

Effect of technical and vocational education and training on youth self-employment in Rwanda: A case study of Rusizi District, Rwanda

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ABSTRACT

This study investigates the determining factors associated with Technical and Vocational Education Training (TVET) on youth self-employment in Rwanda, particularly focusing on the TVET program implemented by Rusizi district. This included detecting the enterprise typologies established by TVET graduates, assessing their contributions to the local labour market, and investigating whether there was any association between graduates of TVET and job creation. The theories used were Search-matching Theory, Human Capital Theory and Lifelong Learning Theory. The study employed a descriptive research design. Through descriptive statistical analysis, the study collected data from 72 self-employed youths out of a total target population of 258 that was derived using the Yamane formula. Information was gathered using a questionnaire and interview guide. The study results further show that TVET graduates are contributing significantly to job creation in the district. They do a range of entrepreneurial activities, from masons, vendors (caterers/event decorators), and poultry farmers, through production to sales, and mobile/computer repair. TVET graduates are job creators; they use skills in painting and decoration (95.5%), masonry (98.4%) and machinery operation. 95.5% Through in-demand skill development (95.5%), business startup (92.6%) and entrepreneurship promotion (98.4%), resulting in job creation. The following chart shows that 95.5% of the employers agree that TVET contribution to job creation is vital because it provides occupation-specific skills, while 98.5% argue that TVET helps in addressing skills shortages and enhances worker productivity. The study identifies key job creation areas stemming from TVET, including painting and decoration, shoe-making, masonry, lumbering, machinery operation, and carpentry. The findings indicate that TVET plays a crucial role in fostering skill development, promoting the establishment of owner-operated firms, and encouraging business initiatives, which collectively contribute to the diversification of the local economy. Furthermore, a significant relationship is established between TVET and job creation, underscoring its importance in enhancing employment opportunities for the youth in Rusizi district. The study thus suggests a reinforcement of entrepreneurship-education programs and closer linkages between TVET centres and industries as the key areas that policymakers should focus on going forward. It further suggests greater investment in TVET infrastructure, policies that promote young entrepreneurs, and raising awareness among politicians about the importance of TVET. It also discourages youth from pursuing self-employment by training, urging them to rely a lot on mentorship as well as consistent learning and specialising in niche markets with the embracement of innovation.

Keywords: Rusizi District, Rwanda, TVET Program, Vocational Education Training, Youth Self-Employment

I. INTRODUCTION

Technical and Vocational Education and Training (TVET) serves as a strategy for developing human capital by combining broad educational foundations with technical knowledge and practical skills. This training is provided both in formal educational settings and workplace environments, ranging from certified diploma programs to various skill-building activities (Lawal, 2019). According to Todd and Dunbar (2018), TVET includes all types of learning, whether formal, non-formal, or informal, that take place in institutions or on the job, preparing individuals for a wide range of economic and social roles." In Rwanda, TVET has become a cornerstone of workforce modernisation and skills development since 2008, supporting foreign investment and sustainable growth.

TVET supports continuous professional development by offering technical training and transferable competencies (Njenga, 2022). In today's knowledge-based economy, individuals must adapt to technological changes as traditional career paths decline. TVET retrains displaced workers and empowers learners to achieve professional goals, fostering equal opportunity regardless of background (Porres et al., 2014).

According to Pongo (2014) in the modern knowledge-based economy, the responsibility of keeping up with change increasingly falls on the individual. Traditional full-time jobs with fixed career paths are becoming less common. As technology rapidly transforms the workplace, many workers face redundancy. Okoth (2023) noted that TVET plays a critical role in retraining these individuals and preparing them for emerging roles. Beyond job readiness, TVET also

contributes to individual empowerment, supporting learners in realizing their professional aspirations and broader life goals. It is instrumental in helping people overcome social and educational disadvantages, fostering equal opportunity regardless of background (Porres et al., 2014).

According to Okoth (2023), TVET promotes economic growth by boosting individual productivity, with returns that often surpass the costs of education. Like other forms of education, it also contributes to social development by enhancing the ability of individuals to engage in meaningful social and economic activities. TVET helps develop a range of personal capabilities characteristic of a well-rounded education, including critical and creative thinking, effective communication, and interpersonal relationship skills (Lamichhane, 2013).

Despite these benefits, Rwanda continues to face a significant youth unemployment challenge, which poses risks to social stability and economic development. With over 60% of the population under 30 (Kawuki et al., 2022), TVET boosts economic growth by enhancing individual productivity and social development (Okoth (2023). It cultivates critical thinking, communication, and interpersonal skills (Lamichhane, 2013). Despite these benefits, Rwanda faces significant youth unemployment (estimated at 20% in 2022), driven by labor market structural issues (Malamud & Wetzels, 2021).

Martinez-Fernandez (2023) stated that lots of young people in Rwanda are occupied with informal jobs, and this kind of occupation is defined by the absence of job security and low payment, thus, the contribution to the poverty cycle. Another cause of this scenario is the lack of correlation between education and the expectations of the employer. The graduates often find themselves in the labour market lacking the practical skills needed by employers and the generation of formal employment opportunities has not been matched by the increased labour supply (Watwana, 2014). Such skills gap does not only restrain personal career opportunities, but also suppresses the overall economic development in the area.

According to Niwemwiza (2021) a major contributor to youth unemployment in Rwanda is the disconnect between the education and training system and the needs of employers. Many graduates lack the practical skills required in the current job market, leading to a surplus of job seekers who are not workforce-ready (Lema, 2024). The situation has been complicated by the poor correlation between education system and labour market requirements, with a sluggish rate of job creation in the formal industry compiling the already reduced access to quality employment chances (International Labour Organization, 2018).

Goulart et al. (2022) said that most students are now taught subjects that are focused on theory with little preparation of practical skills that are needed in the modern world of employment. This has resulted in a lot of graduates who leave school with no ability to display the required competency needed in the workplace thus reflects in frustration, discouragement, and underemployment. Such skills gap not only limits the career prospects of individuals but also limits the expansion of the economy as industries are not able to acquire the skilled workforce to fuel its growth and compete favorably on the market (Hakizayezu, 2022). It is worsened by the fact that the number of graduates in the workforce continues to rise yearly.

The rapid expansion of higher education institutions has produced a surplus of degree holders competing for a limited pool of jobs. This heightened competition leaves many qualified candidates unemployed, emphasizing the urgent need for systemic reforms to address labor market inefficiencies (Caria et al., 2024). The pressure to secure employment often drives graduates to accept positions far below their qualifications, resulting in dissatisfaction and, over time, a potential devaluation of academic degrees in the eyes of employers). Rising graduate numbers intensify job competition, leading to underemployment and credential devaluation (Martinez-Fernandez, 2023; Caria et al., 2024).

To tackle youth unemployment, Rwanda has prioritized Technical and Vocational Education and Training as a central approach, focusing on equipping young people with skills that match market needs (Hakizayezu, 2022). As part of Vision 2050, the government has committed substantial resources to develop TVET, aiming to foster a knowledge-driven economy (Aboeazz, 2021). By concentrating on sectors with high demand, TVET helps close the skills gap, preparing graduates with the abilities that employers actively seek. The emphasis on practical training ensures participants gain real-world experience that strengthens their employability and entrepreneurial potential (Caria et al., 2024).

Key TVET initiatives focus on sectors such as construction, hospitality, and information technology, where demand for skilled workers is high (Rwanda Development Board, 2022). Aligning training with industry requirements helps bridge the gap many young jobs seekers face, enhancing their chances of employment and creating opportunities for self-employment (Ndagijimana et al., 2018). For example, skilled labor in construction is essential for Rwanda's ongoing infrastructure projects, while the expanding tourism industry requires well-trained personnel in hospitality. By concentrating on these growth sectors, TVET not only improves employment outcomes for graduates but also contributes to the broader goals of national economic development (Neupane, 2011).

1.1 Statement of the Problem

Continuous curriculum revisions are essential to keep TVET programs aligned with labor market needs (Hakizayezu, 2022). While many TVET graduates in Rwanda achieve self-employment, others face barriers like limited startup capital, insufficient entrepreneurial skills, family constraints, and market competition (World Bank, 2019). TVET was introduced strategically to address youth unemployment and job creation (Onwe, 2013). In Rusizi District, youth self-employment promotes economic independence, job creation, sustainable development, and innovation. These factors inspired this study.

1.2 Research Objectives

- i. To examine the type of jobs created by TVET Graduates in the Rusizi district;
- ii. To examine the contribution of TVET Graduates to job creation in Rusizi District;
- iii. To find out the relationship between TVET and job creation in Rusizi District.

1.3 Research Questions

- i. What are the types of jobs created by TVET Graduates in the Rusizi district?
- ii. What is the contribution of TVET Graduates to job creation in Rusizi District?
- iii. Is there any relationship between TVET and job creation in Rusizi District?

II. LITERATURE REVIEW

2.1 Theoretical Review

This section presents the theoretical review such as Search-matching Theory, Human Capital Theory, and Lifelong Learning Theory.

2.1.1 Search-Matching Theory

Search-matching theory emerged in the 1960s and 1970s, primarily through the pioneering work of George Stigler in 1961, which laid the groundwork for search theory. This foundational concept was further developed in the 1970s by notable economists John McCall and Dale Mortensen. The theory evolved into a modern framework known as the Diamond-Mortensen-Pissarides (DMP) model, formulated by Peter Diamond, Dale Mortensen, and Christopher Pissarides during the late 1970s and early 1980s (Rosén, 1997).

According to Rosholm and Svarer (2004) Search-Matching Theory emphasizes the importance of reducing the time it takes for workers and firms to connect, suggesting that this reduction is a key factor in job creation. The theory highlights the dynamics of the labor market, where efficient matching processes can lead to increased employment opportunities. In the study by Malgonde et al. (2020) explores the complexities inherent in search matching theory, particularly within the context of two-sided recommender systems on digital platforms. The authors emphasize the importance of understanding the interactions between users and providers in these systems, as they significantly influence the effectiveness of recommendations. The research highlights the challenges posed by the dynamic nature of user preferences and the diverse offerings available on digital platforms.

Further, the study by Chen (2025), the application of deep reinforcement learning (DRL) within a search-matching model is explored to analyze labor market fluctuations. The research highlights how DRL can effectively simulate and predict the dynamics of job search and matching processes, providing insights into the behavior of both employers and job seekers.

Search-Matching Theory is important to this study as it suggests that the efficiency of the job market is significantly influenced by the time it takes for workers and firms to connect. When this matching process is expedited, it leads to an increase in job creation (Rosholm & Svarer, 2004). The theory emphasizes the importance of reducing barriers and improving mechanisms that facilitate the interaction between job seekers and employers. Additionally, this theory helped the researcher to underpin the examining the jobs created by TVET Graduates in the Rusizi district.

2.1.2 Human Capital Theory

The human capital theory was originally submitted by economists Theodore Schultz and Gary Becker during the 1960s; however, it can be dated to Adam Smith during the 18th century. Theodore Schultz made the point that education and training should be regarded as a necessary investment in economic growth and not as social benefits. He came up with the concept of human capital that he defined as skills and knowledge that people have, which play a big role in production processes. Abdeldayem et al. (2021) noted that the human capital is very essential in improving productivity and economic growth. The contribution of human capital theory is to create the basis of the economic worth of investment in education and training and the significance of it on individual and societal progress.

Yaqoob et al. (2022) study offered a critical examination of the human capital theory applied in the education field within a span of fifty years, 1971-2021. The authors discussed the development of the human capital theory by highlighting its importance in educational policy and practice formulation. They emphasized the premise of the theory that education improves the productivity and growth of an individual economy, which underlines the significance of investing in human capital.

Further, Rafid (2023) discussed the complex connection between the human capital theory and education. Author highlighted that the human capital theory assumes education to be one of the most important investments that improve the productivity and economic development of individuals. This focuses on how education leads to not just the provision of individuals with the necessary skills and knowledge, but also the overall benefits of society, in the context of enhanced innovation and better health among the population.

The human capital theory is meaningful to this study as it posits that education, training, and health are vital investments that enhance productivity and earning potential for individuals and society (Saha et al., 2025). Pioneered by economists such as Theodore Schultz and Gary Becker, the theory equates skills and knowledge to forms of capital that can be accumulated, similar to physical capital, to generate economic returns. This accumulation of human capital is linked to increased innovation, economic growth, and higher earnings for individuals. Abdeldayem et al. (2021) noted that the theory emphasizes that investing in human development through education and job training is essential for achieving both personal success and national prosperity. Additionally, the human capital theory was help the researcher to explain the contribution of TVET Graduates to job creation in Rusizi District.

2.1.3 Lifelong Learning Theory

The lifelong learning theory was first comprehensively defined by Basil Yeaxlee in 1929. It was an underlying theory that received a lot of momentum when UNESCO supported the theory in their 1972 report, *Learning to Be*. Lifelong learning was outlined as the master concept of the educational policies in this report, and its significance in the formation of educational frameworks and approaches was noted. According to Gouthro (2022) lifelong learning theory refers to the perpetual acquisition of knowledge and skills in a lifetime and is required to stay competitive in a dynamic job market because of its contribution in skills formation, flexibility and innovation. This is a life long process of developing skills which ensures that people and organizations will be able to adapt to any technological changes and changes in the market.

The paper by Tamas et al. (2024) discussed the importance of lifelong learning theory in terms of improving competitiveness in the labor market. It underlines that lifelong learning and upgrading of skills are important in enabling one to keep in pace with the fast-evolving workplace environment. The authors claim that lifelong learning is not only an individual benefit to the career development, but also leads to the economic evolution in general since it creates a more qualified labor force. Further, a study by Eppler-Hattab (2022) focused on the discussion of the transition to lifelong learning theory to self-employment in old age and the implementation of the latter in the case of Israel. The paper highlighted the significance of lifelong learning theory as a key element to older adults who want to engage in entrepreneurial practices. It brings out the importance of lifelong learning and constant improvement of skills that can help one overcome the challenges of self-employment in later years.

This theory is important to this study as it emphasizes the ongoing acquisition of knowledge and skills throughout an individual's life. This continuous learning process is crucial for maintaining competitiveness in a dynamic job market. It plays a significant role in skill development, enabling individuals to adapt to technological advancements and shifting market demands (Gouthro, 2022). By fostering adaptability and innovation, lifelong learning ensures that both individuals and organizations remain relevant and capable of meeting the challenges posed by an ever-evolving landscape (Tamas et al., 2024). Moreover, this theory was helpful in explanation the relationship between TVET and job creation in Rusizi District.

2.2 Empirical Review

This empirical review is based on following objectives: To examine the type of jobs created by TVET Graduates in the Rusizi district; to examine the contribution of TVET Graduates to job creation in Rusizi District; and to find out the relationship between TVET and job creation in Rusizi District.

2.2.1 Examining the Types of Jobs Created by TVET Graduates

TVET helps to create jobs and leads to economic growth within a community especially through promotion of entrepreneurship. Such a pathway not only eases unemployment rates but also facilitates wider development, and that is why TVET is an important element of the economic plan (Dagar & Yadav, 2016).

Abdullah et al. (2024) stated that career selection significantly impacts an individual's professional trajectory, particularly in the technical sector, where notable gender differences exist. A study conducted among TVET graduates in Malaysia utilized a questionnaire to explore these differences and other influencing factors such as personality,

interest changes, obstacles, salary, and career prospects. The research involved a quantitative approach, surveying 246 randomly selected students from various institutions, including Community Colleges and Polytechnics, using a validated instrument based on the ROSS Career Selection Model. The analysis revealed that 56% of participants were employed in their field of study, while 44% were not. Statistical tests indicated no significant gender differences in career involvement among TVET graduates, with a t-test value of 0.856 and a p-value of 0.394. However, a one-way ANOVA test showed significant differences in career selection based on the type of institution, with a p-value of 0.010. These findings offer valuable insights for management to better support TVET graduates in their career choices within the technical sector. The study focused on career selection, an individual's professional trajectory, and TVET graduates.

Besides these positive findings, there are still some challenges in the context of the Rwanda TVET. Other problems have to deal with quality of training and the lack of good training facilities linked to scarcity of qualified teachers (Jagielska-Burduk et al., 2021). It is also widely known that vocational education is socially stigmatized, as these programs are treated as less prestigious in comparison with academic-oriented programs, which deters young people (International Labor Organization, 2018). There are also monetary obstacles that restrict the range and success of TVET (Ndagijimana et al., 2018). No proper infrastructure and resources interfere with the learning experiences in a negative way to the outcomes. In addition, the current negative attitude limits the involvement and the overall effect of TVET. These issues have to be overcome to unlock the potential of TVET in addressing the unemployment issue among young people (Damayanti, 2022).

Further, the study conducted by Sibiya and Nyembezi (2018) investigates the factors influencing Technical Vocational Education and Training (TVET) engineering students' perceptions of their career choices. Utilizing qualitative self-administered, open-ended questionnaires, the researchers collected data on students' beliefs, feelings, and experiences related to engineering programs and services at TVET colleges. A purposive sampling method was employed, involving 113 engineering participants who voluntarily completed the questionnaires. The findings revealed a significant divergence in student opinions regarding the employment prospects associated with TVET engineering qualifications. Some students expressed strong confidence that these qualifications lead to full employment due to the high demand for engineering skills. Conversely, others highlighted the pervasive unemployment crisis in South Africa, arguing that even graduates with qualifications face substantial challenges in securing employment. The study was limited on TVET's learning programmes, labour market, self-employment.

Moreover, according to Ehrlin and Gustavsson (2018), parental participation in TVET colleges is very important in increasing student performance. In this regard, according to Ntekane (2018), active involvement of parents establishes a supportive environment, which encourages learners to do their best in order to bring pride to their families. To support these sentiments, it is notable that constant support during the development of a child cannot be overemphasized (Budiastuti & Suryono, 2015).

2.2.2 Examining the Contribution of TVET Graduates to Job Creation

The studies suggest that TVET alumnus usually faces a better employment rate than peers who receive a more classical education. These studies show that graduates of Technical and Vocational Education and Training (TVET) programs have higher chances of getting jobs than their counterparts who take conventional academic education. This observation demonstrates the usefulness of TVET in preparing people with hands-on skills that are required in the labor market. The focus on practical training and industry-related skills seems to be a more employable factor, which implies that TVET can be a more appropriate channel to get a job in some areas (Boateng et al., 2024).

Selane and Odeku (2024) conducted a study highlighting the significant role of Technical Vocational Education and Training (TVET) in enhancing students' skills and competencies in South Africa. The research underscores that TVET is crucial for the economy and society, serving as a transformative tertiary educational institution aligned with the South African government's developmental strategies. It provides an alternative pathway for learners who do not gain university admission, enabling them to acquire skills that enhance employability, foster self-employment, and promote job creation. The study was limited on Technical Vocational Education and Training and enhancing students' skills and competencies.

To enhance the role of TVET in self-employment of the youths, some recommendations should be taken into consideration. It is essential to ensure that training remains economic related to industries by creating effective partnerships with industry between TVET institutions and the immediate state (Tusiime et al., 2024). Through such partnerships, students can gain experience through their internships and apprenticeships, as well as understand what the labor market wants, as the organization will be able to provide the answers. In addition, the society needs to be sensitized on changing its collective beliefs about TVET to make it appear as a viable and valid career choice (Dagar & Yadav, 2016). Such campaigns are expected to use social media and professional networks to bring out success stories that would create confidence that TVET has the power to provide promising futures (Amin et al., 2023). Those studies focused on role of TVET in self-employment of the youths, labor market, valid career choice.

2.2.3 Finding the Relationship between TVET and Job Creation

TVET provides business management training, through which the graduates launch their own business (Shikalepo, 2019). It is stated by many that the practicality of their education has a direct positive impact on their work or entrepreneurial activities, increasing confidence and chances of success (Ndagijimana et al., 2018). Murgor (2013) conducted a study examining the relationship between skills acquired through technical and vocational education and training and the skills demanded by the job market in Uasin Gishu County, Kenya. The research aimed to evaluate how well the skills taught in TVET align with employer expectations. Data was collected through questionnaires distributed to 200 former graduates of TVET programs. The findings revealed that certain skills provided by TVET, such as interpersonal skills, personal qualities, numerical data usage, critical analysis, teamwork, and practical experience, fell short of job market requirements. The study concerned relationship between technical and vocational education and training and the job market.

Further, the study conducted by Fatokun (2024) investigates the impact of entrepreneurship education on job creation among graduates of Technical, Vocational Education and Training colleges in Ekiti State, Nigeria. Utilizing a descriptive research design, the research focused on a population of 4,176 students from three technical colleges, with a sample size of 365 selected through simple random sampling. The analysis employed descriptive statistics, including mean and standard deviation, alongside inferential statistics through linear regression to address the research questions and test hypotheses. The findings indicate a significant positive effect of entrepreneurship education on the self-productivity of TVET college students on job creation.

Technical and Vocational Education and Training plays a crucial role in job creation, demonstrating a strong and statistically significant relationship with employment outcomes (Tusiime et al., 2024). By equipping individuals with practical and industry-relevant skills, TVET enhances employability and fosters self-employment and entrepreneurship opportunities (Sibiya & Nyembezi, 2018). Furthermore, it effectively addresses the skills gap in the labor market, aligning the competencies of the workforce with the demands of various industries. According to Jagielska-Burduk et al. (2021) this alignment not only benefits individuals seeking employment but also supports economic growth by ensuring that businesses have access to a skilled labor pool.

III. METHODOLOGY

3.1 Description of the Study Area

According to Uwamahoro et al. (2023) Rusizi District is situated in the southwestern part of Rwanda, within the Western Province. It shares its southern border with Burundi and its western boundary with the Democratic Republic of the Congo (DRC). The Rusizi River, which rises in Lake Kivu and empties into the DRC, is the source of the district's name. Geographically, the western portion of Nyungwe Forest, a popular tourist destination, is included in Rusizi District. Most of the land is mountainous in the east and hilly in the west.

Climatically, the district experiences a moderate climate with an average temperature of 17°C. The average annual rainfall is 1,391 mm, with March being the wettest month and July the driest (Rwanyiziri et al., 2019). Economically, Rusizi District boasts rich agricultural land, producing goods for neighbouring countries. It is a significant exporter of perishable foods, beverages, minerals, construction materials, and manufactured goods.

3.2 Research Design

Abutabenjeh and Jaradat (2018) defines research design as the overall process of analysing the components of a problem by sharing the resulting findings. It can also refer to a visual model illustrating the relationship between independent and dependent variables. In this study, a descriptive research design and correlational research design were chosen. The main goal of descriptive research is to offer an accurate and reliable portrayal of the variables or factors pertinent to the research questions, while, the correlational research is to determine the relationship between two variables. This study also utilised combined approaches, incorporating both quantitative and qualitative approaches.

3.3 Population

Sakaue et al. (2021) describe a population as the complete set of items or subjects to which research applies. Likewise, Lee (2023) defines it as a group of people, animals, or objects sharing one or more characteristics and representing the focus of the study. For this research, the target population consists of 258 self-employed youth who have experience with the impact of TVET on youth self-employment.

3.4 Sample Size and Sampling Technique

According to Serdar et al. (2021), sample size refers to a smaller group or subgroup derived from the available population. For this study, the researcher utilised a model developed by Yamane in 1967, which was deemed appropriate

for determining the sample size (Lamola & Yamane, 1967). This yielded a sample size of 72 respondents who participated in the primary data collection, as calculated using the Yamane formula:

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

Where:

N: Represents the target population

n: Represents the sample size

e: Represents the precision level of the accuracy level, and it is fixed at 0.1

The sample size was calculated based on the above formula.

The current study

N equal 258 taxpayers

e equal 0.1

$$n = \frac{258}{1 + (258 * 0.1 * 0.1)} = 72.06$$

n=72 respondents

3.5 Research Instruments

Abutabenjeh and Jaradat (2018) highlights three primary methods for collecting data from or about individuals. In line with this, the study utilised a survey approach that included interview guide and questionnaire. Sakaue et al. (2021) defines a questionnaire as a collection of written questions that respondents answer, either by themselves or with assistance from an organisation. In this study, questionnaires were carefully designed and pre-tested before being distributed to the chosen participants. The tool consisted of a series of related questions arranged in a particular sequence to make responding easier. Further, Lee (2023) described an interview as a conversation between an interviewer (or group of interviewers) and the interviewee. The researcher employed this technique for the study. Administrative officials closely involved with youth self-employment were interviewed to obtain additional evidence and perspectives relevant to the study.

3.6 Data Analysis Methods

In this research, quantitative and qualitative data were used. Upon the organisation, editing, and coding of the quantitative data, descriptive statistics, Pearson correlation, and multiple regression analysis were used to conduct an analysis. The descriptive analysis and regression analysis have used. The regression analysis was used to understand the relationship between TVET variables and job creation, whereby the following model was used:

$$\text{Job creation} = \beta_0 + \beta_1(\text{TVET Skills}) + \beta_2(\text{Job placement}) + \beta_3(\text{Entrepreneurship}) + \beta_4(\text{Productivity}) + e$$

Where:

Job Creation = the number of jobs created (dependent variable)

TVET Skills = Occupation-specific skills training (IV)

Job Placement = accelerated integration into labor market (independent variable)

Initiation of businesses = Business start-up support (independent variable)

Productivity = Worker/business productivity (independent variable)

β_0 = Intercept

β_1 - β_4 = Regression coefficients

ϵ = Error term

IV. FINDINGS & DISCUSSION

4.1 Findings

Presenting experimental results through graphs, charts, and tables serves two main purposes. First, it offers a visual means to examine the data, understand outcomes, and draw interpretations. Second, it's typically the most effective way to communicate data to others. In this chapter, I'll first categorise the demographic characteristics of the respondents, then address questions related to the research objectives.

Table 1*Profile of Respondents*

Distribution of respondents by gender		
Respondents	Frequency	Percentage (%)
Male	37	51
Female	35	49
Total	72	100%
Distribution of Respondents by Age		
Age of respondents	Frequency	Percentage (%)
16-20	45	62.5%
21-25	16	22.2%
More than 26	11	15.3%
Total	72	100%
Education level of youth self-employment		
Types of degrees	Frequency	Percentage (%)
Diploma (A2)	43	60%
Advanced degree	25	35%
Bachelor's degree	4	5%
Total	72	100%
Marital status of respondents		
Respondents	Frequency	Percentage (%)
Single	49	68%
Separated	0	0%
Married	23	32%
Divorced	0	0%
Total	72	100%

Table 1 indicates findings profile of respondents. The respondents' profile in this study reveals a fairly even distribution between genders, with 51% male and 49% female participants. In terms of age, the majority are young, with 62.5% falling between 16-20 years and 22.2% aged 21-25 years, demonstrating a focus on the youth demographic in Rusizi District's self-employment sector. Educational qualifications among respondents primarily include a Diploma (A2) held by 60%, followed by 35% with an advanced degree and 5% with a bachelor's degree. Regarding marital status, 68% of the respondents are single, while 32% are married.

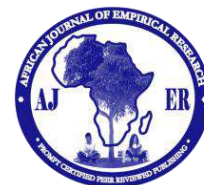
4.3 The type of jobs created by TVET Graduates in the Rusizi district

This section examines the various employment opportunities available to Technical and Vocational Education and Training (TVET) graduates in Rusizi District.

Table 2*The Type of Jobs Created by TVET Graduates in the Rusizi District*

Statements	SA	%	A	%	N	%	D	%	SD	%
Is there Painting and Decoration?	11	15.1	54	79.5	2	2.5	2	2.5	1	1.4
Is there shoe-making?	2	2.9	59	86.7	0	0	5	7.3	2	2.9
Is there Masonry?	7	10.2	60	88.2	0	0	1	1.4	0	0
Is there lumbering?	5	7.3	58	85.2	3	4.4	0	0	2	2.9
Is there machinery operation?	9	13.2	56	82.3	2	2.9	0	0	1	1.4
Is there Carpentry?	2	2.9	59	86.7	1	1.4	4	5.8	2	2.9

Table 2 clearly showcases the variety of jobs created by Technical and Vocational Education and Training (TVET) graduates in Rusizi District, indicating their significant presence across multiple sectors. A significant majority of respondents, 95.5%, indicated the availability of Painting and Decoration jobs (15.1% Strongly Agree, 79.4% Agree). Similarly, shoe-making is highly prevalent, with 89.6% (2.9% Strongly Agree, 86.7% Agree) affirming its existence. Masonry also demonstrates strong representation, with 98.4% (10.2% Strongly Agree, 88.2% Agree) agreeing to its presence. Furthermore, Lumbering was indicated by 92.5% (7.3% Strongly Agree, 85.2% Agree) of respondents, while Machinery Operation was reported by 95.5% (13.2% Strongly Agree, 82.3% Agree). Finally, Carpentry jobs are widely acknowledged by 89.6% (2.9% Strongly Agree, 86.7% Agree) of the respondents, collectively highlighting the diverse skills TVET graduates are translating into employment opportunities within the district. The results coincide with those of Pongo (2014), who insisted that practice-oriented TVET projects are affordable to real-world needs and generate



employment opportunities on a long-term basis. Similarly, Afandi (2019) opined that informal work in emerging economies has been gaining prominence, with young TVET graduates leading most of the entry-level and self-employment opportunities in the countries.

Table 3
TVET Graduates' Role in Creating Jobs in Rusizi District.

Statements	SA	%	A	%	N	%	D	%	SD	%
Are there in-demand skills?	8	12.1	56	82.1	0	0	4	5.8	0	0
Are there start-ups?	3	4.4	60	88.2	0	0	3	4.4	2	2.9
Does it promote entrepreneurship?	5	7.3	62	91.1	0	0	1	1.4	0	0
Do their pilot programs diversify economies?	2	2.9	58	85.2	3	2.9	5	7.3	0	0
Is there support for economic development?	7	10.2	58	85.2	2	2.9	0	0	1	1.4

There is widespread consensus on the positive impact that Technical and Vocational Education and Training (TVET) graduates have on job creation in Rusizi District, as shown in Table 3. According to a noteworthy 95.5% of respondents, TVET graduates gain in-demand skills (12.1% Strongly Agree, 82.1% Agree). Likewise, 92.6% of respondents (4.4% Strongly Agree, 88.2% Agree) agreed that these graduates start their own firms, which directly contributes to the creation of jobs. Additionally, 98.4% of respondents (7.3% Strongly Agree, 91.1% Agree) concurred that TVET graduates actively encourage business in the district.

The data also shows that 88.1% (2.9% Strongly Agree, 85.2% Agree) believe TVET graduates help diversify the local economy, while 95.4% (10.2% Strongly Agree, 85.2% Agree) confirmed their role in supporting overall economic development. Qualitative data from interviews reinforced these findings. For example, one TVET graduate (Youth A) reported employing two fellow graduates in their masonry business, illustrating direct job creation. Another interviewee (Youth B), who operates a catering service, highlighted their role in providing flexible, part-time employment opportunities for community members. These testimonies further underscore the multifaceted impact of TVET graduates on employment and economic growth in Rusizi District. This confirms the findings of Tusiime et al. (2024), who stressed that employers consider Rwandan TVET graduates to be the ones who can contribute to their business through their entrepreneurial spirit, skills, and motivation. It also follows the claim of Shikalepo (2019) that TVET not only serves to acquire skills, but it also enhances independence and entrepreneurship among the young population.

Table 4
The relationship between TVET and job creation in Rusizi District

Statements	SA	%	A	%	N	%	D	%	SD	%
Provides occupation-specific skills	7	10.4	57	83.8	0	0	4	5.8	0	0
Helps people get jobs faster	3	4.4	58	85.2	0	0	5	7.3	2	2.9
Helps address skills shortages	6	8.8	61	89.7	0	0	1	1.4	0	0
Helps people start businesses	5	7.3	59	86.7	2	2.9	0	0	2	2.9
Improve the productivity of workers and businesses.	9	13.2	56	82.3	2	2.9	0	0	1	1.4

As illustrated in Table 4, there is a strong correlation between Technical and Vocational Education and Training (TVET) and job creation in Rusizi District, and respondents generally agreed that TVET is essential for promoting employment. A significant 95.5% of respondents (10.4% Strongly Agree, 83.8% Agree) confirmed that TVET gives people the job-specific skills they need. TVET's effectiveness in meeting labour market demands is further demonstrated by the 89.6% of respondents who agreed (4.4% Strongly Agree, 85.2% Agree) that it speeds up integration into the workforce.

Furthermore, TVET successfully tackles skills shortages, guaranteeing the availability of knowledge within the local labour market, according to 98.5% (8.8% Strongly Agree, 89.7% Agree) of respondents. Additionally, according to the research, 94% of respondents (7.3% Strongly Agree, 86.7% Agree) think that TVET encourages entrepreneurship by empowering people to launch their own companies. Furthermore, 95.5% of respondents (82.3% Agree, 13.2% Strongly Agree) stated that TVET increases worker and corporate productivity. Together, these results show how TVET has a major and diverse influence on economic growth and job creation in Rusizi District.

This conclusion is further supported by interview data. A number of TVET graduates, including Youth A, B, C, and D, highlighted how their training gave them the market knowledge, practical skills, and self-assurance they needed to spot business opportunities, launch businesses, and add jobs in their communities. These first-hand stories demonstrate the clear connection between TVET and successful entrepreneurship, establishing graduates as essential players in the local economy.

The findings of this study align with those reported by Lema (2024), who discovered a close relationship between employment and the TVET system, particularly when it comes to retraining to keep up with the quick changes in technology. It also aligns with Lamichhane's (2013) research, which distinguished two main systems in secondary vocational education: a workplace-based system in which students gain technical skills through hands-on apprenticeships, and a school-based system that follows national curricula while providing students with exposure to the labour market.

Table 5
Regression Coefficients

Variable	Coefficient	Std. Error	t-value	p-value
(Constant)	0.842	0.311	2.707	0.009
TVET Skills	0.387	0.092	4.207	0.000
Job Placement	0.215	0.087	2.471	0.016
Entrepreneurship	0.452	0.078	5.795	0.000
Productivity	0.194	0.085	2.282	0.026

Results from the multiple regression analysis, as indicated in Table 5, reveal a strong and statistically significant relationship between various TVET components and job creation outcomes among youth. The model explains approximately 78.3% of the variance in job creation ($R^2 = 0.783$), indicating a robust explanatory power.

All predictors included in the model, TVET skills training, job placement programs, entrepreneurship education, and productivity enhancement, are statistically significant contributors to job creation ($p < 0.05$). Among these, entrepreneurship training emerges as the most influential factor, with the highest standardised coefficient ($\beta = 0.452$, $p < 0.001$). This highlights the critical role of entrepreneurial education in empowering youth to initiate and manage their own ventures.

Likewise, VET skills training ($\beta = 0.387$, $p < 0.000$) also has a strong positive effect, underlining the importance of hands-on technical competencies in enabling young people to secure or create employment. Further, job placement support ($\beta = 0.215$, $p = 0.016$) and productivity training ($\beta = 0.194$, $p = 0.026$) both show moderate yet statistically significant contributions, emphasising the complementary roles of institutional linkages and efficiency-focused training in fostering employment outcomes. These findings not only reinforce Hakizayezu (2022) argument on the evolving role of TVET in dynamic labour markets but also extend prior research by offering a quantitative comparison of the relative impacts of different program components. The findings indicate that some aspects of TVET are of great value, but to optimise the effect on employment among youth, one should ensure that emphasis is laid on entrepreneurship education when designing the policies and programs.

V. CONCLUSION & RECOMMENDATIONS

5.1 Conclusion

In this study, which was conducted between 2021 and 2023, Technical and Vocational Education and Training (TVET) in the Rusizi District of Rwanda, as a contributor to popularising self-employment among younger generations, is evaluated. The researcher, whose interests were scholarly driven, investigated to establish the types of TVET programs being provided, as well as the type of occupations that TVET graduates, and the contribution of TVET and linkage of TVET and job development in the region. Those findings provide valuable information to TVET institutions, investors in SMEs, and policymakers in Rwanda to develop strategies to improve the rate of self-employment among youths and to address the current issues and formulate effective policies. Under a descriptive research design, the study used a questionnaire as a primary source of data, and 72 self-employed youths were used as respondents. Descriptive statistics and Pearson correlation were utilised to analyse the data and shed some light on the correlation between participation in TVET programs and the outcomes in self-employment. In this regard, the study concludes that there is the impact of Technical and Vocational Education and Training (TVET) on youth self-employment in Rwanda. Specifically, the study found that painting & decoration, shoes-making, masonry, lumbering, machinery operation, carpentry jobs were types of job created. In addition, it concludes that TVET contribute to the training skills, creation of owner firms, business encouragement, helping diversify local economy. Finally, it concludes that there is relationships between TVET and job creation in Rusizi district.

5.2 Recommendations

These proposals are meant to utilise the findings of this research in order to implement the role of TVET in boosting youth self-employment in the Rusizi District of Rwanda. TVET programs should be highly tuned towards local market demand in order to facilitate the effective promotion of youth self-employment in Rusizi District, which should

be through constant assessment of skill gaps. There should be periodic curriculum revision whereby, with the changes in opportunities in specific key sectors such as construction, manufacturing, tourism, and agriculture, the graduates should acquire relevant skills that are in demand. In addition, the incorporation of comprehensive training on entrepreneurship that encompasses skills on business planning, financial management, marketing, and legal issues, as well as practical workshops and mentorship opportunities into all TVET packages, will be very useful in enhancing the capacity of young entrepreneurs to succeed.

In order to actualise the optimisation of youth self-employment in Rusizi District, the TVET program should be highly linked to local market demands by constantly assessing the skills gap. Emerging trends in opportunities available in crucial sectors such as construction, manufacturing, tourism, and agriculture should be included in the curriculum regularly, hence ensuring that graduates acquire relevant skills that are required and in demand. Furthermore, integrating a comprehensive entrepreneurship skills program to encompass skills like business planning, financial management, marketing, and taking the law into account, and running workshops and mentorship programs in all TVET training will go a long way to enhancing the capacity of young entrepreneurs to succeed.

The policymakers are advised to improve investment in TVET facilities and resources rather than to allocate finances to improve facilities, equip facilities with modern facilities as well as hire qualified instructors. These gains will boost the quality of training and prepare the youth in a better way to face the market with quality self-employment. Concurrently, there have to be policies to encourage youth entrepreneurship, such as putting in place accessible financing mechanisms, a simplification of the business registration process, and providing taxation incentives. Also, a solution would be to develop incubators or co-working spaces that specifically cater to graduates of TVET and, in the process, stimulate startup growth and innovation. Finally, TVET can encourage raising the awareness of the benefits of TVET as a part of the targeted campaigns that would aid in changing the societal perception and underline its self-employment and economic growth potentials, in addition to increasing youth involvement and gaining a wider acceptance of the society. To succeed in self-employment, youth should actively seek mentorship and expand their professional networks, engage in continuous learning to stay aligned with changing market demands, and strategically target niche markets and innovative opportunities. This approach empowers them to build sustainable businesses that effectively address unmet needs within their communities.

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