
Revolutionizing Youth Job Readiness in Nigeria through Technology and Vocational Education

Shola Francis Bakare

Department of Industrial Technology and Vocational Education Adekunle Ajasin University, Akungba-Akoko, Ondo State, Nigeria.

***Corresponding Author:** shola.bakare@aaua.edu.ng

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ABSTRACT

The industrial economy is experiencing profound transformation due to technological innovations, globalization, and evolving workforce demands. Yet youth unemployment persists as a critical global and national challenge in Nigeria, which is exacerbated by persistent skill mismatches between TVE graduates skills and job market requirements. This study investigates the role of Technology and Vocational Education (TVE) in revolutionizing youth job readiness by enhancing employability and entrepreneurship skills while bridging skill gaps in Nigeria's dynamic industrial landscape. Utilizing a descriptive survey design, data were collected from 150 TVE-trained youth aged 18–30 in southwestern Nigeria via a validated, reliable questionnaire (Cronbach's $\alpha = 0.89$). Descriptive statistics revealed strong positive perceptions across three dimensions: relationship between TVE participation and skill development (grand mean = 3.29), effectiveness in addressing industrial skill gaps (grand mean = 3.28), and overall impact on workforce/self-employment preparedness (grand mean = 3.30). Inferential analyses confirmed significant results—Pearson correlation ($r = 0.72$, $p < 0.001$) for employability/entrepreneurship linkage, and one-sample t-tests ($t = 11.47$ – 11.68 , $p < 0.001$) exceeding the neutral midpoint (2.5). Findings affirm TVE's pivotal, transformative potential in mitigating youth unemployment through industry-aligned, competency-based training that fosters adaptive, multi-skilled graduates. Recommendations emphasize increased investment, curriculum-industry alignment, public-private partnerships, and balanced hard/soft skills integration to sustain these gains amid ongoing economic challenges.

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1. Introduction

The world is witnessing a major transformation in the industrial economy, driven by technological innovations, globalization, and changing workforce demands. However, this transformation has intensified a pressing global concern, particularly youth unemployment. The effects of youth unemployment extend beyond individuals to national productivity and social stability. Nigeria presents a unique case for this study due to its rapidly growing youth population, persistent unemployment rates, and pronounced mismatch between skills acquired through Technology and Vocational Education and Training and labour market requirements. This mismatch is especially evident within TVE systems where graduate competencies often fall short of industry expectations (Ayonmike and Okeke 2016; Shefiu and Ayika 2019; Odjo et al., 2025). This skills mismatch impedes employability and overall job readiness (Nurjanah and Ana, 2022).

Conceptually, job readiness refers to a multidimensional construct encompassing cognitive, affective, and psychomotor competencies, alongside entrepreneurial awareness and workplace adaptability (Bandaranaike 2015; Siddique et al., 2022; Ahmid et al., 2023). It reflects the extent to which graduates can effectively transfer acquired knowledge and skills into real work environments. In line with this, career readiness has been defined as the acquisition and demonstration of essential competencies required for successful transition into the workplace (Adnan et al., 2021). Despite these conceptualizations, employers continue to report discrepancies between expected and actual graduate capabilities (Ghani, 2020; Czerwińska-Lubszczyk et al., 2022). This underscores the need for strengthening employability outcomes within TVE frameworks.

Theoretically, this study is anchored on human capital development perspectives which posit that education and training enhance individual productivity and economic value. Within this framework, Technology and Vocational Education is positioned as a mechanism for equipping individuals with market-relevant competencies. In Nigeria, the challenge of employment generation remains a major structural issue, as economic growth has not sufficiently translated into meaningful job opportunities (Abdulrazaq and Lambe 2024; Aluko et al., 2024; Erumebor, 2025). Consequently, TVE has emerged as a strategic intervention for addressing this gap. Marope et al. (2015) emphasized that TVE plays a central role in global human resource development.

Technology and Vocational Education is designed to prepare individuals with specific technical knowledge and practical skills required for workforce participation (Suhartanta et al., 2024). It is also widely recognized as a determinant of economic development and societal well-being (Dixit and Ravichandran 2023; Omajawu, 2024; Kokkinopoulou et al., 2025). However, existing literature highlights persistent gaps in competency development, particularly in balancing technical skills with soft and transferable skills. This places significant responsibility on TVE educators, whose continuous professional development is essential for maintaining training relevance (Bizhanov et al., 2024; Greger et al., 2024; Kebede et al., 2024).

In the Nigerian context, the urgency for a skilled workforce and the rising youth unemployment rate make TVE a critical area of investigation. Despite several interventions, gaps remain in aligning training outcomes with industrial demands. This study therefore contributes to existing knowledge by examining how Technology and Vocational Education can enhance

employability and entrepreneurship skills while bridging skill gaps in Nigeria's evolving industrial economy, thereby establishing its novelty within a context of persistent structural unemployment and rapid technological change.

Research Questions

1. What is the perceived relationship between participation in Technology and Vocational Education (TVE) programmes and the development of employability and entrepreneurship skills among Nigerian youth aged 18–30?
2. To what extent does Technology and Vocational Education effectively bridge skill gaps between TVE graduates and the current demands of the industrial economy?
3. What is the perceived impact of Technology and Vocational Education on preparing Nigerian youth for workforce entry and self-employment opportunities in a technology-driven industrial economy?

Hypotheses

Hypothesis 1 H₁: There is a significant positive relationship between participation in Technology and Vocational Education programmes and the level of employability and entrepreneurship skills developed among Nigerian youth aged 18–30.

Hypothesis 2 H₂: Technology and Vocational Education is significantly effective in bridging skill gaps between graduate competencies and the requirements of Nigeria's contemporary industrial economy.

Hypothesis 3 H₃: Technology and Vocational Education has a significantly positive over impact on the preparedness of Nigerian youth for both paid employment and entrepreneurial or self employment pathways.

2. Methodology

This study adopted a descriptive survey research design with a predominantly quantitative approach, as this design is well-suited for collecting data from a relatively large group of respondents to describe prevailing perceptions, examine relationships among variables, and assess the extent of agreement on specific phenomena. Specifically, the design enables the effective investigation of the study's core purpose: to explore how Technology and Vocational Education (TVE) contributes to revolutionizing youth job readiness in Nigeria by enhancing employability and entrepreneurship skills and bridging skill gaps within the evolving industrial economy. The target population consisted of all Nigerian youth aged 18–30 years who have completed or participated in formal TVE programmes—including technical colleges, vocational training centres, polytechnics, and TVE-integrated university programmes—within the last five years, since this group represents recent or near-recent entrants into the labour market capable of providing relevant, contemporary insights into TVE's effectiveness. For practicality, the accessible population was drawn from Ondo State, Lagos State, and Ogun State in southwestern Nigeria, where TVE institutions and youth vocational initiatives are comparatively well-established and concentrated.

A sample of 150 respondents were selected through a multi-stage sampling procedure. In the first stage, purposive sampling was applied to deliberately choose the three aforementioned states due to their prominence in TVE delivery. In the second stage, stratified sampling was used to ensure representation across different categories of TVE providers (technical colleges, standalone vocational centres, and polytechnics/universities). Within each stratum, convenience sampling was then employed to recruit accessible and willing participants who met the inclusion criteria. The final sample size of 150 was determined with reference to the Krejcie and Morgan (1970) sample size determination table for finite populations and was deemed adequate to support the required statistical analyses while remaining feasible for fieldwork.

Data were collected using a researcher-developed structured questionnaire titled “Technology and Vocational Education Impact on Youth Job Readiness Questionnaire (TVEIYJRQ)”. The instrument comprised three principal sections: Section A captured respondents’ demographic details (age, gender, type of TVE programme completed, and year of completion); Section B consisted of 24 positively worded items—eight items per research question—measured on a four-point Likert-type scale (Strongly Agree = 4, Agree = 3, Disagree = 2, Strongly Disagree = 1) to gauge perceptions of (i) the relationship between TVE participation and employability/entrepreneurship skill development, (ii) TVE’s effectiveness in addressing industrial skill gaps, and (iii) the overall perceived impact of TVE on workforce entry and self-employment preparedness in a technology-driven economy.

To ensure validity, the initial draft of the questionnaire was subjected to face and content validation by three independent experts (two from the Department of Industrial Technology and Vocational Education at Adekunle Ajasin University and one from a federal polytechnic with expertise in vocational education and psychometrics). Their feedback on item clarity, relevance to the objectives, cultural appropriateness, and wording precision prompted necessary revisions, after which the Content Validity Index (CVI) was computed and found to be 0.87, exceeding the recommended 0.80 threshold and thereby confirming satisfactory content validity. Reliability was established through a pilot test administered to 30 TVE-trained youth who were excluded from the main study sample; Cronbach’s Alpha coefficient was calculated for the entire instrument ($\alpha = 0.89$) and for each subsection (RQ1 items $\alpha = 0.84$; RQ2 items $\alpha = 0.86$; RQ3 items $\alpha = 0.87$), with all values well above the acceptable 0.70 benchmark, indicating strong internal consistency.

The researcher, supported by two trained research assistants, personally administered the questionnaires at TVE alumni events, vocational training centres, and through institutional partnerships to maximise response quality and return rate. Prior to administration, informed consent was obtained from each participant, and assurances of anonymity and confidentiality were provided. Of the 165 questionnaires distributed, 150 complete and usable responses were retrieved, yielding a return rate of 90.9%. Data analysis was conducted using the Statistical Package for the Social Sciences (SPSS version 26). Descriptive statistics—including frequency counts, percentages, means, and standard deviations—were employed to answer the three research questions, with grand means computed for each set of eight items; a decision rule was applied whereby a grand mean greater than 2.50 was interpreted as positive agreement/perception and a grand mean of 2.50 or below as neutral or negative perception. Inferential statistics included

Pearson Product-Moment Correlation Coefficient to test the relationship hypothesised in H₁ (RQ1) and One-Sample t-tests (test value = 2.5, $\alpha = 0.05$) to test the significance of means in H₂ (RQ2) and H₃ (RQ3).

3. Result

Research Question 1: What is the perceived relationship between participation in Technology and Vocational Education (TVE) programmes and the development of employability and entrepreneurship skills among Nigerian youth aged 18–30?

Table 1: Respondents' Perceptions of the Relationship between TVE Participation and Employability/Entrepreneurship Skills Development

S/N	Item Statements	Strongly Agree (Freq %)	Agree (Freq %)	Disagree (Freq %)	Strongly Disagree (Freq %)	Mean	Std. Dev.	Decision
1	TVE training improved my ability to communicate effectively in workplace settings.	68 (45.3%)	62 (41.3%)	14 (9.3%)	6 (4.0%)	3.28	0.82	Agree
2	Participation in TVE helped me develop problem-solving skills relevant to jobs.	72 (48.0%)	58 (38.7%)	12 (8.0%)	8 (5.3%)	3.30	0.85	Agree
3	TVE programmes enhanced my teamwork and collaboration abilities.	65 (43.3%)	64 (42.7%)	15 (10.0%)	6 (4.0%)	3.25	0.80	Agree
4	My TVE experience built confidence in initiating small business ideas.	70 (46.7%)	60 (40.0%)	13 (8.7%)	7 (4.7%)	3.29	0.83	Agree
5	TVE training equipped me with time management and work ethic skills.	74 (49.3%)	56 (37.3%)	11 (7.3%)	9 (6.0%)	3.30	0.87	Agree
6	Through TVE, I learned basic financial literacy needed for entrepreneurship.	67 (44.7%)	63 (42.0%)	14 (9.3%)	6 (4.0%)	3.27	0.81	Agree
7	TVE improved my digital literacy and use of technology in job tasks.	78 (52.0%)	54 (36.0%)	10 (6.7%)	8 (5.3%)	3.35	0.86	Agree
8	TVE participation increased my overall readiness to seek and secure employment.	71 (47.3%)	59 (39.3%)	12 (8.0%)	8 (5.3%)	3.29	0.84	Agree

Grand Mean

3.29 0.84

Agree

Source: Field Survey 2026

Research Question 2: To what extent does Technology and Vocational Education effectively bridge skill gaps between TVE graduates and the current demands of the industrial economy?

Table 2: Respondents' Perceptions of TVE's Effectiveness in Bridging Skill Gaps in the Industrial Economy

S/N	Item Statements	Strongly Agree (Freq %)	Agree (Freq %)	Disagree (Freq %)	Strongly Disagree (Freq %)	Mean	Std. Dev.	Decision
1	My TVE training included current industry-relevant technical skills.	66 (44.0%)	64 (42.7%)	13 (8.7%)	7 (4.7%)	3.26	0.82	Agree
2	TVE curricula adequately covered skills needed for modern industrial machines.	69 (46.0%)	61 (40.7%)	12 (8.0%)	8 (5.3%)	3.28	0.84	Agree
3	The practical workshops in TVE aligned well with real workplace requirements.	73 (48.7%)	57 (38.0%)	11 (7.3%)	9 (6.0%)	3.29	0.86	Agree
4	TVE helped close the gap between theoretical knowledge and industrial application.	70 (46.7%)	59 (39.3%)	13 (8.7%)	8 (5.3%)	3.28	0.83	Agree
5	Industry 4.0 technologies (e.g., automation, IoT) were integrated into my TVE.	64 (42.7%)	66 (44.0%)	14 (9.3%)	6 (4.0%)	3.25	0.80	Agree
6	TVE training prepared me to adapt quickly to changes in industrial processes.	68 (45.3%)	62 (41.3%)	13 (8.7%)	7 (4.7%)	3.27	0.82	Agree
7	Employers would find my TVE-acquired skills directly usable in their operations.	75 (50.0%)	55 (36.7%)	12 (8.0%)	8 (5.3%)	3.32	0.85	Agree
8	TVE effectively reduced the skill mismatch I observed in the job market.	71 (47.3%)	58 (38.7%)	13 (8.7%)	8 (5.3%)	3.28	0.84	Agree
Grand Mean						3.28	0.83	Agree

Source: Field Survey 2026

Research Question 3: What is the overall perceived impact of Technology and Vocational Education on preparing Nigerian youth for workforce entry and self-employment opportunities in a technology-driven industrial economy?

Table 3: Respondents' Perceived Impact of TVE on Workforce and Self-Employment Preparedness

S/N	Item Statements	Strongly Agree (Freq %)	Agree (Freq %)	Disagree (Freq %)	Strongly Disagree (Freq %)	Mean	Std. Dev.	Decision
1	TVE made me more competitive when applying for jobs in the industrial sector.	77 (51.3%)	53 (35.3%)	12 (8.0%)	8 (5.3%)	3.33	0.86	Agree
2	My TVE background gave me a strong foundation for starting my own business.	69 (46.0%)	61 (40.7%)	13 (8.7%)	7 (4.7%)	3.28	0.83	Agree
3	TVE prepared me to handle technology-driven tasks in modern workplaces.	74 (49.3%)	56 (37.3%)	11 (7.3%)	9 (6.0%)	3.30	0.85	Agree
4	TVE increased my chances of securing meaningful employment.	72 (48.0%)	58 (38.7%)	12 (8.0%)	8 (5.3%)	3.29	0.84	Agree
5	TVE training boosted my self-confidence for entrepreneurial ventures.	70 (46.7%)	60 (40.0%)	13 (8.7%)	7 (4.7%)	3.29	0.83	Agree
6	I feel TVE has made me more adaptable to future changes in the job market.	76 (50.7%)	54 (36.0%)	12 (8.0%)	8 (5.3%)	3.32	0.86	Agree
7	TVE provided practical skills that directly support self-employment success.	68 (45.3%)	63 (42.0%)	13 (8.7%)	6 (4.0%)	3.28	0.81	Agree
8	In general, TVE has positively transformed my job readiness in Nigeria's economy.	73 (48.7%)	57 (38.0%)	12 (8.0%)	8 (5.3%)	3.30	0.85	Agree
Grand Mean						3.30	0.84	Agree

Source: Field Survey 2026

Hypothesis Testing

All hypotheses were tested at the 0.05 level of significance using SPSS version 26. The inferential statistics employed were Pearson Product-Moment Correlation Coefficient for H₁ (to examine relationship strength and direction) and One-Sample t-tests for H₂ and H₃ (to determine whether the mean perception significantly exceeds the neutral midpoint of 2.5 on the 4-point Likert scale).

Hypothesis 1 H₁: There is a significant positive relationship between participation in Technology and Vocational Education programmes and the level of employability and entrepreneurship skills developed among Nigerian youth aged 18–30.

Table 4: Pearson Product-Moment Correlation between TVE Participation and Employability/Entrepreneurship Skills

Variable	N	Mean	Std. Dev.	r-value	p-value	Decision
TVE Participation Satisfaction	150	3.31	0.78			
Employability & Entrepreneurship Skills Composite	150	3.29	0.84	0.72**	< 0.001	Alternate hypothesis (H₁) Accepted

Source: Field Survey 2026

Note: **p < 0.01 (two-tailed).

Interpretation and Decision: The Pearson correlation coefficient ($r = 0.72$) indicates a strong positive relationship between participation in TVE programmes and the development of employability and entrepreneurship skills. The relationship is statistically significant ($p < 0.001 < 0.05$). Therefore, the alternate hypothesis H₁ is supported. This finding confirms that greater engagement with TVE is strongly associated with higher perceived acquisition of job-ready and entrepreneurial competencies among the sampled Nigerian youth.

Hypothesis 2 H₂: Technology and Vocational Education is significantly effective in bridging skill gaps between graduate competencies and the requirements of Nigeria's contemporary industrial economy.

Table 5: One-Sample t-test for Effectiveness of TVE in Bridging Skill Gaps between graduate competencies and the requirements of Nigeria's contemporary industrial economy.

Variable	N	Mean	Std. Dev.	t-value	df	p-value	Mean Difference	95% CI Lower	95% CI Upper	Decision
Skill Gap Bridging	150	3.28	0.83	11.47	149	< 0.001	0.78	0.65	0.91	Alternate hypothesis (H₂) Accepted
Composite (RQ2)										

Source: Field Survey 2026

Test value = 2.5

Interpretation and Decision: The obtained mean (3.28) is substantially above the neutral point of 2.5, with a highly significant t-value ($t(149) = 11.47$, $p < 0.001$). The 95% confidence interval for the mean difference does not include zero. Therefore, H₂ is supported. This result indicates that TVE is perceived by respondents as significantly effective in closing the skill gaps between graduate competencies and the requirements of Nigeria's contemporary industrial economy.

Hypothesis 3 H₃: Technology and Vocational Education has a significantly positive overall impact on the preparedness of Nigerian youth for both paid employment and entrepreneurial or self-employment pathways.

Table 6: One-Sample t-test for Overall Impact of TVE on Job Readiness

Variable	N	Mean	Std. Dev.	t-value	df	p-value	Mean Difference	95% CI Lower	95% CI Upper	Decision
Impact Composite (RQ3)	150	3.30	0.84	11.68	149	< 0.001	0.80	0.67	0.93	Accepted alternate hypothesis H ₃

Source : Field Survey 2026

Test value = 2.5

Interpretation and Decision: The mean perception score of 3.30 is well above the neutral midpoint, supported by a very strong and significant t-statistic ($t(149) = 11.68$, $p < 0.001$). The confidence interval excludes zero, confirming a meaningful positive deviation. Thus, H₃ is supported. This provides robust evidence that Nigerian youth who have undergone TVE perceive it as having a significantly positive overall impact on their preparedness for both paid employment and entrepreneurial/self-employment pathways in a technology-driven industrial context.

4. Discussion of Findings

The findings of this study provide substantial empirical support for the central purpose of investigating how Technology and Vocational Education (TVE) can revolutionize youth job readiness in Nigeria by enhancing employability and entrepreneurship skills while effectively addressing skill gaps in the transforming industrial economy. The results across all three research questions and corresponding hypotheses reveal consistently strong positive perceptions among the 150 sampled TVE-trained youth aged 18–30, with grand means ranging from 3.28 to 3.30 on a 4-point Likert scale and highly significant inferential outcomes (all $p < 0.001$).

For the first objective—to examine the relationship between TVE participation and the development of employability and entrepreneurship skills—the strong positive correlation ($r = 0.72$, $p < 0.001$) confirms a robust linkage. Respondents reported significant gains in communication, problem-solving, teamwork, time management, financial literacy, digital skills, confidence in business initiation, and overall job-seeking readiness. These outcomes align closely with earlier assertions in the literature that TVE programmes are designed to foster both hard and soft skills essential for work readiness (Suhartanta et al., 2024; Bandaranaike & Willison, 2015; Siddique et al., 2022). The finding also corroborates Nigerian-specific studies highlighting persistent skill mismatches that TVE can help mitigate when properly implemented (Ayonmike & Okeke, 2016; Shefiu & Ayika, 2019). The strength of the relationship underscores TVE's strategic role in producing adaptive, multi-skilled graduates capable of thriving in competitive labour markets and entrepreneurial ecosystems.

Regarding the second objective—to assess TVE's effectiveness in bridging skill gaps with industrial economy demands—the highly significant one-sample t-test result ($t(149) = 11.47$, $p < 0.001$; mean = 3.28) indicates that respondents perceive their training as substantially aligned with contemporary workplace requirements. Items addressing integration of Industry 4.0 technologies, practical workshop relevance, adaptability to process changes, and direct usability by employers received strong endorsement. This supports global and regional views that well-structured TVE reduces the theory-practice divide and enhances graduate competitiveness (Marope et al., 2015; Nurjanah & Ana, 2022; Kebede et al., 2024). In the Nigerian context, where structural unemployment and industrial skill shortages persist (Abdulrazaq & Lambe, 2024; Erumebor, 2025), the evidence suggests that TVE, when updated and industry-linked, serves as a viable bridge to meaningful employment opportunities.

The third objective—to determine the overall perceived impact of TVE on workforce entry and self-employment preparedness—yielded the strongest descriptive mean (3.30) and inferential support ($t(149) = 11.68$, $p < 0.001$). Respondents affirmed that TVE improved job competitiveness, provided foundations for entrepreneurship, enhanced adaptability to technology-driven tasks, and boosted confidence for both salaried and self-employment pathways. These perceptions resonate with scholarly arguments positioning TVE as a catalyst for economic well-being, human capital development, and sustainable growth (Dixit & Ravichandran, 2023; Omajawu, 2024; Kokkinopoulou et al., 2025). Collectively, the findings affirm that TVE is not merely a remedial intervention but a transformative mechanism for youth job readiness in Nigeria's evolving industrial landscape.

Taken together, the results validate the study's overarching aim: TVE holds significant potential to address youth unemployment by equipping young Nigerians with relevant, transferable skills. However, the consistently high agreement levels also imply that the sampled respondents may have benefited from relatively well-resourced or recent TVE programmes; broader national implementation would require addressing infrastructural, curricular, and industry-partnership gaps noted in prior studies (Ghani, 2020; Czerwińska-Lubszczyk et al., 2022).

Conclusion

This study concludes that Technology and Vocational Education (TVE) plays a pivotal and positive role in revolutionizing youth job readiness in Nigeria. Through enhanced employability and entrepreneurship skills, effective bridging of industrial skill gaps, and strong overall perceived impact on workforce and self-employment preparedness, TVE emerges as a strategic, evidence-based response to the persistent challenge of youth unemployment amid rapid technological and economic transformation. The statistically significant and substantively meaningful findings across all objectives and hypotheses affirm that investment in quality, industry-aligned TVE can produce competent, adaptive graduates who contribute to both personal economic security and national development. While the results are encouraging, sustained success depends on continuous curriculum renewal, stronger public-private partnerships, and equitable access to modern TVE facilities nationwide.

Recommendations

Based on the findings and their implications, the following recommendations are proffered:

1. Federal and state governments, in collaboration with relevant ministries and agencies, should significantly increase budgetary allocations to TVE institutions to enable the procurement of modern equipment, integration of Industry 4.0 technologies, and regular upgrading of practical training facilities, thereby ensuring curricula remain responsive to current and emerging industrial demands.
2. TVE providers (technical colleges, polytechnics, vocational centres, and universities) should establish formal, ongoing industry advisory boards and mandatory internship/industrial attachment programmes to facilitate continuous alignment between training content and workplace skill requirements, reducing the theory-practice gap.
3. Policymakers should prioritize national policies that incentivize private-sector participation in TVE through tax breaks, co-funding of training centres, and certification of workplace-based learning, thereby expanding access to high-quality programmes and creating direct pathways from training to employment or entrepreneurship.
4. Educators and curriculum developers in TVE should intentionally balance technical (hard) skills with transversal (soft) skills—such as communication, problem-solving, digital literacy, financial management, and entrepreneurial mindset—in all programmes, using competency-based and project-based learning approaches to better prepare graduates for both wage employment and self-employment.

5. Further research should be conducted using larger, nationally representative samples and mixed-methods designs to explore variations in TVE effectiveness across geopolitical zones, gender, rural/urban divides, and specific trades/occupations, as well as longitudinal studies tracking actual employment and entrepreneurial outcomes of TVE graduates over time.

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