

## **Original Research Article**

### **STUDENTS AND TEACHERS' PERCEPTIONS ON VOCATIONAL SKILLS IN PROMOTING TECHNICAL INNOVATION: THE CASE OF VETA KIHONDA IN MOROGORO MUNICIPALITY**

#### **ABSTRACT**

The study focused on the students' and teachers' perceptions of vocational skills in promoting technical innovation; a case of Morogoro Municipality specifically at VETA Kihonda. The study employed a descriptive research design based on a mixed approach i.e., both qualitative and quantitative data were used. To select respondents, both simple random and purposive sampling techniques were used. The sample size of 105 was calculated by using Yamane's (1967) formula. Therefore, 90 finalist VETA students were randomly selected while 15 teachers were purposively selected and used in this study. Both primary and secondary data sources were used in the study. Moreover, qualitative data were analyzed thematically while quantitative data were descriptively analyzed with the support of SPSS version 25 to generate frequencies and percentages. The study revealed that the high cost of raw materials, lack of access to finance, lack of qualified personnel, lack of motivation, and environmental factors were perceived by respondents to be the challenge for VETA in promoting technological innovation. Based on the study findings, researchers recommended that the modernization of workshops/training facilities periodically and the replacement of older training equipment and tools with new ones are required.

**Keywords:** *Students, Teachers, Perceptions, Vocational Skills, Technical Innovation*

#### **1.0 Introduction**

The vocational education and training (VET) system is frequently perceived as the primary source of workforce skills development (Mills et al., 2012). The VET Act of 1994 in Tanzania pointed out that, VETA has the responsibility to coordinate VET among the different players (URT, 1994). Vocational Education and Training Authority (VETA) is charged with the broad tasks of coordinating, regulating, financing, promoting, and providing vocational education and training in Tanzania (URT, 1994). Despite its potentiality, VET has largely been ignored as a player in the innovation system but with its ties to industry, it has the ability to help translate new knowledge into the workforce (Beddie & Simon, 2017).

Backes-Gellner and Pfister (2019) examined “the contribution of VET to Innovation in Switzerland. The findings of the study indicate that there are several updates on curricula and beneficial for future innovation in all companies as it is triggered by the Vocational and Professional Education and Training (VPET) system. There is broad participation of companies in apprenticeship training and a diverse skill mix within companies”.

Diaconu (2011) examined “different studies on technological innovation with a focus on concept, process, typology, and implications in the economy. The study was anonymous in terms of the case study. The findings identified that; Innovative capacity is a key determinant

of the economic competitiveness of nations and an instrument to solve current global challenges related to the environment and health domain. However, the researcher observed that not only physical capital and labor factors that influence production but also technological progress capital, highly skilled human capital, and labor productivity growth. Since skills are necessary for technical innovation, this validates the necessity of vocational skills as inevitable for technical innovation as it enhances creativity, critical thinking, design, and imagination”.

Mwinuka, Redecker, and Wihstutz (2000) explored “the contribution of government to the Vocational Education and Training by Government in Tanzania. The findings of the study show that Ministerial contributions to their respective VET institutions have been decreasing in the past years and are limited to catering to the expenses of staff and personnel. The Government expands their training programs by introducing short-term training courses which address the general public in their respective field of expertise”.

Mara (2018) examined the innovation in the Continuing Vocational Education and Training (CVET) Government-run program in Catalonia -Spain. The findings identified that the research has been very little studied, and even less empirically, therefore his study was exploring and laying the foundations for further research in that area. The study identified that many youths have no vocational skills which could support them in their innovation to innovate new products for better livelihood. The objectives and concepts of the selected skills development interventions which are vocational skills are in line with the needs of the target groups who are youth on technical innovation. Improvement in Technical and vocational education and innovation is high. Despite its endeavors to establish vocational education centers, still there is a gap of making a follow-up to observe the trend and their practicality as well as outcomes if the skills achieved by students enable them to undergo innovation and renovation in their livelihood. Most of the skills are provided with low quality. The skills cannot support the graduates to be creative enough to invent new products and businesses for the sustenance of their lives.

Due to the fact that the VET system is frequently perceived as the primary source of workforce skills development Mills et al., (2012) explored the relationship between workforce skills and innovation. These studies identified a number of major findings in the literature; the predominant form of innovation in firms is incremental which is the result of a broader workforce in the generation, adaptation, and diffusion of technical and organizational change. The extent to which a firm's workforce actively engages in innovation is strongly determined by particular work organization practices. Toner discusses the diffusion of technical and vocational training centers or institutions as the source of an innovative workforce. Tanzania is relevant simply because there are many technical and VET institutions such as Dar Technical College, Arusha Technical College, and VETA Morogoro. Finally, Toner identified that there are large differences across advanced nations in workforce skill formation systems, especially for vocational skills. Such differences result in large disparities across nations in the share of their workforce with formal vocational qualifications, and in the level of these qualifications. The resulting differences in the

quantity and quality of workforce skills are a major factor in determining the observed patterns of innovation and key aspects of economic performance.

Therefore, vocational skills are considered to be a core factor in determining the chance of a successful transition into a culture of work while the expansion of general education is observed in many countries. The role of technical vocational skills is to improve productivity, raise income levels and improve self-reliance through self-employment (Bennell, 1999). The VETA is designated to prepare, update and retrain artisans for self-reliance at the semi-skilled or skilled levels, in any branch of economic activity (URT, 1994). “While an increasing number of studies postulate that VET activities have a positive impact on the innovative capacity of training companies, empirical evidence on the topic remains contradictory” (Matthies, Thomä, & Bizer, 2022).

Despite the fact that the Tanzanian government at all its levels has over the years put in place various measures to empower youth economically, these measures include the establishment of vocational training institutions in each region. However, graduates from VETA in spite of being skilled are suspected to lack some elements of skills particularly in creating and inventing new products, facilities, and tools which inhibit them to create their own jobs products and markets for their products. This study, therefore, aimed at assessing the students' and teachers' perceptions of vocational skills in promoting technical innovations.

### **1.1 Theoretical Framework**

The resource-based view theory forms the basis for this study. The resources in this study are attributed to vocational skills such as digital literacy, complex problem-solving and ideation, critical thinking and analysis, creativity, originality, initiative technology design, programming, leadership, social influence, networking, experiments, observation, effective communication, association, and collaboration. These skills are viewed as key elements in promoting technical innovations when will are imparted to VETA students in Morogoro Municipality. The theory provides a guiding principle in the assessment of the resource to provide highly innovative ability example resource must be valuable, rare, imitable, and organized to enhance sustained competitive advantage (Jurevicius 2021).

“Therefore, RBV assumes that companies achieve competitive advantage by using their different bundles of resources” (Rothaermel, 2016) “for example the competition between Apple Inc. and Samsung Electronics is a good example of how two companies that operate in the same industry and thus, are exposed to the same external forces, can achieve different organizational performance due to the difference in resources” (Jurevicius, 2021). Resource-based view theory in relation to this study is the model that sees resources such as Vocational skills as key to superior firm performance in innovation. The high achievement of Apple Inc. and Samsung electronics companies in innovation involved high investment in technical innovation.

“The resource-based view theory had identified opportunities based on the uniqueness of resource that would lead to competitive advantages” (Nimfa, et al, 2021). The resources in this study are attributed to vocational skills, in enhancing innovations. The assessment of all

resources allows technical education to achieve their innovation objectives efficiently. Selecting an appropriate growth strategy and innovation approaches enable managers to achieve growth. Resource-based view theory (RBVT) like Porter's model of competitive forces cannot contribute to the technical education competitive advantage effectively in rapidly dynamic marketplaces. In a similar vein, the theory did not fully address when to encourage extra valuable resources or how to renew the existing stocks of skills, rare, imperfectly imitable, and inadequately sustainable resources that were revitalized in untenable environmental circumstances. The current study was guided by the resource-based view theory due to its relation to the topic under study.

## 2.0 Methodology

### 2.1 Description of the study area

The study was carried out in Morogoro Municipality between September 2021 and May 2022. Demographically, the total estimated population of Morogoro Municipal Council was 315,866 people whereby 151,700 were male and 164,166 were female. The population density was 31 persons per square kilometer (URT, 2012). Morogoro municipality is located in the eastern part of Tanzania, 196 kilometers (122 miles) west of Dar es Salaam, the largest commercial city in the country, and 260 kilometers (160 mi) east of Dodoma, the country's capital city. Its geographical coordinates are 6° 49' 0" South, 37° 40' 0" East. Morogoro municipality was chosen as an area of study because it is a municipality in Tanzania growing rapidly and also has many VETA institutions in which one of which is VETA Kihonda.

### 2.2 Research Design

The study employed a descriptive research design based on a mixed approach i.e., both qualitative and quantitative data were used. A qualitative approach was used to acquire feelings, perceptions, and opinions of respondents with regard to vocational skills in promoting technical innovation while the quantitative approach was used to get occurrences and the number of respondents on study questions.

### 2.3 Sampling technique and sample size determination

The study was carried out at VETA Kihonda in Morogoro municipality. To select respondents, both simple random and purposive sampling techniques were used. The sample size of 105 was calculated by using Yamane's (1967) formula.

$$n = \frac{N}{1 + Ne^2}$$

Where N=Target Population=144

e=Margin of error=0.05=5%

$$n = \frac{144}{1 + 144 \times (0.05)^2}$$

n=105 respondents

Therefore, 90 finalist VETA students were randomly selected while 15 teachers were purposively selected and used in this study.

#### 2.4 Data sources and methods of data collection

Both primary and secondary data sources were used in the study. In generating primary data 90 questionnaires were administered to 90 finalist VETA students while a semi-structured interview schedule was used for 15 selected teachers. The response rate was 100%, indicating that the researchers obtained enough information for the study. Moreover, the data were collected with the help of enumerators under the supervision of the researchers. Secondary data were obtained from published and unpublished documents of different organizations.

#### 2.5 Methods of data analysis

The type of data analysis method used was profoundly dependent on the research design and the instruments used to collect data. Based on the fact that no single method of data collection is perfect in itself (Mwonge & Naho, 2021) the study employed a mixed research approach as both qualitative and quantitative methods were used. The selected approaches enabled researchers to obtain reliable information from the study area with the aid of a Questionnaire. The qualitative data tangled with quantitative data to further enrich and enhance the information which was collected. Furthermore, qualitative data were analyzed thematically based on the six phases (i.e., familiarization with the data, generating codes, searching themes, reviewing themes to ensure data saturation, defining and naming themes, and report to report the output of the analysis) adopted from Braun and Clarke (2006). Furthermore, quantitative data were descriptively analyzed with the support of SPSS version 25 to generate frequencies and percentages.

### 3.0 Results and discussion

#### 3.1 Challenges faced by VETA in promoting technical innovation

In assessing students' and teachers' perceptions of vocational skills in promoting technical innovation, researchers sought to know the challenges facing technical and vocational education in promoting technical innovation taking VETA Kihonda as the case study. Considering the fact that, if a student is not well equipped with innovative skills, he/she will lack creativity in his/her endeavors and innovations. No new inventions and products are expected rather than imitation and repetition of old versions of products, hence poor-quality products and less production. According to Mushi and Kent (1995) the main challenge for VTCs is to equip students with the knowledge and skills necessary to operate effectively. Therefore, in this study, the respondents were required to indicate in the questionnaire the challenges that are facing VETA in promoting technological innovation. Table 1 presents the study results.

**Table 1 Challenges facing VETA in promoting technical innovation**

Challenges	Frequency	Percentage
High cost of raw materials	30	33.33%
Lack of access to finance	26	28.89%
Lack of qualified personal	14	15.56%
Lack of motivation	12	13.33%
Environmental factors	8	8.89%
<b>Total</b>	<b>90</b>	<b>100%</b>

Source: Field Study, 2021

The study findings from Table 1 above revealed that the high cost of raw materials, lack of access to finance, lack of qualified personnel, lack of motivation, and environmental factors were perceived by respondents to be the challenge for VETA in promoting technological innovation.

### **High cost of raw materials**

Respondents in the study area indicated that the high cost of raw materials was the challenge facing VETA in promoting technological innovation. The majority of respondents 30(33.33%) indicated that the training was poorly planned, managed, and resourced (particularly with respect to trainers and training materials) resulting in poor quality and hence failure to promote technical innovation. The study result is in line with the findings of Thomas (2011) who found that raw materials and advanced equipment were so expensive that VETA could not buy them resulting in poor training programs and hence fail to promote technical innovation. Moreover, this shortfall in practical training corroborates a study conducted by Akplu and Amankrah (2008) on “the efficacy of technical programs which revealed that technical graduates lack the requisite practical skills for the world of work and, in most cases, such graduates are retrained before being employed”.

### **Lack of access to finance**

The study sought to know the types of infrastructure or financial resources or other types of investments that have been made available by the VETA to finance or support the practice. The study results from Table 1 above revealed that 26(28.89%) indicated that lack of access to finance is the main challenge facing VETA in promoting technological innovation. The study result is in line with the findings of Thomas (2011) who found that lack of financial accessibility is one of the factors that hinder innovation in small-scale enterprises.

Moreover, during data collection, one teacher pointed out that: -

*“...innovation is about capital. If you don't have access to finance, you can't think about introducing new products. This is because money provides a means for entrepreneurs to buy quality materials, advanced equipment for production and employing the skilled staffs” (T1).*

The quotation from the VETA teacher implies that lack of access to finance threatened innovativeness. Therefore, the new product invented especially in Tanzania lacks customers buying them with the ideology that they have poor quality; so, it discourages innovators from designing new products. The respondent revealed that customers prefer imported products to locally made ones. The fact was that imported products were more attractive than those which were made locally.

### **Lack of qualified personal**

The study sought to establish the distribution of qualified personnel. It was found that 14 (15.56%) indicated that VETA lacks qualified personnel. According to Chepkoech (2021), VETA trainers should have at least a first degree, which was contrary to our study as most of

them had a specialty in areas falling outside the core mandate of TVET. It was also revealed that VETA trainers rarely upgraded their skills making their teaching to be majorly on basis of historical competencies. Though the ideal situation had established that variables were to account for (72.5%) of trainees' skill formation, the actual position on the ground revealed that variables accounted for only (22.5%) of trainees' skill formation. On the basis of these findings, the study concludes that TVET institutions were incapacitated to produce human resources with the right skills to meet the technical innovations. The study result is consistent with the findings of Luhala, and Yuting (2021) who found that insufficiency of expertise hinder innovation. Luhala, and Yuting found that most TVET teachers have no pedagogical background. Only few lecturers combine pedagogical competencies with technical qualifications.

Therefore, the study found that production techniques were local among innovators with limited technical expertise. Lack of sources of ideas for innovation was among the factor that hindered innovation. However, inadequate skills among VTCs graduates were also observed by Dasmani (2012) to be one of the policy challenges facing educational systems in Tanzania. This contention was supported by Hakielimu (2012) that in this era of a free market economy and privatization, the government is losing control over the quality and quantity of education deliverables in almost all stages of the education system in the country including vocational technical school. This can therefore be concluded that the lack of adequate skills among VTCs graduates is one of the development challenges threatening youth livelihoods.

#### **Lack of motivation**

Also, 12(13.33%) of respondents indicated that lack of motivation for VETA trainers/trainers was one of the challenges facing VETA in promoting technical innovations. Lack of motivation among VTCs teachers has implications for quality practical training. The study result is consistent with the findings of Akplu and Amankrah (2008) who found that lack of motivation among teachers to be one of the challenges facing vocation-training institutions in developing economies. This is therefore realized in this study to be one of the factors contributing to poor quality of practical training hence inadequate skills among VTCs graduates entering into the world of employment.

#### **Environmental factor**

Based on the fact that an entrepreneur with no technological capabilities, would be rigidly unable to adapt to any changes in their environment, and may not survive for long. The study sought to know how the environmental factors change VETA in promoting technological innovation. It was found that 8(8.89%) of the respondents indicated that environmental factors i.e., research and development, technology service providers, and organization structure was the challenge facing VETA in promoting technological innovation. The study result implies that the innovation strategy of an organization is not only determined by the organization's workforce, capital and technical ability but also by how environmental factors force R&D activities and innovation level. Therefore, the effect of environmental factors on innovation level and different innovation strategies also become important for sustaining the competitive advantage of the organizations.

### **3.2 Suggestion to improve vocational training**

The study sought to know suggestions to improve vocational education in promoting technological innovation in the study area. The respondents indicated in the questionnaire that enough electricity supply, qualified technicians, quality education to VETA students, mass media and subsidies are possible solutions for VETA to improve vocational training. This implies that enough electricity supply would simplify electronic machines' operations because they depend on the power supply. Also, technicians are crucial in training vocational skills because they enhance students with reasoning skills on how to solve challenges and maintain the machine, not only that but also skills to run different machines in making new products. Diaconu (2011) supported the idea of enhancing the skills of the technicians as the source of the workforce where he argued that not only capital is necessary for innovation but also skilled labor who can impart skills to the learners.

### **4.0 Conclusion and Recommendation**

The study focused on the assessment of students' and teachers' perceptions of vocational skills in promoting technical innovation taking VETA in Morogoro municipality as the case study. The study was guided by the resource-based view theory. Despite its significant role in promoting technical innovation, VETA faces a number of challenges such as the high cost of raw materials, lack of access to finance, lack of qualified personnel, lack of motivation, and environmental factors like technology. Although inadequate expertise, outdated machines used in teaching and learning, and lack of access to financial sources were found to be challenges that hinder students' innovation but also, courses at VETA were found to be too theoretical due to inadequate machines which are not sufficient to the number of learners as the observation through checklist indicated that some machines were damaged or outdated.

Recommendations for practice, policy, and academic purposes are offered in light of the findings of this study. Based on the study findings, it was recommended that, firstly, the modernization of workshops/training facilities periodically and the replacement of older training equipment and tools with new ones are required, secondly, the involvement of instructors in changing the curriculum or any matter concern the curriculum and emphasis on practical skills need to be looked into.

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