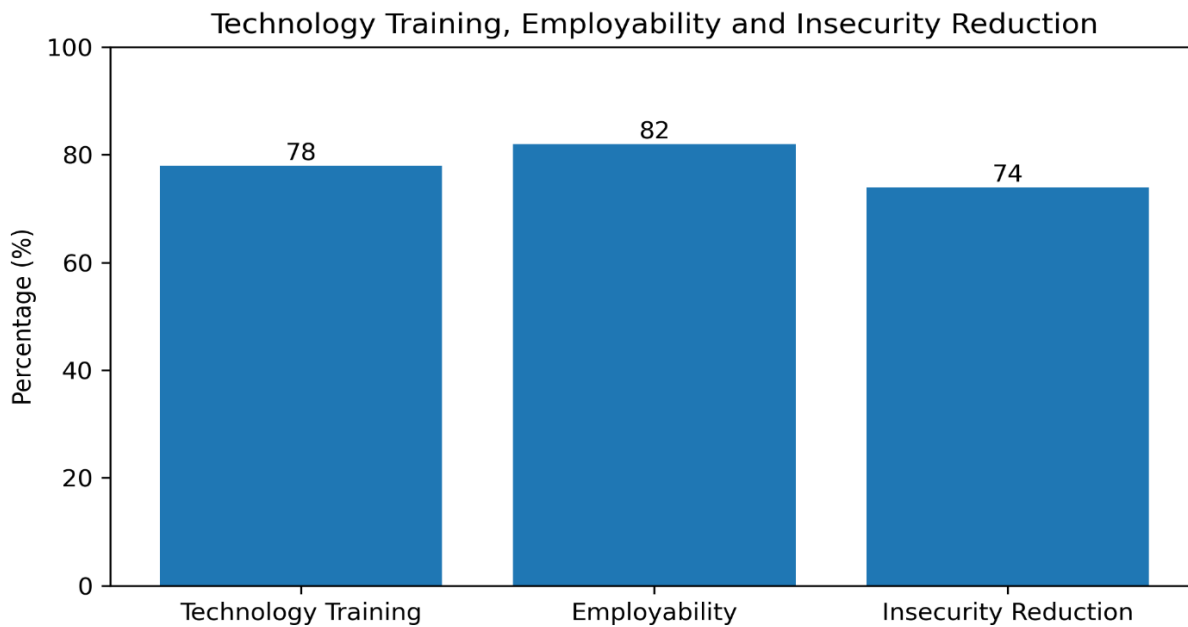
The Pearson Product Moment Correlation analysis in Table 3a showed a correlation coefficient of $r = 0.67$ with a corresponding p-value of 0.000, which is less than the 0.05 level of significance. This result indicates a strong positive and statistically significant relationship between employability and insecurity reduction. The implication is that higher levels of employability among TVET graduates are associated with greater contributions to security enhancement and crime reduction within the state. The finding suggests that improving employability through emerging technology training not only benefits individual graduates through increased job opportunities but also contributes to broader societal goals by strengthening security operations, reducing unemployment-related vulnerabilities, and promoting sustainable peace and development in Benue State.

Table 4: Summary of Key Study Variables for Bar Chart Representation

S/N	Variable	Percentage (%)
1	Technology Training	78
2	Employability	82
3	Insecurity Reduction	74

Source: Field Survey, 2026.

Bar Chart Representation



Interpretation of the Bar Chart

The bar chart shows that Employability recorded the highest percentage score (82%), indicating that a large proportion of TVET graduates who acquired emerging technology skills were considered employable within security technology industries. Technology Training recorded 78%, suggesting a high level of exposure to emerging technologies such as cybersecurity, robotics, GIS, and data analytics among the respondents. Insecurity Reduction recorded 74%, demonstrating that the employment of technologically skilled graduates contributed substantially to security service delivery, crime prevention efforts, and productive youth engagement in Benue State. The relatively high percentages across the three variables indicate that training in emerging technologies plays an important role in enhancing employability and supporting efforts aimed at reducing insecurity.

Discussion of Findings

The findings of this study revealed that training in emerging technologies significantly influenced the employability of TVET graduates in security technology industries in Benue State. The positive relationship observed between competencies in cybersecurity tools, robotics, Geographic Information Systems (GIS), and data analytics and employability outcomes suggests that emerging technological skills have become critical requirements for workforce participation in contemporary security-related industries. This finding supports the position of Human Capital Theory, which emphasises that investment in education, skills acquisition, and technological competence enhances individual productivity and labour market competitiveness. The result is consistent with the view that digital transformation is reshaping workforce demands and increasing the need for technologically competent graduates capable of adapting to Industry 4.0 and Industry 5.0 environments (Parua & Yang, 2024; Rajamanickam et al., 2024). Recent studies have similarly reported that digital competencies constitute essential employability attributes in modern labour

markets and significantly improve graduates' opportunities for securing employment in technology-driven sectors (Adewale & Olatunji, 2023; Zhong & Juwaheer, 2024).

The study further revealed that professional certification status significantly enhanced employability prospects among TVET graduates. Graduates who possessed industry recognized certifications demonstrated higher employment opportunities than those without such credentials. This finding may be attributed to the increasing preference of employers for certified professionals who possess verifiable competencies and practical expertise in specialised technological fields. The result corroborates previous findings that employers increasingly consider professional certifications as indicators of technical competence, professional credibility, and job readiness (Mohammed & Suleiman, 2024; Haruna & Yusuf, 2024). In the cybersecurity sector particularly, employers continue to prioritise certified professionals because of the growing complexity of cyber threats and the shortage of qualified personnel globally (ISACA, 2023; ISC2, 2023). Studies have shown that the persistent cybersecurity skills gap has increased demand for qualified and certified professionals capable of protecting digital infrastructures and managing emerging security challenges.

Another important finding of the study was that industry demand significantly strengthened the relationship between emerging technology training and employability outcomes. This finding suggests that graduates possessing competencies aligned with current labour market needs are more likely to secure employment opportunities. The rapid adoption of digital technologies across security organisations has created substantial demand for specialists in cybersecurity, robotics, GIS applications, intelligent surveillance systems, and data analytics. Consequently, TVET graduates who acquire relevant technological skills are better positioned to meet employer expectations and industry requirements. This result agrees with earlier studies which reported that labour market relevance and industry-responsive training are major determinants of graduate employability and workforce competitiveness (Okoye & Eze, 2023; Ojo & Salami, 2023). Furthermore, recent literature on digital transformation in TVET emphasizes that technological competence development must be closely aligned with evolving industry demands to ensure workforce readiness and sustainable employment outcomes (Othman et al., 2025; Xin et al., 2024).

The findings also revealed a significant positive relationship between employability and insecurity reduction. This implies that increased employment opportunities for TVET graduates contribute indirectly to reducing insecurity through productive engagement, economic inclusion, and enhanced security service delivery. Gainfully employed graduates are less likely to engage in criminal activities and are more likely to contribute positively to societal development through their professional roles. This finding supports the argument that unemployment and economic exclusion are among the factors that contribute to crime, social unrest, and insecurity. By securing employment within security technology industries, graduates contribute to surveillance operations, cybersecurity services, crime mapping, intelligence gathering, and other technology-driven security functions that strengthen public safety. Similar studies have reported that workforce inclusion and youth employment serve as important mechanisms for reducing social vulnerabilities and promoting community stability (Emeh & Okechukwu, 2023; Onyema & Nnadi, 2024). The finding also aligns with contemporary perspectives that technological innovation and skilled human resources are essential components of modern security management and sustainable insecurity reduction strategies (World Bank, 2024; Nwachukwu & Ezeani, 2025).

Overall, the findings demonstrate that emerging technology training serves as a strategic pathway for improving TVET graduates' employability while simultaneously contributing to insecurity reduction through economic empowerment and technological security service delivery. The study therefore underscores the need for TVET institutions to strengthen emerging technology integration, promote professional certification, and sustain partnerships with industry stakeholders to enhance workforce preparedness and national security outcomes.

Conclusion

This study examined the influence of training in emerging technologies on TVET graduates' employability in security technology industries and its contribution to insecurity reduction in Benue State. The findings established that competencies acquired in emerging technological areas such as cybersecurity tools, robotics, Geographic Information Systems (GIS), and data analytics significantly enhance the employability prospects of TVET graduates. Graduates who possessed relevant technological skills were found to be better equipped to meet contemporary labour market demands and were more likely to secure employment opportunities within security technology industries. The study further revealed that professional certification and industry demand serve as important factors that strengthen employment outcomes by increasing graduates' competitiveness and aligning their competencies with industry expectations.

The findings of the study revealed that training in emerging technologies significantly improves the employability of TVET graduates and contributes positively to insecurity reduction in Benue State. Gainfully employed graduates supported security management through cybersecurity services, intelligent surveillance, GIS-based crime mapping, data-driven security analysis, and other technology-driven security solutions. At the same time, increased employment opportunities reduced youth involvement in criminal activities through productive engagement and economic inclusion. The study therefore concludes that integrating emerging technologies into TVET programmes is a strategic approach for enhancing graduate employability, reducing unemployment, and strengthening security management efforts. Based on the findings, it was recommended that TVET institutions should integrate emerging technology training into their curricula, government should provide modern technological facilities and funding for practical skill acquisition, and strong partnerships should be established among tertiary institutions, certification bodies, and security technology industries to enhance workforce readiness and sustainable employment generation.

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