International Journal of Education and Development using Information and Communication Technology (IJEDICT), 2021, Vol. 17, Issue 3, pp. 38-56

Assessing the Adoption Behavior of E-Learning in a Developing Country in South East Asia: Predicting an Alternative Path to Behavioral Intention to Use

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ABSTRACT

To some extent in Bangladesh, all efforts that were put into availing technology-based learning has not paid off well as most of the learners are reluctant to use the evolving technologies. The major impediments to the use of various e-learning platforms include a lack of self-confidence and inadequate technical skills, along with insufficient knowledge. Previous studies have mainly focused on the adoption behavior of information system and information technology among students, educators, and the profession, but little is known about how to enhance learners' skills and capacity prior to the adoption of the emerging e-learning platforms among the HEIs in Bangladesh. This study aims to apply the Unified Theory of Acceptance and Use of Technology (UTAUT) to explore the protagonist factors that may expedite learners' experience and the skills needed to embrace e-learning. The study analyzed data from 250 learners (students) collected from three purposively selected leading HEIs - the American International University-Bangladesh (AIUB), Daffodil International University (DIU) and the Northern University Bangladesh (NUB) in Bangladesh. The study used a paper-based self-administered questionnaire to conduct a survey comprised of statements (manifest variables), adopted from prior studies on the adoption behavior of Information Technology (IT) and Information System (IS). All responses were initially encoded into SPSS then processed through SMART PLS 2.0, a standard structural equation modeling simulation, for testing the study hypotheses. The findings revealed that the learners' behavioral intention to embrace e-learning is highly infiltrated by the variables: effort expectancy (EE), social influence (SI), and performance expectancy (PE); likewise, variables such as i) Social influence (SI), ii) Effort Expectancy (EE), and iii) Facilitating Condition (FC) enhancing learners perceived behavioral control (PBC) of using e-learning platform prior to forming BIU. The study could contribute to the existing regional literature on e-learning acceptance; also, it could be quite useful for HEIs in Bangladesh for accelerating the e-learning penetration rate within their institution.

Keywords: *Behavioral Intention; Information and communication technology; Social influence; Perceived behavioral control; E-Learning*

1.0 INTRODUCTION:

Since the inception of technologies that boost e-learning, the world's education system has observed tremendous changes in all aspects. The technological changes were embraced by the world's developed countries long ago resulting in the implementation of eLearning in every possible area of teaching, but the countries, which fall under the developing category are lagging behind; thereby many of the global e-learning providers, such as, Blackboard and Canvas have not expanded their wings to Bangladesh as yet. Recently some of the initiatives in favor of employing e-learning in HEIs, have been taken into consideration by the protagonists in the developing countries, with the support of donor agencies, in the hope of reaping the benefits.

The widespread adoption of ICTs in higher education significantly changes students' learning patterns making it more interactive. Despite the widespread availability of low-cost technology, only a few HEIs in Bangladesh are now connected to various emerging e-learning platforms, such as Microsoft Teams, Google Classroom, Cisco Webex, Moodle, Virtual University Expert System (VUES), Education and ERP, which allows for profound changes to knowledge and delivery, some of which are licensed and highly praised by the HEIs (Hassan et al., 2020). At present, there are several e-learning platforms opted for by the institutions with HEIs liberally expediting two-way knowledge sharing mechanisms (asynchronous) accompanied by the traditional class room based one-way method (Amin et al., 2016). Generally, two types of e-learnings are taking over the traditional classroom. These are categorized as synchronous (real-time) and asynchronous (offline) in the literature. At one extreme, Bangladeshi HEIs are taking advantage of the benefits provided by the platform, at the other extreme HEIs are constantly overcoming barriers to acceptance of the platform.

E-learning (also known as web-enabled systems) enables information and knowledge to be processed by all users including, the learners and the educators (Sun et al., 2008). E-learning, which is multifaceted, offers educators and learners a rich blend of learning environment and experience, regardless of the barriers to adoption and challenges of acceptance reported (Berge and Leary, 2006, Schneckenberg, 2009, Schneckenberg, 2010, Mahmud and Gope, 2009). In fact, in many countries ICT adoption jumped straight up to the higher education level (Stensaker et al., 2007a); providing a rich alternative learning environment and access to various e-resources (Sevillano-Garc et al., 2015). Despite the fact that the adoption level of ICTs in higher education is widespread, ICTs failed to bring development to the learning and teaching environment (Kirkup and Kirkwood, 2005) because it has been reported that the digital technologies failed to change attitudes of the learners, and resulted in a slow adoption rate. The technologies per se have not been widely adopted by many faculty members as an instructional tool to impart knowledge (Agbatogun, 2013). It is suggested that the technology which is brought about to improve productivity also needs to be accepted and concurrently be used by the stakeholders of an organization (Hu et al., 1999, Chowdhury, 2019).

The appropriate incorporation of ICTs in higher education brought radical changes as a whole in managing the issues of equity, management, quality and pedagogy (Buttar, 2016). One of the major constraints of implementing ICTs in HEIs is the ignorance of the educational needs (Sarkar, 2012), as well as some other issues such as pedagogy, organizational, and human development, which are suggested to be linked positively to ICTs (Stensaker et al., 2007b). In Bangladesh, ICTs, which is still evolving, are costly and the propensity to adopt is also marginal. The implementation experiences indicate high failure rate resulting in low acceptance as many academicians and learners are more reluctant to incorporate ICTs in their academic environment (Amin et al., 2016, Dewi, 2017, Arbaugh and Duray, 2002). The existing literature argues a little about the reasons for not incorporating e-learning. Alternatively, those who are highly embedded into the system possess weak self-control which is not enough to convert their intention into actual use of ICTs (Amin et al., 2016). Although e-learning platforms are highly based on sophisticated codes making the platform more dynamic, the implementation of the platform is also enticed by some social and behavioral factors (Vululleh, 2018). The phenomena discussed above have been widely studied by western scholars who concurrently introduced several conceptual models, which are not universal, for describing adoption behavior, and which can be used to describe phenomena from a particular context only (Andersson and Grönlund, 2009). The benefits of ICTs in education are enormous as it has huge potential in improving the educational system. There are some hurdles as well which may hinder users from reaping the benefits reported worldwide (Khan et al., 2012). Regrettably, exploring phenomena that existed in developing countries (e.g. Bangladesh) are still under consideration or largely unexplored, as not enough studies have been conducted by the local scholars using the cutting-edge organizational theories (academic model) akin to technology adoption (Walsh, 2011). So far, in Bangladesh, few studies have been outlined to reveal the benefits and hurdles, and few were administered to gauge technology readiness conceptually. The studies that tell us the factors responsible for high or low adoption rate, are infrequent and scarce. Therefore, there is a strong need for filling the gap. Further, the phenomenon in Bangladesh has been pointed out by Gronlund and Islam (2010) who also urged investigation of the issues akin to students' attitude and use behavior toward distance learning. Therefore, the focus of the research reported in this article is to provide answers for the following questions:

RQ1: Why and how do learners of a developing country accept e-learning?

RQ2: How may learners' self-control be ramp-up in accepting e-learning in a developing country?

LITERATURE REVIEW

E-learning in Bangladesh

Since the inception of the concept 'distance learning' in 1985, in Bangladesh, e-learning has gone through several stages of advancements (Islam, 2006). A few studies have been conducted to investigate the phenomena, which has drawn much interest recently, and too few scholars have conducted studies to identify barriers that may hinder implementation. In a study, conducted by Mahmud and Gope (2019), it was found that the success rate of implementation of e-learning was impacted by factors such as: technology, social, socio-culture, economy, psychological (Mahmud and Gape, 2009). These hurdles ought to be addressed by the HEIs to reap the benefits of these programmes (Chowdhury, 2019). The challenges of integration have also been highlighted in a study by Mou (2016). From the teachers' point of view, mobile, e-learning models aided teachers to achieve pedagogical changes at the classroom level (Walsh, 2011).

The Use of ICTs in Higher Education:

ICTs has an explicit role to change the modes of imparting knowledge. The scholars in this field have investigated different dimensions, with the aim of bringing forward profound policies with which proposed future developments can be initiated (Kirkup and Kirkwood, 2005, Oliver, 2002). Despite its profound challenges such as implementation impediments, lack of proper infrastructure, cultural barriers and management control, ICTs based education is gaining popularity among the educators. ICT has proven to be useful in disseminating knowledge, sharing educational content, and supporting and improving academic activities (Yasemin et al., 2008, Lockyer et al., 2001). Further, through the appropriate use of ICTs, underprivileged groups of a country and international groups can be reached (Toro and Joshi, 2012).

Technology Adoption Models Used in Measuring e-learning Acceptance

Researchers have been applying and improvising various conceptual models for measuring various phenomena associated with e-learning. In fact, ICTs based education firmly depends on several factors, of which infrastructure is one of the most important in promoting ICTs aided teaching (Chun et al., 2015). There are several predictors responsible for forming the behavioral intention (BI) to accept ICTs, and amongst the most influential, perceived usefulness and perceived ease, have been found to have considerable impact on the formation of BI as highlighted in studies (Davis, 1985). Ummuhan and Petek, (2012) examined the formation of BI in the acceptance of blogs and wikis through which pedagogy can be taught virtually. In order to stimulate learners' intention to accept web-based learning, the variable subjective task had a positive impact on the variable behavioral intention (Chiu and Wang, 2008). At the tertiary level of education, the acceptance of Learning Management System (LMS) is highly patronized by the construct perceived usefulness (Raman et al., 2014). In Bangladesh, it has been reported that, from the learners point of views, e-learning is quite beneficial, but somewhat difficult to adopt (Amin et al., 2016) because some of the features are not well understood by the users at the tertiary level of education.

RESEARCH MODEL, VARIABELS, AND THE DEVELOPMENT OF HYPOTHESES

Based on the literature discussed herein along with researcher prior knowledge gathered during field work, it can be alluded that BI to use e-learning is influenced by variables that include including Performance Expectancy (PE), Social Influence (SI), Effort Expectancy (EE) and Facilitating Conditions (FC) by which perceived behavioral control may also be positively influenced prior to forming behavioral intention. The authors of this study assume that the result will be consistent (or inconsistent) with previous studies of the same theme.

Social Influence (SI)

SI as defined by Venkatesh et al., (2003) focuses on the individual's perception of the importance of the opinion of others prior to using a new system. In other words, SI is the extent to which a person prioritizes other beliefs about a system into their own belief system, before embracing the new system. The influence of SI on users' behavioral intention has been reported several times and was found to have impacted on behavioral intention while interacting with blogs (Hsu and Lin, 2008), but the impact of the construct on the end user's Perceived Behavioral Control (PBC) is unknown. However, in a related study, the direct influence of the variable social forces along with other variables on PBC has been confirmed (Elie-Dit-Cosaque et al., 2011).Therefore, the following hypotheses are proposed:

H3a: SI of a learning community will have a positive influence on end user's BI to embrace e-learning.

H3b: SI of a learning community will have a positive influence on end user's PBC.

Facilitating Conditions (FC)

FC can be defined in the context of the extent to which an individual believes that an organizational and technical infrastructure is needed for use of the system. The technical infrastructure set up to foster e-learning usually impacts on the formation of behavioral intention to use certain applications. Consistent with the prior studies, which have confirmed the impact of facilitating conditions on behavioral intention (Hsu and Lin, 2008, Lin, 2007), this study conceptualizes the same ideology. In addition, in a related study, resources and technological conditions were found to have positively correlated with PBC and the intensity of the relationship was reported as moderate and high, respectively (Lau, 2011). Thus, the study proposes the following hypotheses:

H4a: FC provided by the HEI will greatly influence its learners in the formation of BI to use e-learning.

H4b: FC provided by the HEI will greatly influence its learners in forming PBC to deal with e-learning.

Performance Expectancy

Performance expectancy, also viewed as perceived usefulness, as defined by Venkatesh et al., (2003) focuses on the individual belief that use of a system will help to attain performance. More so, it is the propensity to which an individual believes that incorporating e-learning platforms will greatly help him or her to be more productive in solving issues pertinent to education, which may eventually lead them to use the platform. Performance expectancy has both positive and negative influences on behavioral intention, as confirmed by various studies. In the original UTAUT model, performance expectancy was found to have direct effect on behavioral intention. In the specific context of e-learning on mobile devices, Thomas et al., (2013) highlighted performance expectancy in the context of a direct impact on behavioral intention. In measuring websites that provide e-learning resources, the impact of performance expectancy was found to be well reported as having had a direct positive effect on behavioral intention (Tan, 2013). So, it can be argued that PE positively impacts the formation of behavioral intention to adopt e-learning websites. However, in any context, no direct relationships between PE and PBC have been confirmed in the literature. Hence, the researcher assumes PE will have a significant and positive impact on PBC; which is the degree of confidence that propels individual to perform technical tasks in any mediated environment. Therefore, the study presented the following hypotheses:

H1a: Performance expectancy is expected to have a significant positive impact on behavioral intention.

H1b: Performance expectancy will be the key player to ramp up one's perceived behavioral control.

Effort Expectancy

Effort expectancy has been defined by Venkatesh et al., (2003) in the context of the ease of using a system. In other words, it is the degree to which people believe that technology and its associated products will be easy to use and free from any sort of complexity, and it will be hassle-free. The effect of EE on BI has been mentioned in studies with mixed results. EE has additionally been reported as the strongest significant construct in deciding user acceptance of information technology (Van Raaij and Schepers, 2008) and has significant positive impact on BI (Marchewka and Kostiwa, 2007). EE directly influences acceptance behavior of e-banking, but it does not impact IT acceptance and the impact on e-banking acceptance was observed to be as effective as other predictors (Ghalandari, 2012). On the other hand, effort expectancy did not have a significant positive impact on IT acceptance (Al-Gahtani et al., 2007). Effort expectancy and performance expectancy together stimulate learners' intention to use web-based learning. EE was confirmed as important as performance expectancy in stimulating learners' intention to continue using web-based learning (Chiu and Wang, 2008). Overall, the study predicts that EE will have significant positive influence on BI to use e-learning; as such, no direct relationships between EE and PBC has been reported in literature. The study hereby proposed the following relationships:

H2b: Effort expectancy will be positively impacting on perceived behavioral control.

H2a: EE is assumed to be a significant predictor of BI

Perceived Behavioral Control and Behavioral Intention

Perceived behavioral control has been defined by Fishbein and Ajzen, (2011) can be defined in the context of an individual's perception of their capability to perform or have control over a behavior. Further, PBC which was first introduced in the Theory of Planned Behavior (TPB), focuses on an individual's perception of their capabilities to perform a given task (Ajzen, 1991) but slightly differs from the concept self-efficacy (Ajzen, 2002) as PBC can act as an alternate path for actual control; which may predict the behavior (Ajzen, 2006). So far, no significant relationships between performance expectancy and perceived behavioral control have been found in the existing literature. Furthermore, it is documented that the variables subjective norms, and perceived behavioral control may jointly sway the formation of a behavioral intention (BI) (Ajzen and Fishbein, 2005). In addition, the concept self-efficacy has been conceptualized as perceived behavioral control (Bandura, 1977) therefore, it carries the answer to the question of how people feel, think and motivate themselves and behave (Bandura, 1994). In the context of e-learning, perceived self-efficacy has predictive influence on perceived satisfaction and behavioral intention (Liaw, 2008). Additionally, self-efficacy mediate the relationship between computer anxiety and perceived ease of use (Saadé and Kira, 2009). In earlier studies researchers suggested the conduct of further study to clarify the influence of perceived behavioral control on intention (Devellis et al., 1990), but identification of the determinants that increases one's self control to accept e-learning in a developing country is vague. Hence, in this study, we predict that the PBC of a learner will be significantly impacted by the variables: performance expectancy, effort expectancy, facilitating condition and social influences, prior to forming behavioral intention. Hence, we explore the impact of these variables, assuming that they will collectively accelerate learners' self-control to adopt e-learning. Further, we note the significant influence of PBC on behavioral intention to participate in virtual communities (Lin, 2006) and affect use behavior (UB). So, the study has the following hypotheses:

H5: Learners' perceived behavioral control is assumed to have a significant positive impact on use behavior.
H7: Learners' perceived behavioral control is expected to have a significant impact on learner behavioral intention to accept e-learning.
H6: It is assumed that learners' behavioral intention will have a significant impact on UB

The Research Model

The research model is based on the UTAUT model (Venkatesh et al., 2003), which is robust in explaining e-learning acceptance and a shared 70% variance in BI. The model which is depicted in Figure 1 below has been adopted for this study.

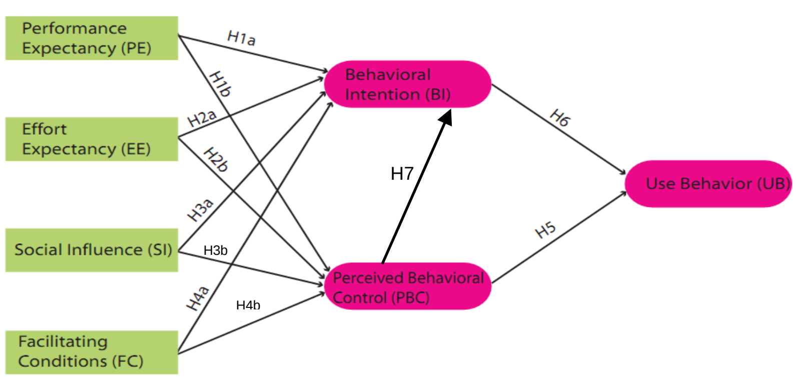

Figure 1: Research Model - Adopted from (Venkatesh et al., 2003)

The endogenous construct, perceived behavioral control (Ajzen, 1991), has a significant positive impact on the formation of behavioral intention (BI) to use instant messaging (Lu et al., 2009), likewise, on the e-learning acceptance (Amin et al., 2015). Hence, the variable perceived behavioral control has been added as an endogenous variable to explore the phenomena in Bangladesh. All moderators have been revoked to simplify the model. The arrows pointing towards the endogenous variables are simply, forming causal relationships.

The relevant equations are derived for the justification below.

Regression Equations

The following are the equations were tested deploying a standard SEM simulation:

1. $PBC = \gamma_{31}PE + \gamma_{32}EE + \gamma_{33}SI + \gamma_{34}FI + \epsilon_3$
2. $UB = \beta_{13}PBC + \beta_{12}BI + \epsilon_1$
3. $BIU = \beta_{23}PBC + \gamma_{21}PE + \gamma_{22}EE + \gamma_{23}SI + \gamma_{24}FC + \epsilon_2$

Notes:
γ= Gamma
β = Beta
ϵ = Epsilon
PE = Performance Expectancy
PBC = Perceived Behavioral Control
EE= Effort Expectancy
SI: Social Influence
BI= Behavioral Intention

METHODS

Research Setting and Instrument

The baseline data were collected from 250 learners with the use of paper-based questionnaires. The sample for study was drawn purposively from three selected HEIs, that is, the American International University-Bangladesh (AIUB), Daffodil International University (DIU), and Northern University Bangladesh (NUB), which use the various e-learning platforms, such as Google Classroom, Moodle, Virtual University Expert System (VUES), and Education ERP, to transform the instructional process. The survey was carried out using structured and self-administered questionnaires comprised of manifest variables mostly adopted from the prior studies on technology acceptance and usage (Venkatesh and Davis, 2000).

The responses were recorded in two different ways. In the first phase of data collection, two universities were chosen based on several criteria: technical infrastructure, type of e-learning applications used in deferring and assessing students, willingness to include state of the art technology in facilitating teaching and learning, and students' inquisitiveness about the new platform and accessibility. Finally, two universities were selected, and a group of students were provided with the structured and open questionnaires made up of statements. To see the variation in learning pattern between students who are currently utilizing e-learning and those who are deprived of the most basic applications of e-learning, we included another university, namely the Northern University Bangladesh (NUB), which did not provide any e-learning support but was in the process of incorporating e-learning on a small scale at the time of the study. To make the study more meaningful, a group of students, chosen from Northern University Bangladesh (NUB), were nurtured by the researcher in a classroom environment using some materials, such as PPT presentation on e-learning and videos (elaborating the benefits of e-learning). Using audio-visual aids, all students were provided with basic knowledge of e-learning, benefits of using e-learning, and some of the basic operations of e-learning. At the end of the session, all selected students were provided with the structured paper-based questionnaire where their responses were recorded using a seven-point Likert scale. The respondents were directed to fill out the self-administrated questionnaires, which consisted of items that ranged from Strongly Agree (7) to Strongly Disagree (1). A group of students was also nurtured in the classroom using interactive materials since those students had no access to e-learning at the time of data collection.

Participants

The participants of the study are mainly learners (students) pursuing undergraduate and graduate studies from different business schools in Bangladesh. Initially, the students from three institutions were chosen for the survey in which the institutions were primarily chosen on the basis of some prior knowledge.

Data Analysis

Finally, all responses were coded into SPSS 26 for initial inspection, cleaned and then analyzed with the help of SMART PLS (version 2.0) simulation, which is based on the partial least square method and designed for analyzing more complex models (multivariate regression) (Ringle et al., 2005a). The PLS-SEM is widely accepted and applied by scholars (Chen, 2011, Lin and Wang, 2012, Islam, 2013) to address issues with respect to e-learning acceptance, and for testing research hypotheses. The SMART PLS, which combines principal components analysis (PCA) with ordinary least squares regressions (OLS), is a well proven statistical tool for estimating complex models as it is quite robust in dealing with the complex model and is regarded as third-generation multivariate data analysis simulation (Ringle et al., 2005b, Vanalle et al., 2017, Mateos-Aparicio, 2011).

RESULTS

Demographics

The study respondents were active learners, most of whom were male students (80%) and around 20% were female students, who were enthusiastic, inquisitive and some of them were highly engaged with various e-learning platforms (accessible through mobile phone). The majority (93%) were computer and Internet literate with more than 3 years of experience and active engagement. Further, 96.4% of the respondents were aged between ages 25 to 29 years, and nearly 3.4% of the respondents were between the ages of 30 to 50 years. In addition, 94.4% of the respondents were undergraduate students, 1.2% were at the master's level, and 3.6% were diploma level students.

Convergent Validity & Reliability Analysis

Using the three (3) standard criteria, that is, Cronbach's Alpha (CA), Average Variance Extracted (AVE) and Composite Reliability (CR), the study validated all scales used in measuring responses. The results of the study revealed that seven constructs: behavioral intention, effort expectancy, perceived behavioral control, performance expectancy, social behavior and use behavior retained adequate CA levels, indicating good internal consistency (Gliem and Gliem, 2003). However, the CA values of the construct FC was found to have lower than the suggested level; however this does not indicate that scales are unidimensional (Dobele and Lindgreen, 2011). In addition, all AVE values were above 0.50 (Fornell and Larcker, 1981a) and CR values were above 0.60 (Henseler et al., 2009), indicating a good internal consistency of the scales used in the study in identifying phenomena. The results are shown in Table 1 below.

Table 1: *Validity and reliability analysis of scales*

	AVE	Composite Reliability	R Square	Cronbach's Alpha	Communalit y	Redundancy	No. of Items
BI	0.6192	0.8291	0.3834	0.6921	0.6192	0.0201	3
EE	0.5020	0.8009	0.0000	0.6688	0.5020	0.0000	4
FC	0.5087	0.7531	0.0000	0.5511	0.5087	0.0000	3
PBC	0.5896	0.8109	0.4614	0.6483	0.5896	0.1204	3
PE	0.5781	0.8438	0.0000	0.7520	0.5781	0.0000	4
SI	0.6244	0.8321	0.0000	0.6960	0.6244	0.0000	3
UB	0.6636	0.8553	0.3423	0.7468	0.6636	0.1336	3

Discriminant Validity Analysis

According to the criteria, the square root of the estimated AVEs are larger than the respective correlations of the constructs with all other constructs in the structural model (Fornell and Larcker, 1981b). As, Smart PLS 2.0 does not perform Fornell-Larcker criterion analysis directly, we, therefore, manually calculated all square root values of AVE (Fornell and Larcker, 1981a). The results derived from the default report, show that square root of the variables: BIU (0.7868); EE (0.7085); FC (0.7132); PBC (0.7678); PE (0.7603); SI (0.7901); UB (0.8146) are greater than the correlations values with other relationships, which clearly indicate the establishment of discriminant validity. The results are shown in Table 2 below.

Table 2: *Fornell-Larcker Criterion analysis*

	BIU	EE	FC	PBC	PE	SI	UB
AVE>	**0.7868**	**0.7085**	**0.7132**	**0.7678**	**0.7603**	**0.7901**	**0.8146**
BIU	1.0000						
EE	0.4261	1.0000					
FC	0.4863	0.4439	1.0000				
PBC	0.5220	0.5359	0.5085	1.0000			
PE	0.4380	0.6180	0.3134	0.4729	1.0000		
SI	0.3928	0.3236	0.3923	0.4958	0.3465	1.0000	
UB	0.4907	0.6233	0.4576	0.5279	0.5634	0.3773	1.0000

Analysis of the Structural Models

The structural model shown in Figure 2 below comprised of three endogenous and four exogenous variables. All outer loadings are quite adequate since all loadings exceeded the standard cut-off point of 0.40. As shown in Figure 2, all endogenous variables returned the value of R^2 that represents the amount of variance in endogenous explained by other exogenous or endogenous variables. The study predicts 46% of the variance in perceived behavioral control from the variables: PE, EE, FC, SI. In addition, 38% of the variance in BIU is explained by the variables PE, EE, SI, PBC and FC. Lastly, 23.4% of the variance in UB were shared by the variables BIU and PBC.

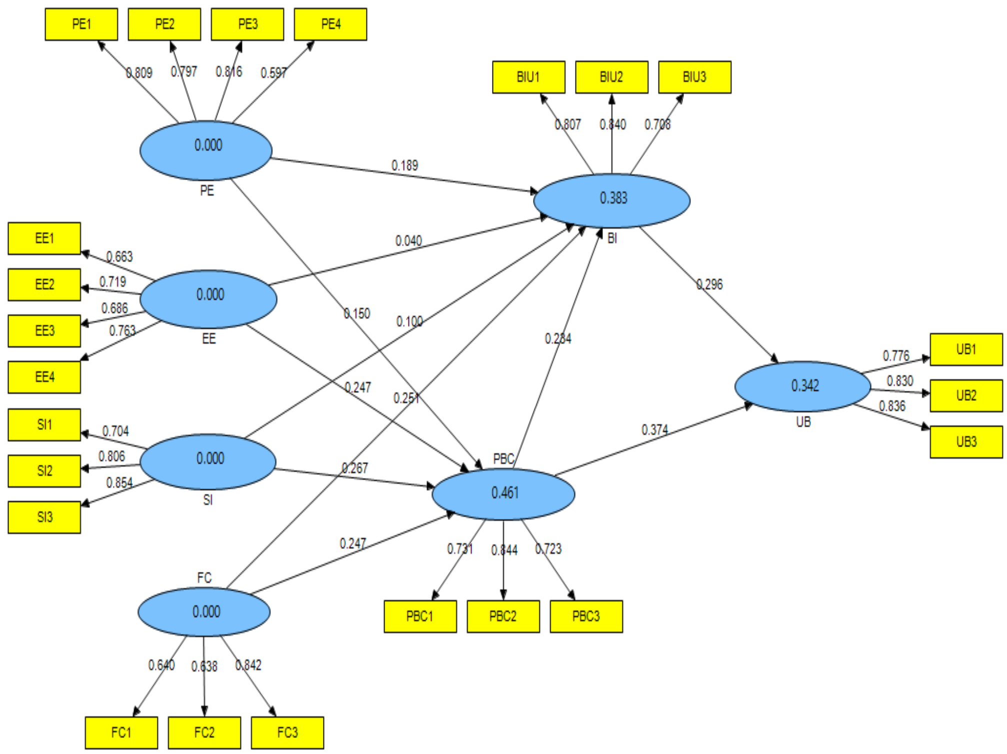

Figure 2: Analysis of the Structural Model

As shown in Figure 2, the construct PE is reflected by four manifest variables: PE1 (0.809), PE2 (0.797), PE3 (0.816) and PE4 (0.697). The loading values seem to be all above the minimum standard cutoff point of 0.40, but somewhat near to the maximum cut off value of 0.70 (Hulland, 1999). The variable EE is reflected by four indicators: EE1(0.663), EE2 (0.719), EE3 (0.686), EE4 (0.763). It can be posited that the loadings are well above the standard cutoff point. Likewise, SI and FC are reflected by three individual items, all the items are loaded quite well exceeding the standard cutoff point. The model comprised of three endogenous constructs: BI, PBC and UB with the alpha values of 0.6921, 0.6483, and 0.7468, respectively, each is reflected by three distinctive items.

Correlation Analysis

The correlations analysis of the latent constructs used in the study are shown in Table 3 below. It can be postulated that the variables are positively correlated since most formed positive relationships yielding “high” strength (Cohen, 1988) all below 0.70.

Table 3: *Correlation analysis of the latent variables used in the study*

	BI	EE	FC	PBC	PE	SI	UB
BI	1.0000						
EE	**0.4261**	1.0000					
FC	0.4863	0.4439	1.0000				
PBC	**0.5220**	**0.5359**	**0.5085**	1.0000			
PE	**0.4380**	0.6180	0.3134	**0.4729**	1.0000		
SI	**0.3928**	0.3236	0.3923	**0.4958**	0.3465	1.0000	
UB	**0.4907**	0.6233	0.4576	**0.5279**	0.5634	0.3773	1.0000

Testing Research Hypotheses

The study tested eleven hypothesized paths on the suggested indicators, that is, T-Statistics and Standardized Beta Coefficients, which are shown in columns 3 and 5 of Table 4 below. Using two-tailed test and keeping the significance level at 5% (Hair Jr et al., 2017), the study accepted all the path coefficients, which are above or larger than 1.96 as statistically significant (Wong, 2013, Hair et al., 2012, Hair et al., 2019). To calculate the T-Statistics and Beta Coefficients of the hypothesized paths, the researchers enabled the bootstrapping function of the simulation named SMART PLS (Hair et al., 2011). The minimum number of the bootstrap samples was set to be 5000 (Streukens and Leroi-Werelds, 2016).

Table 4: *Analysis of the study hypotheses*

HYPOTHESIZED PATHS	**RELATIONSHIPS**	**STD. BETA**	**STD. ERROR**	**T-STATISTICS**	**DECISION**
H6	BI -> UB	0.2957	0.0736	4.0198	Supported
H2a	EE -> BI	0.0400	0.0735	0.5448	**Not Supported**
H2b	EE -> PBC	0.2469	0.0824	2.9979	Supported
H4a	FC -> BI	0.2511	0.0621	4.0418	Supported
H4b	FC -> PBC	0.2471	0.0692	3.5695	Supported
H7	PBC -> BI	0.2337	0.0896	2.6072	Supported
H5	PBC -> UB	0.3735	0.1104	3.3829	Supported
H1a	PE -> BI	0.1895	0.0960	1.9736	Supported
H1b	PE -> PBC	0.1504	0.0773	1.9444	**Not Supported**
H3a	SI -> BI	0.0998	0.0694	1.4379	**Not Supported**
H3b	SI -> PBC	0.2668	0.0624	4.2770	Supported

Note: ** $p < 0.01$, * $p < 0.05$

The results of testing, which were analyzed using SEM simulator, are presented in Table 4. It reveals that, of the eleven hypothesized relationships, seven are statistically significant (see discussion below). However, the study also estimated the insignificant relationships among the paths: effort expectancy (EE) and behavioral intention to use (BIU) (.5448), performance expectancy (PE) and perceived behavioral control (PBC) (1.94), social influence (SI) and behavioral intention (BI) (1.43) since the calculated values were below the threshold of the 1.96 critical value (Nitzl et al., 2016, Henseler et al., 2009, Hair et al., 2006). We, therefore, accepted the null hypotheses for the three insignificant hypothesized paths.

DISCUSSION

The study both confirms and dispels several relationships in the UTAUT model. The hypothesized paths between behavioral intention to use (BIU) and use behavior (UB) (β=0.2957, t= 4.0198, P< 0.05); performance expectancy (PE) and behavioral intention to use (BIU) (β=0.1898, t= 1.9736, P< 0.05) are statistically significant, which is consistent with the findings reported in several studies (Venkatesh et al., 2003, Hsu and Lin, 2008, Yu et al., 2013). Further, the hypothesized relationship between effort expectancy (EE) and behavioral intention (BIU) (β=0.3994, t= 4.1970) was insignificant, which finding is similar to the study conducted by Tarhini et al. (2016). Additionally, the hypothesized path between social influence (SI) and behavioral intention (BIU) (β=0.0998, t= 4.2770, P< 0.05) is statistically insignificant, which contradicts the evidence shared by Venkatesh et al. (2003) but is similar to the findings of the authors Hong and Kang (2011). Simultaneously, the study also confirmed the relationships between the UTAUT constructs: social influence and facilitating condition and perceived behavioral control (PBC); such results are consistent with the findings reported in studies conducted by (Elie-Dit-Cosaque et al., 2011) and Lau (2011). The study reported that hypothesized paths between facilitating condition (FC) and perceived behavioral control (PBC) (β=0.2471, t= 3.5695, P< 0.05), effort expectancy (EE) and perceived behavioral control (PBC) (β=0.2469, t= 2.9979, P< 0.05), social influence (SI) and perceived behavioral control (PBC) (β=0.2668, t= 5.0071, P< 0.05) are statistically significant. The study rationalized that the variable facilitating conditions, in a form of technological infrastructure along with social influence, that is, peer influence, reference group, opinion leader and effort expectancy – the belief that eLearning will be easy and effortless – indirectly impacts on learners' behavioral intention to embrace e-learning via perceived behavioral control. Alternatively, PE (a strong predictor of BI followed by FC) and FC impacted directly on behavioral intention to accept e-learning, which is also reported in numerous studies. In addition, the study failed to prove the relationship between performance expectancy (PE) and perceived behavioral control (PBC) (β=0.1504, t= 1.9444).

The study has substantiated and refuted several relationships in the UTAUT model; likewise, the results validated an alternative path to BIU via PBC. The predictors: PE, SI and FC affected jointly BIU via PBC prior to impacting on UB. SI has been confirmed as the strongest predictor of PBC followed by EE and FC. Social influence usually comes from several sources such as mentors, family members, faculty members and friends. In the above discussion we note the possible influence of family and faculty members on learners' decision to choose an e-learning platform. The variables EE and FC also influenced learners PBC in dealing with e-learning.

CONCLUSION, IMPLICATION AND FUTURE RESEARCH DIRECTION

The study aimed to ascertain the key influential factors swaying learners' behavioral intention, which further influences the use behavior, to accept e-leaning in Bangladesh. The study has focused on identifying an alternative path to accept e-learning in Bangladesh. Learners' intention to adopt online is mainly based on the technical skills and ability that they possess since low skills in dealing with online learning may result in low adoption behavior, which may impede the learners to adopt e-learning. But those who are already interacting with various technology driven products and services to manage their daily activities may possess high levels of technical skills, which may increase their propensity to embrace online learning. Overall, the majority may face barriers to adopt, whereas fewer may adopt online learning while overcoming the barriers. Therefore, we propose that focus by the educators while formulating strategies within the institution, should be on how to increase learners' perceived behavioral control or self-efficacy required for dealing with online learning. Keeping these in the mind, overarching policies can be driven towards the enhancement of the requisite skills needed to function in the environment.

The study found that learners' behavioral intention to accept e-learning in Bangladesh is highly influenced by the factors: performance expectancy (PE), effort expectancy (EE), social influence (SI). Concurrently, learners perceived behavioral control (learners' self-control in using e-learning) is influenced by effort expectancy (EE), social influence (SI) and facilitating condition (FC). In Bangladesh, since e-learning is not widespread, it is important to create awareness of the functionalities of e-learning as it is regarded as technical and complicated in Bangladesh. To achieve a vast level of acceptance, greater emphasis should be placed on the three factors: effort expectancy (EE), social influence (SI) and facilitating condition (FC), which may trigger learners' belief systems in a more positive way, resulting in greater increase in acceptance. We note that perceived behavioral control can act as an alternate path for actual control, which may predict the actual behavior (Ajzen, 2006). The study found a direct relationship between the variables: perceived behavioral control and behavioral intention to adopt e-learning in Bangladesh; as such, it also established a direct relationship between PBC and UB.

However, the formation of Behavioral Intention (BI), which is an individual's readiness to perform a given behavior, mainly relies on three factors, that is, attitude towards the behavior, social pressure to perform the behavior (subjective norms) and perceived behavioral control by which people expect to perform a behavior when opportunity arises; therefore, behavioral intention is assumed to be the immediate antecedent of BI (Ajzen, 2002). Perceived behavioral control along with behavioral intention can also be used to predict behavioral achievement (Ajzen, 1991), since Perceived Behavioral Control (PBC) has been labeled as a strong predictor of behavioral intention (Quine and Rubin, 1997), which is also useful for raising skills (Hardin-Fanning and Ricks, 2017).

By far, adoption behavior is somewhat related to the level of confidence that the person possesses in dealing with technology enabled platforms. In most cases, learners are not provided with any sort of hands-on training on the issues. The study found a positive influence of FC on PBC prior to forming BIU. If a learner is well connected on campus or off campus with all the necessary facilities to take up e-learning, the person's self-esteem will likely be enhanced, thus leading to greater adoption.

The study confirmed that the two factors: facilitating condition (FC) and performance expectancy (PE) together account for the formation of behavioral intention (BI) to accept e-learning. Conversely, the factors, effort expectancy (EE), social influence (SI) and facilitating condition (FC) combined to sway learners' perceptions and skills in a positive direction, fostering learners' aspirations to confidently accept e-learning. The study excluded all moderators; however, the results of the study may have been more interesting if interrogated against some moderators, that is, age, gender, Internet skills, and self-expertise. Future research on these areas can be conducted to further elucidate the issues and generate meaningful research findings.

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