

# INSTRUCTORS' PERCEPTIONS OF DIGITAL TECHNOLOGY USE IN TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING

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## ABSTRACT

*This study examines the perspectives of Technical Vocation Education and Training (TVET) instructors on the use of digital technology at a Vocational Training Centre (VTC) in Namibia. Technology integration in education and training has elicited various responses from different stakeholders. The use of digital technology and how it is influencing business operations and it will is likely to enhance teaching and learning outcomes in vocational settings. A qualitative research approach and Interpretative Phenomenological Analysis (IPA) were employed, using semi-structured interviews of 4 instructors and 3 management members and focus group discussions with a sample of TVET 4 instructors from VTC in Namibia. The data gathered were analysed thematically using the Provalis Research QDA miner application and Microsoft Word text-based data to relate to instructors' experiences with digital technology use and the adequacy of support mechanisms. The study revealed that the integration of technology in the classroom was potentially beneficial, aligned with the training objectives of the respondents, convenient, and secure in aiding the TVET institution in achieving its educational goals by improving instructional delivery and enhancing trainee engagement. Further research should be conducted focusing on the availability of sustainable infrastructure to support the use of digital technologies in VTCs.*

**Keywords:** Digital technology, TVET, Instructor perceptions, vocational training centre.

## Introduction

Technical and Vocational Education and Training (TVET) has been an educational avenue whose cardinal objective at its conception was to fill the occupational skills gap for employment (Hassan et al., 2021). It is TVET “the study of technologies, and related sciences, the acquisition of practical skills and knowledge aimed at the development of individuals for employment in various sectors of economic and social life” (Chinyere et al., 2015; Gyimah, 2020). The use of digital technologies has become attractive and has ultimate significance in our daily lives and the delivery of TVET system. Therefore, in understanding TVET instructors’ perceptions of digital technology use and support at a Vocational Training Centre in Namibia, the integration of digital technology, and connectivity is imperative within TVET institutions in the context of the fourth industrial revolution (4IR). TVET institutions also have the responsibility to enhance individuals’ use of digital technologies, analytical capabilities and advancement of digital skills needed in industries. Some of the digital tools include, online learning platforms, virtual simulations, and smart devices, into the curriculum to enhance teaching and learning experiences (Wark, & Mohamed, 2020).

Digital technologies and connectivity offer instructors innovative global opportunities fit for 4IR (Nundkumar & Subban, 2018). TVET staff and trainees are at the heart of the transformational agenda of Namibia’s industry in terms of economic growth. Therefore, TVET lecturers are expected to be proficient in the use of digital technologies for them to be champions of 4IR skills transfer to their students and improve general efficiency in the daily work and lesson delivery.

The purpose of this article is to examine the perceptions of TVET instructors' use and support of digital technology in a Vocational Training Centre in Namibia. To achieve this objective, the paper extensively reviewed related literature, followed by the theoretical framework. Subsequently, the methods are detailed, along with the presentation of data results, and the discussion and conclusions based on the findings. Finally, recommendations are provided for proposed strategies for improving the perceptions of TVET instructors' use and support of digital technology in a VTC in Namibia.

## **Literature Review**

According to the swift pace of digital technologies, all the TVET management team, instructors, trainees, and “classrooms should be prepared to meet the culture of teaching and learning based on 21<sup>st</sup>-century skill requirements for digital technologies. This is meant to nurture and produce knowledgeable and skilled students who will spearhead economic development” (Yilmaz, 2021). As global economies progress towards digitalisation, it is crucial to incorporate digital technology in all facets of TVET in order to synchronise education with the needs of changing modern industry operations (Kumar & Kumar, 2020). Digital technology encompasses various tools and resources such as computers, software applications, internet-based platforms, and digital learning resources, all of which have the potential to improve teaching effectiveness and student engagement (UNESCO, 2017).

Seven state and government-supported centres in Namibia and four community training and development centres administer vocational education and training. Open and Distance Learning (ODL) which heavily depends on online lesson delivery, accounts for 52% of all tertiary enrolment rates in the country and is available through learning centres around the country. However, the higher education sector in Namibia, specifically TVET institutions, has struggled to get support and reap the benefits of incorporating digital technology into its teaching-learning platforms, evidenced by a single centre introducing video-conferencing and online delivery (UNESCO, 2017). Nevertheless, due to the unforeseen circumstances of the COVID-19 pandemic, several TVET institutions have already moved to digital learning mode and have adapted to the digital environment (UNESCO, 2020).

## **Technical Vocational Education and Training**

UNESCO (2017) defines TVET as "areas of an educational process that involve, in addition to the general education, the study of technologies and related sciences, as well as the development of practical skills, attitudes, understanding, and knowledge relating to the profession in various sectors of the economy." Furthermore, Nooruddin and Karachic Grammar School (2017) state that "TVET is an educational programme that emphasises learning through formal or informal training aiming to develop a skilled workforce required for the industry market". Hence, TVET provides trainees with occupational skills and a wide variety of information, abilities, and assertiveness that are now widely acknowledged as essential for effective involvement in the workplace.

Furthermore, Kuo (2017) suggests that learners may gain self-awareness, self-esteem, increased interpersonal skills, citizenship, communication, and entrepreneurial abilities through TVET training. In addition, e-learning, covered in the next section, can potentially provide learners with numerous rewards in their learning process.

### **Use of Digital Technologies in TVET Institutions**

The use of Digital Technology (DT) has enhanced e-learning and transformed the provision of Technical and Vocational Education and Training (TVET) on a global scale. As industries automation, artificial intelligence, and digital platforms, TVET centres must adapt their curricula and teaching methods to meet the needs of the digital economy. This transition involves not merely the incorporation of new tools but a fundamental change in the manner in which skills are taught, accessed, and utilised in practical scenarios.

In the context of TVET, digital technologies are defined as the utilisation of electronic tools, systems, devices, and resources that create, store, or process data to support and enhance the teaching, learning, assessment, and administration processes within vocational training institutions. According to UNESCO (2020), DT in education are described as tools and platforms that facilitate knowledge delivery, collaboration, interaction, and data management for both learners and educators. In the realm of TVET, these technologies fulfil both instructional and operational roles, allowing institutions to replicate work environments, provide remote learning opportunities, evaluate skills digitally, and manage the delivery of training effectively.

The types of digital technologies utilised in TVET include the following: Virtual and Augmented Reality (VR/AR), Artificial Intelligence (AI), Online Learning Platforms, Collaboration Technologies, 3D Printing, Blockchain, and Digital Twins. E-learning and blended learning models, which combine traditional in-person instruction with online resources. These models have been shown to improve student outcomes by providing flexible learning schedules and catering to diverse learning styles (Sharma & Saxena, 2025; Udeze, 2024). One significant dimension is the adoption of e-learning and blended learning models, which integrate traditional face-to-face instruction with online resources. These models have proven to enhance student outcomes by facilitating flexible learning schedules and accommodating various learning styles (Sharma et al., 2024).

The second crucial dimension involves the use of data analytics to monitor student progress and customise interventions, thereby improving overall educational effectiveness (Pathak & Jain, 2025). Thirdly, the integration of DT in the delivery of TVET skills is vital, as it helps to close the skills gap by equipping learners with training that is relevant to industry needs and aligns with current job market trends (Vasilev, 2024).

Lastly, the applications of virtual reality (VR) and augmented reality (AR) are becoming increasingly powerful tools for simulating real-world scenarios, allowing students to safely and effectively practice practical skills. This integration of technology not only enriches the learning experience but also prepares students for the demands of the digital economy (Iyer et al., 2025).

### **The Advantages of Adopting Digital Technologies in TVET**

DT significantly transform TVET by improving access, collaboration, and skill development, thus making education more attainable (Renkema & Tursunbayeva, 2024). Additionally, these collaborative tools facilitate the sharing of presentations and materials, promoting an interactive learning atmosphere, while video conferencing links students and instructors worldwide.

DT are progressively being incorporated into TVET programmes due to their capacity to convert traditional learning settings into vibrant, interactive experiences (Mbatha, 2024). Furthermore, the integration of digital learning tools and platforms in TVET offers numerous benefits for both educators and learners. For educators, these technologies streamline administrative tasks, thereby enabling greater focus on personalised instruction and meaningful trainees engagement. They can effortlessly create and distribute resources, monitor student progress, and deliver prompt feedback (Munyaradzi et al., 2024). For learners, digital transformation enriches education by providing access to interactive content, a variety of learning resources, and real-time assessments that accommodate different learning preferences (Zhong & Juwaheer, 2024). This adaptability encourages self-directed learning, enabling students to advance at their own speed and cultivate essential digital skills required for the contemporary workforce. Moreover, the application of DT promotes collaboration among students through online discussions and group assignments, equipping them for teamwork in their future professions.

## **Challenges of Digital Technologies in TVET**

Despite the numerous advantages, the integration of digital technologies in TVET presents distinct challenges. A major obstacle is the digital divide concerning infrastructure, where inequalities in access to technology and dependable Internet connectivity can hinder students' opportunities to study in vocational training institutions that lag in DT (Mthabela, 2024). The costs of equipment, issues with electricity infrastructure, and a lack of experience among instructors are significant barriers. Each of these challenges substantially impacts the overall effectiveness of digital transformation initiatives in TVET (Shambare & Jita, 2025).

In particular, a notable challenge is the financial burden associated with obtaining the essential technological equipment. The expenses related to computers, tablets, and other digital resources necessary for effective online learning create a barrier for many vocational training centres (Mhlanga, 2024). This issue is exacerbated by the continuous costs for technology upgrades and maintenance, which can be a financial strain for TVET centres operating under constrained budgets. If vocational training centres are unable to successfully incorporate DT into their curricula due to high equipment costs, the potential advantages of digital education may be significantly limited (Mesuwini & Mokoena, 2023).

## **Theoretical Framework**

A theoretical framework serves as the foundation that directs research by utilising a formally established theory to elucidate the relationships among concepts. In a literature review, a theoretical framework provides an analytical perspective: assisting in the understanding, comparison, and synthesis of findings from various studies. Additionally, it clarifies the reasons behind the adoption, usage, or resistance to digital technologies (DT). Ultimately, it facilitates the categorisation of themes such as adoption, usefulness, ease of use, impact, and challenges. For this review, the Technology Acceptance Model (TAM) is employed as it specifically addresses the reasons why individuals, particularly educators and trainees, either accept or reject digital technologies.

The TAM is a theoretical framework that describes how individuals perceive and use technology. TAM is a widely used framework in information systems research and has been applied in various settings, including education, healthcare, and business (Davis, 1989; Venkatesh & Bala, 2008). The model was first introduced by Davis in 1989 and has since been revised and expanded by various researchers.

According to TAM, the “intention to use technology is influenced by two factors: perceived usefulness (PU) and perceived ease of use (PEOU). PU refers to the degree to which a person believes that using technology will improve their performance or productivity, while PEOU refers to the degree to which a person believes that using technology is effortless” (Venkatesh & Davis, 2000:188). These two factors directly influence an individual's attitude towards using technology, which in turn affects their intention to use it.

Therefore, TAM provides a valuable theoretical framework for understanding the factors that influence technology adoption. The model has been applied in various contexts and has consistently demonstrated the importance of perceived usefulness and perceived ease of use in shaping individuals' attitudes towards using technology. It is against these merits that this study resorted to the application of TAM to investigate TVET instructors perceptions digital technology use and the institutional support provided at a Namibian Vocational Training Centre. Consequently, this study seeks to understand Namibian stakeholders perceptions of adoption and utilisation of technology in teaching and learning within the TVET context.

## **Methodology**

This study employs a qualitative research approach grounded Interpretative Phenomenological Analysis (IPA). Qualitative methods are appropriate as they allow for an in-depth exploration of participants lived experiences, attitudes, and the contextual influences shaping of their perceptions (Merriam, 2009). In line with an interpretivist research philosophy, IPA was selected as the guiding qualitative design to interpret how participants make sense of their experience. IPA is a qualitative research methodology that investigates how participants perceive their individual and social environments, as well as the significance they attribute to perceptions (Smith et al., 2009). It involves an empathetic interpretation of human experiences and questioning such views while being coherent to their origin

phenomenologically. The objective of IPA is to derive the meaning from the perspective of the participants (Smith & Osborn, 2007). Therefore, the study's phenomenological design enabled an investigation of how TVET instructors made sense of digital technology use and support.

### **Population and Sampling**

The target population includes the supporting staff and instructors of one of the technical vocational training centres in Namibia. A purposive sampling technique was employed to select a sample of 11 participants, consisting of eight (8) instructors and three (3) management members. According to Vasileiou et al. (2018:2), sample size in qualitative research are typically small to support "the depth of case-oriented analysis fundamental to this phenomenon."

In line with this approach, the aim of conducting an IPA study with a relatively small and homogeneous group participants is to gain deeper and more nuanced understanding of their shared perceptions. Smith and Osborn (2007), similarly argue that IPA studies favour small sample sizes, as the detailed case-by-case analysis of individual transcripts is time-intensive and central to the methodological rigour of IPA. This position supported by Alase (2017), who emphasises that the primary goal of IPA research is to achieve depth rather than breadth of understanding.

Purposive sampling employing Maximum Variation Sampling (MVS) was selected as the sampling technique for this study (Etikan et al., 2016). Maximum variation sampling was used to capture diverse perspectives within the framework of the research by including participants with differing roles and characteristics. Selection criteria included basic and relational demographic characteristics of TVET instructors and management members, as well as their availability and willingness to participate, and their ability to communicate experience and opinions in an articulate, expressive, and reflective manner" (Etikan et al., 2016).

Based on these criteria, a total of eleven (11) participants were selected, comprising eight (8) instructors and three (3) management members.

## **Data Collection Process and Analysis**

The data collection methods employed to investigating this phenomenon were semi-structured interviews and focus group discussion. The data collection process followed four sequential steps. First, 11 participants were purposively selected and formally invited to participate in the study. Second, participants voluntarily agreed to take part by signing informed consent forms. Third, individuals semi-structured interview was conducted with each participant, with each interview lasting minimum of one hour. Participants were given the autonomy to choose interview venues and times that were convenient to them, a decision intended to ensure comfort, privacy, and openness during the interviews.

Finally, a focus group discussion was conducted to further explore shared experiences and to enrich the data through participant interaction. In-depth interview is particularly valuable in qualitative research as they allow participants to express their experiences in their own terms, thereby generating rich, detailed data suitable for interpretative analysis (Kvale & Brinkmann, 2009).

Due to the study's qualitative nature, its data were analysed using thematic analysis as outlined by Braun and Clarke (2014). The researcher coded the data and composed and identified themes from the codes. The recorded audio was transcribed into a Word document. In addition, open coding was used to encode data for analysis; This was accomplished by reading every word and paragraph in the (transcribed) text to identify common themes, which the researcher filtered out and labelled with codes that shortened the meaning. Provalis Research QDA miner application and Microsoft Word was a used for linking code text-based data annotations to identify relationships and set research goals and research questions for the study. The data was categorised, sorted according to patterns, and linked to the identification of emerging themes and patterns. This process facilitates a coherent interpretation of the responses provided by participants. Thematic analysis empowers researchers to systematically arrange and link data to derive significant conclusions (Braun & Clarke, 2014). The output was therefore a detailed report of the experiences of the participants on the adoption of technology for teaching and learning at the TVET vocational training centre, which is congruent to Braun and Clarke's (2014) submission.

## **Presentation of results**

The data collected through semi-structured interviews comprised four (4) instructors and three (3) management members, while a focus group discussion was conducted with four (4) participants. This approach provides insights into instructors' perceptions regarding the implementation of digital technology within the TVET context. The vocational training centre provides support to instructors in promoting the use of digital technology in their teaching, as well as offering recommendations for its application in teaching and learning.

To understand the perception of adopting technology in TVET, the following sub-themes were identified from the participants and grouped as follows.

### **Online Learning**

Participants cited the benefits of adopting technology in the TVET centre as it was found that technology training is possible via online learning. In a statement, one participant mentioned that the advantages of digital technology in the Vocational training centres extend to a variety of aspects.

As witnessed during the COVID-19 era, digital technology assisted our trainees in different training phases; for example, when the country was on a lockdown it helped us with trainees' assessment for assignments or quizzes or tests that were done on an online basis – Participant A.

While admitting to the merits of technology, participant X supported the submissions of participant A by saying that:

Even though COVID-19 protocols were imposed whereby classes were even called off, but then we still could give classes online through Moodle; we also communicated through online platforms, namely WhatsApp through Google Classrooms, Gmail, and Yahoo, we were also able to give classes through ZOOM. Trainees were also able to collaborate, collect relevant information, and have access to YouTube to search for information within their studies; at the end of the day, it is not only up to the instructors to deliver a presentation or a class. We could also use PowerPoint presentations to integrate our learning in classes. That

is why I said digital technology had impacted vocational education training in a very positive way – Participant X.

Digital technology gives us many ways to approach our daily lessons. For example, I want to teach a specific topic, so I can incorporate the names and events whereby now I can even introduce my topic with a picture or with a video that allows me to get the Trainee's attention because I introduce a topic with a picture or a video which is showing them their real-life world event – Participant G.

In supporting the benefits further is participant T, who added that:

When we started, other things were witnessed; it got easy with revisions and quizzes you give Trainees even when at home, and they appreciated the benefits of learning virtually. So, if everything is implemented now, I do not think people suffer wherever they are, whether I am on sick leave and feeling better, I can communicate or do training while I am at home, and then things will move – Participant T.

Participant T highlighted how digital technologies simplified lesson delivery across multiple classes, stating: It makes work easier; for instance, if you have recorded one work for one class, you do not have to record for another class because it is the same work; present the same work to another class to the next until you are done with your classes. Trainees can view the lesson later through the projector video and get motivated. They can also watch a video previously made by someone else, my instructor, or anything, so it is pretty good. The technology is beneficial as it keeps the Trainees active because of its interactivity and ability to have control of recorded lessons. They can stop or pause the video. Virtually they can ask questions when you are presenting – Participant G

With the integration of technology in training, participant X in other words confirms the literature of Obwoge and Kwamboka (2017), that with e-learning, TVET trainees stand to benefit from a variety of course completion options and flexibility in educational delivery, contributing to lifelong learning. The submissions by the participants further agree with Obwoge and Kwambokas (2017) assertions that the implementation of e-learning can reduce the time, space, and location constraints, which have become a significant impediment and

difficulty to education delivery, particularly for distance trainees. Participant X submission further agrees with the literature of Redouane (2020), who observed that Algeria's Ministry of Education facilitated the accessibility of educational materials on YouTube for general trainees in the education sector to lessen disruptions to learning activities during the COVID-19 lockdown. The findings further affirm the benefits of e-learning in a TVET environment as reported by the Botswana government (2015), that the commitment to create high-quality TVET programs for various groups using flexible learning techniques is made possible by the relatively high level of ICT access. The perceptions by the respondents revealed a significant attribute in the technology adoption and use as stated in the TAM model, all the sentiments by the participants pointed to perceived usefulness and perceived ease of use important predictors of attitudes towards the use of technology (Fearnley & Amora, 2020).

### **Accessibility and Affordability**

On accessibility and affordability, experiences cited under this sub-theme are the ease of access to technology resources on the instructors' side, as indicated by the participant.

It is straightforward; you will be able to reach out in other areas where the trainees are: It is easy to access because it is just a matter of logging into a personal computer (PC) with a password. Then you can access whatever information or assessment tools the instructors have captured on the system. However, it can also be beneficial since the instructor's course will not be through face-to-face contact with our trainees. The incorporation of digital technologies not only updates the method of training delivery but also offers a more secure option during health emergencies such as the COVID-19 pandemic, thereby minimising the likelihood of viral transmission. Furthermore, instructors and trainees can access it quickly, and it is also cheap when it is time to submit an assignment; printing used to cost more, while online is cheap and easy because I do not need to print papers out." - Participant A

Supporting similar sentiments, cutting costs on transport was cited as one of the benefits:

It is cost-efficient because you will not need to attend all the classes full-time daily. After all, when you upload study materials and any other information or

assignments, you can upload them from whatever space you are in. They can reach wherever they are so they do not need to take transport to the centre or where classes may take place, so it is an excellent experience, and it is swift to communicate with the Trainees. – participant G

The availability of resources as a barrier to digital technology integration is uncharacteristic of the education sector in developed countries (Torres & Giddie, 2020). Moreover, barriers to technology implementation in education may be classified into the following broad factors: economic, technological, regulatory, and social. However, in ascertaining the accessibility and affordability of the proposed technology at the institution, the findings under this sub-theme revealed that the participants did not experience economic, technological or regulatory impediments. However, the trainees were reported by the participants to have experienced economic and technical challenges. The participants reported having no difficulty accessing the technology as the centre could afford the requisite equipment. The accessibility of the technology as expressed by the participants indicated the right attitude to use the technology. The attitudes of users as stated in the TAM model shape their behavioural intent, which in turn determines how technology is used (Fearnley & Amora, 2020).

### **Convenience and Security**

Participants cited the convenience brought by technology at the TVET centre.

Digital technology is convenient because you can have all trainees who need to access education simultaneously, and Moodle lets you upload the information and assignments. Then trainees can get access and receive some presentations where for instance, you have to present. Participant G

Safety issues related to online data determine the elements of information security. An experience from a participant indicated that they trusted where the information was being kept on their behalf.

Very safe because information on my computer is safe since data cannot get lost, you know, get destroyed or something like that because it is online on the system  
– Participant A

The participant expressed their perception of the freedom to share information and, thus, knowledge.

Suppose I have to share information with another instructor. In that case, it is straightforward to share also because it is just online, is just a matter of emailing or directing another colleague of mine who needs that information to a link on a repository – Participant A.

Participants found the technology to be convenient and what came out was the ability to share files easily with trainees. This affirms the submissions of Horvitz et al. (2019), who emphasised that instructors could use application sharing to conduct trainees' polling, share their computer screens, or assign trainees to share their computer screens during an interaction. Though the instructors did not demonstrate how to share their display virtually, they still showed one aspect of technology application of sharing files as expressed by Horvitz et al. (2019). Horvitz and colleagues further pointed out that synchronous virtual classroom characteristics are essential in maintaining interaction thus making it a convenient approach to deliver training virtually.

### **How does the vocational centre support instructors in encouraging digital technology use in teaching?**

In exploring the support available to instructors at the TVET institution, the following sub-themes emerged from the participants' responses.

#### **Financial support**

Financial support is a cardinal requirement in adopting a new system and participants shared their experience with finances required in implementing technology at the TVET centre.

Money will be the major obstacle. I have mentioned that it is very expensive to get the type of technology you want in an institution like ours. If there is no money, there will be no implementation, so I think that resources are essential and then track the implementation of such – Participant E

One participant in the top management team shared the scarcity of financial support at the TVET centre.

The plan is there, but the problem is funding. Even if we do not have the funds, the world is moving to digital technology. When you have the funds or the resources to do that, you will not be able to deliver your training without these digital technologies, so there should be a plan, we have a plan, but we do not have the resources here. Participant K.

### **Technical background**

The technical aspect of technology comes together in the quest to implement an innovation. Experiences witnessed by participants indicated the need for an upgrade in technical competency.

The second thing would be how people would have to utilise this technology. If I look at the institution where I am currently, instructors, for example, would need much training because most of the instructors employed at the institution are of middle age and higher, so they did not grow up with this technology, so for them to utilise the technology, there is a need a culture of practice and training Participant E.

A shared experience by another participant maintained that practical technical prowess is limited among the instructors.

With my experience, I have seen that some of our instructors lack what we call computer user skills. So, I tell some instructors they are open to asking for help. Then there are some of the instructors who are still behind or still stuck with the traditional teaching method whereby they want to say no we can go to class then we do our traditional method. They do not want to do PowerPoint presentations.

So, at the end of the day, it is not really that the people do not want to do the work. It is that they lack the knowledge and the skills to do that: Participant X.

A participant expressed fears about using one of the tools in the execution of training and encouraged the provision of a tutorial.

There is a smart board in one of the classes, but we need to be trained on how to operate it: Participant A.

In supporting similar sentiment, the above cited tool was found to have limited features in training delivery.

On the whiteboard screen, just like you are writing on the board because now, at the end of the day, you need to explain how you get to the formula; the most challenging thing about this tool is the space. It was so small that if you write a formula, the space gets to be finished, and then you do not have any other space to access. So now, at the end of the day, it was causing a small quantity of havoc whereby you need to arrange and say no, let me move on to the next thing so that you can create another space, all right so that was a very challenging thing: Participant X.

If you look at the demographics of the centre where I am currently employed reveals both a younger and an older cadre. For the younger cadre, I mean they are used to these things, to the technology, they grew up with it, so it is easy for them, and I understand the older cadre of the instructors say that it will take time to change and yes, we are afraid to embrace this change: Participant E.

In the same vein, another participant from the top management team also witnessed the reluctance to adopt the new technology at the TVET centre.

Talking from the experience of the institution where I am, people are not receptive to change. People do not want to change, do new things, learning new things. So, the culture is still doing paperwork, doing all things manually, so the receptiveness of changing from paperwork and manual work to technology is not. So, there is no openness, but things are changing. People are changing little by little, encouraging

them to technological change, so we are moving towards something good – Participant K.

### **Infrastructure**

In the adoption of technology, a well-planned infrastructural topology is a necessity that should be met. Participants with full knowledge of their infrastructural configuration had the following experiences:

End users do not have smartphones, laptops, tablets, and all those gadgets that people now use to get this information on learning. So, I think those three can be significant challenges in implementing such a plan: Participant E.

Operating within the domain of technical assistance at the TVET centre, one participant cited the speed at which the infrastructural installation was being executed.

Yes, of course, there is a national plan evolving around digital TVET, and relevant entities have made provisions to set up the necessary infrastructure and guidelines in terms of roll-out; however, the process is going slow due to matters that I am not in control of and that I am also not fully aware of, but I know the plan is there, and efforts have been made, but the rollout is slow: Participant B

This was supported by another participant who expressed dissatisfaction with the equipment.

Okay, our challenging tools are computers; we do not have enough computers too, you know, to cater to everyone because we have three computers that we use for office administration only. There are no computers for the other workshops, so it is a challenge for the trainees. So, that is the big challenge; for the computers to have that digital technology system is also expensive, so buying one can cost a lot, and many parents are unable to afford laptops for their children : Participant A.

However, on accessibility, one respondent perceived that it remained a challenge from the student side.

Trainees do not have access to data, smartphones, or laptops; for example; I want to give you a class on Zoom, but now at the end of the day, I only have 20 trainees in my class but now ten of them do not have access to these gadgets the other five do not have data, we need to see as a centre/institution how we go along to give them access to the internet. So, the very challenging thing again is the access for the trainees, the data, and the tools they need to access some of this information are limited to them: Participant X.

Take the technological gadgets like laptops to the trainees because when you are talking about digital technologies, trainees need to have electronic gadgets and sometimes it is very difficult for some trainees that cannot afford to get this gadget: Participant G

In investigating the challenges faced in adopting this new technology at the TVET centre, financial support was featured as the most significant challenge every participant experienced at the centre. Participants reported that it delayed the implementation. Technical skills in the use of the proposed innovation appeared to have taken the second place after finances; reports of some respondents being digital refugees were raised, which seemed to have affected perceived ease of use. According to TAM, before the technology is adopted, it must be easy to use. Participants also pointed out that a lot needed to be done even though the infrastructure was laid out. For example, there were still few computers for student numbers, and internet access remained a challenge on the trainees' side, which could impact the output quality as described in the proposed framework.

### **How can TVET instructors use digital technology in their teaching and learning to be further developed?**

The participants, while expressing their views on this theme, recommended the following as identified in the themes that follow.

#### **Training**

The need for training appeared to be cited the most by participants; they revealed that the following could accelerate the adoption.

Now speaking from experience, people need to be trained, the instructors themselves, you know we have laptops and computers, but now we cannot go further to teach online without training. So, you do not have that experience, and then you struggle with what we do when training is needed. So yes, we need training for that, and the centre should be well equipped with an Internet connection –Participant T.

Training that considers instructors and trainees was cited as essential to adopting technology at the TVET centre.

PDP - Professional Development Plan, whereby now, if, for example, I identify my weakness that I have a problem with a computer or problem with typing or presenting a PowerPoint, I need to get extra classes on that so that I can be developed in that area where you are lacking. So, I believe that TVET instructors require training or development in current technologies to keep pace with advancements. Additionally, it is essential to educate trainees about the upcoming Moodle platform, which is a highly regarded software utilised by major vocational centre. Some trainees perceive it as not user-friendly; however, this perception arises from a lack of education on its operation and usage – Participant X

Besides providing adequate funding and securing enough computers for trainees, the participants recommended training that ensures that instructors and trainees become digitally native. Furthermore, the participants recommended addressing the limitations of the tools used for training together with this technology. Moreover, there was a need to finally find a solution to challenges experienced by the trainee, especially in acquiring the requisite gadgets and data/internet to access the training.

## **Discussion**

The study highlights various lessons that can be adopted in formulating best practices when adopting new technology in a TVET institution. In addition, the study brings together various perspectives reported by participants and integrates them with literature supporting these experiences towards adopting technology into training. The study's main objective was to

ascertain TVET instructors' perceptions of digital technology use and support in a Vocational Training Centre in Namibia.

### **Instructors' Perception of the Use of Digital Technologies in TVET**

The use of digital technology in education and training became a reality in the wake of COVID-19, making online learning the only option available to deliver teaching to students across many nations; Namibia was not excluded. Even though during the pandemic, protocols were imposed whereby classes were even called off, instructors admitted that training still went on and was made possible through e-learning. Instructors at the TVET college had previously been introduced to Moodle but had not adequately practiced with it, thus they encountered their initial experience using a Learning Management System (LMS). They expressed joy in using various communication mediums like WhatsApp, Google Classroom, and Zoom. In so doing, they affirmed Mohammadyari and Singh's (2015:12) definition of e-learning as "a web-based communication platform that allows trainees, without limitations in place and time, to access diverse learning tools, such as discussion boards, content repositories, assessment, and document sharing systems." The participant's submission to technology being flexible, they added that online learning helped the TVET college constructively, and trainees were able to collaborate. This is consistent with the research conducted by Bowen et al. (2018), who gathered pertinent information and utilised YouTube to seek information related to their area of study as instructed by their instructors. Being able to deliver training virtually, or the fact that a different group of classes can view one recorded lesson without having to give a similar class again was an opportunity that was considered exciting and impacted the vocational education training in a very positive way, as reported by the participants. This resonates with the findings of Munyengabe et al. (2017), who found that trainees benefitted greatly from instructors who positively perceived the usefulness of technology. As stated by Davis (1989), one of the factors in the Technology Acceptance Model that influences technology adoption is its perceived usefulness, which serves as a crucial determinant for the successful adoption of the technology. Through the experiences expressed in the usefulness of online learning, the TVET instructors are ready to adopt the technology at the institution.

### **VTC Support to Instructors in Encouraging Digital Technology Use in Teaching**

To identify support given to the instructors at the TVET centre, findings revealed that Moodle LMS was created to capture results besides delivering training. This was a medium that enabled communication and sharing of information more uniformly than circulating documents. In adopting the use of technology for training and education, a platform that enables this is paramount to the success of e-learning. Participants observed that the institution had tried to install one e-Learning platform. Babo and Azevedo (2011) describe LMS as a platform created for transmitting and managing instructional content besides delivering assessments to student and institutional learning objectives, recording progress towards those objectives, and providing data necessary for running the learning process of a learning institution. It is a collection of instruction that automates the administration and delivery of learning and ensures the successful provision of learning in electronic format at a distance. The efforts to put up such a support system were lauded as good by participants.

The trainer from the Namibia University of Science and Technology (NUST) was brought in to train instructors on the use of the proposed technology. Therefore, it can be argued that the centre provided support regarding training.

### **Developing TVET Instructor's Use of Digital Technology in Teaching and Learning**

Continual training on the use of the proposed technology remains a significant need in supporting TVET instructors to access of learning materials, flexible teaching and learning approaches and enhanced assessment and feedback mechanisms. According to literature, LMS platforms such as Moodle support blended and online learning, promote trainee engagement and improve instructional efficiency. However, these benefits can only be realised when instructor are sufficiently trained and confident in using the technology. The participants' emphasis on extended training period reflects findings in the literature that short, on-off training sessions are often inadequate for meaningful technology adoption. Continuous professional development enables instructors to fully exploit the pedagogical of digital tools.

This finding aligns with the study results, where instructors reported have basic computer skills but experienced difficulties in navigating the LMS, creating quizzes and marking assignments. The literature further suggests that without adequate training and sustained support, digital technologies tend to remain underutilised in TVET institutions.

Furthermore, the suggestion to have an IT support officer permanently stationed on campus aligns with existing research that emphasises the importance of on-site technical support to address immediate changes faced by instructors and trainees. Without such support structures, the effective implementation and sustainability to digital technologies in TVET institutions remain constrained.

## **Conclusion**

Based on the findings, it can be concluded that addressing the identified barriers and improving support structures are crucial steps in cultivating a more technologically proficient TVET workforce in Namibia. This study revealed that training instructors on digital technology tools was necessary. This study established that even though instructors were being provided with digital technology training, some of the training sessions were minimal, for instance, one-day training that was once provided to instructors. As a result, participants thought that the frequency of the training sessions for instructors could be intensified.

This conclusion summarises the study contributions, implications for practice, and recommendations for future research, encapsulating the significance of understanding TVET instructor perception of digital technology in the Namibia vocational training centre.

## **Recommendations**

The study provided recommendations for developing TVET instructors' use of digital technology in their teaching and learning in the TVET setting based on the respondents' experiences. In addition, trainees should be assisted in owning or accessing digital learning tools. The centre requires fully equipped digital classrooms, and trainees require improved campus internet and more investments in digital technology.

Regarding offering training to instructors and trainees. Therefore, it is paramount that trainees be given adequate training on digital learning tools and applications. Having full-time technical support personnel was recommended by the respondents as this would assist in resolving technical challenges experienced by instructors and trainees alike.

Future research could investigate the long-term effects of technology integration on teaching practices and trainees' outcomes, further contributing to the advancement of vocational education in the digital age. This study recommends that further research be carried out that employs the UTAUT theoretical model of technology adoption to ascertain further the readiness of TVET instructors to accept and use technology for education and learning. Choosing the proper framework for adopting any technology is crucial to its success. At the same time, many scholars have used TAM, but it is limited in covering all the variables

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