

## Overview of TVET Institutional Capacity in Addressing Dynamic Labour Market: The Case of Tanzania and Selected Two Asian Tiger Nations

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### **ABSTRACT**

*In most developed countries, technical and vocational education and training (TVET) system has been considered to be among the key players for industrial growth through production of competent and skilled labour forces. However, TVET system in Tanzania has not been able to produce graduates who meet satisfactorily the skill demand of industries. The study examined the TVET institutional' capacity in addressing dynamic labour market. The study used a combination of instruments including questionnaires, semi-structured interviews, and observations to collect data from Tanzania and two Asian Tiger Nations, Singapore and the Republic of Korea. A total of 219 respondents were selected using simple random, stratified, and purposive sampling techniques. In summary, the study found that while conditions are very friendly in the two Asian Tiger Nations, Tanzania's TVET system is facing the short- supply of technically skilled workforce. The study has revealed further that among other factors influencing the effectiveness of TVET system in Tanzania are inadequate and poor teaching and learning infrastructure; outdated TVET curricula, teaching staff who not only lack practical experience but also lack the ability to interpret and apply labour market data and information. In ensuring that TVET system optimally contributes to economic development in Tanzania, lessons to be learnt from the two Asian Tiger Nations include establishing and strengthening strong partnerships among TVET institutions and industries and continuously monitoring of the relevance of TVET learning packages and curricula in line with current needs of industries.*

**Keywords:** *Technical and Vocational Education and Training (TVET), Dynamic Labour Market, Curricula and Learning Packages (LPs), Teaching and Learning infrastructure, Industries*

## **INTRODUCTION**

Shortage of skilled labour force is considered one of long outstanding problems facing many industrial sectors across the globe (Mutuku, 2017; Morris and Fessehaie, 2014). In fact, according to Seng (2012) the problem becomes very serious when technical and vocational competencies are inadequate. For instance, Siddiqui (2018) reported in the recent past that the Small and Medium Enterprises [SMEs] in India are struggling to find adequate skilled labour force. The problem is attributed to prevailing skill mismatch between what is provided by Technical and Vocational Education (TVET) institutions and the SME's demand, resulting in the shortage of most needed human capital.

The skill mismatch is mainly contributed to by dynamic technology that result in new demands for skills in enterprises and business environments. In response to these changes, various countries have been working on improving their education and training systems to fill technical skills and knowledge gaps in order to facilitate a competitive economy globally (URT, 2010). According to Redecker, Wihstutz and Mwinuka (2000), one of the notable interventions of this kind is the establishment and integration of TVET system into their education system.

TVET system is considered as one of the key education and training systems that generate competent and skilled labour forces for driving socio-economic, technological, and innovation development. In fact, TVET system inherently contributes to transformation of various sectors of the economy (Young, 2012; Chae and Chung, 2009). Likewise, TVET significantly contributes in increasing productivity in various industries and reduce massive unemployment (URT, 2010). The contribution of TVET system to socio-economic development can be seen in terms of meeting the labour force needs and demands of various industries.

However, for this to happen, TVET curricula (learning packages) should not only seek to equip trainees with occupational skills and attitudes for seeking employment, but also with entrepreneurial capabilities for turning their occupational skills into feasible, viable and sustainable industrial entities (Shikalepo, 2019). It is therefore imperative that there must exist strong linkages among TVET institutions, business environment, and investors to foster competitive business that enhance the development of countries regardless of their geographical locations (OECD, 2010; URT, 2010; Watson, 1994).

Some of the best success stories involving the role of TVET system have happened in two Asian Tiger Nations, Singapore and Republic of Korea. Studies indicate (Yew, 2000; OECD, 2011; Chang-Won, 2011, UNESCO-UNEVOC, 2018) that the two countries have managed to transform their economies with the help of TVET system. Available literature shows that the Government of the Republic of Korea has adopted and integrated TVET system to enhance the quality of its technical labour force.

Historically, such remarkable TVET initiatives and programmes can be traced back to years between 1960s and 1990s, Young (2012) where the demand for labour force with technical and vocational skills was high. This indicates that TVET system has been a key driving force for technological and innovation development as well as socio-economic transformation of the Republic of Korea (Young, 2012; Chae *et al.* 2009). The transformation has been linked to TVET's ability to balance workforce supply to demand in the country to ensure that the technical and vocational skills in demand are filled by increasing the pool of instructors and teachers with technical and vocational skills.

Similarly, since 1960s, there has been efforts to expedite and expand TVET system to meet technical and labour needs of new emerging industries in Singapore. This was associated with the increasing pace of industrialization and competitive business. For example, the labour-intensive economy (1960s-1970s) and the capital-intensive economy (1980s-1990s) were two important phases of the implementation, development, and promotion of TVET system. TVET contributed to the development of Singapore's competitive industrial economy by supplying high-quality human capital to facilitate the development and utilization of advanced technological facilities (OECD, 2010).

On the other hand, TVET initiatives in Tanzania have a long history that can be traced back to the year 1940 (long before independence). This includes establishment of trade and technical schools and colleges such as technical colleges (DIT, MUST, ATC); focal development colleges (FDCs), Post Primary Technical Centres (PPTCs), etc., to offer technical and vocational training. The main objective was to produce technicians, artisans and other semi - skilled workers for farming and livestock keeping enterprises found in rural communities (Schadler, 1968; URT, 1995; Kahindi, 1996; Pfander and Gold, 2000; Sishe, 2008).

Later the Government enacted VET Act of 1974, VET Act No.1 of 1994 and the TET Act of 1997 with the principle aim of establishing VETA and NACTE authorities for strengthening and promoting VET and TET systems, respectively, in the country (URT, VET Act: 1974; VET Act: 1994 and TET Act: 1997). Thereafter, the formal TVET system was established in Tanzania, offered through two distinct sub-systems, namely vocational education and training (VET) under the administration of Vocational Education and Training Authority (VETA) and technical education and training (TET) under the administration of the National Council for Technical Education (NACTE) [(UNESCO, 2016)].

Notwithstanding the efforts made by the Tanzanian government to integrate the TVET system into its education system, hence improve access to technology, there are still complaints about TVET system being unable to produce graduates who meet satisfactorily the skill demands of many enterprises (URT, 1995, 2010; Morris and Fessehaie, 2014; Mutuku, 2017). In other words, the Tanzanian TVET system has not been able to empower industries to adapt to the changes happening technologically and orchestrate advancements that would see the economy grow. This situation suggests that there are bottlenecks in the Tanzania's TVET system. Considering the impact of TVET system on the country's economy, the need to improve it so it gets to its real potential is apparent. Therefore, in this paper, the study was initiated to examine TVET institutional capacity in addressing dynamic labour market in Tanzania in comparison with the two selected Asian Tiger Nations.

## **METHODOLOGY**

### **Research Design**

The study employed a mixed research design. Specifically, the study used descriptive and exploratory-cross-sectional designs. The former focused on examining factors influencing the effectiveness of TVET institutions in addressing dynamic labour market, whereas the latter focused on determining if the countries under study are up to the task of supporting the processes of equipping learners with technological skills demanded by the market. As such, the combination of two designs was necessary to gain deeper insights on the capacities of TVET institutions particularly in looking at the state of teaching infrastructure of same institutions. Generally, the mixed research design allowed for the integration of both qualitative and quantitative approaches in carrying out this study. According to Creswell (2008), when quantitative and qualitative data are

together, they provide a better understanding of a research problem than either type by itself.

### **Areas of the Study**

This study was carried out in the United Republic of Tanzania, the Republic of Korea, and Singapore. In Tanzania, the study was conducted in Dar es Salaam, and Morogoro regions. Dar es Salaam region cover five administrative districts namely: Ilala, Kinondoni, Ubungo, Kigamboni and Temeke. Morogoro region has seven administrative districts namely: Morogoro Urban, Morogoro Rural, Gairo, Kilombero, Kilosa, Mvomero and Ulanga (NBS, 2014). In Dar es Salaam region, the study was carried out in four districts namely: Ilala, Kinondoni, Temeke and Ubungo while in Morogoro region the study was carried out in two districts namely: Morogoro Urban and Kilosa.

The study involved twelve Vocational Education and Training (VET) centres and eight Technical Education and Training (TET) institutions. Out of these, twelve VET centres and six TET institutions are located in Dar es Salaam region whereas, two TET institutions are located in Morogoro region, as one of the regions with more agriculturally based TVET institutions compared to other regions. Besides TVET institutions, the study also involved medium size industries and companies, government agencies, association of employers, informal workplaces as well as Small and Medium Enterprises (SMEs). The Republic of Korea and Singapore were picked for this study following their success in using TVET system to transform their economies.

In the Republic of Korea, the study involved three vocational training centres and one polytechnic college of which, all were located in the city of Seoul, whereas the Korea Tech University was located in the Chung Num Province about 100km away from the city of Seoul. In Singapore, the study involved Institutes for Technical Education (ITE) that include ITE College Central, ITE College East, and ITE College West.

### **Study Population and Sample**

The total population of trainees, students, tutors and vocational teachers from the three selected countries was 3,300 out of which, 2,160 were from the United Republic of Tanzania; 620 from the Republic of Korea and 520 were from Singapore. Selection of respondents for this study based on, a multistage approach, which applied both probability and non-probability techniques. To start with, 28 institutions were selected to be

involved in the study by stratifying them based on their location and types. From these institutions, the study dealt with four (4) categories of respondents namely: trainees (43); students (69), vocational teachers (22); tutors (31).

Simple random sampling technique was used to select a sample of 165 respondents, which is 5% of (3,300) the target population (Cohen, Manion and Morrison, 2003; Lund research Ltd, 2012; Hayes, 2014). In addition to that, fifty-four (54) respondents were purposively selected to represent various TVET stakeholders, namely: Principals and Rectors (28) from TVET institutions out of which, twenty (20) were selected from Tanzania, five (5) from the Republic of Korea and three (3) from Singapore. Other stakeholders from Tanzania were selected from medium industries and companies (8); Government Agencies (10); Executive Secretaries from Association of Employers (2); as well as Informal Sector Operators & SMEs (6).

In short, for the purposive sampling technique that involved 54 respondents who were interviewed, forty-six (46) were from Tanzania, five (5) from the Republic of Korea and three (3) from Singapore. Therefore, the study involved the total of 219 participants (see Table1).

**Table 1: Summary of respondents selected in the study by different categories**

S/N	Category of Respondents	Tanzania	Rep. of Korea	Singapore	Total	Percentage (%)
1.	Trainees	43	0	0	43	19.6
2.	Students	29	20	20	69	31.5
3.	Vocational Teachers	22	0	0	22	10.0
4.	Tutors	14	11	6	31	14.2
	<b>Sub – Total</b>	108	31	26	<b>165</b>	<b>75.3</b>
5.	Principals & Rectors and Presidents of Polytechnic I & Korea TECH	20	5	3	28	12.8
6.	Medium size Industries and Companies	8	-	-	8	3.7
7.	TVET Experts from Government Agencies	10	-	-	10	4.6
9.	Associations of Employers	2	-	-	2	0.9
11.	Informal Sector Operators and SMEs	6	-	-	6	2.7
	<b>Sub – Total</b>	46	5	3	<b>54</b>	<b>24.7</b>
	<b>Grand Total</b>	<b>154</b>	<b>36</b>	<b>29</b>	<b>219</b>	<b>100</b>

Source: Field Data (2015-2016)

## **Data Collection Methods**

Primary data was collected by employing surveys (semi-structured interviews and questionnaire) and observation. In general, quantitative data was collected from 165 respondents using questionnaires with both open and close-ended questions to enhance validity and reliability of the data to be collected. Qualitative data was collected from 54 respondents using semi-structured interviews (Table 1). Observations complemented these methods. The primary data collected was complemented by secondary data through a documentary review method from various sources such as Emerald, Google Scholar, and JSTOR.

In addition, data given on most of the reports from the websites of various universities, polytechnics, colleges and TVET centres located in the countries under study was accessed. Others included relevant books retrieved from online sources as well as past theses and dissertations.

## **Data Analysis**

The collected data and information were coded, edited, classified and itemized before being entered into the Statistical Product for Service Solutions (IBM SPSS) version (22) for analysis. On the other hand, thematic analysis was used to analyse qualitative data. The results of the analysis have been presented using tables, graphs, and charts. Where qualitative responses were seen very informative, they were used to support the results presented. All scores of trainees, students, vocational teachers and tutors were converted to percentages to generate meaningful comparisons and facilitate interpretation of the results.

## **FINDINGS AND DISCUSSION**

### **Response Rate**

Table 2 shows a total of 165 questionnaires that were administered to 108, 31, and 26 respondents from Tanzania, Republic of Korea and Singapore, respectively. The questionnaires with both closed and open-ended questions were administered. Generally, all the questionnaires were completed and returned successfully, giving a 100% response rate. The data collection tools used in each country corresponded with the numbers of respondents targeted in each of them. Table 2 shows the composition of respondents based on countries where the study was carried out.

**Table 2: Respondents by Country**

Category of Respondents (n=165)	Tanzania	Republic of Korea	Singapore	Total
Trainees	43	0	0	43
Students	29	20	20	69
Vocational Teachers	22	0	0	22
Tutors	14	11	6	31
<b>Sub – Total</b>	108 (65.5%)	31 (18.8%)	26 (15.8%)	<b>165</b> <b>(100%)</b>

Source: Field Data (2015-2016)

It can be observed from Table 2 that majority of respondents (65.5%) were from Tanzania. This was due to the sizes of the target populations found in the studied countries at the time of the study. Apart from that, the fact that the response rate was 100% ensured that the composition of respondents is as it is. Overall, the composition represents optimum representations of the target populations in the three individual countries where the study was carried out.

### **Status of Teaching and Learning Infrastructure**

Learners from all the countries were asked to indicate if they found the teaching and learning infrastructure to be adequate or not. The results are shown in Table 3.

**Table 3: Adequacy of Teaching and Learning Infrastructure in Studied Countries**

Country	Infrastructure and Resources	Adequacy of Infrastructure & Resources	
		Adequate	Inadequate
Tanzania (n = 72)	Classrooms	15 (20.8%)	57 (79.2%)
	Workshops	18 (25.0%)	54 (75.0%)
	Workshop machines	10 (13.9%)	62 (86.1%)
	ICT facilities	19 (26.4%)	53 (73.6%)
	Learning materials	15 (20.8%)	57 (79.2%)
	Teaching staff	20(27.8% )	52 (72.2%)
	Laboratories	6(8.3%)	66 (91.7% )
	Equipment	11(15.3%)	61(84.7%)
South Korea (n = 20)	Classrooms	20(100%)	0(0%)
	Workshops	20(100%)	0(0%)
	Workshop machines	20(100%)	0(0%)
	ICT facilities	20(100%)	0(0%)
	Learning materials	19(95%)	1(5%)
	Teaching staff	20(100%)	0(0%)
	Laboratories	19(95%)	1(5%)
	Equipment	20(100%)	0(0%)

Country	Infrastructure and Resources	Adequacy of Infrastructure & Resources	
		Adequate	Inadequate
Singapore (n = 20)	Classrooms	20(100%)	0(0%)
	Workshops	20(100%)	0(0%)
	Workshop machines	20(100%)	0(0%)
	ICT facilities	20(100%)	0(0%)
	Learning materials	20(100%)	0(0%)
	Teaching staff	19(95%)	1(5%)
	Laboratories	19(95%)	1(5%)
	Equipment	20(100%)	0(5%)

Source: Field Data (2015-2016)

The results in Table 3 show variations in terms of the adequacy of teaching and learning infrastructure among the three countries involved in the study. While majority of respondents from Tanzania found the infrastructure to be inadequate, almost all respondents from the two Asian Tiger Nations found their infrastructure sufficient and up-to-date. The modernity of teaching infrastructure in the Asian Tiger Nations was confirmed through observations as part of this study. Plate 1 shows technology found at one of the ITE colleges involved in the study.



**Plate 1: An Automatic Machine in a Mechatronics Workshop in Singapore**

Source: ITE College Central – “*College of Creativity and Innovation*” (2016)

Specifically, while 100% of respondents from Singapore and the Republic of Korea considered their classrooms, workshops, workshop machines, Information and Communication Technology (ICT) facilities, and related teaching and learning equipment to be adequate; only 20.8%, 25%, 13.9%, 26.4%, and 15.3% of the respondents in Tanzania found them adequate (in the same order). Similarly, while learning materials, teaching staff, and laboratories were considered enough by majority of the respondents in the Republic of Korea and Singapore, only 20.8%, 27.8%, and 8.3% of the respondents in Tanzania considered them sufficient in their institutions, respectively.

The inadequacy of these facilities was confirmed through interviews with principals of public and private TVET institutions and training centres in Tanzania. Elaborating on this state, the principal from one of the TET institutions in Tanzania shared the following:

At our institution, training facilities are insufficient and outdated. This state forces us to place our students under industrial attachment for a period of not less than ten weeks per year. This is done only to help our students get the skills we cannot sufficiently provide to them.

In addition to stating that the infrastructures were inadequate, the interviewees also revealed that the available workshop machinery, equipment, and other tools were aged and outdated (for example, see Plate 2), hence making them more insufficient. In confirming the aging status of the infrastructure, the principal from one of the VET centres in Tanzania described the status at his centre as follows:

This institution was equipped the last time 30 years ago. Workshops machinery, equipment, and tools are too aged and outdated to match the current industries' technological demands. This is partly contributed by the absence of a Public Private Partnership (PPP) instrument which has not yet fully established by the Government.



**Plate 2: Semi-automatic machine in an Electrical Workshop at one of the VET Centres in Tanzania**

Source: Dar es Salaam Regional Vocational Training and Service Centre (2015)

The results demonstrate clearly that TVET institutions in Tanzania have inadequate learning and teaching infrastructure while those in the two Asian Tiger Nations have sufficient infrastructure. This could be one of the reasons why most of the TVET institutions in Tanzania are not performing well (VETA, 2012). The findings corroborate those of Ayonmike (2014) who stated that the challenge of implementing TVET curriculum includes inadequate and obsolete infrastructure and equipment.

In the same note, the results further show that the limited available infrastructure in Tanzania is too aged, out-dated and is in poor state, the situation which is partly contributed by the absence of a Public Private Partnership (PPP) instrument, which has not yet fully established by the government. For instance, new investments in physical infrastructure development using PPP basis are low in Tanzania (URT, 2009). As a result, the development of infrastructure in TVET institutions in the country is likely to solely be a government's responsibility.

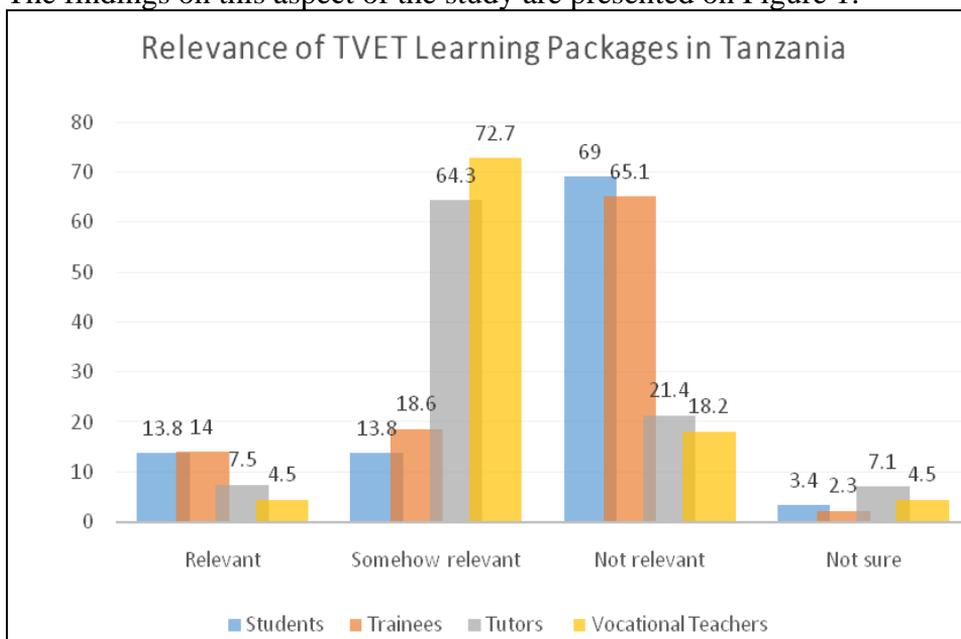
As such, some benefits such as improved facilities through industry donations and teacher/tutor's knowledge and skills improvement are

almost impossible in that regard (Raihan, 2014). This implies that there is poor linkage between TVET institutions and industries in Tanzania. Accordingly, this is a bottleneck for TVET institutions in Tanzania to contribute to socio-economic development of the country in the same way it has done to the two Asian Tiger Nations (URT, 2009, 2010; Morris and Fessehaie, 2014; Mutuku, 2017).

This implies further that poor or inadequate teaching and learning infrastructure in TVET institutions could also significantly affect the teaching and learning environment leading to production of incompetent graduates required by the labour market.

### Relevance of TVET Learning Packages

Tutors and vocational teachers of the Tanzania’s TVET institutions were also asked to state how they felt about the relevancy of learning packages in relation to the skills needed by learners to perform well at workplaces. The findings on this aspect of the study are presented on Figure 1:



**Figure 1: Relevance of TVET Learning Packages (Tutors: n=14; Vocational Teachers: n=22; Trainees: n=43; Students: n=29)**

Source: Field Data (2015-2016)

The results in Figure 1 show that majority of tutors (64.3%) and vocational teachers (72.7%) found their LPs somehow relevant to technological skill demands in the labour market compared with 21.4% and 18.2%, respectively, who found the LPs to be irrelevant. Furthermore, the findings show that 7.1% of tutors and 4.5% of vocational teachers were not sure of the relevance of the LPs while only 7.5% of tutors and 4.5% of vocational teachers found them relevant to technological skill demands in the labour market.

In contrast, the result disclosed that majority of students and trainees (69.0% and 65.1%) found courses offered by their respective TVET institutions/centres not relevant to the labour market demands in Tanzania. In fact, only 13.8% of students and 18.6% of trainees found the courses somehow relevant while an insignificant number of respondents [(13.8%) students and (14.0%) trainees] found the courses relevant to labour market demands.

The implication is that the learning packages used to train learners in Tanzania are not relevant to the needs available in the labour market. This is one of the factors likely to impede TVET institutions from producing the calibre of graduates who can support the economic development of a nation. The results is supported by previous literature (Mutuku, 2017; Morris and Fessehaie, 2014; URT, 2010, 1995) which stated failure of TVET institutions in the country to produce graduates who meet skill demands of workplaces. Moreover, the results is supported through the responses of the tutors and vocational teachers whose comments relate to each other hence indicate no significant difference (Fig. 1).

Poor matching of learning packages to industrial skill and knowledge demands has been partly attributed to lack of collaboration between TVET institutions and industries (VETA, 2012). As a result, industries are left in need of human resources and most likely forced to hire expatriates who cost more. This agrees with Choy and Haukka (2018) who pointed out in their report that in most regions of the world, TVET is founded on partnerships between governments, industry and TVET institutions. Apart from loose collaboration between TVET institutions and the industrial sector, irrelevance of TVET LPs in Tanzania has been associated with rapid technological changes that outpace the development and review of TVET institutions' curricula and LPs (Mutuku, 2017;

Morris and Fessehaie, 2014). This make majority of teaching staff and learners to have the feeling that LPs and curricula are not attuned to prepare students and trainees for current labour market skill demands.

The comments are supported by the remarks from one of the key respondents during an interview session who said:

To tell the truth, technology is changing at a high speed while the learning packages in use do not move at that pace in their adaptation to changes. In other words, there is less flexibility in adaptation.

### **Tutors and Vocational Teachers’ Participation in Industrial Practical Training**

Considering the importance of industrial practical training (IPT) in imparting teaching staff and learners with practical skills, tutors and vocational teachers were asked of their participation in such training. Table 4 shows the results on this:

**Table 4: Tutors and Vocational Teachers’ Participation in Industrial Practical Training**

Participation	South Korea n=11		Singapore n=6		Tutors n=14		Tanzania Vocational teachers n=22	
	Freq	%	Freq	%	Freq	%	Freq	%
Participating	9	81.8	5	83.3	4	28.6	8	36.4
Not participating	2	18.2	1	16.7	10	71.4	14	63.6
<b>Total</b>	<b>11</b>	<b>100</b>	<b>6</b>	<b>100</b>	<b>14</b>	<b>100.0</b>	<b>22</b>	<b>100.0</b>

Source: Field Data (2015-2016)

The results in Table 4 show that majority of tutors from the Republic of Korea (81.8%) and Singapore (83.3%) said they were involved in IPT while only 28.6% of tutors and 36.4% of vocational teachers in Tanzania got such an opportunity. This implies that only 18.2% and 16.7% of teaching staff from the Republic of Korea and Singapore, respectively and majority of tutors (71.4%) and vocational teachers (63.6%) from Tanzania do not go through IPT. Alternatively, data collected from interviews indicated that the situation in Table 4 has been associated with inappropriate field attachment, poor interaction between TVET staff and experts from industries, absence of an Industrial Practical Training Policy to foster participation in IPT, and shortage of budget to facilitate IPT. On the same note, investors have been reported to accept a limited number of students and TVET staff for IPT. These findings suggest limited involvement of teaching staff in practical training which severely affects the ability of TVET institutions to produce quality graduates in Tanzania.

The implication is that opportunities to participate in Industrial Practical Training are narrow for TVET teaching staff in Tanzania resulted into limited opportunities for translating theoretical knowledge into practical skills. The implication is further affirmed by Mutuku (2017), who asserted that TVET instructors in Tanzania lack the necessary skills to carry out their tasks effectively.

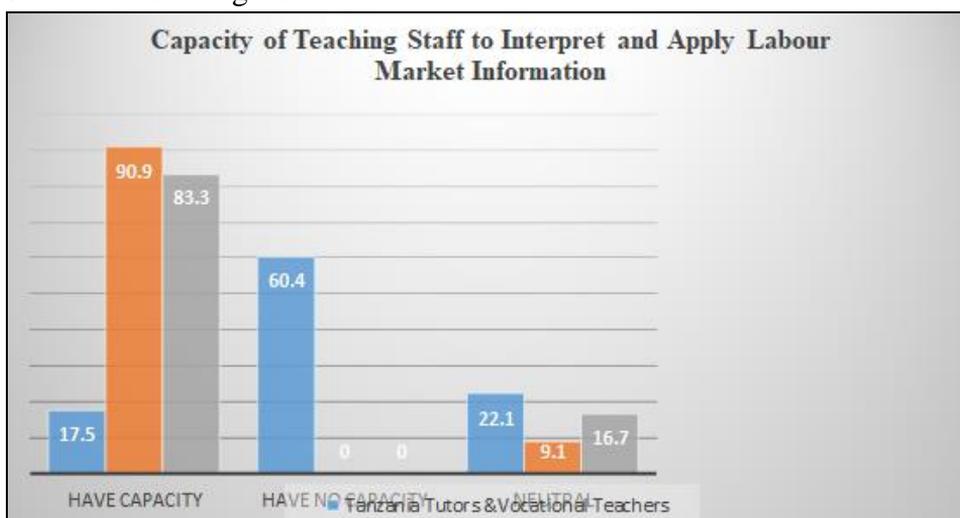
These findings were further supported through data collected from interviews which revealed that in Tanzania most industries are privately owned; meaning that the government has no say regarding IPT decisions of such entities due to absence of an Industrial Practical Training Policy which ensures acceptance of students and trainees as well as tutors and vocational teachers in industries. Apart from that TVET institutions in Tanzania has not made it mandatory for tutors and vocational teachers to attend Industrial Practical Training in their relevant fields. Accordingly, incubation, traineeship and internship opportunities are also very limited in the country that, in turn, limit students, trainees, tutors and vocational teachers' opportunities to smoothly acquire practical knowledge.

Noting from the findings in Table 4 and data collected from interviews, findings indicated that Tanzania is lagging behind South Korea and Singapore when it comes to teaching staff taking part in Industrial Practical Training. For instance, in Singapore, the government partners with foreign governments to enhance industrial practical training. The government has adopted foreign teaching systems and developed a unique "Teaching Factory" concept to prepare "work ready" skilled workforce (ITEES, 2020). Similarly, data collected from interviews revealed that, the Republic of Korea adopted the "Factory Learning System" (FL System) which is a unique college operation system that seeks to innovate TVET colleges in response to the changes in the employment/labour market and educational environment. The aim of this is to reinforce industry-TVET collaboration and escape from the traditional theory-based classroom format. The implication is that access to such opportunities is limited in Tanzania when compared to the two other countries.

### **Capacity of Teaching Staff to Interpret and Apply Labour Market Information**

Notwithstanding the importance of industrial practical experience to teaching staff in TVET institutions, this study also sought to explore awareness of the teaching staff to the labour market demands. TVET

teaching staff were requested to indicate their ability to interpret and apply labour market information. This ability is vital in TVET systems as it forms the basis for coming up with information for the development of TVET learning packages and or curricula that address the needs of the labour market. The respondent provided the following information summarized in Figure 2.



**Figure 2: Capacity of Teaching Staff to Interpret and Apply Labour Market Information (Tanzania: Tutors n=14; Vocational Teachers: n=22; Rep. of Korea: Tutors n=11; and Singapore: Tutors n=6)**

Source: Field Data (2015-2016)

It can be revealed from Figure 2 that majority (90.9%; 83.3%) of tutors from TVET institutions in the Republic of Korea and Singapore, respectively, expressed their ability to interpret and apply labour market information in their training, only 17.5% of the teaching staff members (tutors and vocational teachers) in Tanzania indicated that capability. The results show further that majority (60.4%) of the teaching staff in Tanzania indicated the inability to interpret and apply the labour market information, while 22.1% remained neutral.

The inability to interpret and apply labour market information in TVET systems makes the TVET institutions to have incompetent teaching staff and undermines the effectiveness of the system and capacity of the institutions to produce competent graduates required in the dynamic

labour market. One of the key interviewees from one of the TET institutions in Tanzania provided the following remarks:

The institute holds consultative meetings with stakeholders from industries to learn about their technological needs. Otherwise, the analysis, interpretation and application of the labour market data is done by a trained group of staff of the institute who come up with actual market needs.

The implication is that, the quality of LPs and, or curriculum would arguably be considered the strongest factor for any TVET institution to produce quality graduates. Hence, it is practically impossible to have good results from any training that uses poorly developed LP or curriculum. As a matter of fact, the inputs brought forward during the development and review of LPs and, or curriculum determines the results of such processes, and that is where teaching staff members come in. Teaching staff with the ability to interpret and put into application labour market information will bring quality inputs for LPs (Middleton *et al.*, 1993).

Unfortunately, while teaching staff members in the Republic of Korea and Singapore can interpret and apply labour market information in their TVET system, majority of their counterparts in Tanzania cannot. Based on these results, it can be stated that the VET and TET institutions in Tanzania have limited capacity to interpret and apply labour market information. This is because of centralization of this activity to the regulators (i.e. VETA and NACTE) and therefore alienating individual institutions in the process.

### **Other Factors Influencing the Effectiveness of TVET Institutions to Address Dynamic Labour Market**

The study also investigated other factors that slow down TVET institutions' efforts to address dynamic labour market. The respondents in this case were heads of TVET institutions, experts from medium and heavy industries and companies as well as TVET experts from government agencies. They also included executive secretaries from employers' associations, as well as informal sector operators and SMEs. The responses obtained were processed thematically giving the results summarized in Table 5:

**Table 5: Other Factors Influencing the Effectiveness of TVET Institutions to Address Dynamic Labour Market**

Factors influencing the effectiveness of TVET institutions (n =54)	Tanzania Stakeholders n=46		Republic of Korea Stakeholders n=5		Singapore Stakeholders n=3	
	Freq	%	Freq	%	Freq	%
Slow adoption of technologies and innovation systems among the TVET institutions	43	93.5	0	0.0	0	0.0
TVET regulations and policies are not friendly to industry' participation in different TVET programmes and activities	43	93.5	0	0.00	0	0.00
Private industries unwillingness to accept tutors/vocational teachers for IPT	42	91.3	1	20.0	1	33.3
Weak involvement of stakeholders from industries in designing and reviewing TVET learning packages and, or curricula	40	86.9	0	0.00	0	0.00
Absence of a well-established system for stakeholders from industries to express their technological skill needs	39	83.0	0	0.00	0	0.00
Weak communication mechanism at national level for creation of competent labour force as one among national future plans	38	82.6	0	0.00	0	0.00
Limited opportunities for TVET institutions and their stakeholders from industries to participate in national policy formulation.	38	82.6	0	0.00	0	0.00
Absence of joint forum between TVET institutions and industries	34	73.9	0	0.00	1	33.3
Research institutions are not well aligned with TVET institutions on innovation and research matters and industrialization development	34	73.9	0	0.00	0	0.00
Research conducted by LPs and, or curricula developers is limited and not based on data and information from viable sources	32	69.6	0	0.00	1	33.3

Source: Field Data (2015-2016)

The results in Table 5 show that majority 43 (93.5%) of stakeholders from Tanzania indicated that slow adoption of new technologies and innovation systems among TVET Institutions negatively affects them in addressing dynamic labour market, and that TVET regulations and policies are not friendly to industry' participation in different TVET programmes and activities. In contrast, stakeholders in Republic of Korea and Singapore did not indicate these challenges. Similarly, while 42 (91.3%) of respondents in Tanzania reported that private industries are unwilling to accept tutors and vocational teachers for IPT, only 1 (33.3%) of stakeholders from Singapore and 1 (20.0%) from Republic of Korea said so.

Such experience was observed by one of the key stakeholders from Tanzania who said:

Most industries in Tanzania are privately owned, which means that the government has no shares in those industries. As such industry owners are free to decide on matters to do with IPT. This tendency limits the opportunities for tutors and vocational teachers to attain practical skills. Worse still, a policy to foster the participation in Industry Practical Training is not in place.

On the same note, another stakeholder from Tanzania added that:

Tutors and, or vocational teachers do not actively and effectively interact with experts from industries and from work places. Skills and knowledge are not exchanged between the TVET institutions and consumers of TVET outputs and products. This undermines the process of gaining experience and practical knowledge.

Furthermore, the results show that 40 (86.9%) stakeholders from Tanzania cited the weak involvement of stakeholders from industries in designing and reviewing TVET learning packages and or, curricula while no any stakeholder in the two other countries cited it. On top of that, 39 (83.0%) stakeholders from Tanzania mentioned absence of a well-established system for stakeholders from industries to express their technological skill needs, while no stakeholder in the two other countries mentioned it. During an interview session, one key stakeholder stated that:

The absence of a well-established system through which the demand side can express skills needs is a challenge facing our TVET system. This increases the mismatch of efforts made by TVET institutions to fill skill gaps and the actual industries' skill needs. This is so because information

on labour market and kinds of new technologies available is not communicated effectively.

The findings indicate further those 38 (82.6%) respondents mention weak communication mechanism at national level for creation of competent labour force as one among national future plans. The same number of stakeholders from Tanzania cited those limited opportunities for TVET institutions and their stakeholders from industries to participate in national policy and plans formulations as a factor that deters TVET's positive contribution to the development of competent labour force in Tanzania. On this, one of the key stakeholders argued that:

In Tanzania, there is a weak mechanism for communicating big and future national plans (in terms of new investments) at national level. This adversely affects future plans for the creation of competent labour force for future national investments. This limits TVET institutions' opportunities to effectively participate in national policy and plans formulations.

Besides that, 34 (73.9%) stakeholders from Tanzania cited the absence of a clear joint forum for TVET institutions and their stakeholders from industries as a problem, while on the other hand only 1 (33.3%) of the stakeholder from Singapore cited it.

This factor was also noted by one of the key stakeholders during interview sessions, who said:

There is no joint forum for TVET Institutions and stakeholders from the industry. This is one of the factors limiting the effectiveness of TVET institutions in satisfying labour markets and industries' technological skills needs. This is why most learning packages are not appropriately promoted and provided. For example, industries in Tanzania have not yet established sector Councils' representatives that can represent them during meetings/workshops or in committees developing or reviewing learning packages. Consequently, industries do not know exactly their prevailing challenges and at the same time TVET institutions cannot just imagine them. These Councils remain non-functional although their establishment is mandated by law.

The same number 34 (73.9%) of stakeholders in Tanzania indicated that research institutions' targets are not well aligned with TVET institutions shared focus on industrialization initiatives. Moreover, the results further show that 32 (69.6%) stakeholders in Tanzania said the research

conducted by LPs and, or curricula developers is so limited and not based on data and information from viable sources, while only 1 (33.3%) stakeholder in Singapore indicated this factor.

On this, one key stakeholder in Tanzania informed that:

Research conducted by LPs designers and reviewers is so limited and does not cover wide areas and large proportion of stakeholders. Worse still, researches on new technologies deployed by industries are hardly to be found. This is associated with the limited research funding opportunities in TVET institutions.

The implication is that TVET institutions in Tanzania are not immune to various limiting factors. Other factors, which influence the effectiveness of TVET institutions to address dynamic labour market, were revealed by majority (93.5%) of respondents through interviews who confirmed that there is a tendency of being slow in adoption of technologies and innovation systems among the TVET institutions. This means that TVET institutions are not effectively innovating and introducing new technologies for the consumption of local industries, resulting in poor contributions to building and strengthening labour market capacities that are essential for local economic development (Hoffecker, 2018).

The impact of these technologies is to prepare the workforce to benefit from the same hence minimize the risks (United Nations, 2021). Others (91.3%) confirmed that most of privately owned industries are unwilling to accept tutors and vocational teachers for IPT which limits the opportunities for tutors and vocational teachers to attain practical skills. The envisaged reason relies on the absence of a national policy to enforce participation of industry in Industry Practical Training. On the other hand, stakeholders (83.0%) from Tanzania were concerned of the absence of a well-established system for stakeholders from industries to express their technological skill needs.

This shows that there is lack of avenues through which TVET institutions and industries can exchange their ideas and experiences. This tendency inhibits the existence of viable linkages between TVET institutions and industries, which in turn deter TVET institutions to address properly the dynamic labour market. More stakeholders (73.9%) interviewed confirmed that research institutions in the country are not well aligned with TVET institutions on innovations and research matters and industrialization development, hence have different focus towards such

undertakings. This implies that collaboration between both parties is not well structured which is one of the main barriers to the development of new skills and solutions that are responsive to specific demands (VETA, 2012).

Lesser number of stakeholders (69.6%) cited on research activities conducted by LPs and, or curricula developers that are limited and not based on data and information from viable sources. This implies that limited research opportunities associated with TVET institutions and their stakeholders from industries deter the effectiveness of TVET institutions to address the dynamic labour market. This has a negative impact as for instance, experts in hospitality industry in Tanzania always come from our neighboring country-Kenya because they are smart in predicting the market trend for tomorrow through research (Murungu, 2018).

Based on these data there are several factors that undermine the effectiveness of TVET institutions to address dynamic labour market in Tanzania. However, these factors appear to be only prominent in Tanzania hence practically explaining the difference in the effectiveness of TVET system in these three countries to address dynamic labour market.

## **CONCLUSIONS**

### **Status of Teaching and Learning Infrastructure**

The findings of the study revealed that teaching and learning infrastructure not only is out-dated and in poor state but also is in short supply among TVET institutions in Tanzania. This is due to TVET institutions' inability to acquire and install new facilities in their workshops to enhance the acquisition of skills and knowledge among learners. In contrast, the findings show that the situation in two Asian Tiger nations have been noted to have modern and sufficient infrastructure of this nature (Table 3). Overall, TVET institutions are insufficiently linked with industries in Tanzania as one of the factors that contribute to poor state of infrastructure, hence the development of infrastructure in TVET institutions in the country is likely to solely be a government's responsibility.

### **Relevance of TVET Learning Packages and/or Curricula**

The findings of the study found that, majority of students and trainees (69.0% and 65.1%) found courses offered by their respective TVET

institutions/centres not relevant to labour market skill in demand. Conversely, majority of tutors (64.3%) and vocational teachers (72.7%) found courses offered somehow relevant. According to the study, TVET institutions in Tanzania have not been able to address dynamic labour market because of poor TVET LPs and, or curricula. This has been connected to various factors. However, all of them can be summed up under poor linkage of TVET institutions and industries.

On the whole, the failure of TVET institutions to produce quality graduates in Tanzania, is significantly associated with the usage of LPs and, or curricula that do not address dynamic labour market.

### **Tutors and Vocational Teachers' Participation in Industrial Practical Training**

The findings of the study found that, tutors and vocational teachers' participation in IPT is ineffective (28.6%, 36.4%) in Tanzania (Table 4.0). Conversely, the findings further show that majority (81.8%, 83.3%) of tutors in Republic of Korea and Singapore (Table 4.0) indicated to have been attending Industrial Practical Practice frequently. As such, the challenge TVET institutions faces regarding finding IPT placements for learners partly explains the poor quality of graduates. Moreover, the absence of an Industrial Practical Training (IPT) policy appeared to imperil the acceptance of students and trainee as well as tutors and vocational teachers in industries. Furthermore, TVET institutions in Tanzania has not made it mandatory for tutors and vocational teachers to attend Industrial Practical Training in their relevant fields. Yet alone, opportunities such as incubation, traineeship and internship are also very limited in the country hence the inherent incompetence among students, trainees, tutors and vocational teachers. Overall, lack of a national IPT Policy and poor linkage of TVET institutions and industries in Tanzania are partly to blame for this problem.

### **Capacity of Teaching Staff to Interpret and Apply Labour Market Information**

The findings of the study found that, while academic staff members (90.9% and 83.3%) in Republic of Korea and Singapore have ability to analyse, interpret and apply labour market information, majority (60.4%) of those in Tanzania do not have it. However, data collection is not a responsibility left to individual TVET institution in Tanzania but the same

is done by a trained group of staff of the individual institution who come up with actual needs of the labour market. On the whole, once teaching staff from TVET institutions in Tanzania are availed with the same opportunity as it is being done in the two Asian Tiger Nations, the improvement of LPs and, or curriculum would be obvious.

## **RECOMMENDATIONS**

Based on the findings and conclusions, the study recommends that in order to improve TVET institutions' capacity to address the dynamic labour market in Tanzania, it is recommended to take positive actions that will include improvement of teaching and learning infrastructure; making exposure to practical training mandatory for all teaching staff members; ensuring technologies used for teaching reflect those that are in use in industries/enterprises where TVET graduates are going to be employed; and improve the capacity of teaching staff members starting from the data collection stage up to application of labour market information, so as to improve development and review of LPs and, or curricula.

Additionally, it is recommended to establish a national IPT Policy that requires industry to participate fully in IPT training of teaching staff and students.

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