

# Graduates' and Schools' Managers' Perceptions of the Role of Industrial-Based Training in Technical Vocational Education and Training, Rwanda

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## Abstract

Studying perceptions of stakeholders and beneficiaries is important in framing the system and improving the outcome. This study sought to appraise the perceptions of graduates and TVET school managers vis-à-vis the Industrial-Based Training (IBT) in use in TVET schools in Rwanda. A mixed method was used, and data were collected from both graduates and TVET managers. Research instruments were questionnaire surveys and follow-up in-depth interviews. Findings revealed that 83.2 % of the TVET graduates appreciated the IBT program. Similarly, about two-thirds (73.4%) of the sampled TVET graduates communicated that IBT provided them with the necessary skills for self-employment. Most (84%) school managers affirmed that skills provided by TVET institutions are highly demanded in the labor market, and TVET graduates have opportunities in the labor market. The present study recommends more partnerships and resources to enable IBT to be well established among TVET schools.

**Keywords:** Industrial-Based Training, TVET, Graduates, School Managers, Rwanda



## Introduction

From the global context, it is now foreseen that promoting Technical Vocational Education and Training (TVET) is the cornerstone strategy for prosperity. This is proved by small but leading nations like Finland, Taiwan, and Singapore, whereby skills obtained by TVET graduates result in self-employment and the creation of more employment opportunities. TVET refers to education and training activities undertaken in a formal or informal training environment to enable trainees to acquire knowledge, understanding, and skills that are relevant to the world of work (2<sup>nd</sup> International Congress on Technical and Vocational Education held in Seoul, 1999).

In its vision 2020, the Government of Rwanda has also set its development agenda with a focus on transforming the country from a predominantly agrarian to a knowledge-based and service-driven economy. Under this agenda, human resource development was a key pillar of the country's development. In this spirit, plans to reform the education sector was undertaken with particular emphasis on restructuring TVET management and delivery systems. The emphasis was put on the need to develop a productive, employable, and skilled workforce, especially at the level of technicians and artisans. This intervention was expected to close the hands-on skills gaps experienced across the occupational trades in almost all sectors of the Rwandan economy (Ministry of Public Service and Labour, 2013). Rwanda has had political and socio-economic stability since the 1994 genocide against the Tutsi (World Bank, 2022). Rwanda is a small landlocked country in Eastern Africa with a population of around 13 million and one of the most densely populated countries in the world. The government is taking active steps to overcome its tragic past, promoting reconciliation and unity for all Rwandans and banning any political activity or discrimination based on race, ethnicity, or region (World Bank, 2011). It makes efforts to provide essential public services, such as education to Rwandans, aims to maintain the spirit of inclusion and reduce geographic, socio-economic, and gender disparities. The education sector plays an important role in the implementation of the national program. Rwanda's development agenda is entering a new phase as it moves from post-genocide recovery to creating an economically and socially secure population that is economically and socially competitive locally and globally. Political status is badged by allowing multiparties and increasing the number of women in government and public institutions. This is achieved through seven-year National Transformation Plans (NST1s) supported by sectors striving to achieve the Sustainable Development Goals (Republic of Rwanda, 2017), which has resulted in Rwanda's strong economic and social performance. Average growth was 7.2% during the 2019 decade, while the gross domestic product (GDP) per capita increased by 5% per year (World Bank, 2022). Rwanda's strong economic growth has been accompanied by significant improvements in living standards, with infant mortality falling by two-thirds and primary school enrollment nearly universal. The focus on local policies and initiatives has significantly improved access to services and human development

indicators. Measured by the national poverty line, poverty fell from 77% in 2001 to 55% in 2017, while birth expectancy fell from 29 in the mid-1990s to 69 in 2019. The official measure of inequality, the Gini index, has fallen. From 0.52 in 2006 to 0.43 in 2017 (World Bank, 2022).

TVET restructuring process in Rwanda entailed (i) developing a policy framework for guiding TVET management and delivery systems and a strategy for its implementation; (ii) putting in place legal and institutional arrangements to facilitate the realization of policy goals and objectives set out in the TVET policy and strategy for its implementation; (iii) developing basic tools for translating TVET policy goals and objectives into implementable actions; (iv) establishing, equipping and operationalization of 5 provincial-level Integrated Polytechnic Regional Centres (IPRCs) as well as providing guidance and oversight of Technical Secondary schools (TSSs) and Vocational Training Centres (VTCs) in their training delivery process across the country. In this vein, mechanisms for improving curriculum development and training of trainers were put in place; and a TVET qualification framework was also developed and approved. In addition, several projects were initiated and implemented to support the TVET restructuring process. The key partners included the Netherlands Organisation for International Cooperation in Higher Education (NUFFIC), the Flemish Association for Development Cooperation and Technical Assistance (VVOB), the German Agency for International Cooperation (GIZ), and the Skill Development Plan (SDP) financed by the World Bank (Republic of Rwanda, 2015).

In Rwanda, TVET delivery is informed by priority sectors (Draft TVET Policy 2013/14-2017/18, 2014) outlined as follows:

- Hospitality and Tourism: (Culinary Art, Foods and Beverage service, Housekeeping service, Tour agency operation, and Tour guide)
- Construction and building services: (Electrical installation, Plumbing, Air-conditioning and refrigeration, Masonry, Painting, Welding, Carpentry, Interior design, Land Surveying)
- ICT: (Hardware fitting, repair & maintenance, programming, networking and cabling, Web design, Database management and IT security and GIS applications)
- Agriculture: (Aquaculture, Food conservation and processing, Irrigation techniques, Commercial cultivation)
- Technical Manufacturing, Assembling and Servicing: (Electronics, Mechanics, electrical, Automotive, Mobile phone)
- Clean and Sustainable Energy: (Biogas and Bio-mass technology, Wind, Geothermal, Hydro, and Solar energy generation technologies)
- Art and Craft: (Ceramics, Banana fibers, Stones cutting, Basketweaving, Handcraft, and tailoring)
- Beauty and Aesthetics: (Hairdressing and treatment, Manicure, Massage)



- Film Making: (Movie shooting, Light design & Animation).

The mode of delivery has been both formal and non-formal. It encompasses school-based delivery mode, which entails formal TVET delivery by Vocational Training Centers (VTCs), former Technical Secondary Schools (TSS) now turned into TVET schools and Integrated Polytechnical Regional Centres (IPRCs) that provide higher education training in TVET (Republic of Rwanda, 2013). While TVET training has been much focused on traditional classroom lectures coupled with workshop-related practices, employers have been complaining about poor training and skills mismatch for TVET graduates; a discussion that gave birth to Industrial-Based Training (IBT) in Technical Vocational Education and Training in Rwanda.

### **Research objectives**

The present study sought to:

- identify the training center used for Industrial Based Training (IBT)
- assess the relevance of Industrial Based Training (IBT) from graduates' and school managers' perspectives
- determine the challenges to Industrial Based Training (IBT)

### **Literature review**

Palmer (2014) named the years after 2015 a period of shift decisive for formulating goals and targets, including increased global recognition and awareness of the importance of technical and vocational skills development. The author articulated that the soonest need would be a stronger connection between the technical and vocational skills community, who are already working on improving its indicators, and the technocrats who are drafting post-2015 targets. "Objectives of vocational education are to prepare students to enter the workforce and to develop a professional attitude" (Hasanah, 2012, p. 265).

Africa is lucky that policymakers in many African countries have a new awareness of the critical role that TVET can play in national development (African Union, 2007). In this vein, African Union has intervened to revitalize, modernize, and harmonize TVET to transform it into a mainstream activity for African youth development, youth employment, and human capacity building in Africa. Therefore, an initial assessment of the existing TVET system was needed to establish the state of the art of the existing TVET system, funding levels and budget utilization, strengths, weaknesses, and deficiencies across all nations (African Union, 2007).

Assessing TVET graduates is also paramount because it enables measuring the extent to which the intended TVET goals are being achieved and thus informs policy reform (Mukhtar & Ahmad, 2015). According to Oketch (2007), the development of TVET is the



only pathway to accelerate progress and reduce unemployment. While the potential are recognized, the mode of its delivery is the one that make a difference. Okolie et al. (2020) found out that the TVET system has positive implications for quality TVET graduates. In this perspective, industrial-based training (IBT) is recognized by its potential to motivates learning, improve students' self-efficacy, allow students to construct learning on their own, enhance graduate competencies and sharpen graduate employability (Okolie et al., 2020). IBT is a dual system of vocational training and education where schools and firms share responsibility for providing TVET inputs (Hasanah, 2012; Remington, 2018). It is German-style, and around the world, governments, educators, and employers have expressed growing interest in it (Remington, 2018). Thus, a strong relationship should be established between TVET schools and IBT. Few studies have investigated the challenges of TVET schools toward IBT outcomes. For instance, only Ismail and Hassan (2013) have studied issues and challenges of technical and vocational education and training in malaysia for knowledge worker-driven and human capital development (Ismail & Abiddin, 2014). It is important to increase participation in TVET, as argued by Ismail and Abiddin (2014), and improve the overall quality of training, as TVET has become vital to the economy and the industrial side as a whole in recent years. However, these challenges that overlay the implementation of TVET can, in some ways, be overcome through innovation and system improvements (Ismail & Hassan, 2013).

Although TVET is, no doubt, a trigger for development, some challenges are cited to roadblock its growth. For instance, it was demonstrated that factors such as (i) perceptions of parents, teachers, and peers (Kagaari, 2017), (ii) gender, (iii) family income, and (iv) parental educational level affect students' choices towards vocational education (Aldossari (2020). Indeed, the public's perception of TVET is cited as having been the back of the discouragement of TVET enrolments since this has been perceived as an area of study for those who have nowhere to go or are poor academic achievers (Zone, 2019). Another demotivating factor for the youth not to join TVET has been the lack of qualified trainers, unavailability of well-functioning machines, and inadequacy of raw materials for practical skills training (Zone, 2019). Therefore, the present study sought to explore graduates' and schools managers' perceptions of the role of IBT in Rwanda TVET institutions.

## **Methodology**

The present study employed a mixed method. It was approached from a "triangulation" design structure, a process of verification that increases validity by incorporating several viewpoints and methods. Triangulation involves the combination of varied tools of data collection and data sources. The design ensures data triangulation using primary data from key informants (graduates, employers, and institutional officials). The quantitative data or information was obtained from graduates from IBT centers using a graduate questionnaire. The questionnaire measured respondents' behavior, knowledge, opinion,



or attitude in a range of thematic areas in this study. This method also helped explain, explore and describe current circumstances and perceptions from the labor market and graduates' training programs. Table 1 shows the targeted population and sample size.

**Table 1: Population of industrial Based Training (IBT) Graduates per training center**

<b>IBT District Population Summary for IBT 1&amp; 2</b>		<b>Total Population</b>
<b>1</b>	East Land Hotel (Kayonza)	202
<b>2</b>	Virunga Hotel ( Musanze)	208
<b>3</b>	Morial Hill Resort Hotel (Karongi)	192
<b>4</b>	Urumuri Hotel ( Gicumbi)	195
Total Population		797
Total sample (30) % of the total population of IBT 1&2		239

The qualitative (in-depth Interview) method was used, and this technique specifically sought to describe, decode, translate, and make meaning of respondents' views of the study objectives (Ndiokubwayo et al., 2019). The qualitative approach helped investigate the topic from the respondents' perspectives (graduates, employers, and heads of TVET institutions). In this study, a qualitative approach was in the form of respondents' opinions to give the study an in-depth insight into graduates' training, labor market competencies, and employer's satisfaction levels graduates' competencies as applied to work.

### Research instruments

The graduate questionnaire was designed along different pathways from studying to the workplace. Given the complexity of the expected outcome of the study, structuring mechanisms were adopted as respondents' profiles; academic life, background, employment, skills' relevance; and employers' satisfaction. The data collection instrument was structured into different areas to capture such diverse details: closed and open-ended questions for graduates and employers. In addressing the structured areas, questions were developed chronologically as determinants of transition from academic life to the labor market. The order included the socio-demographic, family background, academic life, employment, and skills adequacy to job life. Further, the employers' questionnaire was structured into respondents' characteristics, the importance of skills to work and level of satisfaction, and overall satisfaction. From the preceding, both questionnaires were developed around the critical variables of investigation; demographic profile of respondents, academic programs' effectiveness and relevance to market needs, employment, and employers' competence satisfaction with TVET graduates. The questionnaire development procedures considered the length and clarity of each questionnaire. After a technical team of the former Workforce Development Authority (WDA) approved the final version of the questionnaires. The face construct and content validity were established, and observed corrections were made before the questionnaires were actually distributed to the different respondents for a pilot study. The questionnaire

was translated from English to Kinyarwanda and administered to randomly selected respondents from Kigali City and other Provinces. Translating the questionnaire was done to enhance harmony in question interpretation among respondents and thus ensure the validity and reliability of responses. It was also done to respect the respondents' choice of language they preferred to provide their perspectives on the phenomenon of study. In addition, interviews were used on a sampled group of respondents to provide a rich narrative to the statistical data.

### **Pilot Study and Administration of the questionnaires**

The developed tools were pre-tested on a sample of graduates and employers randomly selected the City of Kigali. The pilot exercise was conducted to minimize ambiguities, enhance clarity, and check the instrument's reliability.

The questionnaires were administered and retrieved by pre-trained enumerators under the guidance of the researchers. The roll-out of the questionnaires proceeded along field-visit, and the questionnaires were collected on each visit. In areas where the actual number of respondents was small, it reflected the actual number of graduates working in those areas visited. It took approximately two (2) weeks to collect the data from both graduates, heads of institutions, and employers.

### **Data Analysis and presentation**

The cleaning involved checking that each of the filled questionnaires was coded correctly and that each response was logically aligned to previous responses. Before the analysis, the data screening was done and weighted to account for possible variation in response rates between graduates. Microsoft Excel 2016 was used to analyze quantitative data, while traditional method was used to analyze qualitative data. The data was subjected to statistical processing and analysis. Outputs from the analysis were presented in tables or graphs, and verbatim statements were coded and incorporated where appropriate.

## **Results and Discussion**

### **IBT Graduates' profile**

This section describes the demographic characteristics of the sampled IBT graduates. The key demographic aspects considered were geographical location, gender, age, marital status, and occupation.

A slight majority of the sampled graduates were males (58.9%). Females constitute a proportion of 41.1%. The impression that these findings give is that more males could have enrolled in the IBT programs. In addition, males tend to outnumber females in enrolment and graduation rates in general, as indicated by most of the previous Tracer studies conducted in Rwanda (HEC, 2014). There is hope that the current sensation of girl education and participation in economic development will narrow the gender gaps concerning educational opportunities in general and vocational training.



### Industrial Based Training Centers

The survey on industrial-based training focused mainly on Hospitality based courses. These include Food and Beverage, Culinary Art, Housekeeping, Front Office, and other Hospitality oriented trades.

As revealed in the analysis, most of the graduates (131 out of 270 or 48.5%) were trained at Virunga Hotel, followed by Morial Hill Resort Hotel (64 out of 270 or 23.7%), the East Land (44 out of 270 or 16.3%) and then Urumuri Hotel (31 out of 270 or 11.5%). It should be noted that these figures are not the training proportions as percenter. Rather, they represent the sample of IBT graduates who participated in this study by the center. Although it was planned that the sample would be proportional to the population, the realities in the field did not practically allow for these criteria to be applied.

### Graduates' reasons for undertaking IBT training

The results suggest that IBT training offers high prospects for immediate employment. In other words, TVET institutions equip graduates with skills that enable them to get employment easily and income. Figure 1 shows the reason for undertaking TVET training.

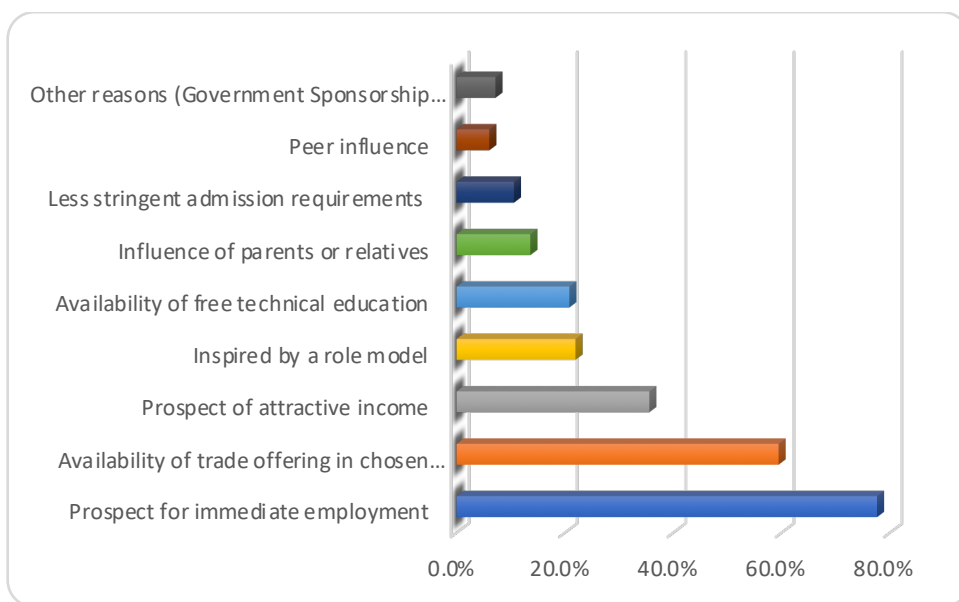


Figure 1: Reasons for undertaking TVET training (N= 264)

When asked why they enrolled in IBT training, most of the graduates sampled (77.7%) pointed out prospects for immediate employment as the main reason. A quite significant



percentage (59.5%) said that they were prompted by the availability of training specialists in the Host training center. A proportion of 35.6% was captivated by attractive income prospects, while a role model inspired 22.0% of the graduates. Other graduates mentioned the availability of free technical education (20.8%), the influence of parents or relatives (13.6%) as well less stringent admission requirements (10.6%). Peers influence 6.1% of graduates, and other reasons, such as government sponsorship, were mentioned by 7.2%. In their study (Ibrahim et al., 2012) assessing the students' perceptions of service quality in Malaysian TEVT institutions, there were significant differences in students' perception of service quality provided by public and private institutions. Students in both institutes were moderately satisfied with the aspects of training implementation, including the instructor, curriculum, and training delivery. In Kenya, the community perceives that graduates from TVET are not well prepared for the world of work and have negative attitudes towards informal sector employment opportunities (MOTUKA & ORODHO, 2018). The authors concluded that such a negative attitude hinders trainees from choosing TVET and, as such, are largely unemployed.

### Graduates' likelihood, enrolment, and relevancy to the IBT program

About the training opportunities provided in the IBT centers. It was revealed that a substantial proportion of the graduates got information from friends (35.3%) and media (27.8%). Others got information from TVET graduates, TVET Staff, and high school teachers.

Considering the importance of knowledge and skills acquired in the IBT program, most of the graduates wished that any candidate would choose their trades, as illustrated in Table 2. The majority (96.3%) of respondents expressed that they would advise other incoming students to choose their trade. This partly implies that graduates are overall satisfied with their trades. This again implies the degree of relevance to which graduates associate their acquired skills with current employment or the possibility of employment among those who are not employed.

**Table 2: Graduates' likelihood, enrolment, and relevancy to IBT program**

SN	Statements	Yes (%)	No (%)	N
1	Graduates' likelihood of advising another person to enroll in the IBT program	96.3	3.7	268
2	Graduates' enrolment in other courses after graduation	12.6	87.4	270
3	Relevancy of IBT program to skills required on the Job	83.2	16.8	113
4	Relevancy of IBT program to Graduates' self-employment	73.4	26.6	128

After IBT graduation, a small proportion of graduates pursue more courses, as shown in Table 2. Asked whether they took other courses after graduation, 12.6% said they had taken other courses/training, and the majority (87.4%) said they had not taken other



courses or training. The statistical results imply two scenarios: The first one is that as much as IBT graduates might have wished to go for further training, most have not been able to do so. The second likely possibility is that the knowledge and skills graduates acquire from IBT can enable most graduates to earn a living without requiring further training. However, keeping other conditions constant and assuming that graduates would pay for further studies would be a good practice for graduates to constantly pursue short courses that give them a fair advantage on the job market.

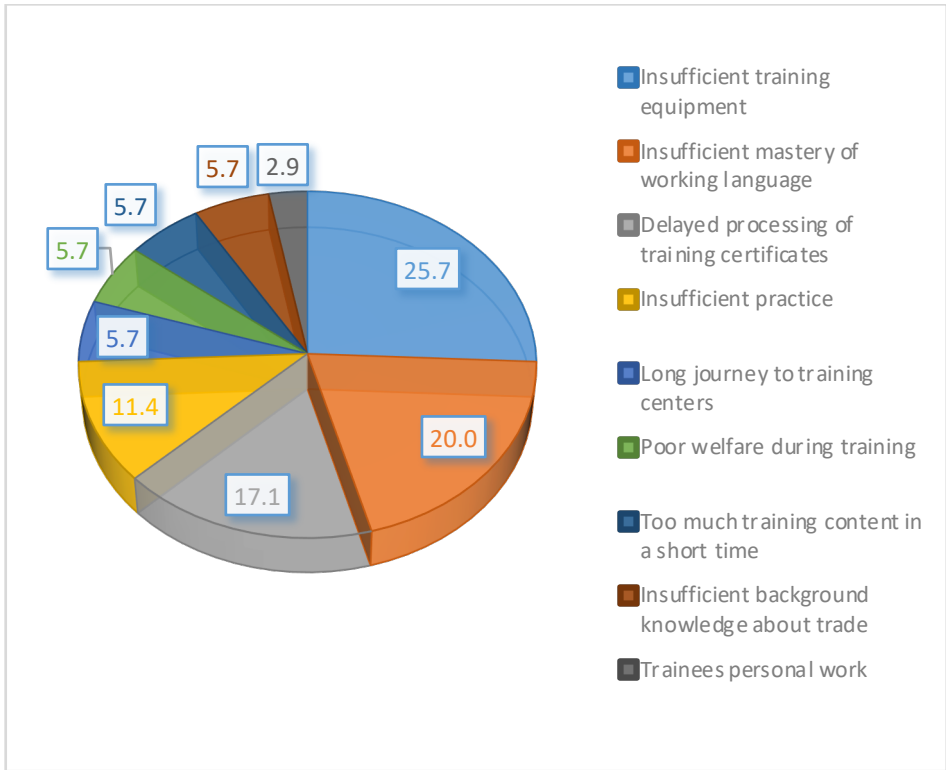
The key factor to TVET graduates' employment and performance depends on the quality and relevance of TVET training programs to the demands on the job market. The graduates' perceptions of the relevance of their training programs were investigated. As seen in Table 2, a significant percentage (83.2 %) of the respondents agreed that they had gained the necessary technical skills for their chosen profession. In comparison, 16.8% said the acquired skills were irrelevant to their job. For the latter category, follow-up interviews with sampled students revealed that almost half of those who said that the acquired skills were not relevant were employed but not necessarily in the trades for which they were trained. Therefore, according to the respondents' views, it can be deduced that, overall, the graduates were equipped with relevant skills required in the labor market. This implies that the TVET programs are designed based on the demands in the labor market. Notwithstanding, it should be noted that irrespective of the relevancy of employment training, it was suggested that some improvements be made like allocating more time to practice and emphasizing teaching in the language of work during the training.

This study also explored whether the IBT program prepared graduates to become self-employed. About two-thirds (73.4%) expressed that the training provided the necessary skills for self-employment. However, it should be noted that the ability to create personal businesses does not solely lie in the quality of training programs. Rather, it involves a combination of factors like access to the start-up capital, like money and equipment, which are challenging to afford. Most graduates are fresh graduates and lack collateral from lending institutions.

### **Major challenges hindering IBT graduates from being self-employed**

Graduates who expressed low satisfaction about the IBT program's potential to create self-employment mentioned the gaps highlighted in Figure 2; graduates suggested that addressing these challenges would improve the quality of the IBT programs and thus increase their capacities for employment in general and self-employment in particular.





**Figure 2: Challenges to IBT graduates' ability for self-employment**

Though the IBT program has made a big step forward in providing graduates with technical skills required on the job market, graduates face several challenges to self-employment and the overall quality of training. As highlighted by graduates, the major ones include insufficient training equipment (25.7%) and insufficient working language, as noted by 20% of respondents. Thus, there is a call for the government and private sector partners to finance those TVET graduates in self-employment (Kiboi & Dimo, 2019). The college enrollment is below the target, and the job-creation awareness of the stakeholders is weak. Thus, the integration of the TVET College with stakeholders is fragile, and hence, they are not delivering their responsibilities (Zone, 2019). For instance, the trainees are selective in streaming the job opportunity after completing the training (Zone, 2019).

### **Perceptions of Heads of institutions about the employability of Graduates**

The views of managers of TVET institutions on different aspects regarding graduates' employability were sought. TVET institutions managers were asked to give their opinions based on a five-point scale pertaining to skills imparted to graduates, preparation of



graduates for self-employment, the assistance of graduates in seeking employment, and follow-up of graduates, among others. Table 3 provides details of their responses.

**Table 3: Perceptions of managers of TVET institutions on different aspects of graduate employability.**

Note: N: sample, Scale-1: Agreement, Scale-2: Moderate, and Scale-3: Disagreement

SN	Perception statements	Scale-1	Scale-2	Scale-3	N
1	TVET graduates have opportunities in the labor market	22	2	2	26
2	Students in this institutions get enough training for self-employment	21	3	2	26
3	More courses need to be introduced to prepare student for self-employment	15	3	7	25
4	Students in this institution get enough training to enable them to create their own jobs	24	1	1	26
5	Training in TVET institutions is tailored towards the labour market	19	1	4	24
6	This TVET institution assist graduates in seeking for employment	14	6	5	25
7	Skills provided by TVET institutions are highly demanded in the labour market	21	3	1	25
8	We make a follow-up of the performance of graduates from this institution.	20	2	2	24

Table 3 shows the opinions of managers of TVET institutions on different aspects regarding graduate employability. In terms of job opportunities, a large proportion of TVET managers (92.4%) expressed that TVET graduates have high opportunities in the labor market. Likewise, the same proportion of the respondents (92.4%) agreed that students in their institutions get enough training for self-employment. Much as most of the graduates acknowledged that their institutions adequately prepare students for self-employment, on the other hand, a percentage of 72 respondents were of the view that more courses need to be introduced to prepare the student for self-employment.

Almost all the respondents (96.1%) concurred with the view that students in their institutions get enough training to enable them to create their jobs in their trades. Also, 83.3% agreed that training in TVET institutions is tailored toward the labor market. Furthermore, a very significant proportion (96%) equally acknowledged that skills provided by TVET institutions are highly demanded in the labor market. Last but not least, a substantial proportion of the respondents (91.6%) agreed that they follow upon the performance of graduates from their institutions.

These results imply that, generally, the programs in TVET institutions appear to be aligned with the demands of the labor market as well as social needs. According to the findings, it could be inferred that students are equipped with skills required in the labor market and create employment for others. Nonetheless, there is a need to strengthen the training

concerning preparing graduates for self-employment, as voiced by most respondents. The managers' views about the relevance of TVET training in the labor market seemed to match the graduates' views. There were a few variations especially concerning TVET institutions' efforts to link graduates to the jobs market. On the latter component, TVET managers appeared to provide overrated views compared to the students. Some heads of institutions, in a follow-up interview, have claimed to receive money from students' tuition fees but have argued that the fees are not sufficient to ensure quality education. The result is that some schools had high-quality machines that were not used regularly to generate revenue, especially on holidays or even on weekdays.

Differently, a study examining perceptions of TVET offering institutions on TVET education in Zimbabwe showed a diametrical distribution (Makochekanwa & Mahuyu, 2021). Only 50% of the community and stakeholders rated TVET education positively, while the other 50% rated it negatively. The Boahin and Hofman (2013) study result demonstrated the need for academic disciplines to determine specific employability skills required for social and community practice to enhance the development of employability skills in training programs.

## Conclusion

This study revealed that TVET graduates were generally positive about the quality of training they received. For example, 83.2% affirmed that IBT training was relevant to their employment demands. However, there were instances where graduates expressed that training institutions secured equipment during the last phases of the training, which affected the graduate's opportunities to acquire sufficient practical skills. As a recommendation, training institutions should be asked to secure training equipment before students effectively start their training programs. Some of the Heads of Institutions expressed that they get their funds from school fees but expressed that the fees were not sufficient to rely on to provide quality education. Notably, some institutions had quality machinery that was not regularly utilized primarily during holidays or even regular days, to generate income. They should be an elaborate plan by TVET institutions to generate supplementary income from the infrastructure- and other machinery that was provided to TVET institutions. Indeed, where possible, the Career Advisory Services and mentorship programs should be enhanced to constitute an integral part of TVET training programs.

## Author contribution

*Michael Rwibasira Tusiime*, designed the study, collected and analyzed data

*Irénée Ndayambaje*, wrote the manuscript

*Kizito Ndihekubwayo*, revised the manuscript



## Ethical statement

The protocol was approved by Workforce Development Authority (WDA) per the research guidelines and regulations in Rwanda.

## Consent

Informed consent (consent to participate and consent to publish) were obtained from all participants.

## Data Availability

Data are available upon request from the first author.

## References

- African Union. (2007). *Strategy to Revitalize Technical and Vocational Education and Training (TVET) in Africa* (Issue January). Addis Ababa
- Aldossari, A. S. (2020). Vision 2030 and reducing the stigma of vocational and technical training among Saudi Arabian students. *Empirical Research in Vocational Education and Training*, 12(1), 1–24. <https://doi.org/10.1186/s40461-020-00089-6>
- Boahin, P., & Hofman, A. (2013). A disciplinary perspective of competency-based training on the acquisition of employability skills. *Journal of Vocational Education and Training*, 65(3), 385–401. <https://doi.org/10.1080/13636820.2013.834954>
- Hasanah. (2012). Optimizing the Role of Industry in the Development of Vocational Education and Training In Indonesia. *International Conference on Vocational Education and Training*, 265–269. [www.journal.uta45jakarta.ac.id](http://www.journal.uta45jakarta.ac.id)
- Ibrahim, M. Z., Rahman, M. N. A., & Yasin, R. M. (2012). Assessing Students Perceptions of Service Quality in Technical Educational and Vocational Training (TEVT) Institution in Malaysia. *Procedia - Social and Behavioral Sciences*, 56, 272–283. <https://doi.org/10.1016/j.sbspro.2012.09.655>
- Ismail, A., & Abiddin, N. Z. (2014). Issues and Challenges of Technical and Vocational Education and Training in Malaysia Towards Human Capital Development. *Middle-East Journal of Scientific Research*, 19(February), 7–11. <https://doi.org/10.5829/idosi.mejsr.2014.19.icmrp.2>
- Ismail, A., & Hassan, R. (2013). Issues and Challenges of Technical and Vocational Education & Training in Malaysia for Knowledge Worker Driven. *National Conference on Engineering Technology, February 2015*. <https://doi.org/10.13140/2.1.4555.2961>
- Kagaari, J. R. K. (2017). Evaluation of the effects of vocational choice and practical training on students' employability. *Journal of European Industrial Training*, 31(6), 449–471. <https://doi.org/10.1108/03090590710772640>
- Kiboi, M. J., & Dimo, H. (2019). Challenges Facing the Entry of Graduates of Technical Training Institutions into Self-employment : The Case of North Rift Region. *Africa Journal of Technical & Vocational Education & Training*, 4(1), 94–107.
- Makochekanwa, A., & Mahuyu, J. (2021). TVET Offering Institutions' Perceptions on TVET Education: The Case of Zimbabwe. *The African Review*, 1, 1–28. <https://doi.org/https://doi.org/10.1163/1821889X-12340036>

- Ministry of Public Service and Labour. (2013). *Skills area and numbers of priority skills required across Rwanda: Five-year program for priority skills development to deliver EDPR II (2013 - 2018)*.
- Motuka, G. M., & Orodho, J. A. (2018). Technical and Vocational Education and Training: Why Attainment of Kenya's Vision 2030 is an Illusive Goal for TVET Graduates. *Greener Journal of Educational Research*, 8(2), 007–016. <https://doi.org/10.15580/gjer.2018.2.030818035>
- Mukhtar, M. I., & Ahmad, J. (2015). Assessment for Learning: Practice in TVET. *Procedia - Social and Behavioral Sciences*, 204(November 2014), 119–126. <https://doi.org/10.1016/j.sbspro.2015.08.124>
- Ndihokubwayo, K., Byusa, E., & Yutaka, I. (2019). Redistributing Public Institutions to Rural Areas : A Case of the University of Rwanda College of Education, Rukara. *African Journal of Governance and Development*, 8(1), 24–35. <https://journals.co.za/doi/pdf/10.10520/EJC-18a5c51725>
- Oketch, M. O. (2007). To vocationalise or not to vocationalise? Perspectives on current trends and issues in technical and vocational education and training (TVET) in Africa. *International Journal of Educational Development*, 27(2), 220–234. <https://doi.org/10.1016/j.ijedudev.2006.07.004>
- Okolie, U. C., Elom, E. N., Igwe, P. A., Binuomote, M. O., Nwajiuba, C. A., & Igu, N. C. N. (2020). Improving graduate outcomes : Implementation of problem-based learning in TVET systems of Nigerian higher education. *Higher Education, Skills and Work-Based Learning*, 11(1), 92–110. <https://doi.org/10.1108/HESWBL-12-2018-0140>
- Palmer, R. (2014). Technical and vocational skills and post-2015: Avoiding another vague skills goal? *International Journal of Educational Development*, 39(June 2013), 32–39. <https://doi.org/10.1016/j.ijedudev.2014.08.007>
- Remington, T. F. (2018). Public–private partnerships in TVET: adapting the dual system in the United States\*. *Journal of Vocational Education and Training*, 6820, 1–26. <https://doi.org/10.1080/13636820.2018.1450776>
- Republic of Rwanda. (2013). *National TVET strategy 2013/14-2017/18. Kigali Rwanda*. Draft TVET Policy 2013/14-2017/18, (2014).
- Republic of Rwanda. (2015). *National Policy on Workplace Learning to Prepare Rwandan Youth for Employment (Workplace Learning Policy-Draft Kigali Rwanda)*.
- Republic of Rwanda. (2017). *7 Years Government Programme: National Strategy for Transformation (NST1) 2017–2024*. [www.nirda.gov.rw/uploads/tx\\_dce/National\\_Strategy\\_For\\_Transformation\\_-\\_NST1-min.pdf](http://www.nirda.gov.rw/uploads/tx_dce/National_Strategy_For_Transformation_-_NST1-min.pdf)
- World Bank. (2011). *Rwanda - Education country status report: toward quality enhancement and achievement of universal nine year basic education - an education system in transition; a nation in transition*. <https://documents1.worldbank.org/curated/en/677741468107072073/pdf/579260SR0P11151353788B01PUBLIC10Web.pdf>
- World Bank. (2022). *The World Bank in Rwanda*. <https://www.worldbank.org/en/country/rwanda/overview>



Zone, G. G. (2019). Challenges and Prospects of Technical and Vocational Education and Training (TVET): Evidence from Sawla TVET College, Gamo Gofa Zone, SNNPRS, Ethiopia. *Journal of Economics and Sustainable Development*, 10(5), 17–26. <https://doi.org/10.7176/jesd/10-5-02>