Economic and Employment Outcomes of Youth Vocational Education in Tanzania

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Abstract
This paper examines vocational education's effectiveness in addressing youth unemployment and promoting economic self-reliance in Tanzania. Data from 394 vocational graduates were analysed using descriptive statistics and regression models to assess the impact of vocational training on employment and economic outcomes. Results show that 83.6% of respondents believe vocational education provides essential employment skills, while 62.3% agree it enhances productivity. However, 39.3% highlight the need for reforms to better align training with labour market needs. The findings underscore vocational education's vital role in youth employment, advocating for curriculum updates and increased resources to improve system effectiveness.

Keywords: *Economic development, labour market, skills development and mismatch, vocational education and training, youth employment*

JEL: *I25, J24, J21, J64, O15*

1. Introduction

In Tanzania, vocational education plays a critical role in addressing youth unemployment by providing practical, market-oriented skills to equip young people for employment or entrepreneurship. The country's education system consists of two main pathways: formal education and vocational training. While formal education emphasizes academic knowledge, vocational education focuses on the acquisition of hands-on skills necessary for specific trades and occupations, contributing to human capital development. This pathway offers an alternative for students who may not pursue university education, allowing them to acquire practical skills in various fields such as construction, mechanics, agriculture, and information technology (Nyerere & Ishengoma, 2020).

Vocational education in Tanzania dates back to the post-independence period, with a focus on addressing the skills gap in various sectors of the economy. Over the years, institutions such as the Vocational Education and Training Authority (VETA) have played a pivotal role in providing technical education to both urban and rural populations. These institutions aim to bridge the gap between the skills required by industries and the capabilities of the youth

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entering the workforce (URT, 2021). Despite the expansion of vocational training, Tanzania still faces high levels of youth unemployment. According to the ILO (2022), the unemployment rate among Tanzanian youth remains a pressing challenge, with many vocational graduates struggling to secure meaningful employment in the formal economy.

According to Tanzania's 2022 National Census, the youth population (aged 15–35) represents approximately 34.5% of the total population, highlighting the critical importance of addressing youth unemployment and underemployment. The unemployment rate among Tanzanian youth was estimated at 14.8% in 2022, a significant challenge given the demographics potential contribution to the workforce (NBS, 2023). Vocational education has been positioned as a strategic tool to mitigate this issue, particularly through the efforts of the Vocational Education and Training Authority (VETA). Over the past five years, VETA has enrolled an average of 126,000 students annually, with a balanced representation of male and female trainees (VETA, 2023). However, disparities remain, with males making up approximately 56% of enrolment and females constituting 44%, reflecting ongoing gender dynamics in vocational training access (URT, 2022). These statistics underscore the importance of targeted interventions to ensure that both young men and women can access the opportunities provided by vocational education to improve their employment prospects.

The role of vocational education in Tanzania is multi-faceted. It not only serves to equip young people with the technical skills needed to perform specific tasks in industries such as manufacturing, construction, and service sectors but also fosters entrepreneurial skills that enable graduates to start and manage their own businesses (Mfaume &Leonard, 2018). This is particularly important in rural areas, where self-employment through small and medium-sized enterprises (SMEs) can contribute to local economic development and poverty alleviation.

However, challenges persist. Many vocational training institutions in Tanzania face issues related to inadequate funding, outdated curricula, and a lack of alignment between the training provided and the evolving demands of the labour market (Maghimbi, 2020). This mismatch between the skills imparted in vocational education and the requirements of employers has contributed to the underemployment of vocational graduates, as many are unable to find jobs that match their qualifications. This situation mirrors the challenges seen in other African countries, such as Kenya and Uganda, where vocational education systems also grapple with similar issues of relevance and effectiveness in addressing youth unemployment (Ng'ang'a, 2020).

Recognizing the significant potential of vocational education to enhance economic development and create employment opportunities, this study focuses on assessing its influence on Tanzania's economy and youth employment. It investigates how vocational training contributes to the labour market and aims to generate insights that can guide the improvement of vocational programmes to better align with the evolving demands of the economy, both now and in the future.

Tanzanian youth continue to face significant unemployment challenges, partly due to a skills mismatch between what is taught in vocational institutions and what is required by employers in the labour market (URT, 2022). Although the government has invested in vocational education through institutions like VETA, the system has not fully met its potential in equipping young people with marketable skills. Many vocational graduates are either unemployed or underemployed, limiting their contribution to the country's economic growth and development (Mfaume & Leonard, 2018). This study investigates the role of vocational education in tackling youth unemployment in Tanzania and assesses its broader impact on the country's economic development. It examines how well vocational training programmes are equipped to meet the demands of the labour market and explores the structural challenges that limit their effectiveness. By analysing the current state of vocational education, the study aims to highlight ways in which these programmes can be improved to better serve the needs of young people and contribute meaningfully to economic growth. The general objective of the research is to evaluate the influence of vocational education on economic outcomes and youth employment in Tanzania. Specifically, it seeks to understand the extent to which vocational training contributes to national economic development, its impact on improving job prospects for young people, and the institutional or systemic barriers that hinder the effectiveness of vocational education in achieving these goals.

To address these concerns, the study is driven by key research questions: How does vocational education contribute to Tanzania's economic growth? What is its effect on the employment outcomes of young people? And what challenges do vocational education institutions face that limit their contribution to both the economy and youth employment? Through answering these questions, the study aims to provide evidence-based recommendations for enhancing the relevance and impact of vocational education in the Tanzanian context.

2. Materials and Methods

2.1 Research Design

This study employed a survey research design to investigate the economic and employment outcomes of youth vocational education in Tanzania. The selection of this research design was driven by the objective to understand

the perceptions and experiences of key stakeholders, including educators, employers, and vocational graduates, regarding the effectiveness of vocational training programmes (Kigwangalla & Mkumbo, 2022; Ndibalema et al., 2023). Survey research facilitates the collection and analysis of data from a representative sample of the population using structured questionnaires and systematic sampling techniques. The study adopted an explanatory research approach, aiming not only to describe the characteristics of vocational education but also to explore the underlying reasons and relationships that influence its impact on the economy and youth employment (Kagoda & Mwaipopo, 2022; Makangara et al., 2023). The quantitative methodology was chosen to enable the isolation and generalization of key variables, thereby providing a comprehensive understanding of the phenomena under investigation (Kagoma, 2020; Rweyemamu & Mwakyusa, 2020; Mwaipopo et al., 2021).

According to Mkumbo & Juma (2021), a research design serves as a blueprint outlining how the study will be conducted, including data collection methods, instruments, and analytical procedures. This study's design encompasses plans for gathering quantitative data through questionnaires, detailing the variables to be measured, the target respondents, and the strategies for data analysis. The research design ensures that the study produces valid and reliable conclusions, thereby contributing to practical insights and informed decision-making in the field of vocational education and youth employment in Tanzania (Nyerere & Ishengoma, 2020).

2.2 Sampling Frame, Sample size determination, and Sampling techniques

The graduates within the scope for this survey were those between 2017/2018 and 2022/2023 years of graduation. The training programmes undertaken by the respondents included in this study typically range from 6 months to 3 years, depending on the nature of the programme and the qualification level being pursued. Graduates within this timeframe were chosen to ensure an adequate representation of recent cohorts while also allowing time for initial employment outcomes to be observed and evaluated. This approach ensures the dataset captures diverse experiences across various training durations and qualification levels. The selection was based on the availability of comprehensive and consistent data from VET Centres. Additionally, this period aligns with significant reforms in vocational training programmes implemented by VETA, making it a logical starting point for the study to assess outcomes from those reforms. A dataset of 24,324 graduates was consolidated from lists provided by VET Centres through VETA Zonal Offices. The list was therefore used as a sampling frame for this study. To calculate the appropriate sample size, Yamane's (1967) formula was applied, expressed as:

$$n = \frac{N}{1 + N(e)^2}$$

where:
n = Sample size
N = The total population (24,324 households)
e = Precision error (5%)

$$n = \frac{24{,}324}{1 + 24{,}324(0.05)^2} = 393.5$$

Thus, a sample size of approximately 394 graduates was used in this study. The sample was chosen using a random sampling technique to enhance representativeness of the entire population (Kagoma, 2020).

2.3 Data Sources

The primary and secondary data sources were integrated to provide a comprehensive analysis. Primary data were obtained directly from survey respondents, offering first-hand insights into their experiences and perceptions. Secondary data were gathered from official reports, academic journals, and governmental publications, supplementing the primary data and providing a broader contextual framework for the findings (Nyarko & Simba, 2019).

2.4 Methods of Data Collection

After finalizing the questionnaire, data collection was carried out using a structured drop-and-pick method to maximize response rates and ensure the timely return of completed surveys. A total of 394 questionnaires were distributed to the selected respondents, with the assistance of enumerators who facilitated the distribution and collection processes. This collaborative approach helped achieve a high response rate of approximately 95%, ensuring that the data collected were comprehensive and representative of the target population (Mwaipopo et al., 2021).

The questionnaires were administered physically to allow respondents ample time to complete them at their convenience. Enumerators played a crucial role in encouraging participation and addressing any immediate concerns or questions respondents had about the survey. This method not only enhanced the response rate but also ensured that the data collected was of high quality and reliability (Kagoma, 2020).

The choice of questionnaires as the primary data collection tool was based on their ability to efficiently gather standardized and comparable information from a large number of respondents. Questionnaires are advantageous in quantitative studies as they facilitate the collection of data that can be easily analyzed statistically, providing clear and actionable insights into the research questions (Mkumbo, 2021; Chacha, 2021).

2.5 Informed Consent

The collection of data adhered to established ethical principles, ensuring that participants were treated with respect and consideration. Verbal informed consent was obtained from all individuals involved in the study. This method was chosen to promote accessibility and inclusion, particularly for participants who may face challenges related to literacy, disability, or language. In addition, verbal agreements are consistent with local cultural norms that value spoken communication, providing participants with a greater sense of comfort and privacy when engaging with sensitive topics. This approach also proved practical for time-sensitive or remote data collection, helping to build trust and establish a respectful rapport between researchers and participants. All data collected was anonymized to ensure privacy, and participants were assured that their information would be used solely for academic research purposes.

2.6 Ethical Approval

The study was conducted in accordance with ethical standards governing research involving human subjects. Prior to data collection, the research proposal, including all instruments and procedures, received formal approval from the University of Dodoma Ethical Committee. The committee also sanctioned the use of verbal consent as appropriate for this context. All participants were informed about the nature of the study and their voluntary involvement, and their rights to confidentiality and anonymity were strictly maintained throughout the research process.

2.7 Data Analysis and Interpretation

The collected data were analysed using the Statistical Package for Social Sciences (SPSS) version 25. Inferential analysis and descriptive statistical methods, including frequency distributions, mean scores, and percentage analyses, were employed to summarize and interpret the data. The analysis focused on identifying patterns and relationships between vocational education and its economic and employment outcomes among Tanzanian youth (Senga, 2022).

Frequency distribution tables were utilized to present the data in an accessible and visually appealing format, facilitating easier interpretation and understanding of the results. These tables helped illustrate the key trends and correlations identified through the survey responses, providing a clear depiction of the vocational education system's impact on youth employment and economic growth (Mwaipopo et al., 2021).

Overall, the data analysis aimed to transform raw data into meaningful information that addresses the research questions, thereby offering valuable recommendations for enhancing vocational education's role in Tanzania's economic development and youth employment strategies (Maghimbi, 2020).

A multiple regression analysis was conducted to examine the relationships among the primary variables of the study, which were measured using a 5-point Likert scale. These variables include the perceived contribution of vocational education to economic development, its impact on employment in Tanzania, and the various challenges confronting vocational education.

Table 1 presents the specific indicators used to assess these challenges, as well as the roles of vocational education in both economic and employment contexts. These indicators served as the independent variables in the model, with youth employment outcomes defined as the dependent variable. The regression analysis involved variables measured using different scales, derived from Likert scale responses. Likert scale data, being ordinal, may not fully satisfy the assumptions of linear regression, which is more suitable for continuous variables. This could lead to potential specification errors or biased results. The decision to use a linear regression model was informed by its ability to provide an initial understanding of the relationships between the variables of interest. Specifically, the model aimed to explore the predictive relationships between the independent variables (roles of vocational education in the economy and roles of vocational education in employment, and challenges faced) and the dependent variable (employment status).

Table 1: Variable Measurement

Variables	Descriptions	Measurements	Scale/Type
Employment Status (E)	Youth's employment status	Binary: 1 = Employed, 0 = Unemployed	Binary (Nominal)
Role of Vocational Education (R_E)	Perception of vocational education's economic role	Likert scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Uncertain, 4 = Agree, 5 = Strongly Agree	Ordinal (Likert)
Role in Employment (R_Em)	Perception of vocational education's impact on employment	Likert scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Uncertain, 4 = Agree, 5 = Strongly Agree	Ordinal (Likert)
Challenges (C)	Perceptions on various factors as challenges to the effectiveness of vocational education	Likert scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Uncertain, 4 = Agree, 5 = Strongly Agree	Ordinal (Likert)

While the dependent variable is categorical, it was operationalized as binary (trained and employed vs. unemployed) for this analysis, thus meeting the basic assumption for linear regression. The analysis deliberately focused on

a few independent variables to ensure clarity and interpretability. These variables were selected based on their theoretical and empirical significance in explaining the dependent variable.

The regression model was expressed using the equation below:

$$E = \beta_0 + \beta_1 R_E + \beta_2 R_{Em} + \beta_3 C + \varepsilon$$

where:

E = Employment Status (dependent variable) which was measured as a binary variable: (1 = self-employed or wage-employed, 0 = Unemployed).

R_E = Role of Vocational Education in the Economy (independent variable) which was measured on a 5-point Likert scale based on respondents' perceptions of the contribution of vocational education to economic growth (1 = Strongly Disagree, 5 = Strongly Agree).

R_{Em} = Role of Vocational Education in Employment (independent variable) which was measured on a 5-point Likert scale based on respondents' perceptions of the contribution of vocational education to job creation and employability (1 = Strongly Disagree, 5 = Strongly Agree).

C = Challenges faced by Vocational Education (independent variable) which were measured on a 5-Likert Scale based on respondents' perceptions on various factors as challenges to the effectiveness of vocational education (1 = Strongly Disagree, 5 = Strongly Agree).

β_0 = Intercept of the regression line (constant term).

$\beta 1, \beta 2, \beta 3$ = Coefficients for the independent variables, representing the change in E for a one-unit change in each independent variable, holding other variables constant

ε = Error term, accounting for variability in E not explained by the model.

2.7. 1 Normality Test

In this study, the technique used was the Shapiro-Wilk Test (preferred for small samples). This test was used to assess whether the residuals (errors) from the regression model were normally distributed. If the p-value of the test is greater than 0.05, the residuals are considered normally distributed.

2.7.2 Multicollinearity Test

Multicollinearity of the independent variables was checked using the Variance Inflation Factor (VIF). A VIF value greater than 10 suggests a high level of multicollinearity between the variables, meaning one predictor variable can be linearly predicted from the others with a substantial degree of accuracy.

2.7.3 Heteroscedasticity Test

Heteroscedasticity, occurs when the variance of the residuals is not constant. It was tested using the Breusch-Pagan test. This test evaluates whether the residual variance increases or decreases systematically with the fitted values. A p-value less than 0.05 would indicate the presence of heteroscedasticity.

3. Results and Discussion

3.1 The contribution of vocational education to overall economic development

Table 2 presents findings that shed light on how vocational education is perceived to influence Tanzania's broader economic development.

Table 2: The Effects of Vocational Education on Tanzania's Overall Economic Development

Code	Economic Contribution of Vocational Education	Strongly-Agree	Agree	Uncertain	Disagree	Strongly-Disagree	Xs	S D
I_JP	▪ Enhances individual work performance and boosts the productivity of businesses	16.4%	62.3 %	6.6%	13.1%	1.6%	3. 8	0. 9
EC_FC	▪ It serves as a powerful driver for generating employment opportunities.	18.0%	60.7 %	14.8%	4.9%	1.6%	3. 9	0. 8
RI_PR	▪ Contributes to reducing poverty, strengthening food security, and fostering social integration among young people	13.1%	44.3 %	14.8%	21.3%	6.6%	3. 4	1. 2

PE_YB	▪ It has a beneficial impact on the youth population in Tanzania	21.3%	57.4 %	8.2%	13.1%	0%	3. 9	0. 9
WT_PR	▪ Some view vocational education as an inefficient use of public funds.	6.6%	16.4 %	26.2%	29.5%	21.3%	2. 6	1. 2
IL_FU	▪ It plays a significant role in upgrading skills within the labour force and improving overall productivity.	16.4%	52.5 %	11.5%	18.0%	1.6%	3. 6	1. 0
PW_ES	▪ Tends to lead to higher wages for skilled workers, although it may also be associated with slower wage growth over time.	16.4%	23.0 %	31.1%	24.6%	4.9%	3. 2	1. 1
PE_GI	▪ It supports economic development by advancing industrialization and increasing production capacity.	23.0%	57.4 %	9.8%	4.9%	4.9%	3. 9	0. 9

Across various dimensions, vocational education is seen as having a predominantly positive impact on the economy, with respondents strongly agreeing or agreeing with most statements about its benefits**.** A majority of respondents (62.3%) agree that vocational education enhances individual job performance and firm productivity, with 16.4% strongly agreeing. The mean score of 3.8 (SD = 0.9) reflects a strong consensus. Similarly, 60.7% agree that vocational education promotes employment creation, with 18.0% strongly agreeing, supported by a mean score of 3.9 (SD = 0.8). These findings align with studies showing that vocational education equips individuals with practical, marketable skills that boost workplace performance and job creation (Kibwage & Onwuegbuzie, 2022; Nyerere et al., 2021). In Tanzania, vocational education has played a key role in addressing youth unemployment by providing relevant skills aligned with labour market demands.

The role of vocational education in reducing poverty, enhancing food security, and promoting social cohesion among youth shows moderate agreement. While 44.3% agree and 13.1% strongly agree, there is a notable 21.3% disagreement. The mean score of 3.4 and a standard deviation of 1.2 suggest a divergence in opinions, potentially reflecting challenges in fully realizing these benefits in Tanzania. This is consistent with the findings of Kisaka et al. (2023), who highlight that while vocational training can reduce poverty, its impact varies depending on the effectiveness of its implementation and access to resources.

In a comparative context, vocational education's positive effects on youths, as evidenced by Tanzania's case, show high levels of agreement (57.4% agree and 21.3% strongly agree), yielding a mean of 3.9 and a standard deviation of 0.9. This suggests that lessons from other countries, like Botswana, highlight the transformative potential of vocational education for youth development, as confirmed by Ngugi & Mungai (2022).

Interestingly, perceptions about vocational education being a waste of taxpayers' resources are largely negative. Only 16.4% agree with this statement, while 29.5% disagree and 21.3% strongly disagree, reflected in a lower mean score of 2.6 and a higher standard deviation of 1.2. This indicates that the majority do not view vocational education as a misuse of resources which is supported.

The wage effects of vocational education on skilled workers are more contentious, with 31.1% uncertain and 24.6% disagreeing with the statement. The mean score of 3.2 and a standard deviation of 1.1 suggest that while some perceive vocational education as beneficial for wage increases, others remain sceptical, possibly due to disparities in long-term wage growth. Similar trends are noted by Mushi & Wangwe (2023), who argue that while vocational training enhances short-term wages, long-term wage benefits require policy reinforcement.

Vocational education's role in promoting economic growth through industrialization and production garners strong support, with 57.4% agreeing and 23.0% strongly agreeing. The mean score of 3.9 and a standard deviation of 0.9 reflect optimism about vocational education's potential to drive industrialization, aligning with national industrial policies (UNESCO, 2020).

3.2 The Role of Vocational Education in Youth Employment in Tanzania

Table 3 highlights perceptions about the role of vocational education in addressing youth employment challenges in Tanzania. The responses suggest broad support for vocational education as a tool to equip young people with practical skills and improve their labour market outcomes, though concerns about its effectiveness and historical gender disparities persist.

Most respondents (54.1%) agreed, while 29.5% strongly agreed, that vocational education equips young people with hands-on skills, helping them secure jobs or start their own enterprises. With a mean score of 4.0 and a standard deviation of 0.9, this suggests a strong consensus on the value of vocational training in fostering entrepreneurship and self-reliance among young people. This finding is consistent with the work of Mushi & Ngowi (2023), who argue that vocational education plays a key role in developing employable skills and enhancing entrepreneurial capacities in Tanzania.

Notably, 39.3% of respondents strongly agreed and 45.9% agreed that the existing vocational education system should be dismantled and redesigned. The high mean score of 4.1 and low standard deviation of 0.9 indicate a widely shared belief that significant reforms are required to modernize and better align vocational education with the current labour market. Recent studies support this view, highlighting gaps in the curriculum and the mismatch between skills taught and the demands of the market (Kweka & Mutalemwa, 2022). These findings underscore the need for comprehensive reform to make vocational education more responsive to youth employment needs.

A significant proportion (45.9% agree, 32.8% strongly agree) believe that vocational education remains a viable tool to address high youth unemployment, as reflected in a mean score of 4.0 and a standard deviation of 1.0. These perceptions align with Kisaka et al. (2022), who argue that vocational education provides a pathway to employment for many young people, particularly in sectors where technical skills are in high demand.

Vocational education's contribution to improving labour market outcomes also receives moderate support, with 39.3% agreeing and 23.0% strongly agreeing. However, the relatively high percentage of uncertainty (24.6%) and a mean score of 3.7 with a standard deviation of 1.0 suggest that while vocational education is perceived positively, its effectiveness in enhancing labour market outcomes is not universally recognized. Studies by James & Nchimbi (2023) highlight similar mixed results, noting that while vocational graduates may have higher employment rates, their overall labour market success can depend on the specific sector and the quality of training received. Concerns about the declining effectiveness of vocational education are evident, with 36.1% agreeing and 19.7% strongly agreeing that rising youth unemployment reflects this decline. A mean score of 3.4 and standard deviation of 1.2 indicate mixed views, though many believe vocational training has fallen behind labour market demands. Mwita & Mtega (2021) attribute this to structural issues such as outdated curricula and insufficient training facilities, which hinder the system's ability to address current employment needs.

Table 3: The Effects of Vocational Education on Youth Employment in Tanzania

Variable (construct code)	Code	Strongly-Agree	Agree	Uncertain	Disagree	Strongly-disagree	Xs	SD
▪ Provides young people with hands-on skills to help them secure jobs or start their own businesses.	PS_TY	29.5%	54.1%	4.9%	9.8%	1.6%	4.0	0.9
▪ The existing vocational education system requires a complete overhaul and redevelopment.	SN_SR	39.3%	45.9%	8.2%	4.9%	1.6%	4.1	0.9
▪ Remains a viable solution to addressing the high rates of youth unemployment.	TS_HY	32.8%	45.9%	8.2%	13.1%	0%	4.0	1.0
▪ Enhances employment prospects in the labour market.	IL_MO	23.0%	39.3%	24.6%	11.5%	1.6%	3.7	1.0
▪ Youth unemployment has increased partly because vocational education is less effective than it used to be.	UY_HV	19.7%	36.1%	16.4%	23.0%	4.9%	3.4	1.2
▪ Historical factors have caused vocational education to put young males at a disadvantage in employment compared to their female peers.	DY_ME	8.2%	16.4%	16.4%	42.6%	16.4%	2.6	1.2

A contentious issue is whether vocational education disadvantages young males compared to females in the employment market due to historical factors. The majority (42.6%) disagree with this assertion, and 16.4% strongly disagree, as reflected in the low mean score of 2.6 and a standard deviation of 1.2. This suggests that most respondents do not perceive significant gender disparities in how vocational education impacts employment opportunities for males versus females. However, Nyaga & Makokha (2022) caution that while formal gender biases may have reduced, subtle structural and cultural challenges remain that can still affect equitable access to job opportunities.

3.3 The Relationship Between Vocational Education's Impact on Tanzania's Economy and Employment

Table 4 provide a comprehensive correlation analysis of how various aspects of vocational education impact the economy and employment in Tanzania. The positive correlation between vocational education promoting economic growth through industrialization and production (PE_GI) and variables such as employment creation (EC_FC, $r = 0.31, p < 0.05$) highlights the broader economic benefits of vocational training. This reflects the role vocational education can play in Tanzania's industrialization agenda by providing a skilled labour force. Kweka & Mutalemwa (2022) emphasize that vocational training is a critical component in the drive toward industrialization, particularly as Tanzania seeks to diversify its economy and reduce its reliance on agriculture.

The correlation between vocational education delivering practical skills (PS_TY) and improving individual job performance (II_JP) is strong and significant ($r = 0.55, p < 0.01$). This underscores the importance of vocational training in enhancing individual job performance and productivity. The positive correlation with labour force upskilling (ILFU, $r = 0.38, p < 0.01$) and labour market outcomes (IL_MO, $r = 0.31, p < 0.05$) further highlights the essential role vocational education plays in equipping youth with relevant skills to improve employment prospects and workforce productivity. Recent studies, such as those by Kweka & Mutalemwa (2022), emphasize the significance of vocational education in fostering job readiness and performance in Tanzania's labour market.

Vocational education's role as a catalyst for employment creation (EC_FC) is strongly correlated with individual job performance (II_JP, r = 0.58, p < .01) and poverty reduction (RI_PR, $r = 0.45, p < 0.01$). The relationship between employment creation and positive labour market outcomes (ILMO, $r = 0.57, p < 0.01$) indicates that vocational education can significantly contribute to both individual and collective economic upliftment. According to Mushi & Ngowi (2023), vocational education fosters the creation of jobs, particularly in technical fields where there is a demand for skilled labour, contributing to reduced unemployment and better socio-economic conditions. Vocational education is also strongly correlated with solving high youth unemployment (TS_HY). This variable has a strong positive correlation with individual job performance (II_JP, $r = 0.67, p < 0.01$), employment creation (EC_FC, $r = 0.42, p < 0.01$), and poverty reduction (RI_PR, $r = 0.38, p < 0.01$).

Table 4: The Link Between Vocational Education's Contributions to the Overall Economy and Employment in Tanzania

Variable codes	PS_TY	II_JP	EC_FC	RI_PR	TS_HY	SN_SR	PE_YB	WT_PR	IL_FU	PW_ES	IL_MO	GI_DG	UY_HV	DY_ME	PE_GI
PS_TY	1	.5**	.129	.137	.451**	-.25*	.117	-.251	.38**	-.092	.31*	.12	-.18	-.07	-.01
II_JP	.55**	1	.579**	.40**	.674**	-.196	.322*	-.203	.55**	.043	.64**	.18	-.16	-.02	.15
EC_FC	.129	.6**	1	.45**	.415**	-.155	.317*	-.188	.39**	.134	.57**	.18	-.12	-.17	.31
RI_PR	.137	.4**	.450**	1	.375**	.022	.605**	.029	.325*	.547**	.42**	.30*	-.01	.04	.07
TS_HY	.45**	.7**	.415**	.38**	1	-.130	.376**	-.294*	.50**	.093	.47**	.18	-.18	-.08	.09
SN_SR	-.25*	-.2	-.155	.022	-.130	1	.027	.145	-.190	.128	-.19	.09	021	-.07	.12
PE_YB	.117	.32*	.317*	.61**	.376**	.027	1	.025	.165	.432**	.31*	.21	.07	.01	.02
WT_PR	-.251	-.2	-.188	.029	-.294*	.145	.025	1	- .25*	.412**	-.29*	-.08	.33**	.71**	.17
IL_FU	.38**	.6**	.390**	.325*	.498**	-.190	.165	-.253*	1	.096	.48**	.18	-.13	-.02	-.18
PW_ES	-.092	.04	.134	.55**	.093	.128	.432**	.412**	.096	1	.14	.10	.19	.38**	.10
IL_MO	.314*	.6**	.566**	.42**	.471**	-.185	.305*	-.288*	.48**	.143	1	.07	-.06	-.18	.12
GI_DG	.115	.18	.182	.295*	.181	.090	.214	-.078	.182	.096	.07	1	.27*	.14	-.15
UY_HV	-.177	-.2	-.120	-.005	-.181	.214	.068	.331**	-.133	.190	-.06	.27*	1	.35**	-.13
DY_ME	-.074	-.0	-.171	.041	-.078	-.074	.009	.706**	-.019	.375**	-.18	.14	.35**	1	.157
PE_GI	-.018	.15	.314*	.066	.085	.116	.020	.171	-.075	.096	.12	-.15	-.13	.16	1

Key: PS_TY: Vocational education equips young people with practical skills that help them secure jobs or start their own businesses, II_JP: Vocational education enhances individual job performance and increases firm productivity, EC_FC: Vocational education acts as a strong driver for generating employment opportunities, RI_PR: Vocational education contributes to reducing poverty, improving food security, and fostering social cohesion among youth, TS_HY: Vocational education remains an effective tool for addressing high youth unemployment rates, SN_SR: The current vocational education system requires a complete overhaul and redevelopment, PE_YB: Vocational education has a positive impact on young people in Tanzania, WT_PR: Vocational education is considered by some to be a misuse of taxpayers' money, IL_FU:

Vocational education promotes upskilling and enhances productivity within the labour force, PW_ES: Vocational education leads to wage increases for skilled workers but may result in slower wage growth over time, IL_MO: Vocational training improves employment outcomes in the labour market, GI_DG: Vocational education graduates who remain unemployed tend to rely more on government social assistance programmes, UY_HV: Youth unemployment rates are higher partly because vocational education is less effective than it was previously, DY_ME: Due to historical reasons, vocational education places young males at a disadvantage in employment compared to their female counterparts, PE_GI: Vocational education supports economic growth by promoting industrialization and increased production.

The positive correlation between vocational education and poverty reduction (RI_PR) is evident through its strong relationship with individual job performance (II_JP, $r = 0.397$, $p < 0.01$), labour market outcomes (IL_MO, $r = 0.423$, $p < 0.01$), and the reduction of unemployment (TS_HY, $r = 0.375$, $p < 0.01$). Vocational training is seen as an essential factor in reducing poverty by providing young people with the skills necessary for employment, particularly in sectors like agriculture, which remain crucial for Tanzania's economy. Kisaka et al. (2022) support these findings, noting that vocational education helps reduce poverty by improving social cohesion and food security. The significant correlations suggest that vocational education could be a vital tool in addressing unemployment among Tanzania's youth. The strong relationship between vocational education and labour market outcomes (IL_MO, $r = 0.47$, $p < 0.01$) reinforces its importance as an avenue for reducing unemployment. The findings align with research by James & Nchimbi (2023), who emphasize that vocational education can be leveraged to address youth unemployment by providing market-relevant skills.

Vocational education's contribution to labour force upskilling and productivity (IL_FU) is significantly correlated with improved job performance (II_JP, $r = 0.55, p < 0.01$) and labour market outcomes (IL_MO, $r = 0.48, p < 0.01$). The link between upskilling and positive labour market impacts demonstrates that vocational education can play a key role in fostering economic productivity through a more skilled workforce. Mwita & Mtega (2021) argue that the Tanzanian labour market benefits from vocational training programmes, particularly in sectors such as construction and manufacturing, where technical skills are in high demand. Despite these positive correlations, there are concerns about the effectiveness of vocational education. The negative correlation between the perception that vocational education is a waste of taxpayers' resources (WT_PR) and labour market outcomes (IL_MO, $r = -0.29, p < 0.05$) suggests that some respondents feel that current investments in vocational education may not always yield the expected benefits. Similarly, the perception that vocational education is less effective than in the past (UY_HV) correlates negatively with job performance

(II_JP, $r = -0.16$) and individual labour market outcomes (IL_MO, $r = -0.06$), although these correlations are not statistically significant. According to Nyaga & Makokha (2022), these sentiments could stem from outdated curricula and insufficient infrastructure, which limit the effectiveness of vocational training in addressing contemporary labour market challenges.

3.4 The challenges of vocational education in Tanzania

The analysis of challenges in vocational education in Tanzania, as illustrated in Table 5, reveals several critical areas that need immediate attention to improve the vocational training system. A significant portion of respondents, 60.7%, agree that vocational education institutions are under-subscribed (VI_US, X = 3.6, SD = 1.1). This reflects low enrolment levels, likely due to the negative perception of vocational training and its perceived lower status compared to higher education pathways (Komba & Hiza, 2020). A lack of effective outreach and promotion of vocational education as a viable career path may contribute to these low enrolment rates.

Table 5: Obstacles Facing Vocational Education in Tanzania

Statements	Code	Strongly-Agree	Agree	Uncertain	Disagree	Strongly-Disagree	Xs	SD
▪ Enrolment numbers are low.	VI_US	16.4%	44.3%	23.0%	11.5%	4.9%	3.6	1.1
▪ The quality of teaching staff is substandard	PQ_TC	19.7%	29.5%	14.8%	27.9%	8.1%	3.3	1.3
▪ Graduates receive inadequate training.	PQ_TV	16.4%	32.8%	16.4%	31.1%	3.3%	3.3	1.2
▪ Curriculum outcomes are of poor quality.	PQ_CO	24.6%	41.0%	16.4%	14.8%	3.3%	4.5	0.9
▪ They are not given sufficient priority.	LP_VN	21.3%	54.1%	13.1%	9.8%	1.6%	3.8	0.9

▪ The overall standard is weak.	QV_EP	24.6%	32.8%	14.8%	24.6%	3.3%	3.5	1.2
▪ Infrastructure and facilities are insufficient.	LA_IF	31.1%	50.8%	13.1%	4.9%	0%	4.1	0.8
▪ Funding allocated is inadequate.	IF_VE	32.8%	42.6%	21.3%	3.3%	0%	4.1	0.8
▪ Reforms in vocational education policy are progressing slowly.	SV_EP	27.9%	55.7%	9.8%	6.6%	0%	4.1	0.8
▪ Employers express dissatisfaction with the skills of graduates.	EU_VT	23.0%	27.9%	26.2%	23.0%	0%	3.5	1.1
▪ There is a lack of coordination among relevant policies.	SP_CI	23.0%	49.2%	19.7%	8.2%	0%	3.9	0.9
▪ It is currently perceived as irrelevant.	VE_CI	19.7%	18.0%	14.8%	37.7%	9.8%	3.0	1.3
▪ Professional training systems are poorly organized and implemented.	PS_PT	29.5%	27.9%	21.3%	18.0%	3.3%	3.6	1.2
▪ They continues to be viewed as less prestigious	VE_PI	27.9%	42.6%	14.8%	13.1%	1.6%	3.8	1.0
▪ Industrial placements arranged by employers are ineffective.	II_PO	29.5%	41.0%	19.7%	9.8%	0%	3.9	0.9
▪ There is limited diversification within industry and the economy.	LI_ED	29.5%	44.3%	13.1%	11.5%	1.6%	3.9	1.0
▪ A weak culture of practical, hands-on learning exists in Tanzania.	PL_DC	32.8%	27.9%	14.8%	23.0%	1.6%	3.7	1.2

Moreover, 57.4% of respondents indicated dissatisfaction among employers with the competencies of vocational graduates (EU_VT, X = 3.5, SD = 1.1). This dissatisfaction underscores the necessity for stronger linkages between vocational institutions and the industry, which would ensure that training programmes are more relevant to market needs (Mori, 2023). A key challenge lies in the quality of teaching, as 49.2% of the respondents agree that vocational education institutions have poor-quality teachers (PQ_TC, X = 3.3, SD = 1.3).

Similarly, concerns over the poor quality of training for VET graduates (PQ_TV, X = 3.3, SD = 1.2) were highlighted by 49.2% of respondents, indicating gaps in both the instructors' competence and the practical components of vocational training programmes. Inadequate instructor development, as indicated by 57.4% of respondents highlighting poor systematic professional training (PS_PT, X = 3.6, SD = 1.2), further exacerbates the issue of suboptimal teaching quality (Njenge, 2022).

The curriculum quality is also under scrutiny, with 65.6% agreeing that there are poor-quality curriculum outcomes (PQ_CO, X = 4.5, SD = 0.9). Vocational training must be aligned with labour market needs, and the lack of industry collaboration in curriculum development might explain the mismatch between training and the skills required by employers (Venance, 2023). This lack of alignment with industry needs is further evidenced by 64.1% of respondents acknowledging ineffective industrial placements by employers (II_PO, X=3.9, SD=0.9). Without sufficient practical experience, graduates are likely to enter the job market underprepared, perpetuating high unemployment rates among vocational graduates (VETA, 2021).

Inadequate funding (IF_VE, X = 4.1, SD = 0.8) and insufficient infrastructure (LA_IF, X=4.1, SD = 0.8) were highlighted by 75.4% and 81.9% of respondents, respectively. These deficiencies hinder the delivery of high-quality vocational training, contributing to the poor perception of vocational education as inferior to other forms of education (VE_PI, X = 3.8, SD = 1.0). Additionally, policy reforms in vocational education appear to be slow (SV_EP, X = 4.1, SD = 0.8), as agreed upon by 83.6% of respondents. The lack of timely reforms may impede the sector's adaptability to changing labour market dynamics, further reducing the effectiveness of vocational training in addressing youth unemployment.

Since this p-value from the Shapiro-Wilk test was higher than the threshold of 0.05, it indicated that the errors were normally distributed, confirming the appropriateness of the regression analysis. The VIF test results reassured the researchers that each variable (the role of vocational education in the economy, employment, and the challenges) contributed independently to the model's overall explanation of employment outcomes, because the mean VIF value was less than 10, suggesting that multicollinearity was not a significant

concern. Additionally, the p-value from the Breusch-Pagan test was greater than 0.05, suggesting no heteroscedasticity meaning the residuals were evenly spread out across different levels of the predictors.

3.5 Regression Model results

The results presented in Table 6 illustrate the outcomes of a regression linear model assessing various aspects of Vocational Education and Training (VET) in Tanzania, particularly focusing on its role in the economy, employment, and the challenges it faces.

The first model examines the relationship between vocational education's role in the economy and the employment status of individuals who are trained and employed. The model shows a correlation coefficient (r) of 0.626, indicating a moderate positive relationship. The R-squared value of 0.391 suggests that approximately 39.1% of the variance in employment status can be explained by the economic role of vocational education. However, the adjusted R-squared value of -0.006 indicates that the model may not be significantly improving the explanatory power beyond what would be expected by chance, highlighting potential weaknesses in the model's ability to predict employment status based on economic factors alone (Mwanakatwe et al., 2021).

Table 6: Regression linear model showing relationship between the role in the economy, employment, and the challenges it faces

Model	R	R-Squared	Adjusted R-Squared	Standard Errors of the Estimates
	Present employment condition = Skilled and employed (Chosen)			
1: The Role on economy	0.626	0.391	-0.006	1.80926
2: The Role on employment	0.982	0.964	0.549	1.21208
3: VET Challenges	0.998	0.996	0.846	0.70711

In contrast, the second model shows a much stronger correlation with an rvalue of 0.982, reflecting a very strong positive relationship between vocational education's role in employment and current employment status. The R-squared value of 0.964 indicates that an impressive 96.4% of the variance in employment status can be explained by the employment role of

vocational education. This suggests that vocational training is highly effective in enhancing employability among graduates. The adjusted R-squared value of 0.549 further supports this finding, indicating that the model retains considerable predictive power (Kiwango & Msemo, 2022). This aligns with existing literature that emphasizes vocational education as a critical pathway for improving youth employment rates in developing economies (Moyo et al., 2023).

The third model assesses the impact of challenges faced by vocational education, along with the roles of vocational education in the economy and in employment, on youth employment outcomes. The model exhibits an exceptional r value of 0.998, suggesting a near-perfect positive correlation. The R-squared value of 0.996 implies that 99.6% of the variance in employment status can be accounted for by the challenges associated with Vocational Education and Training (VET). This extremely high value indicates that the issues identified in vocational education, such as inadequate funding, poor-quality training, and infrastructure challenges, are crucial barriers to effective employment outcomes (Chinyoka et al., 2022). The adjusted R-squared value of 0.846 also affirms the robustness of this model, indicating that the challenges faced by VET significantly influence the employability of graduates.

4. Conclusion

The findings of this study underscore the significant role that vocational education plays in promoting economic growth and enhancing employment outcomes for youth in Tanzania. Vocational training is widely perceived as a critical driver of individual job performance, productivity, and industrialization. It contributes positively to employment creation and poverty reduction, particularly by equipping young people with practical skills that meet the demands of the labour market. The strong correlations between vocational education, employment outcomes, and economic development reaffirm its importance in fostering sustainable growth and reducing unemployment. However, the study also highlights persistent challenges that hinder vocational education's full potential. Therefore, policymakers should align vocational training with labour market needs, enhance public-private partnerships, and integrate soft skills and entrepreneurial training. Strengthening teacher development and incentivizing private-sector job creation through tax incentives or grants would further improve vocational education, ensuring better employability and addressing youth unemployment.

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