



Review Article

Perceived Impact and Contributions of Technical and Vocational Education and Training Programmes to Employment Opportunities in Sierra Leone

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Abstract

This study assessed the contribution of Technical and Vocational Education and Training programmes to employment opportunities and income levels among youth and young adult graduates and examined stakeholder perceptions of TVET from the perspectives of students, employers, and educators. A convergent mixed-methods research design was employed, integrating quantitative survey data with qualitative interviews and document review. A total of 278 respondents were selected through stratified purposive sampling, with the sample size determined using Yamane's formula. Quantitative data were analysed using descriptive statistics, Spearman's rank correlation (ρ), and thematic analysis was applied to qualitative data. The findings revealed that 47% of students identified employment, self-employment, and income generation as the primary benefit of TVET, followed by livelihood and community development (21%). Among employers, 52.7% expressed positive perceptions of graduates' practical competence, although many emphasized the need for improved workplace readiness. Similarly, 45.9% of educators perceived TVET as enhancing student skills, employability, and reducing unemployment. Respondents reported positive perceptions of well-being improvement ($M = 3.19$, $SD = 1.24$) and labour market skills relevance ($M = 3.17$, $SD = 1.27$), while employability improvement received the lowest rating ($M = 2.81$, $SD = 1.25$). Spearman correlation analysis showed significant positive relationships between skills relevance and employability ($\rho = 0.416$, $p < .001$), income ($\rho = 0.549$, $p < .001$), and well-being ($\rho = 0.618$, $p < .001$), indicating that greater skills relevance is associated with improved livelihood outcomes. The study concludes that TVET contributes positively to employment, income generation, and overall well-being but that its full potential is constrained by inadequate industry linkages, limited career support services, insufficient workplace exposure, and lack of start-up resources. It recommends strengthening industry partnerships, modernising curricula, expanding apprenticeship opportunities, improving career guidance and job placement services, and increasing government and private-sector investment in TVET infrastructure and graduate entrepreneurship support to enhance employment and livelihood outcomes.

Keywords

Technical and Vocational Education and Training (TVET), Employment Opportunities, Income Generation, Skills Relevance, Youth Employability

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1. Introduction

Sierra Leone ranks 181st of 193 countries on the 2023/2024 Human Development Index, with youth unemployment and income insecurity among its most persistent structural challenges [1]. The country's post-conflict recovery has placed Technical and Vocational Education and Training (TVET) at the centre of national skills strategy, viewing it as a practical mechanism to connect educational attainment to productive employment and economic self-reliance [2, 3, 55, 56]. Globally, TVET is recognised under Sustainable Development Goal 4 (Targets 4.3, 4.4, and 4.5) as a critical lever for inclusive skills development and decent work [64]. In 2024, the proportion of youth aged 15–24 not in employment, education, or training (NEET) across sub-Saharan Africa stood at 21.9%, exceeding the global average of 20.4% [4]. Informal employment dominates youth labour markets in the region, and Sierra Leone is no exception: structural labour market fragility, informal sector prevalence, and the social stigma historically attached to vocational pathways compound regional pressures and limit TVET's uptake and perceived value [5, 6].

Policy investment in TVET has been substantial. The National TVET Policy [7] established a framework for programme delivery; the Sierra Leone Skills Development Project [8, 3] committed multi-million-dollar funding for institution strengthening and curriculum alignment; and the TVET Dual Apprenticeship Policy [9] introduced structured workplace learning pathways for graduates. National development planning has also embedded TVET within wider employment and poverty-reduction frameworks [2, 46]. Despite these investments, the empirical evidence base documenting programme contributions to graduate livelihoods within Sierra Leone's district-level reality remains narrow. Available institutional surveys have concentrated on supply-side conditions facilities, enrolment, and course coverage [10], while qualitative investigations have illuminated social perceptions and structural barriers [5]. Robust, district-level quantitative analyses of employment and income effects, and coordinated multi-stakeholder impact assessments, are largely absent from the published literature [50, 51].

The global evidence base on TVET's employment effects situates this gap in a broader context. Systematic reviews indicate that TVET interventions produce small but consistent positive effects on paid employment and earnings in low- and middle-income countries (LMICs), though significant heterogeneity exists across studies and settings [11, 12, 65]. A landmark joint report by the ILO, UNESCO, and the World Bank concluded that TVET systems in many LMICs do not adequately match skills to labour market needs, and that training outcomes are conditioned by programme quality, curriculum relevance, and the availability of post-graduation support structures [13, 43]. These findings build on a longer line of vocational education scholarship that documents the potential of TVET as an engine of economic growth and social inclusion while also emphasizing the conditionality of those gains

[52, 53, 62]. In the sub-Saharan African context, scholars have argued consistently that skill formation must be understood in relation to labour demand, institutional infrastructure, and the broader macroeconomic environment [14–16]. Vocational training that is disconnected from employer needs, unsupported by post-training capital and guidance, and delivered in under-resourced facilities cannot generate sustainable livelihood improvement [48, 49].

Three complementary theoretical frameworks ground the study. Human Capital Theory, developed by Becker [17, 18], holds that investment in skills development increases individual productivity and labour market returns. In the TVET context, this implies that relevant training should raise employability and income, an expectation borne out in the literature for contexts where training is industry-linked, and labour markets are absorptive [21, 33, 34]. The theory's limits, however, are exposed when applied mechanistically to post-conflict, low-income settings where industrialization is slow and formal employment is scarce [22, 44]. Competency-based training models, which are increasingly central to TVET delivery globally, depend on precisely the kind of industry alignment and assessment infrastructure that many LMICs, including Sierra Leone, are still developing [59, 60]. Empowerment Theory [19] extends the account by capturing how skills acquisition generates economic agency, self-efficacy, and social recognition among previously excluded youth [23, 66]. The Sustainable Livelihoods Framework (SLF) [20] provides the integrating layer: it demonstrates that human capital gains translate into livelihood outcomes only when graduates also have access to complementary financial, physical, social, and institutional assets [24, 67].

Taken together, these frameworks constitute an explanatory architecture for both why TVET contributes to livelihoods and why those contributions remain conditional. Against this background, the present study reports on two objectives from a larger doctoral investigation conducted across four Sierra Leonean districts: (i) to examine the contribution of TVET programmes to employment opportunities and income levels among youth and young adult graduates; and (ii) to assess the perceived impact of TVET from the perspectives of students, employers, and educators. The study contributes three additions to the published literature: district-level quantitative evidence on TVET livelihood effects for Sierra Leone; theoretical integration of Human Capital Theory, Empowerment Theory, and the SLF to explain the conditionality of those effects; and the first coordinated multi-stakeholder perception analysis across student, employer, and educator groups in the Sierra Leonean context.

2. Research Methodology

2.1. Research Design

A convergent mixed-methods design was employed,

combining quantitative survey data with qualitative interview and document-review evidence to produce a comprehensive account of TVET's livelihood contributions and perceived value [25-27]. This design is appropriate because numerical analysis provides generalizable estimates of employment and income relationships while qualitative data illuminate the contextual and experiential dimensions that quantitative instruments do not fully capture.

2.2. Study Area and Population

The study was conducted across Bombali (Northern Province), Koinadugu (North-West), Kenema, and Kailahun (both Eastern Province), with two chiefdoms sampled from each district. These districts were purposively selected to represent geographically and economically diverse settings. The target population comprised youth and young adults aged 15–35 years enrolled in or recently graduated from TVET programmes, employers with experience of hiring TVET graduates, and educators actively teaching within TVET institutions across the selected chiefdoms.

2.3. Sample Size and Sampling Procedure

A total of 278 valid respondents participated. The sample size was determined using Yamane's formula applied to the accessible population [28] and validated against minimum thresholds for mixed-methods studies [29]. Stratified purposive sampling ensured proportional representation across respondent categories (student/graduate, employer, and educator) and all four districts. Quantitative questionnaires were administered to all 278 participants; semi-structured interviews were conducted with purposively selected sub-groups for triangulation.

2.4. Data Collection Instruments

Three instruments were used. A structured questionnaire with five-point Likert scales and open-ended items collected data on TVET contributions to employment, income, and well-being, and on stakeholder perceptions of programme impact. Semi-structured interview guides, designed separately for student, employer, and educator groups, elicited contextual narratives. A document review checklist examined policies and institutional records. Content and face validity were established through expert review by a panel of academics and TVET practitioners. Cronbach's alpha reliability coefficients exceeded 0.70 for all quantitative scales, meeting the threshold recommended for social science instruments [27].

2.5. Data Analysis

Quantitative data were processed using SPSS Version 26.0.

Descriptive statistics (mean, standard deviation) characterised perceptions of TVET outcomes. Spearman rank correlation assessed relationships between skills relevance and livelihood dimensions, an appropriate choice given the ordinal nature of Likert-derived variables. One-way ANOVA with partial eta-squared (η^2) effect sizes estimated the differential influence of TVET-related factors on livelihood outcomes, with effect-size interpretation following established benchmarks [58]. Qualitative data from interviews and open-ended questionnaire items were subjected to thematic content analysis: responses were transcribed, coded into categories, and quantified by frequency and percentage to enable systematic integration with the quantitative strand.

2.6. Ethical Considerations

Ethical approval was granted by the Njala University Board of Postgraduate Studies. All participants provided written informed consent, were assured of voluntary participation and response confidentiality, and were informed that data would be used solely for academic purposes. No personal identifying information is reported.

3. Results and Discussion

3.1. Demographic Characteristics of Respondents (N = 278)

Table 1 shows that the 278 respondents were drawn from three regions and four districts, providing broad geographical representation of TVET stakeholders in Sierra Leone. The Eastern Region had the highest proportion of respondents (145; 52.2%), followed by the Northern Region (126; 45.3%), while the North East Region had the fewest (7; 2.5%). At the district level, Bombali recorded the highest representation (74; 26.6%), followed closely by Kailahun (73; 26.3%) and Kenema (72; 25.9%), with Koinadugu contributing the lowest (59; 21.2%). Most respondents were male (196; 70.5%), compared with 81 females (29.1%), reflecting the continued male dominance in TVET programmes. The majority were also young, with 18–25 years accounting for 104 respondents (37.4%) and 26–30 years for 63 (22.7%), meaning that 60.1% were aged 30 years or younger. This age profile aligns with the primary target group of TVET programmes, which focus on equipping youth with employable skills. Regarding educational background, respondents with Certificate qualifications formed the largest group (107; 38.5%), followed by Others (78; 28.1%), Diploma holders (55; 19.8%), Degree holders (22; 7.9%), and Master's degree holders (16; 5.8%).

Table 1. Demographic characteristics of respondents (N = 278).

Variables	Responses	Frequency	Percentage
		(n)	(%)
Region	Eastern	145	52.2
	Northern	126	45.3
	North East	7	2.5
District	Bombali	74	26.6
	Kailahun	73	26.3
	Kenema	72	25.9
	Koinadugu	59	21.2
Sex	Male	196	70.5
	Female	81	29.1
	Missing	1	0.4
Age	18-25 Years	104	37.4
	26-30 Years	63	22.7
	31-35 Years	43	15.5
	36-40 Years	42	15.1
	41 Years and Above	26	9.4
Educational Background	Certificate	107	38.5
	Others	78	28.1
	Diploma	55	19.8
	Degree	22	7.9
	Master	16	5.8

3.2. Perceived Impact of TVET from Students, Employers, and Educators

3.2.1. Perceived Impact of TVET from Students

Across all respondents, the most frequently cited benefit of TVET participation was employment, self-employment, and income generation (n = 119; 47%) (Table 2). Livelihood, family welfare, and community development accounted for 54 responses (21.1%); certification and qualification benefits for 26 (10%); and practical skills acquisition for 16 (6%). A meaningful minority 41 responses (16%) were unclear, unrelated, or negative. This last category is analytically significant: it indicates that a segment of TVET participants does not articulate a coherent benefit narrative, raising questions about programme structure, facility quality, and outcome clarity. Table 4 disaggregates student perceptions specifically. The largest proportion of youth respondents (38%) reported positive

improvements in skills and employability. However, more than a quarter (28%) held mixed perceptions, a level of ambivalence consistent with Harris's [5] qualitative finding that TVET's social standing in Sierra Leone is undermined by institutional under-resourcing and policy under-prioritisation. Mixed perceptions among youth also mirror findings from Kenya, where Muchira et al. [37] found that trainees valued TVET's practical dimension but expressed frustration with inadequate equipment and insufficient workplace exposure. The 12% reporting negative or unclear outcomes warrants targeted institutional investigation: it indicates that current TVET delivery does not, for a non-trivial minority, produce an articulable benefit. International evidence identifies this pattern particularly in low-income, post-conflict settings where TVET has historically been positioned as a residual rather than a first-choice educational pathway [6, 49, 66]. From the Empowerment Theory perspective [19] which holds that skills acquisition generates economic agency, self-efficacy, and social recognition the predominance of employment and income

generation (47%) and livelihood and family welfare (21%) as the primary perceived benefits is theoretically coherent. These results confirm that students experience TVET most immediately through its contribution to economic participation and reduced dependence. The 10.4% citing livelihood and

entrepreneurship benefits specifically points toward self-generated income pathways, supporting Wignall et al.'s [23] argument that TVET can foster economic agency beyond wage employment when entrepreneurship components are incorporated and supported [48, 67].

Table 2. Student Perceptions of TVET Impact (N = 278).

Category	Frequency (n)	Percentage (%)
Employment, self-employment and income benefits	119	47
Livelihood, family welfare and community development	54	21
Unclear, unrelated or negative responses	41	16
Certification, recognition and qualification benefits	26	10
Practical skills acquisition and technical competence	16	6
Total	256	100

3.2.2. Perceived Impact of TVET from Employers

Table 3 reveals a positive but conditional employer stance. The dominant category, positive but cautious (30.9%), captures employers who acknowledge graduates' practical utility while identifying residual gaps in professional conduct, adaptability, and familiarity with modern equipment. This profile replicates closely the employer stance documented in West African and other African settings [13, 16] and is consistent with ILO's [4, 43] documentation of the dual technical-and-soft-skills threshold that employers apply when assessing graduate readiness. Billett [38] argues that vocational learning

must be grounded in authentic workplace practice to meet this threshold; that Sierra Leone's facility-constrained TVET institutions are not consistently meeting it is evident from the 6.1% skills mismatch rate, which corroborates curriculum alignment concerns recurring throughout the African TVET literature [22, 39, 59, 60]. The combined positive categories (30.9% + 21.8% = 52.7%) nonetheless indicate that a majority of employers hold a fundamentally favourable view of graduates' practical competence, a finding that creates space for productive employer-TVET institution partnerships of the kind recommended by the ILO Quality Apprenticeships framework [42, 61].

Table 3. Employer Perceptions of TVET Graduates' Skills Relevance (N = 262).

Category of Responses	Frequency	Percentage (%)
Positive but cautious (useful; additional readiness needed)	81	30.9
Positive perception of practical usefulness	57	21.8
Employment and self-employment outcomes	48	18.3
Other responses / no specific opinion	50	19.1
Skills mismatch or workplace readiness gaps	16	6.1
Negative perception or poor relevance	10	3.8
Total	262	100.0

3.2.3. Perceived Impact of TVET from Educators

Educator perceptions present a picture of strong

developmental motivation constrained by structural limits. Nearly half (45.9%) (Table 4) identified student skill development, employability enhancement, and unemployment

reduction as the primary reward of TVET teaching, an orientation that aligns with the sector's developmental mandate and represents a substantial institutional asset. Practical teaching and applied learning featured for 14.0%, and professional growth and industry connection for 9.3%. The 28.8% providing unclear or unrelated responses constitutes the most arresting finding in this sub-section. UNESCO-UNEVOC [40] has identified professional development, industry reconnection, and pedagogical updating as priority challenges for TVET educators globally; the high proportion of diffuse educator responses may reflect a systemic gap in structured professional learning that leaves instructors without a coherent conceptual language for articulating their own practice. The African Union's [41] Continental TVET Strategy 2025–2034 specifically

identifies educator qualification and continuous development systems as a priority investment axis, a recommendation strongly supported by the present findings [47, 54].

Across all three stakeholder groups, the findings converge on a coherent systemic interpretation. Students value TVET primarily for its economic utility, but express ambivalence rooted in facility and quality inconsistencies. Employers hold qualified confidence that translates into conditional hiring rather than categorical endorsement. Educators are developmentally motivated but structurally under-supported. All three perspectives point toward the same diagnosis: TVET in Sierra Leone has real and recognised developmental potential that current institutional, financial, and professional deficits prevent from being fully realised [14, 24, 53, 63].

Table 4. Educators Perception TVET Graduates' Skills Relevance ($N = 257$).

Category of Responses	Frequency	Percentage (%)
Student skill development, employability, unemployment reduction	118	45.9
Unclear, general, or unrelated responses	74	28.8
Practical teaching, assessment, and applied learning	36	14.0
Educator professional growth and industry connection	24	9.3
Community and national development contribution	3	1.2
Institutional monitoring and teaching improvement	2	0.8
Total	257	100.0

3.3. Contribution of TVET to Employment Opportunities and Income Levels

Table 5 presents descriptive statistics for respondents' perceptions of TVET livelihood outcomes, rated on a five-point Likert scale (1 = Strongly Disagree; 5 = Strongly Agree). The distribution reveals positive but moderate perceptions across all dimensions. Well-being improvement ($M = 3.19$, $SD = 1.24$) and skills relevance to the labour market ($M = 3.17$, $SD = 1.27$) were rated positively. Income improvement was slightly positive ($M = 3.01$, $SD = 1.26$), career support services were rated neutrally ($M = 2.99$, $SD = 1.22$), and employability improvement received the lowest rating, classified as moderate/low ($M = 2.81$, $SD = 1.25$).

That well-being and skills-relevance ratings surpass direct

employment scores reflects the structure of Sierra Leone's predominantly informal labour market, where livelihood gains materialize through own-account trade, apprenticeship progression, and household enterprise before formal employment becomes accessible [30–32]. This pattern is consistent with the African Development Bank's [45, 57] documentation of skills-to-livelihood pathways in low-income, high-informality West African economies. The neutral rating for career support services ($M = 2.99$) signals institutional inconsistency in providing post-graduation guidance and job-placement support, precisely the structures that the SLF [20] identifies as critical mediators between skills acquisition and sustainable livelihood outcomes. This finding aligns with ILO reports confirming that youth employment outcomes across sub-Saharan Africa depend on effective school-to-work transition systems, not on training alone [4, 61].

Table 5. Contribution of TVET to Employment Opportunities and Income Levels ($N = 278$).

Statement on TVET Outcome	Mean	SD	Interpretation
Employability opportunities improved	2.81	1.25	Moderate/low

Statement on TVET Outcome	Mean	SD	Interpretation
Income levels increased	3.01	1.26	Slightly positive
Well-being improved	3.19	1.24	Positive
Skills relevant to labour market	3.17	1.27	Positive
Career support services effective	2.99	1.22	Neutral

Note: Scale: 1 = Strongly Disagree; 3 = Neutral; 5 = Strongly Agree. Interpretation: ≤ 2.60 = Negative; 2.61–2.80 = Moderate/low; 2.81–3.20 = Slightly positive/Neutral; 3.21–3.80 = Positive; ≥ 3.81 = Strongly positive.

3.4. Spearman Rank Correlation for TVET Skills Relevance and Livelihood Outcomes

Table 6 presents Spearman rank correlations (ρ) between skills relevance and three livelihood dimensions. All coefficients were positive and statistically significant ($p < .001$). The pattern follows a theoretically coherent gradient: skills relevance correlated moderately with employability ($\rho = 0.416$) and with income ($\rho = 0.549$), and strongly with well-being ($\rho = 0.618$). That the strongest association is with well-being rather than direct employment aligns with the SLF's proposition that skills gains contribute to a broader capability set: confidence, community standing, household welfare before they translate into formal wage employment [20]. Human Capital Theory [17, 18] predicted that relevant training raises productivity and

labour market returns. The income correlation ($\rho = 0.549$) provides qualified support for this proposition. The theory's limits, however, are evident in the moderate employability coefficient ($\rho = 0.416$): in a labour market where formal sector absorption is constrained by slow industrialization and macroeconomic weakness [22, 44] as observed in Sierra Leone and across much of sub-Saharan Africa [36, 45] skills investment alone cannot ensure formal employment. Longitudinal evidence from sub-Saharan Africa confirms that the labour market advantage of vocational training is real but conditional on programme quality, economic context, and post-training support [33, 34]. The Sierra Leone Skills Development Project assessment [35] showed higher employment rates specifically among graduates who received integrated training with workplace exposure, directly corroborating the skills-relevance correlation pattern reported here.

Table 6. Spearman Rank Correlation for TVET Skills Relevance and Livelihood Outcomes.

Variable Relationship	ρ	p-value	Interpretation
Skills relevance $\times$ Employability	0.416	$< .001$	Moderate positive
Skills relevance $\times$ Income	0.549	$< .001$	Moderate positive
Skills relevance $\times$ Well-being	0.618	$< .001$	Strong positive

Note: All correlations significant at $p < .001$ (two-tailed). $\rho = 0.10$ – 0.29 : weak; 0.30 – 0.49 : moderate; ≥ 0.50 : strong positive association. Source: Field Data (2025).

Qualitative interview data contextualized these findings. Graduates reporting livelihood gains attributed them to practical, industry-relevant training; their economic activities included small business operation, informal contract work, and apprenticeship progression. Those reporting limited gains cited lack of start-up capital, absence of tools, restricted market access, and inadequate employer connections. One educator participant observed that graduates “leave with skills but without the means to use them” an articulate condensation of the assets gap that the SLF formalizes. These narratives are consistent with Ansari and Amegah's [35] evaluation evidence and with ILO's emphasis on effective school-to-work transition systems as prerequisites for employment gains [4, 47].

4. Conclusion and Recommendation

The study concludes that Technical and Vocational Education and Training (TVET) programmes make a positive contribution to employment, income generation, and the well-being of youth and young adult graduates in Sierra Leone. Students viewed TVET primarily as a pathway to employment and self-employment, employers acknowledged graduates' practical competence despite concerns about workplace readiness and soft skills, and educators recognized its role in developing employable skills while highlighting institutional constraints.

However, the full potential of TVET is constrained by weak industry linkages, limited workplace exposure, inadequate career guidance, insufficient start-up support, and institutional capacity challenges. The study therefore recommends increased government investment in modern TVET infrastructure, equipment, and competency-based curricula; stronger partnerships between TVET institutions and industry through internships and apprenticeships; institutionalized career guidance and job placement services; expanded access to start-up finance and entrepreneurship support for graduates; continuous professional development for TVET educators; regular curriculum reviews involving employers to ensure labour market relevance; and longitudinal studies to evaluate the long-term effects of TVET on employment, income, and sustainable livelihoods.

Author Contributions

Joseph James Mbavai: Conceptualization, Data curation, Formal Analysis, Funding acquisition, Investigation, Supervision, Writing – review & editing

Karim Theodore Bostock Mansaray: Conceptualization, Data curation, Formal Analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing

Samuel Joseph Bebeley: Conceptualization, Data curation, Formal Analysis, Funding acquisition, Investigation, Supervision, Writing – review & editing

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Conflicts of Interest

The authors declare no conflicts of interest.

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