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Measuring the Impact of E-learning Adoption: A Case of University of Perpetual Help System-Pueblo de Panay, Roxas City, Capiz, Philippines

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Abstract

The reinforcement of knowledge has evolved to e-learning. E-learning has become the modern way of learning, so it is exceptional for the students to hold on with changing technology and time. This study draws upon the model of technological acceptance and five other variables such as facilitating conditions, perceived enjoyment, perceived service quality, perceived value, and satisfaction was developed to identify the factors of learning as an observational viewpoint from the University since it is the only learning institution in the whole province of Capiz that provides an e-learning platform for Senior High School students. For this purpose, the data were collected from Senior High School respondents of University of Perpetual Help System-Pueblo de Panay, Roxas City, Capiz, Philippines. The results from the side of the university will draw a point as to how Senior High School students regard e-learning adoption. The investigation utilizes quantitative method with the support of SPSS and one-way ANOVA analysis. The investigation utilizes quantitative method with the support of SPSS and one-way ANOVA analysis. The investigation concludes that Satisfaction, Perceived Value, and Perceived Service Quality have statistical significant impact on Behavioral Intention. However, Facilitating Condition and Perceived Enjoyment have no statistical significant impact on Behavioral Intention.

Key Words: e-learning, perceived enjoyment and service quality, facilitating conditions and perceived value, satisfaction and behavioral intention

1. Introduction

The development of information technology (IT) in the Philippines has led to more collaborative, interactive, and creative ways of delivering education to many; and education is one of the sectors that has been influenced by its development (Alsabawy, Aileen, & Jeffrey, 2011). The rapid growth of information technology has shaped the curriculum of UPHS and it can be seen in all facets of teaching and learning at school. This has been an integral part of every teacher's and student's way of getting acquainted with and delivering the lesson including all homework, quizzes, and exercises which have to be done and delivered through a laptop or tablet. The vital role of e-learning is to make learning accessible to everyone and minimize costs. E-learning brings changes in pedagogical strategies and improves the efficiency of teaching and learning (D. Doculan, 2016). The benefits of e-learning adoption can be seen in all facets of class from teaching, giving homework, quizzes, exercises, and even up to taking major exams. It is therefore there is a need to evaluate the adoption in order to assess and provide e-learning remedies which target the specific needs based on the identified determinants which are Perceived Value (Rahman, Hussein, & Aluwi, 2015), Service Quality (Abu-Al-Aish & Love, 2013), Facilitating Conditions (Mtebe & Raisamo, 2014), Perceived Enjoyment (Duyen Nguyen, 2005), and Satisfaction (Alkhalaf, Drew, & Alhussain, 2012). There is a need for the University to assess student's e-learning adoption and identify their degree of acceptance through objective assessment (Alsabawy et al., 2011). This advancement in education has led and enabled the institution to provide systematized

lessons used by nine (9) campuses of the university and has created well-planned and organized lessons which target the specific competencies of each subject area. The importance of this study is to highlight the factors which contribute to student's successful e-learning adoption in the city of Roxas, Capiz, Philippines. Since the University implements e-learning, it is important to assess as to which factor greatly affects the adoption. Based on the existing records, none has ever studied as to how students of Roxas City, Capiz, Philippines regard e-learning and as to how this new channel of learning breaks the conventional way of teaching and learning. To fully understand the issue, the paper is explained and discussed in different sections as follows.

1.1 Research Model

The conceptual model depicts the driving factors of an individual's intention to adopt e-learning. Technology Adoption Model (TAM) by (Venkatesh & Brown, 2001). Academicians have established plentiful patterns to construe an individual's adoption and usage behaviors formed on various external components. In fact, several studies utilized the model (Briz-Ponce, Pereira, Carvalho, Juanes-Méndez, & García-Peñalvo, 2017); (Al-Alak & Alnawas, 2011); (Bombaes, 2017); and (Masa'deh, Tarhini, Bany Mohammed, & Maqableh, 2016) to explain what influences the adoption of technology and what affects individual's behavioral intentions towards technology adoption. By using this model, the study is able to address and explore the factors to predict individual's motives towards the e-learning adoption in terms of characteristics and diversities. The relationship will be revealed with the use of TAM and this will further expound and empirically justify the adoption. As identified in previous studies, the study explores facilitating conditions (FC), perceived enjoyment (PE), perceived service quality (PSQ), satisfaction (SAT), and perceived value (PV) as its determining factors. Behavioral Intention (BI) is used as a component to explore the relationship with the key determinants on e-learning acceptance. The model hypothesizes five determinants of acceptance. The figure shows the relationship between PE and SAT, the relationship between PE and PV, the relationship between SQ and SAT, the relationship between SQ and PV, the relationship between FC and SAT, the relationship between FC and PV, the relationship between SAT and Bi, and the relationship between PV and Bi. The study identifies two key moderating variables (PV, SAT) that are significant in conjunction with this model. Using the information collected from University of Perpetual Help System-Pueblo de Panay, Roxas City, Capiz, Philippines. Furthermore, the model explained student's motive towards e-learning adoption.

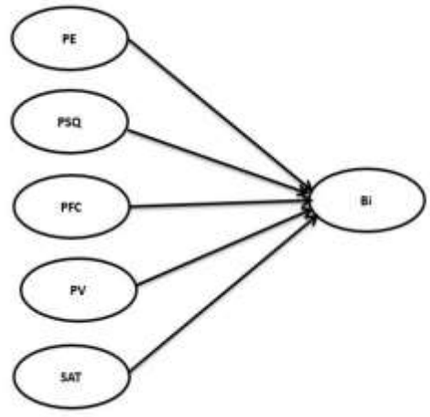

Figure 1. Theoretical framework

2. Relevant Literature

Based on the similar investigations, the factors have been identified due to their appropriateness in construing and predicting user's e-learning adoption.

2.1 Facilitation Conditions (FC)

These are considered to be perceptions of individuals that technical and organizational infrastructure required to use and support an intended system are available and thus intention to adopt new technologies should not be an issue. FC represents the external constraints on intention to adopt (Kasse, Moya, Nansubuga, Business, & Modelling, 2015). Facilitating conditions are originally characterized as objective factors in the environment that observers agree that they make an act easy to accomplish. Those objective factors define the motive to utilize information technology resources. As mentioned earlier, FC is broadly included and utilized in ICT and technology acceptance modeling. In addition,

facilitating conditions has been studied in the fields of e-learning (Jong & Wang, 2009); online learning (Lin & Bhattacherjee, 2008). Furthermore, the construct facilitated conditions has been measured by different items, and formed on the recent findings, they concluded that they could have a heavy impact on e-learning adoption depending on the broad perspective e.g. IT support and framework. Facilitating conditions in terms of technical infrastructure, accessibility, human resources, and skills had significant positive impact on the use of digital library by engineering lecturers (Hamzat, 2018).

2.2 Perceived Enjoyment (PE)

It is considered as a potential factor influencing mobile payment adoption (Chaniotakis, 2019). It is an essential factor that produces keen satisfaction and pleasure, an act of possessing and benefiting from something that individual experiences when doing or possessing something. It comes from enjoyable activities from reading, seeing movies, watching TV, playing video games, possessing a valuable thing, learning, using and experiencing services and having fun with family member and comrades are the usual sources of enjoyment. PE predicts users' degree of motivation to do or repeat an amusing activity (Pindeh, Suki, & Suki, 2016). Absence of enjoyment can lead to apathy and motivation towards acquisition of knowledge (Abuhamdeh & Csikszentmihalyi, 2012). PE has a favorable link to users' motive to learn and perform thus defining the capability of a certain system to keep users from utilizing the system (Asmi, Zhou, & Lu, 2016); (Aziz, Nur, & T, 2013); and (Pe-Than, Goh, & Lee, 2014). As Ryan & Deci (2000) further explained that users can be both internally and externally interested if it meets users' expectation and targeted outcomes. If an activity is highly engaging, naturally pleasing or interesting, the effect will be higher especially if interest is shown, it will increase intrinsic motivation via educational software. As expected, learners become deeply engaged in the activities like activities, attempting to use more complex operations, and thereby learned more from the activities in a fixed period of time. If learners are internally and externally motivated, they will likely set the learning objectives. As indicated, the study needs to go deeper as to what ignites student's inquisitiveness towards e-learning.

2.3 Perceived Service Quality (PSQ)

It is defined as the valuation of the performance of services consumed in a given tourist destination (Mohamad, 2019). It refers to the overall judgment or assessment which can lead to satisfaction which can be either affective or emotional response (Armstrong, Mok, Go, & Chan, 1997). It is drawn that service is crucial in predicting user's motive to utilize a service. PSQ is an aftermath of observing the performance or service as to how the consumer feels about it. When SQ meets user's expectations, therefore, it is more likely be adopted or utilized by many. As regards e-learning, it is fundamental to figure out the concepts of how a certain service keeps users from using it thus the intention to use a certain service becomes repeatable. It should be understood as a process whereby customers either compare the performance with ideal standards or simply rate their perceptions of the quality of a series of attributes for a product or service (Dias, Ferreira, Romão, & Manuel, 2019).

2.4 Perceived Value (PV)

It is defined as the sacrifice paid by the consumer to obtain a product or service, such sacrifice including monetary and non-monetary (Mohamad, 2019). It is the aftermath of benefits that customers obtained after experiencing using a service. Sometimes PV is determined by the cost linked with the purchase. Pertinent research pieces of evidence propose that customers appreciate value upon the service they receive which means that the service will be highly appreciated if the cost matches the service and if the service cost is reasonable enough formed on a service given to the users. It is associated with the benefits received and felt by the users (Zeithaml, 1988). For this investigation, perceived value will be regarded as user's overall judgment and appraisal of the service quality. To sum it up, it is a concession between the benefits and the costs (Lovelock & Gummesson, 2004). An investigation recommends that PV may be a superior predictor of reacquiring than either SQ

or SAT (Cronin, Brady, & Hult, 2000). Setiawan, Agus, & Pramudana (2018) stated that customer perceived value is a positive customer valuation that has a positive and significant impact on customer satisfaction.

2.5 Satisfaction (SAT)

Student's satisfaction is the student's subjective perceptions of how well a learning environment supports academic learning experience (Fadel, Yousif, & Mohammed, 2017). It is the overall affective acknowledgment build upon the performance of a service after expenditure (Oliver, 1980). In practical use, SQ and SAT are sometimes mutual, because they are appraisal valuables pertinent to consumers' assumptions about a given product or service. SQ is interrelated to intellectual assessment and customer satisfaction is relevant to emotive and affective judgments. The idea of the whole satisfaction is conceptualized to categorize from satisfaction with users peculiarity (Bharwana, Bashir, & Mohsin, 2013); and (Arıkan & Güner, 2013). Clues from factual investigations suggest that upgrading SQ augments advantages and long duration competitiveness. People always assess and evaluate things they consume, encounter or experience. They will feel satisfied when things like goals and expected outcomes are received and obtained well. Therefore, SAT is the midpoint of every individual is to complete his/her purpose and desires and this achievement further proceeds to SAT. It is ultimate judgment and every individual strives harder to accomplish this purpose through judgment and evaluation upon experiencing something therefore it depends on one's conscious and cognitive assessment or appraisal.

2.6 Behavioral Intention towards e-learning

Behavioral intention is a cognitive interpretation of an individual to which define individual intention to act on something or certain situation after evaluating the benefits, gains from activity, technology and objects (Maina & Nzuki, 2015). From the above supporting literature following hypothesis are presented:

H1: Perceived enjoyment has positive impact on student's behavioral towards e-learning
H2: Perceived service quality has positive impact on student's behavioral towards e-learning
H3: Facilitating conditions has positive impact on student's behavioral towards e-learning
H4: Perceived value has positive impact on student's behavioral towards e-learning
H5: Satisfaction has positive impact on student's behavioral intention towards e-learning intention

3. Research Design and Method

The current investigation is conclusive research because of its aim to bring a solid and steady relationship of all the components in e-learning adoption. It is quantitative. It depends on second-hand and primary research or data specifically gathered for the current study. The scope of using conclusive investigation is to bring a solid and stable of the populace with well-founded research tools. This will also test hypotheses. Therefore, this method is sub-divided into two major classes such as descriptive or statistical research and causal research. It is quantitative because the current investigation follows careful way of compiling and selecting data gathered from various sources and references. It compromises the utilization of numerical and experimental tools to obtain results. The study aims to construe the major components that influence the e-learning adoption; and to classify the components that mainly influence the acceptance of e-learning and offer clear interpretation of the overall adoption process by starting from the major fundamental components that mainly give impact on student's motive to accept e-learning. These factors must be explained as to how they correlate along with each other component. The research uses survey as the strategy in data collection. As how it is described based on its usages it answers the wh-questions such as how, when, what, why etc. (Saunders, Lewis, & Thornhill, 2009). The researchers then have to utilize a structured questionnaire to figure out the bases and foundations of building behavior towards mobile learning adoption. A structured survey was utilized.

3.1 Instrumentation

The study took place at University of Perpetual Help System-Pueblo de Panay, Roxas City, Capiz. Random sampling was conducted to gather information. The questionnaire has only one part which measures intention of students to learn through e-learning in terms of perceived enjoyment, perceived service quality, perceived facilitating condition, perceived value, satisfaction, and intention to use e-learning platform using five-point Likert Scale. The questionnaires were adopted from different studies (Christie, Smith, Fisher, Thyroff, & Killian, 2015; Venkatesh, 2000; Revels, Tojib, & Tsarenko, 2010; Venkatesh, Thong, and Xu, 2012; Zhu, Sun, & Chang, 2016) with little modification of words and sentences in accordance with the current study.

3.2 Sample Design

For statistical analysis the data were collected from Grade 11 senior high school students who are active users of e-learning platform of the university. There were 120 participants and they were grouped by strand. A structured questionnaire was used to perform correlation analysis to test the relationship of every variable and Cronbach's Alpha was used to determine the scale reliability. This study is quantitative with the support of SPSS.

3.3 Pilot Testing

It was conducted on 10% of total senior high school students to test the applicability and objectivity of the research tool. Students who were part of the pilot testing were excluded from the research.

4. Data Analysis and Results

Confirmatory Factor Analysis (CFA) is utilized for measuring the model that consists of validity and reliability test. The first item is done through utilizing factor analysis. All factors are tested to be greater than 0.7. In the reliability test, Cronbach's Alpha value is determined and found to be higher than 0.7. This is a manifestation that questions under each construct are good and reliable in order to measure the m-learning adoption. Therefore, the results in Table 1 indicate good validity as all values meet the required criteria.

Constructs	Indicators	Cronbach's Alpha
Facilitating Condition	Facilitating Condition Q1	0.851
	Facilitating Condition Q2	0.856
	Facilitating Condition Q3	0.857
Satisfaction	Satisfaction Q1	0.841
	Satisfaction Q2	0.84
Behavioral Intention	Behavioral Intention Q1	0.846
	Behavioral Intention Q2	0.844
	Behavioral Intention Q3	0.853
Perceived Value	Perceived Value Q1	0.847
	Perceived Value Q2	0.842
	Perceived Value Q3	0.844
	Perceived Value Q4	0.846
Perceived Service Quality	Perceived Service Quality Q1	0.838
	Perceived Service Quality Q2	0.848
	Perceived Service Quality Q3	0.844
Perceived Enjoyment	Perceived Enjoyment Q1	0.838
	Perceived Enjoyment Q2	0.841
	Perceived Enjoyment Q3	0.845
	Perceived Enjoyment Q4	0.848

Table 1. Results of Confirmatory Factor Analysis

4.1 Results of hypothesis testing

After signifying the validity of the measurement model, the next step was to hypothesized relationship using the one-way ANOVA analysis. The results based on the structural model support that all proposed hypotheses were supported by the data. *Perceived facilitating condition* does not have statistical significant impact on behavioral intention (FC (2,117) = .690, p=.504) which means that the absence of driving components that fall under FC can hinder the acceptability of technology such as smooth access to internet, and human resource. *Satisfaction* has statistical significant on behavioral intention (SAT (2, 117) = 7.317, p=. 001) which defines users' behavioral intention. *Perceived value* has statistical significant impact on behavioral intention (PV (2, 117) = 6.546, p= .002) and is noted as users' overall appraisal of the total worth of the experience formed on the users' judgment of what is provided. *Perceived service quality* has statistical significant impact on behavioral intention (PSQ (2,117) = 14.982, p= .000) which means that it contributes directly to users' perception of utilizing the learning platform. The findings show that the better SQ is the better the level of value received and felt is. It is vital to boost and enhance SQ to keep on maintaining its long-lasting effect on users' motive to utilize the m-learning. *Perceived*

enjoyment does not have significant impact on behavioral intention (PE (2,117) = .971, p= .382).

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Facilitating Condition	Between Groups	.535	2	.268	.690	.504
	Within Groups	45.390	117	.388		
	Total	45.925	119			
Satisfaction	Between Groups	5.662	2	2.831	7.317	.001
	Within Groups	45.263	117	.387		
	Total	50.925	119			
Perceived Value	Between Groups	5.394	2	2.697	6.546	.002
	Within Groups	48.198	117	.412		
	Total	53.592	119			
Perceived Service Quality	Between Groups	9.372	2	4.686	14.982	.000
	Within Groups	36.595	117	.313		
	Total	45.967	119			
Perceived Enjoyment	Between Groups	.822	2	.411	.971	.382
	Within Groups	49.545	117	.423		
	Total	50.367	119			

Table 2. Results of ANOVA Analysis

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5. Discussion and Conclusion

This study examines the e-learning adoption of the Senior High School students of University of Perpetual Help System-Pueblo de Panay Campus, Roxas City, Philippines. The results of this study assemble by Confirmatory Factor Analysis and one-way ANOVA Analysis which indicate that Satisfaction, Perceived Value, and Perceived Service Quality have significant impact on user's behavioral intention and are important determinants of user's behavioral intention whereas perceived Facilitating Condition and Perceived Enjoyment have a positive impact but it is not significant. These findings support H2, H4, and H5 are significant whereas H1 and H3 have a positive impact but it is not significant on the findings generated with the use of one-way ANOVA analysis.

As part of the investigation, it reveals that based on 120 willing respondents who participated in the data collection; the respondent's perceived Facilitating Condition as the one which has the lowest impact on behavioral intention. The findings show that lack of effectiveness, maintenance, expertise and support which fall under *Facilitating Conditions* should be improved by means providing better internet access for positive technology adoption such as e-leaning because data shows that slow access and continuous downtimes of e-learning platform is the major cause of lack of motivation in adopting and use of e-learning. The lack of training or proper orientation before using the e-learning platform and competent people hinder the smooth transition from conventional learning method to e-learning. The authorities or management must get involved in constant monitoring the structure of the program through this they can re-frame and redesign the curriculum pertaining under this matter. Redesigning or fortifying the purposes of the range of specialization should be carried on to meet the learning objectives. Facilitating Condition can have immense impact on user's behavioral intention which leads to behavioral motive to utilize the system; it is therefore the institution should improve its facilitating condition such as internet connection and e-learning platform and based on the findings Facilitating Condition's impact is not statistically significant which means that user finds inefficiency in terms of infrastructure, qualified personnel, ICT facilities, related equipment, internet bandwidth, and qualified technical support (Masa'deh et al., 2016) and (Mtebe & Raisamo, 2014). *Perceived Enjoyment* has a low significance to behavioral intention which can be partly attributed to user's perceptions of the service. It is an essential factor that produces keen satisfaction and pleasure and the absence of enjoyment can lead to apathy and motivation towards learning (Abuhamdeh & Csikszentmihalyi, 2012). If it fulfills their needs, users are more likely to interact with the technology. Learning while engaging in fun activities students learn more actively than in a serious environment. The lack of enjoyment can hinder the success of e-learning adoption. Moving on to *Perceived Service Quality*, the results state that it has a high impact on behavioral intention. The management can keep or further improve its service by means of discovering and determining what drives success in providing quality services. Generally, service quality is the best predictor of successful e-learning adoption. *Perceived Value* of e-learning is good which means that most users perceived e-learning platform is worth the price of the service they paid for. Since PV is the aftermath of benefits that customers obtained after experiencing or using a service or product, it is reasonable enough to better improve the e-learning service by meeting user's expectations. Records show that users appreciate value

upon the service they receive which means that the service will be highly appreciated if the cost matches the service and if the service cost is reasonable enough based on a service given to the users. *Perceived service quality* has immense impact on behavioral intent thus defining the intention to the e-learning adoption. The management should know that this is a crucial notion in keeping the university's status on top of the competition. The degree of impact on user's behavioral intention to use e-learning comes from *Satisfaction* which determines the successful e-learning adoption. Identifying the antecedents of satisfaction would improve the overall satisfaction to favorable behavioral intentions. User's positive e-learning experience and positive service encounters create an eagerness for prospective repetitiveness

The study has some limitation associated with the study like the data were collected only in the University of Perpetual Help System-Pueblo de Panay, Roxas City, Capiz, Philippines which does not entirely define the whole system of the institution. Second, there were limited numbers of students since the population of the Senior High School Program was small but could be increased if added more variables which aim at measuring the student's behavioral intention.

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