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E-learning Effectiveness amongst Sabah Student in Technical and Vocational Education Training (TVET) Institutions

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Abstract

E-learning or its elements are practically absent in the vocational education and training system and are introduced mainly in universities environment. It was used as a teaching method but it was never truly put to use until the pandemic hit. This paper seeks to examine E-learning Effectiveness Amongst Sabah student in Technical and Vocational Education Training (TVET) in Sabah, Malaysia context. Specifically, the effects of three components of TVET E-learning Effectiveness (TEE) through (DeLone & McLean, 2002) Information system success model namely System Quality (SYQ), Information Quality (IQ) and Service Quality (SEQ) towards the mediating variable which is system usage (USE) and User satisfaction (US) TVET E-learning Effectiveness in in Sabah, Malaysia context are discussed. In addition, Use and User Satisfaction (US) as mediator to TEE also be deliberated.

Keywords: E-learning, Distance Learning, TVET, Technical and Vocational Education Training, VET, Malaysia, Service Quality, System Quality, Information Quality, User Satisfaction, Technology, Education

Introduction

The global disruption by Coronavirus disease (COVID-19 caused by a newly discovered coronavirus (World Health Organization (WHO), 2020) has severely affected the economy sector of every nation in this world, including the higher education sector. Higher education was significantly affected by this disease faced major changes that impacted the students in higher education sector. As a result, there are widespread school closures in many countries. UNESCO reports that 89% of the global student population is affected by the closures, in about 188 countries. More learners could be impacted, according to UNESCO. This can be seen with the unexpected closure of educational institution all over the world and in Malaysia particularly. The emergence of Covid-19 has prompted the authorities to suggest adopting alternatives traditional learning methods in emergencies to ensure that students are not left

without studying and to prevent the epidemic from spreading. Governments have implemented variety policies, strategies and approaches corresponding the preparedness of countries to tackle the issue in different fronts. The movement control order (MCO) has propelled almost every educational institution in the country to embrace digital teaching and learning.

Technical Vocational Education and Training (TVET) is one of the critical drivers in the transformation of Malaysia's education system and contributes towards economic growth. It works to develop and equip individuals with current technical skills based on industry demand. The Malaysian government invests heavily in higher education and technical vocational education and training (TVET) institutes. Many issues faced by the government in the way to brace the field of Technical and Vocational Education and became worse when the outbreak of COVID-19 pandemic changed the way of delivering education from conventional methods to e-learning. According to press reports, Malaysian universities, colleges, and polytechnics are utilizing numerous e-learning platforms. Over the projected period of 2016–2023, the online education market is expected to increase at a rate of 16.4 percent per year. With the rapid rise of the internet, university and TVET teaching and learning methods may shift in the next 10 to 15 years. Even though distant education and its components are mostly used at universities, they are virtually non-existent in the vocational education and training system. (Petrenko, 2020)

The disruption of traditional teaching and learning methodologies (i.e., face-to-face methods) caused by the COVID-19 pandemic has had a severe impact on the global educational sector's long-term development, particularly in underdeveloped countries where schools were shuttered throughout the pandemic. About 120 countries abandoned face-to-face teaching; COVID-19 affects the education of approximately a billion pupils globally. According to Azzi-Huck and Shmis 2020; Shahzad et al. 2020a, (b) majority of the higher education system is based on e-learning. Most TVET institutions in developing countries apply traditional methods in teaching and learning delivery where a learner must be physically present in class and the teacher is mostly the source of the content while the learner is only a recipient. However with current situation all institutions practically TVET institutions requiring or need to shift teaching and learning method from the norm.

In Sabah, though E-learning has been used in private and government universities and institutions as teaching method but it was never truly put to use until the pandemic hit. The sudden switch to using digital instruction may have led to sub-optimal results if compared to a business as usual in-presence instruction, as teachers, students and schools all had to unexpectedly adjust to a novel situation. This is understandable given that instructors prefer face-to-face instruction and that some distant areas lack adequate infrastructure, such as an internet connection. However, Sahu 2020 quoted that the change to online learning has prompted many concerns about the quality of education. The first concern which has arisen is that online learning is only available to students that have access to an internet connection at home that is fast enough to support online learning. Furthermore, great infrastructures such as computers and IT current equipment reception are now in high demand, and institutions are upgrading their teaching approaches to make better use of intellectual capital (Alvino, Di Vaio, Hassan, & Palladino, 2020). Most countries have considerable challenges with technological infrastructure in rural areas; consequently, the quality of online education may be a critical issue that requires immediate attention. As a result of the aforementioned

concerns, the study was undertaken to investigate the E-learning Effectiveness Among Sabah Students in Technical and Vocational Education Training (TVET) Institutions.

In the literature, the D&M model is tested on the general population, including banks and other financial sectors, as well as information systems (e-learning). Ref. Bhuasiri et al. has further examined e-learning research using information systems success model such as (Roca et al., 2006; Chiu et al., 2007; Wu et al., 2010; Lin, 2007; Wang, 2009; Ozkan & Koseler, 2009; 2012). According to the primary findings mentioned by Bhuasiri et al (2012), these studies altered the model to be useful in the e-learning sector. Whereas system and information quality have a substantial impact on learner satisfaction, performance expectations, and perceived usefulness. This research aims to determine how to create an effective online learning environment without sacrificing quality, as well as how to motivate students to attend lectures, particularly at Technical and Vocational Education Training (TVET) Institutions in Sabah, which recently implemented an online learning system during the COVID-19 Pandemic. Furthermore, this research was carried out as a technique for students to sustain their excitement for online learning in the Pandemic Era COVID-19.

Therefore, based on the information above, the research objectives are as follows.

- To examine E-learning Effectiveness Amongst Sabah student in Technical and Vocational Education Training (TVET) in Sabah, Malaysia context.
- To examine the effects of three components of TVET E-learning i.e., Effectiveness (TEE) through Delone & Mclean Information system success model (namely System Quality (SYQ), Information Quality (IQ) and Service Quality (SEQ)) towards the mediating variable which is system usage (USE) and User satisfaction (US) TVET E-learning Effectiveness in in Sabah, Malaysia

Literature Review

Technical and Vocational Education Training (TVET)

Formal, non-formal, and informal learning are all part of technical and vocational education and training (TVET), which prepares young people with the information and skills needed in the workplace. TVET has been referred to by a variety of names over the years, according to the United Nations Organization for Education, Science, and Culture (UNESCO): apprenticeship training, vocational education, technical education, technical-vocational education, occupational education, vocational education and training, professional and vocational education, career and technical education, workforce education, and workplace education. UNESCO defines TVET as “in addition to general education, the study of technologies and allied sciences, as well as the acquisition of practical skills, attitudes, understanding, and knowledge linked to employment in diverse sectors of economics and social life.” Young people can learn from basic to advanced levels in TVET, which takes place in a variety of institutional and occupational settings.

E-learning/Distance Learning

E-learning is a method of remotely delivering education or training programs. It does not necessitate interaction between the teacher/trainer and the learner at the same time. This is not a new concept; in fact, delivering learning materials to learners who lived far away from educational/training institutions via postal mail existed long before the Internet (UNESCO). Distance learning has benefited greatly from increased Internet access and advances in Information and Communication Technologies (ICTs) over the last two decades, and it is now commonly referred to as “e-learning.” With education and training no longer reliant on

physical infrastructure and co-location, e-learning enables a diverse range of learners, including those who, for a variety of reasons, do not have access to traditional learning and training, to gain new knowledge and skills. Computer-based or Internet-assisted learning activities are an important component of e-learning. Another term that is frequently used is online learning, but e-learning can also be off-line, such as learning from off-line educational applications stored on a tablet

System Quality (SYQ)

The phrase "system quality" refers to the degree to which systems are "user friendly" and simple to operate (Rai, et al., 2002); (Davis et al., 1989) ; (Doll & Torkzadeh, 1988). It also denotes the information system's quality, which is normally decided by the software and hardware employed. (Bharati & Berg, 2003). System quality is usually measured in terms of flexibility, reliability, functionality, simplicity of use, data relevance, integration, and quality (Delone & Mclean, 2003). In order to create the foundation of system quality, the researcher, on average, employs ease of use to represent system quality. According to (Shin, 2003), another criterion to consider when evaluating system quality is simplicity of use. Availability, usability, simplicity of learning, and quick access are all characteristics of a high-quality e-learning system. (Guimaraes, Armstrong, & Jones, 2009) and (Halawi, McCarthy, & Aronson, 2008) a good e-learning system should be simple to use and offer students with useful feedback. Doll and Torkzadeh (1988) measured user satisfaction in terms of system quality (i.e., system accuracy, ease of use). The user interface's navigation, terminology, and screen design are all factors that can increase users' desire to use the system (Ramayah, 2006) According to (Cheng, 2014), users are worried about system quality; the authors believe that compatibility and system quality can lead to student happiness. As a result, it is believed that the system's quality will have an impact on a person's happiness with E-learning.

Based on the review of literature on SYQ above, it is proposed that:
Preposition 1a: There is a positive and significant relationship effect between users' satisfaction with using the e-learning system.
Preposition 1b: There is a positive and significant relationship effect between system quality and system usage.

Service Quality (SVQ)

Service quality refers to users' subjective judgement that the service they are receiving from the portal is the service they expect. Ahn et al (2004) stated that Competence, follow-up service, empathy, confidence, dependability, and responsiveness are all factors that can be used to assess service quality. The updated model has received a lot of attention since (DeLone & McLean, 2002) introduced service quality as a metric for measuring IS success (Ravichandran , Rai, Stylianou, & Kumar, 2000). A correlation analysis (Masrek, 2007) revealed strong correlations between service quality and user satisfaction. In their studies, (Lwoga, 2013) and (Shaltoni et al., 2015) discovered similar evidence. Another line of research discovered a significant relationship with the confirmation of system use; for example, (Cheng, 2014) stated in the findings of their investigation that service quality is one of the factors that explains nurses' satisfaction with the use of the blended e-learning system, and (Chen & Chengalur, 2015) supported this claim . As a result, higher levels of service quality are assumed to lead to higher levels of user satisfaction and usage.

Based on the review of literature on SVQ above, it is proposed that
Preposition 2a: There is a positive and significant relationship effect between Service quality and users' satisfaction with E-learning system.
Preposition 2b: There is positive and significant relationship effect between Service quality and use (usage) with E-learning system.

Information Quality (IQ)
Information quality is a term used to describe the quality of data generated by a system. An information system's intended features include accuracy, precision, validity, reliability, appropriateness, and intelligibility. In an e-learning system, features like information accuracy, content needs, and the ability to deliver knowledge in a timely manner become more crucial (Swaid & Wigand, 2009). Furthermore, the quality of information is strongly tied to the content of an e-learning system. It is vital to provide students with relevant information about the course's goal before the course begins Rossin et al (2009) stated that the system's input to pupils is likewise tied to student satisfaction. In an e-learning environment that is personalized to the needs of learners and the usage of a content management system, learning outcomes and user satisfaction are likely to improve. The system's output quality is linked to the information quality. Successful interaction between the system and its users determines the degree to which a system is used, and user happiness is the result of such relationship. The success of the system also explains the consumers' impression of its utility (Freeze et al., 2010; Mohammadi, 2015).

Therefore, it is proposed that
Preposition 3a: There is positive and significant relationship effect between information quality (IQ) and system Use (usage).
Preposition 3b: There is a positive and significant relationship effect between information quality (IQ) and user satisfaction.

System Usage (USE)
The application of a system is an important factor in determining its success (Van der Heijden, 2004). The system utilization construct can also be described using the terms "possibility to use" and "intention to use." This component is represented by the quantity and frequency with which it is used. According to DeLone and McLean (2003), the nature, quality, and suitability of system usage are also significant outputs. In this study, system utilization refers to the nature and scope of using an e-learning system. When a system is thought to be useful, it is more likely to be used; when it is thought to be useless, it is less likely to be used (Alshare et al., 2010). It is necessary to use an e-learning system. Students, on the other hand, may believe that using the system is beneficial or that it has no effect on their learning experience. Furthermore, if students perceive system use as assisting them in improving their classroom performance, the e-learning system is more likely to be regarded as a success.

Based on the review of literature on USE above, it is proposed that
Preposition 4a: There is positive and significant relationship effect between System usage (USE) and E-learning system effectiveness (ELSE)

Preposition 4b: There is a positive and significant relationship effect between System usage (USE) and User satisfaction.

User Satisfaction (US)

One of the most important aspects of IT success is user satisfaction. According to (Delone & Mclean, 1992), user satisfaction and system usage are linked. (Doll WJ & Torkzadeh, 1988) stated that end User Computer Satisfaction is a widely used user satisfaction instrument (EUCS). Palvia (1996) has created a new holistic satisfaction model for small business users using information technology. (Palvia, 1996) identified information quality, service quality (vendors, document ation), security, and hardware adequacy as antecedents of user pleasure. Delone and McLean (1992), who proposed a precise description of six primary areas of IS success stated that user happiness was the most widely used single quantity. According to Seddon and Kiew (1994), user satisfaction is defined as happy or unpleasant feelings associated with the benefits the individual expects to obtain as a result of interacting with the information system. Doll and Torkzadeh (1998), on the other hand, defined user satisfaction as how users feel about using specific computer programmes. These feelings are inextricably linked to the system's ability to meet all of the client's requirements (Seddon & Kiew, 1994) According to Chen and Chengalur-Smith (2015), when a target system provides a positive user experience, the user is satisfied and thus encouraged to use the system again. In previous studies, Cheng (2014a); Lwoga (2013); Ismail et al (2012) discovered a similar association. Users' intention and actual use of the system are likely to increase if they are satisfied with the quality of the information, system, and service. In another study, end user satisfaction and system usage are frequently used as key criteria in determining the success rate of information systems (Iqbaria and Tan, 1997). Several other studies (DeLone & McLean, 1992; Igbaria & Tan, 1997; Bokhari, 2005; Kim & Lee, 2014; Peter et al., 2008; livary; 2005; Hollsaple & Lee-post, 2006) show a positive relationship between user satisfaction and system usage. According to existing empirical data, user satisfaction is linked to frequently used systems (Bharati, 2003; Freeze et al., 2010). According to De Lone and McLean, user happiness has been routinely used to assess the success of an information system (1992). Because using an e-learning system is mandatory, its success must be measured in terms of learning outcomes (Gill, 2006)Students will regard an e-learning system as effective if they are satisfied with it and its contributions to their learning activities.

Based on the review of literature on US above, it is proposed that
Preposition 5a: There is positive and significant relationship effect between User satisfaction (US) and System usage (USE)

Preposition 5b: There is positive and significant relationship effect between User satisfaction (US) and E-learning system effectiveness (ELSE)

Proposed Model

The model that will be used is the Delone & Mclean Information Success Model. It was developed by DeLone WH and McLean ER (2003) and originated in the field of management information systems. This model was used to study information systems success as stated in Delone & Mclean (1992), (2003) & (2008). This model was tested as stated in Romi (2013), and the results show that; the model shows good explanations to information systems success factors and enables the applied theories in the area of information systems measurement to take place Seen et al, (2006). Furthermore, the model takes in to consideration the perspectives of all information systems recipients. E-learning studies that applied the information systems success model Roca & Chiu (2006); Wu (2010); Lin (2007);

Wang (2009) Ozkan & Koseler (2009) were reviewed in Ref. (Bhuasiri et al., 2012). The main findings stated in Bhuasiri et al (2012) show that these studies adapted the model to be applicable in the e-learning area. Where, system quality and information quality significantly influence learner satisfaction, performance expectation and perceived usefulness. Therefore, D&M model is found to be the most appropriate approach for this study since this model is widely used in e-learning industry and gives good explanations to information success factors and can give a better explanation to the problem statement which is distance education or its elements are introduced mainly in the universities' environment and are practically absent in the vocational education and training system (Petrenko et al., 2020).

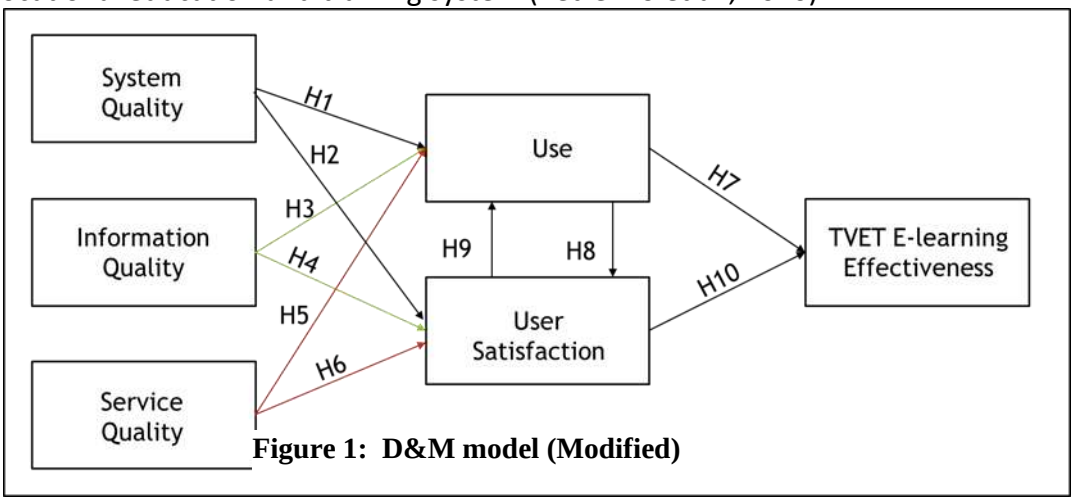

Figure 1: D&M model (Modified)

Conclusion

The present study is conceptual in nature, conducted to gain a better understanding of the relationships between the Delone and Mclean IS model dimension which is system quality, information quality and service quality towards the relationship to the moderating variable which is system usage and user satisfaction. It is also conducted to gain better understanding of the relationship between the moderating variable which is system usage and user satisfaction towards technical and vocational education training e-learning effectiveness. In so far as the literature review is concern, the preliminary findings show that there is positive and significant relationship between the three dimension which is SYQ, SVQ and IQ towards moderating variable which is USE and US. This conceptual study has also highlighted the contribution towards facilitate continuing education for the technologists, researchers and academicians at a very low cost through arrangement of advanced lectures provided by the international experts It is also hoped findings of the study will be able to influence Policy Making decision in enhancing E-learning effectiveness in technical and vocational education training (TVET) in Sabah, Malaysia. The study is currently being conducted and findings will be presented in future publications

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