

Factors Affecting E-Learning Adoption in Afghanistan: Empirical Evidence from Technical and Vocational Education and Training Authority

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Abstract

The improvement of technology and its usage in the education sector in the last decade has caused traditional methods to be reformed in order to improve communication in a learning environment. E-learning seems to be the new paradigm of modern education and it has been highlighted as a tool that can deliver education to underprivileged people in rural areas, allowing more students to access higher education through a less expensive and more flexible alternative. Considering the advantages of E-Learning, the TVET Authority of Afghanistan tends to make use of e-learning in order to enhance learning and ensure better use of resources. According to research, the adoption of e-learning in developing countries is influenced by a variety of factors and is hampered by a number of challenges, the severity of which varies by country. Hence, this study aims to explore the factors affecting E-Learning Adoption in Afghanistan through empirical evidence from the TVET Authority. Data was collected from a total of 200 teachers and employees of the TVET Authority in Kabul City using a random sampling method and an exploratory factor analysis was employed to explore the challenges. Individualistic challenges, malfunctioning administrative and technical support, and attitudinal & cultural challenges were identified as the main factors, among others. Further research with a larger sample size covering many cities in Afghanistan and examining the interrelationships between all of the factors is recommended.

Keywords: E-Learning, E-Learning Adoption, Factors Affecting E-Learning Adoption, E-Learning Adoption Challenges

JEL Codes: I2, I21, I23, I28

Introduction

The improvement of technology and its usage in the education sector in the last decade has caused traditional methods to be reformed in order to improve communication in learning environment (Sheerah & Goodwyn, 2016). E-Learning seems to be the new paradigm of modern education (Sun, Tsai, Finger, Chen, & Yeh, 2008). E-Learning is identified as a tool which can provide education to marginalized groups in rural areas, increasing the number of students accessing higher education through a cheaper and more flexible alternative (Andersson & Grönlund, 2009; Mathew & Iloanya,

2016). E-Learning is an element which can enhance learning and ensure better use of resources in the education sector (Kituyi & Tusubira, 2013). Downey, Wentling, Wentling, & Wadsworth (2005) claim that E-Learning is one of the rapid growing markets in the education industry. Eze, Chinedu-Eze & Bello (2018) argue that E-Learning is a significant strategy in education which should be introduced into the current learning and teaching style of institutions. E-Learning practices have been utilized by many universities worldwide as a mode of educational content delivery (Bhuasiri, Xayoungkhoun, Zo, Rho, & Ciganek, 2012). The number of universities adopting E-Learning practices is increasing around the world in order to meet the educational demand in the sector (Oyerinde, 2014).

E-Learning has been adopted by many educational institutions in developed and developing countries as well. In developed countries, E-Learning adoption has reached its advanced stages, but in many developing countries, it is still in the infancy stages (Al-Azawei, Parslow, & Lundqvist, 2016). As per Almaiah, Al-Khasawneh, & Althunibat (2020), introducing E-Learning into the traditional education system is a matter of change as it is involved in factors such as teachers, students, technology, culture, and governmental policies and regulations. Therefore, the adoption of E-Learning in developing countries is affected by a series of factors which are considered as challenges (Aldowah, Al-Samarraie, & Ghazal, 2019; Atanda & Ahlan, 2015; Aung and Khaing, 2016). Almaiah *et al.* (2020) claim that for successful implementation and adoption of E-Learning, the adoption factors as well as the challenges of the systems should be understood first. Developing countries face different challenges than developed countries in the implementation of E-Learning. Understanding the challenges to E-Learning before its implementation will result in cost and time savings (Naresh & Reddy, 2015; Bhuasiri *et al.*, 2012). In this regard the current study makes an endeavor to introspect the challenges faced by TVET Authority in Afghanistan. The rest of study is structured with section two discussing the literature review, section three discusses the methodology followed by section four encompassing results and discussions and finally section five concludes the study with recommendations.

2. Literature Review

2.1 TVET and its Background in Afghanistan

UNESCO defines Technical & Vocational Education and Training (TVET) as *"those aspects of the educational process involving, in addition to general education, the study of technologies and related sciences and the acquisition of practical skills, attitudes, understanding and knowledge relating to occupation in various sectors of economic life."* (Hanni, 2019, p.11). According

to Oketch (2007), TVET refers to labor learning experiences and education which may be acquired in different contexts, in formal educational institutions or in firms/workplaces. Hanni (2019) elaborates that there are the three following types of TVET provided in different contexts: 1) Formal TVET: refers to the programs which are offered in a formal education system and students get a degree or certificate upon successful completion of the program. 2) Non-formal TVET: are programs provided outside education systems and entry to these programs does not rely on any formal education; and the programs are provided by institutions such as private institutes and firms. There is no certification upon successful completion of the programs. 3) Informal TVET: refers to training in which skills are learned through a process of learning-by-doing in households and at the workplace.

Technical and Vocational Education and Training (TVET) is one of the top drivers of the socio-economic development priorities of the Government of the Islamic Republic of Afghanistan (GoIRA). Before 2018, the Deputy Ministry for TVET, under the Ministry of Education (MOE), was responsible for the delivery of TVET all over the country. In 2018, DM-TVET was separated from MOE and promoted to an independent authority through Presidential Decree No.11, with the goal of reforming the educational system and bringing TVET delivery under one roof. Formal TVET (Long-term training) is provided by TVET-Authority; Non-formal TVET (short-term training) is provided by the Ministry of Labor and Social Affairs (MOLSA), some other relevant government entities and NGOs; and Informal TVET (Hands-on training in firms) is provided by the private sector. TVET-A is currently managing over 350 schools and institutes throughout the country with majority located in provinces. There are over 64000 students being trained in 80 trades. TVET is currently being provided by both public as well as private institutions. However, there are several public TVET institutions which operate under other government agencies. Efforts are underway to improve the nationwide governance of the TVET provision (TVET Authority of Afghanistan, 2020).

2.2 Concept of E-Learning

The concepts of learning and its environment have been changed with the development of Information and Communication Technologies (Aung & Khaing, 2016). The development of technology and science has resulted in the education sector growing as well. Technology has been used in the education sector to make access to education and knowledge easier for users (Sfenrianto, Tantrisna, Akbar, & Wahyudi, 2018). Along with the advancement of Information and Communication Technologies (ICTs), web-based education such as E-Learning has also been increasingly used by

institutions in developing countries as an alternative to traditional education (Ahmadpour & Mirdamadi, 2010).

Electronic Learning (E-Learning) refers to learning which is mediated through the utilization of software and hardware, in a face-to-face classroom or from a distance, for the purpose of empowerment of teacher-student interactions (Eze et al., 2018). FAO (2011, p.3) defines E-Learning as

"The use of computer and Internet technologies to deliver a broad array of solutions to enable learning and improve performance."

Similarly, the World Bank defines E-Learning as

"The use of computer-based electronic technologies like the Internet, e-mail, websites and CD-ROMs, and their applications, to deliver, facilitate and enhance both formal and informal learning and knowledge sharing at any time, in any place and at any pace."(Alkharang, 2014, p.23).

According to Sun et al. (2008) and Downey et al (2005), E-Learning refers to the delivery of information and knowledge for the purpose of education and training through telecommunication technology. Aparicio and Bacao (2013) defines Online Learning as another relevant concept to E-Learning which refers to the learning in which knowledge and information is provided to users through partial or entire use of internet in the process, with feature of flexible timing and accessible geographically.

E-Learning is identified as a tool to provide education to marginalized groups in rural areas, increasing the number of students accessing higher education through a cheaper and more flexible alternative (Andersson & Grönlund, 2009; Mathew & Iloanya, 2016). E-Learning is an element which can enhance learning and ensure better use of resources in the education sector (Kituyi & Tusubira, 2013). It supports and enhances learning, teaching, assessment, and makes learning accessible, customized and continuous with flexibility of time and place (Naresh & Reddy, 2015; Steyn & Belle, 2015; Alkharang, 2014). E-Learning provides an opportunity to deliver quality and standardized content, increase access to information, and improve interactivity and convenience (Bhuasiri et al., 2012).

The improvement of technology and its usage in the education sector in the last decade has caused traditional methods to be reevaluated and reformed in order to improve communication in the learning environment, while new combined techniques are used (Sheerah & Goodwyn, 2016). E-Learning seems to be the paradigm of modern education (Sun et al.,2008). Downey et al. (2005) claim that E-Learning is one of the fastest growing markets in the education industry. Eze et al. (2018) argue that E-Learning is

a significant strategy in education which should be introduced into the current learning and teaching style of institutions. E-Learning practices have been utilized by many universities worldwide as a mode of educational content delivery (Bhuasiri *et al.*, 2012). The number of universities adopting E-Learning practices is increasing around the world in order to meet the educational demand in the sector (Oyerinde, 2014). E-Learning approaches have been widely used in developed countries and are regarded as a government responsibility. For instance, a board called the Quality Assurance Agency (QAA) was set-up as the code of practice for E-Learning in the UK (Naresh & Reddy, 2015). Likewise, in order to enhance and support E-Learning projects and ensure the growth rate of undergraduates in Saudi Arabia, the Ministry of Education encourages universities to adopt blended learning. Blended Learning refers to learning which is a combined form of online learning and traditional learning (Sheerah & Goodwyn, 2016).

2.3 E-Learning Implementation Challenges in Developing Countries

E-Learning has been adopted by many educational institutions in developed and developing countries. E-Learning has aided in the expansion of higher education for graduates over the last decade (Aldowah *et al.*, 2019). In developed countries, E-Learning adoption has reached its advanced stages, but in many developing countries, it is still in its infancy stages (Al-Azawei *et al.*, 2016). As per Almaiah *et al.* (2020), introducing E-Learning into the traditional education system is a matter of change as it is involved in factors such as teachers, students, technology, culture, and governmental policies and regulations. Therefore, the adoption of E-Learning in developing countries faces a series of challenging factors (Aldowah *et al.*, 2019; Atanda & Ahlan, 2015; Aung and Khaing, 2016). A study by Alamaiah *et al.* (2020) claims that for successful implementation and adoption of E-Learning, the adoption factors as well as the challenges of the systems should be understood first (Almaiah *et al.*, 2020). Developing countries face different challenges than developed countries in the implementation of E-Learning. Understanding the challenges to E-Learning before its implementation will result in cost and time savings (Naresh & Reddy, 2015; Bhuasiri *et al.*, 2012).

Researchers have reported similar results when it comes to the challenges of E-Learning adoption in developing countries. Andersson and Grönlund (2009), through an extensive review of literature on the challenges of E-Learning, found 30 challenges and categorized them into four dimensions; namely, contextual, course, technological and individual challenges. They further found out that the literature in developing countries is focused on access to technology and context, while in

developed countries, the literature focuses on individuals. Likewise, it is reported by Oyerinde (2014) that the challenges to E-Learning in developing countries are mostly infrastructural, technological and contextual, while in developed countries, the challenges are associated with the individual dimension of E-Learning. Based on literature reviewed and taking advantage of Andersson and Grönlund's (2009) framework of E-Learning challenges, the study has categorized the challenges to E-Learning successful implementation into four categories; Technological and Infrastructural, Course and Approach, Contextual, and Individual challenges.

2.3.1 Technological and Infrastructural Challenges

Many gaps exist between developing and developed countries and one of the gaps is the Digital Divide, which refers to the gap existing between those who can use and have access to modern ICT technology and those who cannot use it and do not have access to it (Ali, Hussain, & Ahmed, 2011). ICT infrastructure is considered as a preliminary step to adopting E-Learning. ICT infrastructure acquisition, management and maintenance and the cost and speed of the internet are identified as challenges to E-Learning adoption in developing countries (Al-Azawei *et al.*, 2016; Aung & Khaing, 2016). Almaiah *et al.* (2020) point out technological factors as a necessary factor for the successful implementation of E-Learning systems. He elaborates that if institutions do not have the necessary technology and infrastructure for E-Learning systems, it would be a hurdle for the successful implementation of the systems. The cost of technology, access to the internet and its high cost, lack or shortage of electricity, lack of technical skills and support for maintenance and upgrading the system, software and interface design are the technological challenges to the successful implementation of E-Learning in developing countries (Almaiah *et al.*, 2020; Al-Azawei *et al.*, 2016; Sheerah & Goodwyn, 2016; Aung & Khaing, 2015; Oyerinde, 2014; Andersson & Grönlund, 2009). Besides, Almaiah *et al.* (2020) reported that the design of E-Learning is among the factors affecting E-Learning adoption. He claims that if the system is not user-friendly and compatible with students' needs and skills, E-Learning adoption will face another challenge. For instance, Alekbaikan and Troudi (2010) identified that finding the right design is one of the challenges to blended learning implementation in Saudi Arabia. He recommends that the design of blended learning, which is one of the E-Learning practices, should be user-friendly, easy to use and interesting in order to be successfully adopted.

Ahmadpour and Mirdamadi (2010) identified the high cost of internet and telecommunication infrastructure (hardware and software),

maintenance cost, low speed internet, and lack of access to the internet as major challenges of E-Learning implementation in agricultural extension services in Iran. Likewise, Al-Azawei *et al.* (2016) reported that low internet bandwidth, lack of ICT infrastructure, and shortage of electricity are technological challenges of E-Learning in the context of Iraq. Andersson (2008) investigated the challenges of E-Learning in Sri Lanka. The study identified access to the internet and the quality of the internet as one of the major challenges of E-Learning implementation in Sri Lanka. In their study, Sfenrianto *et al.* (2018) verified that technological infrastructure is one of the major challenges to E-Learning in Indonesia, since access to the internet in the eastern areas of Indonesia is a critical issue and some students do not own their own laptops. According to Mathew and Iloanya (2016), technology can help improve access to higher education in Africa, and in this way, higher education can be opened up to the marginalized population who are settled in rural areas, in particular, women. Internet issues such as unreliable access, poor bandwidth and high costs are identified as major challenges to E-Learning in Africa. One repetitive problem with the implementation of E-Learning in Africa is the non-availability of electricity. For instance, one of the obstacles to E-Learning adoption in Tanzania is the electricity supply (Atanda & Ahlan, 2015). In another study, lack of access to technological infrastructure was identified as the fundamental obstacle to E-Learning in Tanzania (Steyn & Belle, 2015). Atanda and Ahlan (2015) also identified the lack of internet access and its cost, computer ownership, epileptic electricity supply, and internet experience as challenges to the successful implementation of E-Learning in Nigeria.

2.3.2 Course (Content) and Approach Challenges

In their comprehensive literature review focusing on the challenges of E-Learning implementation in developing countries, Andersson and Grönlund (2009) identified the need for the development of new curriculum, pedagogical models, irrelevant and outdated subject content, teaching and learning activities, flexibility of the E-Learning approach, localization of the content, support functions and faculty support as course challenges to the successful implementation of E-Learning in developing countries. Aung and Khaing (2016) have also reported the lack of a proper curriculum for E-Learning and language issues as challenges to E-Learning in developing countries. He elaborates that, since most E-Learning systems are in English, insufficient English skills are one of the obstacles to successful implementation of E-Learning. Similarly, Naresh and Reddy (2015) and Al-Azawei (2016) identified a lack of technical and administrative support for teachers and students as a

barrier to successful E-Learning implementation in developing countries. For example, in Iran, a major barrier to E-Learning implementation in agricultural extension services has been identified as a lack of technical support. Similarly, Steyn and Belle (2015) identified the lack of technical and administrative support as challenges to E-Learning implementation in Tanzanian universities. According to Andersson (2008), the pedagogical model of E-Learning is mostly student-centered and, since E-Learning involves a move from traditional learning instructor-centered to student-centered learning, in order to manage this change, training activities are crucial in E-Learning implementation, which, if not considered, can pose a potential challenge to E-Learning adoption. He elaborates that students should be allowed to learn at their own pace in order for E-Learning implementation to be successful.

2.3.3 Contextual Challenges

According to Andersson and Grönlund (2009), economy and funding, knowledge management issues, role of teacher and student, attitude E-Learning and IT, policies, rules and regulations of government are identified as contextual challenges of E-Learning in developing countries. Andersson (2008) claims that understanding the attitude of society, politicians, students and other stakeholders toward E-Learning is crucial, which if not addressed appropriately can pose challenges to successful implementation of E-Learning in developing countries. He adds that the content of E-Learning should be adapted to the local culture. Since most E-Learning systems are designed and manipulated in the English language, low English language skills are one of the obstacles to the successful implementation of E-Learning (Aung & Khaing, 2016). According to Alebaikan and Troudi (2010), culture is one of the challenges to blended learning implementation. The research identified that adaption of blended learning in a traditional university culture is a hinderance to blended learning implementation. Similarly, another study verified that culture is one of the major challenges to E-Learning adoption in Indonesia (Sfenrianto *et al.*, 2018). According to Naresh and Reddy (2015), the lack of financial support from the government is another challenge to the successful implementation of E-Learning in developing countries. According to Al-Azawei *et al.* (2016), allocating a specific fund for E-Learning is necessary, but the lack of financial support and the government's ambiguous policies are identified as barriers to E-Learning implementation in Iraq. Similarly, Almaiah *et al.* (2020) reported that financial support for E-Learning projects is a challenge, which is also true for Jordanian universities due to limited resources and a budget deficit.

2.3.4 Individual Challenges

According to Andersson and Grönlund (2009), motivation, conflicting priorities of individuals, the economy of individuals, academic and technological confidence, social support and employer support are individual challenges of E-Learning adoption in developing countries. Likewise, Steyn and Belle (2015), Babu and Reddy (2015), and Aung and Khaing (2016) investigated E-Learning adoption challenges in developing countries. They have reported that the lack of sufficient IT literacy and a lack of awareness of E-Learning are challenges to E-Learning adoption in developing countries. Bhuasiri *et al.* (2012) identified motivation, learners' behavior and technology awareness as the first steps toward the successful implementation of E-Learning systems. Individuals' attitude toward E-Learning, improving their technology skills and enhancing the motivation of individuals are identified as the most important and relevant factors which can influence E-Learning adoption in developing countries. Almaiah *et al.* (2020) point out that there are teachers and students who do not prefer E-Learning over the traditional learning system. Furthermore, if the E-Learning system is not user-friendly and compatible with the needs and skills of the students, the system's adoption will be difficult. Therefore, it is necessary to consider the self-efficacy factor and conduct awareness sessions in order to make them feel confident and motivated to use E-Learning systems. Mathew and Iloanya (2016) identified technophobia, which refers to the fear of technology, as one of the challenges to E-Learning adoption in developing countries. In their study, Almaiah *et al.* (2020) reported that lack of trust in E-Learning systems is another factor which will lead to resistance to the adoption of E-Learning systems. According to Ahmadpour and Mirdamadi (2010), lack of awareness and ICT skills, negative attitude towards E-Learning and lack of technical support are major challenges to E-Learning implementation in agricultural extension services in Iran. Al-Azawei *et al.* (2016) reported insufficient E-Learning literacy and the willingness of individuals to adopt new learning approaches over traditional systems as challenges to the adoption of E-Learning in Iraq. Similarly, Andersson (2008) found out that since Sri Lankan students do not possess sufficient technical confidence, the lack of support and guidance for individuals is a hindrance to E-Learning adoption. Albaikan and Troudi (2010) argued that since blended learning demands more time from an instructor in order to develop the educational materials than in traditional learning, time demanded by the blended learning system is one of the challenges of its adoption in Saudi Arabia. Based on the literature, Table 1 depicts the factors which are identified as challenges to E-Learning adoption in developing countries.

Table 1: Challenges Affecting E-Learning Adoption in Developing Countries based on the Literature

No	Dimensions	Factors	
1	Access to Internet		
2	Internet Connectivity/Speed/Quality		
3	Cost of Internet		
4	Lack of Technical Experts	Infrastructural and Technological Challenges	
5	Hardware (Computers, ICT Equipment)		
6	Software and Interface Design		
7	Cost of Hardware and Software		
8	System Management & Maintenance		
9	Cost of Maintenance and Upgrading system		
10	Lack/Shortage of Electricity		
1	Development of New Curriculum		
2	Pedagogical Model of E-Learning		
3	Subject Content		
4	Teaching and Learning Activities		
5	Flexibility of E-Learning Model	Course (Content) and Approach Challenges	
6	Content in a Language other than Native Language		
7	Lack of Technical Support (Trainings) to Students and Teachers		
8	Lack of Administrative Support to Teachers and Students		
1	Financial Support by Government		
2	Governmental Policies, Rules and Regulations		
3	Attitude of Society, Students and Teachers towards E-Learning and IT		Contextual Challenges
4	Language		
5	Culture		
6	Knowledge Management (Lack of Experience Sharing among Institutions)		
1	Motivation		
2	Technological Confidence (ICT Literacy)		
3	Academic Confidence		
4	Economy of Individuals	Individual Challenges	
5	Lack of Awareness		
6	Technophobia		
7	Lack of Trust		
8	Lack of Social Support (Family/Employer Support) to Students		

Source: Literature Review Studies, 2005-2020

Based on the literature, there are different obstacles which developing countries face while implementing e-learning practices. Research reflects that the degree of the challenges faced by developing countries differs from country to country. Because Afghanistan is a developing country, it is unavoidable that it will face difficulties in implementing e-learning in its education sector, particularly in the TVET sector.

3. Methodology

Since the research aims to explore the factors affecting E-Learning adoption in Afghanistan through empirical evidence from the TVET Authority, this study uses a quantitative design. This study uses a deductive approach in order to check the identified factors in the literature in the context of the TVET Authority of Afghanistan. The study employed a closed-ended questionnaire divided into two sections. The first section included 5 items in order to get demographic information about the respondents. The second section included 40 items about the challenges of e-learning adoption in developing countries, categorized into four segments based on the researcher's elaboration of the challenges from the literature. In order to measure the dimensions, a 5-point Likert Scale was applied. The respondents rated their agreement with each item using: 1 = Strongly Disagree, 2 = Disagree, 3 = Somewhat Agree, 4 = Agree, 5 = Strongly Agree. Since the study uses a factor analysis approach, according to Bajpai (2011), the sample size should be five times the dimensions included in an EFA study. Based on the literature, 40 dimensions are discussed, so the sample size is 200, which includes specialists, policymakers, curriculum developers, and instructors in TVET Authority in Kabul City. The sample size was determined using a probabilistic sampling method. Since there are many challenges in different dimensions to the successful implementation of e-learning practices in developing countries, based on the literature. Based on the literature, the identified E-Learning adoption challenges in developing countries are investigated in the context of Afghanistan. In order to analyze and interpret the primary data, this study uses a Factor Analysis technique, Exploratory Factor Analysis. It refers to a technique of data reduction which brings many variables with the same variance under the same factor.

4. Results and Discussion

4.1 Results

The study covered a total of 200 respondents from the TVET Authority; 115 teachers of TVET Authority institutions in Kabul city, and 85 employees working in different departments of the TVET Authority of Afghanistan were

included. The Cronbach's Alpha of the collected data has a value of 0.912, which is greater than 0.6 and means that there is internal consistency in the collected data, and that the collected data is reliable. As shown in Table 2, the data's KMO test value is 0.801, which is greater than 0.5 and indicates that the data sample is adequate. Meanwhile, Bartlett's test of sphericity shows a value of 0.000 for significance, which is less than 0.05, and thus, factor analysis is appropriate for application in this study.

Table 2: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.801
Bartlett's Test of Sphericity	Approx. Chi-Square	2778.394
	Df	561
	Sig.	.000

Source: Data output from SPSS v 26.0

As shown in Table 3, the value after extraction of all dimensions have greater than 50% variance, and the large variance between them aids in determining that the factors are quite equivalent and are considered important in the explanation of the issue.

Table 3: Communalities

	Initial	Extraction
Access to Internet by Students and Teachers	1.000	.583
Poor Quality Internet	1.000	.689
Cost of Internet	1.000	.674
Lack of Technical Experts	1.000	.555
Lack of Proper Hardware (ICT Equipment) by Teachers and Students	1.000	.682
Lack of Proper Software and Interface Design	1.000	.726
System Management and Maintenance	1.000	.756
Cost of System Management, Maintenance and Upgrading	1.000	.665
Lack or Shortage of Electricity	1.000	.525
Development of New Curriculum for E-Learning Approach	1.000	.692
Pedagogical Model of E-Learning as it is mostly Student-Centered while Traditional Systems are mostly Instructor-Centered.	1.000	.710
Irrelevant, Boring, and Outdated Subject Content	1.000	.608
Lack of Proper Teaching and Learning Activities (Frequent Follow-ups, Teacher Interventions, and Continuous Assessment) of E-Learning Models	1.000	.549
Lack of Technical Support (Trainings) to Students	1.000	.580
Lack of Technical Support (Trainings) to Teachers	1.000	.704
Lack of Administrative Support to Students	1.000	.727

Lack of Administrative Support to Teachers	1.000	.732
Insufficient or Lack of Financial Support by Government	1.000	.610
Governmental Rules and Regulations (Regulations as a hinder to E-Learning Adoption)	1.000	.700
Governmental Policies (Lack of Policies encouraging E-Learning Adoption)	1.000	.726
The attitude of Students towards E-Learning and IT	1.000	.783
The attitude of Teachers towards E-Learning and IT	1.000	.722
The attitude of Governmental Education Policy Devisors towards E-Learning and IT	1.000	.695
Culture: Adaption of E-Learning in Institutions with Traditional Culture (Classroom Learning).	1.000	.544
Interface Design of E-Learning Systems in the English Language (Not in Local Languages)	1.000	.804
Course Content of E-Learning Systems in the English Language (Not in Local Languages)	1.000	.757
Lack of Motivation for E-Learning Adoption by Students	1.000	.708
Lack of Motivation for E-Learning Adoption by Teachers	1.000	.708
Lack of Sufficient ICT Literacy of Students	1.000	.617
Teachers and Students are not Financially Ready for E-Learning Adoption	1.000	.698
Technophobia: Fear of Technology by Teachers and Students.	1.000	.660
Lack of Trust to E-Learning Approaches	1.000	.674
Lack of Support to Students to Adoption of E-Learning Approaches	1.000	.692

Extraction Method: Principal Component Analysis.

Source: Data output from SPSS v 26.0

As shown in Table 4, as per the values of factor loadings, 10 factors are identified as challenges to E-Learning Adoption in the context of the TVET Authority of Afghanistan. As, the study was conducted in order to explore the factors posing a challenge to E-Learning adoption in the context of the TVET Authority of Afghanistan. Based on Principal Component Analysis, 10 factors were extracted using Varimax with the Kaiser Normalization Rotation Method. The findings revealed the challenges under the 10 factors as shown in Table 5; individualistic challenges, malfunctioning administrative and technical support, attitudinal and cultural challenges, governmental challenges, insufficient ICT facilities and capacity, course content and approach challenges, linguistic challenges, operational challenges, infrastructural challenges, and financial challenges

Table 4: Rotated Component Matrix

	1	2	3	4	5	6	7	8	9	10
Lack of Trust to E-Learning Approaches										
Lack of Motivation for E-Learning Adoption by Teachers	.762									
Lack of Motivation for E-Learning Adoption by Students	.760									
Technophobia: Fear of Technology by Teachers and Students.	.736									
Lack of Support to Students to Adoption of E-Learning Approaches	.719									
Lack of Sufficient ICT Literacy of Students	.650									
Lack of Technical Support (Trainings) to Teachers	.568	.789								
Lack of Administrative Support to Teachers		.767								
Lack of Administrative Support to Students		.766								
Lack of Technical Support (Trainings) to Students		.600								
Attitude of Students towards E-learning and IT			.803							
Attitude of Teachers towards E-learning and IT			.782							
Attitude of Governmental Education Policy Devisors towards E-Learning and IT			.698							
Culture: Adaptation of E-Learning in Institutions with Traditional Culture (Classroom Learning).			.517							
Governmental Policies (Lack of Policies encouraging E-Learning Adoption)				.740						
Governmental Rules and Regulations (Regulations as hinder to E-Learning Adoption)				.697						
Insufficient or Lack of Financial Support by Government				.696						
Lack of Proper Teaching and Learning Activities (Frequent Follow ups, Teacher Interventions and Continuous Assessment) of E-Learning Models										
Lack of Proper Software and Interface Design					.762					
Lack of Proper Hardware (ICT Equipment) by Teachers and Students					.738					
Lack of Technical Experts					.590					
Development of New Curriculum for E-Learning Approach						.790				
Pedagogical Model of E-Learning as it is mostly Student-Centered while Traditional Systems are mostly Instructor-Centered.						.778				
Access to Internet by Students and Teachers						.529				
Interface Design of E-Learning Systems in English Language (Not in Local Languages)						.808				
Course Content of E-Learning Systems in English Language (Not in Local Languages)						.772				
System Management and Maintenance							.808			
Cost of System Management, Maintenance and Upgrading							.704			
Poor Quality Internet									.753	
Cost of Internet									.635	
Lack or Shortage of Electricity									.512	
Teachers and Students are not Financially Ready for E-Learning Adoption										.728

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.*

a. Rotation converged in 10 iterations.

Source: Data output from SPSS v.26.0/

Table 5: Challenges to Adoption of E-Learning at TVET Authority

Factor No.	Dimensions	Factor Loading	Name of the Factor
1	Lack of Trust to E-Learning Approaches	.762	Individualistic Challenges
	Lack of Motivation for E-Learning Adoption by Teachers	.760	
	Lack of Motivation for E-Learning Adoption by Students	.736	
	Technophobia: Fear of Technology by Teachers and Students.	.719	
	Lack of Support to Students to Adoption of E-Learning Approaches	.650	
	Lack of Sufficient ICT Literacy of Students	.568	
2	Lack of Technical Support (Trainings) to Teachers	.789	Unavailability /Malfunctioning Administrative and Technical Support
	Lack of Administrative Support to Teachers	.767	
	Lack of Administrative Support to Students	.766	
	Lack of Technical Support (Trainings) to Students	.600	
3	Attitude of Students towards E-learning and IT	.803	Attitudinal and Cultural Challenges
	Attitude of Teachers towards E-learning and IT	.782	
	Attitude of Governmental Education Policy Devisors towards E-learning and IT	.698	
	Culture: Adaption of E-Learning in Institutions with Traditional Culture (Classroom Learning).	.517	
4	Governmental Policies (Lack of Policies encouraging E-Learning Adoption)	.740	Governmental Challenges
	Governmental Rules and Regulations (Regulations as hinder to E-Learning Adoption)	.697	
	Insufficient or Lack of Financial Support by Government	.696	
5	Lack of Proper Software and Interface Design	.762	Insufficient ICT Facilities and Capacity
	Lack of Proper Hardware (ICT Equipment) by Teachers and Students	.738	
	Lack of Technical Experts	.590	
6	Development of New Curriculum for E-Learning Approach	.790	Course Content and Approach Challenges
	Pedagogical Model of E-Learning as it is mostly Student-Centered while Traditional Systems are mostly Instructor-Centered.	.778	
	Access to Internet by Students and Teachers	.529	
7	Interface Design of E-Learning Systems in English Language (Not in Local Languages)	.808	Linguistic Challenges
	Course Content of E-Learning Systems in English Language (Not in Local Languages)	.772	
8	System Management and Maintenance	.808	Operational Challenges
	Cost of System Management, Maintenance and Upgrading	.704	

9	Poor Quality Internet	.753	Infrastructural Challenges
	Cost of Internet	.635	
	Lack or Shortage of Electricity	.512	
10	Teachers and Students are not Financially Ready for E-Learning Adoption	.728	Financial Challenge

Source: Data Compilation from Table 4

4.2 Discussions

In E-Learning adoption in institutions of the TVET Authority, the situation does not seem easy. There are several factors that impede E-Learning adoption. Individualistic issues such as motivation, trust, ICT literacy and technophobia are identified as some of the factors which pose a challenge to the adoption of E-Learning in the institutions of the TVET Authority. It means that teachers and students of institutions of the TVET Authority do not have motivation for the adoption of E-Learning, students are not equipped with sufficient IT literacy, and they do not trust E-Learning approaches. Similar results were found by Almaiah *et al.* (2020) in Jordanian universities, Al-Azawei *et al.* (2016) in Iraq, Mathew & Iloanya (2016) in Botswana, Bhuasiri *et al.* (2012) and Andersson & Grönlund (2009) in developing countries. In these studies, the authors identified lack of motivation, trust and ICT literacy, and technophobia as challenges to E-Learning adoption. Furthermore, the lack of technical and administrative support for students and teachers is revealed as another factor which, in turn, poses challenges to E-Learning adoption by the TVET Authority institutions. Students and teachers do not receive sufficient support in terms of administration and technical issues in order to adopt E-Learning. These results are consistent with those of Al-Azawei *et al.* (2016) in Iraq, (Steyn & Belle (2015) in Tanzanian Universities, Ahmadpour & Mirdamadi (2010) on e-learning implementation challenges in agricultural extension services in Iran, and Andersson (2008) in Sri Lanka. The studies identified the lack of technical and administrative support as key challenges to E-Learning adoption. Attitudinal and culture issues are another impediment to E-Learning adoption in TVETA institutions, which means that students, teachers and policy directors have negative attitudes toward E-Learning and IT, and that the adaption of E-Learning in the institutions is too hard, since they still have the traditional classroom learning system. These findings come in parallel with studies of Alamaiah *et al.* (2020) in Jordan and Saudi, Sfenrianto *et al.*, (2018) in Indonesia, Al-Azawei *et al.* (2016) in Iraq, Bhuasiri *et al.* (2012), and Ahmadpour & Mirdamadi (2010) in Iran. They investigated negative attitudes toward E-Learning as well as the traditional learning culture as a barrier to E-Learning adoption. The role of the government is also significant. The study explored the lack of policies encouraging E-

Learning adoption, the existence of governmental rules as a barrier to E-Learning adoption, and insufficient government financial support as the governmental side of the E-Learning challenges. These findings are supported by Almaiah *et al.* (2020) at Jordanian universities, Al-Azawei *et al.* (2016) in Iraq, and Naresh and Reddy (2015). The studies found that a shortage of funding by governments, ambiguous governmental policies, and governmental rules are among the challenges to E-Learning adoption in many countries. Insufficient ICT facilities and capacity are identified as another factor posing a challenge to E-Learning adoption in the institutions of the TVET Authority. The results show that the lack of proper software, hardware and ICT equipment for teachers and students, and the lack of technical experts, are among the challenges of E-Learning adoption. These findings are in line with the results of Sfenrianto *et al.* (2018) in Indonesia, Atanda and Ahlan (2016) in Nigeria, Al-Azawei *et al.* (2016) in Iraq, Steyn and Belle (2015) in Tanzania, and Ahmadpour & Mirdamadi (2010) in Iran. These studies identified providing software and hardware for E-Learning, and computer ownership as challenges to E-Learning adoption. The course content and approach are the dimensions of E-Learning that play a role in its adoption. The findings explain that the pedagogical model of E-Learning, which is student-centered, the lack of curriculum for the E-Learning system and the need for the development of a new curriculum pose challenges to E-learning adoption in the institutions of the TVET Authority. Aung and Khaing (2016), and Andersson & Gronlund (2009) came up with similar results in their studies. They found out that, despite the need for the development of new curriculum for E-Learning systems, the transition from traditional instructor-centered learning to student-learning is a challenge to E-Learning adoption.

Among all other issues related to learning, language is one of the unavoidable factors. Similarly, it is an important factor in E-Learning adoption. The findings reveal that the lack of proper course content interface design of systems in local languages is among the challenges of E-Learning adoption in institutions of the TVET Authority. These results are confirmed by Aung and Khaing (2016) and Andersson & Grönlund (2009). They reported that because the majority of E-Learning system courses and interface designs are in English, the insufficient English level of individuals and the development of content in local languages is a barrier to E-Learning adoption. Operational issues are also among the factors which pose a challenge to E-Learning adoption in the TVET Authority institutions. It reports that management, maintenance, upgrading the E-Learning system, and the cost of the operations are among the challenges to E-Learning adoption in the institutions of the TVET Authority. This finding is also

supported by the studies of Almaiah *et al.* (2020) and Aung and Khaing (2016). Infrastructural issues have been identified as a barrier to E-Learning adoption in almost all developing countries, including Afghanistan's TVET Authority. The findings explored that poor quality of internet, cost of internet and shortage of electricity are the variables which pose challenges to E-Learning adoption in institutions of TVET Authority. This finding is in line with the works of Almaiah *et al.* (2020) in Jordan, Sfenrianto *et al.* (2018), Al-Azawei *et al.*, (2016) in Iraq, Mathew & Iloanya (2016) in Africa, Sheerah & Goodwyn (2016), and Atanda & Ahlan (2016). They have reported that the high cost of the internet, internet bandwidth and insufficient electricity supply are challenges to E-Learning adoption. Finally, the findings reflect financial issues as another challenge. The study explored that the teachers and students of the institutions of the TVET Authority are not financially ready to adopt E-Learning. The finding is supported by the studies of Ahmadpour & Mirdamadi (2010) in Iran, and Andersson & Grönlund (2009) in developing countries, who reported that E-Learning adoption is associated with the cost of the internet & computers, the economy of individuals, and students are not financially ready for it. Research done by Naresh & Reddy (2015) claimed that developing countries face different challenges in the implementation of e-learning than in developed countries. Similarly, it is reported by Oyerinde (2014) that the challenges to e-learning in developing countries are mostly infrastructural, technological and contextual, while in developed countries, the challenges are associated with the individual dimension of e-learning. However, findings from the TVET Authority of Afghanistan revealed that E-Learning adoption is hampered not only by infrastructural, technological, and contextual challenges, but also by individual challenges.

5. Conclusion

E-learning seems to be the paradigm of modern education and it is identified as a tool which can provide education to marginalized groups in rural areas, increasing the number of students accessing higher education through a cheaper and more flexible alternative. Considering the advantages of E-Learning, the TVET Authority of Afghanistan tends to make use of e-learning in order to enhance learning and ensure better use of resources. This study was conducted to explore the challenges to e-learning adoption through empirical evidence from the TVET Authority of Afghanistan. The findings revealed that individualistic challenges, malfunctioning administrative and technical support, attitudinal and cultural challenges, governmental challenges, insufficient ICT facilities and capacity, course content and approach challenges, linguistic challenges,

operational challenges, infrastructural challenges, and financial challenges are the challenges faced during the adoption of E-Learning in the context of the TVET Authority of Afghanistan. The study contributes to the identification of the challenges to E-Learning adoption in the context of the TVET Authority of Afghanistan, and provides the reader with an in-depth understanding of the challenges of introducing e-learning approaches in the institutions of the TVET-Authority of Afghanistan. This study's findings are useful not only for academics, but also for policymakers, education sector decision makers, and education system developers. Since this study covers teachers and staff of the TVET Authority in Kabul City, further research with greater coverage of the main cities is recommended. In addition, this study only explores the challenging factors of E-Learning adoption and does not check the interrelationships between the factors. The research area for checking the interrelationships of the factors through models such as PLS is open.

5.1 Recommendations

This study explores the factors posing a challenge to E-Learning adoption in institutions of the TVET Authority of Afghanistan. Thus, the following main recommendations are given:

1. Since teachers and students have a negative attitude toward E-Learning, they lack the required ICT literacy, and there is a lack of motivation and trust for E-Learning among teachers and students in institutions, the TVET Authority should conduct awareness sessions and technical training for them in order to equip them with IT literacy, and thus, the technophobia effect will also be minimized and they will be motivated for E-Learning adoption. Consequently, their attitude to E-Learning will also be changed.
2. Lack of policies encouraging E-Learning adoption, governmental rules, insufficient financial support by government, infrastructural insufficiencies, and economy of students and teachers are issues which are identified as factors posing challenge to E-Learning adoption. As a result, the Afghan government should develop policies and incorporate them into the national strategy in order to pave the way for easy adoption of E-Learning in the context of the TVET Authority, and other players in the education sector, such as the Ministry of Education and the Ministry of Higher Education.

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