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Acceptance of Technology and e-learning Among Undergraduate Business Students

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Abstract[1]

Recently, e-Learning during the COVID-19 pandemic have affected all academic institutes all around the world. Academic institutes are facing challenges in keeping the education process in place. In order to keep the education system running at its capacity, academic institutions have had to quickly find solutions to adapt to the situation and overcome delays in many approaches and systems. The increased impact of the World Wide Web are leading to new and innovative ways of learning and education. educators and technology lead assumed that new e-learning system technologies and services enable activities that allow users to be active learners, actively participating in the on-line learning process. The objective of this paper is to examine the acceptance of e-education from the perspective of students and to raise their points of view. The methodology used is a self-reported survey and the PLA approach to confirm the findings. The main finding was that more training for teachers and students are essential to better implement technology in the education. Furthermore, the acceptance of e-Learning technology by students in higher education based on their training and orientations for the concept, while some students confirmed that their face-to-face education is more interaction.

Keywords: e-learning, technology, students view, Covid-19, education 4.0, The Fourth Industrial Revolution.

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1. Introduction

Many recent research studies, conducted in response to the COVID-19 pandemic and its effect on education, have revealed that universities must integrate new technologies in their curriculum.

The tremendous advancements in technology have had a profound effect on everyday life. With the advent of digital technology, the developments have been achieved, and, as a result of the 4th industrial revolution, education has evolved in response to the requirements of this development, with new curricula tailored to meet COVID-19 challenges (Darma, Darma, & Syaharuddin, 2020). According to UN estimates over 1.6 billion students in over 190 nations have been impacted by the pandemic. Over 94% of the world's students were affected by the shutdown of their colleges. It also declared that e-Learning and other creative approaches have been adopted to insure the sustainability of the educational process (UN, 2020).

E-learning educational systems providing provide services that are essential aspects for handling the course requirement through a single consistent web interface established within the universities. The e-learning system provides ~~the~~ educators with services such as course content management, synchronous and asynchronous communication, the uploading of contents from anywhere at any time and acceptable from anywhere, submission and marking students' work, peer assessment, student and course administration, organization, finalizing and publishing of students' grades, online questionnaires, online quizzes, assessments, tracking tools. Also, e-learning systems support~~s~~ students' work in many ways such as allocated tasks, open discussion and interactive learning etc. Universit~~i~~es are using e-learning systems to provide services that enable students to shift from passive to active learners where they can actively participate in the on-line learning process (Massy, 2005) .

The main objective of this study is to examine the acceptance of technology in education from the perspective of university students.

2. Literature Review

2.1. e-Learning

The importance for educational institutions to adopt online educational strategies in developing and delivering effective online courses has been demonstrated in A study considered various approaches to e-Learning in underdeveloped countries. Mahmood highlighted the necessity for educational institutions to: establish cooperation with telecom companies, obtain students' input and provide adaptable learning and appraisal practices (Mahmood, 2020). Another study described e-learning as the practice of using digital technologies in conjunction with conventional educational methods to enhance the practices in a virtualized setting. Moreover, it may enhance structured as well as informal teaching. (Mousa, Aldeen, Nasir, & Hamdi, 2020).

Marini and Milawati (2020) emphasized that the Covid-19 and Education 4.0 era created a vital need to develop technology platforms for education, especially ~~that~~ since education 4.0 is about creative solutions, usage of technology tools, accessible materials and e-Learning to maintain continuous learning and benefit the community, which quickened the digital transition in ~~the~~ Indonesian schools.

2.2. Technology Acceptance Model (TAM)

In the past researchers have given a plethora of models of technology adoption across a broad variation of fields for evaluating and monitoring Information System reliability. Each and every one of the models has been thoroughly analyzed. In order to assess if technology would be welcomed, embraced, and used, the Technology Acceptance Model was developed by Davis (1989) and Zaineldeen, Hongbo, & Hassan, (2020). TAM aims to assist academics and professionals in determining if a certain technology is desirable or undesirable and to conduct appropriate actions through description in addition to forecasting (Lai, 2017). The model is considered one of the most referenced models in acceptance of technology.

Perceived usefulness, perceived ease of use and, attitude toward Behavior are elements considered by TAM (Taherdoost, 2018).

Technology Acceptance Model – TAM (Davis, 1989). Davis proposed TAM to explain the potential user's behavioral intentions when using a technological innovation, because it explains the causal links between beliefs (the usefulness of a system and ease of use of a system) and users' attitudes, intentions, and the actual usage of the system. The principal TAM concepts are (see Figure 1):

• Perceived Ease of Use (PEOU) – the degree to which a person believes that using a particular system would be free of effort,

• Perceived Usefulness (PU) – the degree to which a person believes that using a particular system would enhance his or her job performance, and,

• the dependent variable Behavioral Intention (BI) – the degree to which a person has formulated conscious plans to perform.

Davis et al. 1989 suggested that one purpose of TAM is to work as a starting point for testing the impact of external variables on behavioral intentions. TAM has improved and considered through a rigorous development process, with flexibility that allows it to be extended and be one of the more widely used models in technology research because of its understandability and simplicity (King & He, 2006).

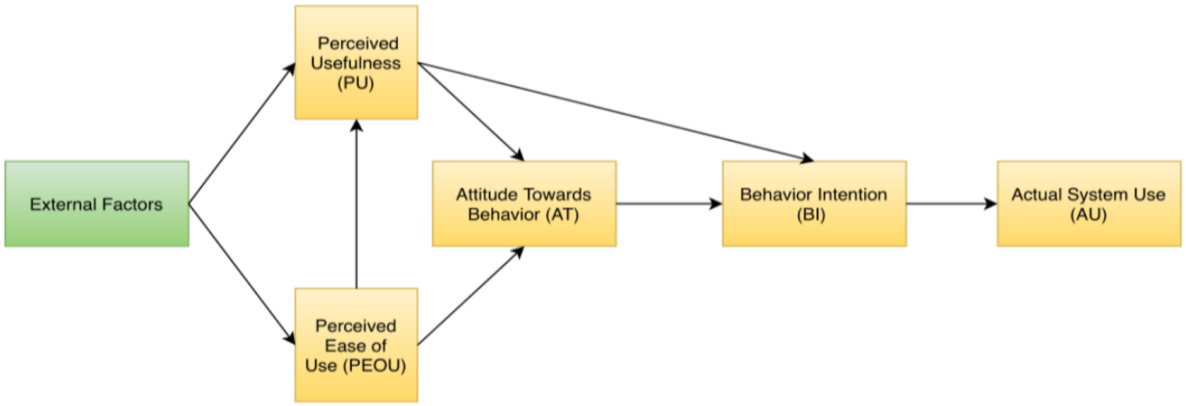

Figure 1: Technology Acceptance Model (TAM)

Sources: Zaineldeen, et all., 2020

Figure (1) illustrates how behavioral intention influences system utilization, which is influenced by both perceived usefulness and attitude toward behavior. Perceived simplicity or ease of use and usefulness directly influences behavior. The TAM examines people's views and attitudes about computer technology acceptance based on two factors. One factor is perceived ease of use and the other is perceived usefulness (Zaineldeen, Hongbo, & Hassan, 2020).

Furthermore, studies pointed out that TAM cannot be used outside the workplace since it ignores societal implications on the acceptance of technology. Aside from that, TAM requires the addition of external factors for more reliable system utilization forecast (Taherdoost, 2018). Chuttur (2009), says that despite the widespread use and recognition of TAM, scholars have opposing opinions on the conceptual premises and actual operational efficacy of the model. It was employed in several technological fields, and has developed through time, overcoming constraints, integrating other scientific theories or presenting additional variables, and being implemented to many contexts, institutions and activities. According to 74 studies, there is a substantial connection between PU and BI, with PU being a greater predictor of BI (Lee, Kozar, & Larsen, 2003).

2.3. Previous Studies Examined TAM

2.3.1. Recent Studies: The learners' adoption of e-Learning at "University Tunku Abdul Rahman" in Malaysia by Lazim in 2021, the results of their study include motivating learners to embrace technology as a new educational medium. Moreover, the perceived usefulness and perceived ease of use dimensions of e-Learning have impacted learners' adoption attitude (Lazim, Ismail, & Tazilah, 2021). The usage of TAM to assess academic staff' preparedness for e-learning has been investigated by A study gather information from 375 undergraduates and faculty members from four public and private institutions. The findings indicated the willingness of educators and learners to embrace e-learning despite numerous obstacles like shortage of devices, applications and suitable Internet connection (Mousa, Aldeen, Nasir, & Hamdi, 2020). Furthermore, TAM to examine The

University of Jordan students' intents regarding smartphone technology and readiness to use it in learning. In their research, a modified version of the model was created incorporating mobile learning self-efficacy, behavioral intention, perceived usefulness, personal standards, perceived ease of use, platform availability and attitude regarding utilization. Data were collected from 1199 students. The findings revealed that enhanced TAM components influenced students' behavioral intent in the utilization of mobile learning (Falah, et al., 2020).

Nevertheless, the TAM module was employed in the United Arab Emirates to investigate the acceptability of Google Translate (GT). The study findings suggested that behavior intent to use GT is greatly affected by perceived ease of the use, incentives and perceived usefulness. Also, perceived use and incentives had a substantial effect on perceived ease of the use (Al-Maroof, Salloum, AlHamadand, & Shaalan, 2020).

The educator's consent of gamification in an online teaching & and learning environment was examined by research conducted at Cyprus International University (Vanduhe, Nat, & Hasan, 2020). To engage and interact with learners, educators use gamification which is a method that introduces dynamics related with digital games in the academic context (Manzano-León, et al., 2021). Another used of TAM while investigating the acceptance of gamification utilization in higher education. They concluded that instructors' involvement and behavior intents to utilize gamification for training have increased (Vanduhe, Nat, & Hasan, 2020). A research analysis of 120 published studies was carried out to determine the most commonly employed TAM factors affecting e-learning adoption. TAM was expanded to evaluate learners' acceptance of e-learning in five academic institutions in the UAE where 435 learners participated. This study found that perceived e-Learning ease of use is influenced by three factors: systems performance, efficiency of computers, and device amusement. Additionally, perceived ease of use and usefulness of e-Learning were strongly impacted by the quality of information, perceived pleasure, and convenience of access to materials (Salloum, Alhamad, Al-Emran, Monem, & Shaalan, 2019). The Saudi Arabian students' usage of Learning

Management Systems in higher education was examined quantitatively using the technology acceptance model (TAM) and its external factors. According to the findings, perceived ease of use is influenced by six factors: material quality, platform navigation and access, system engagement and instructional evaluation (Binyamin, Rutter, & Smith, 2019). Moreover, the integration between TAM and IDT (Innovation Diffusion Theory) was examined by Al-Rahmi and others in a study involving 1,286 Malaysian e-learning students. This proposed an expanded TAM that has been evaluated and analyzed using both IDT and a technology acceptance model. Perceived benefits on regarded ease of use such as anticipated merits and verified appropriateness were shown to influence students' e-learning conduct intent. It also supports combining IDT and TAM to boost learners' achievement (Al-Rahmi, et al., 2019).

Handoko also examined TAM in an online higher education environment, in a study that involved 365 e-Learning students. He concluded that in order to boost student enthusiasm in adopting technology in education, universities should focus on aspects including engagement, performance, creativity and resource quality. The educator variable has little impact on behavior intent (Handoko, 2019). Granić & Marangunić reviewed in their study 71 research publications on TAM in academic institutions, from 2003 to 2018. Their results supported TAM as a valid paradigm for enabling evaluation of various educational technologies (Granić & Marangunić, 2019).

To investigate how Academic Staff in higher education mindsets affect utilization of educational applications, Fathema and others conducted an investigation of an expansion of Davis' 1989 TAM. According to their findings, the academic behavior regarding learning management systems were influenced by the supportive circumstances, platform reliability, and self-efficacy perceived. Moreover, the findings verified the expanded TAM's accuracy in predicting staff's acceptance behavior toward technology (Fathema, Shannon, & Ross, 2015).

2.3.2. Early Studies: Numerous earlier studies were conducted to examine TAM as follow:

A conceptual expansion of the Technology Acceptance Model (TAM) was created and evaluated by Alharbi & Drew study, whereby addressed perceived utility and use intents in context of public impact and cognitive practical procedures (Alharbi & Drew, 2014). In a study of 400 learners engaged in e-learning in rural and urban Pakistan, Shah and others employed TMA with the contribution of 400 learners engaged in e-Learning. The findings demonstrated that the e-Learning structure significantly influences perceived usefulness and convenience of use, resulting to favorable intents to incorporate e-Learning (Shah, Bhatti, Iftikhar, Qureshi, & Zaman, 2013). A verification on how college learners embrace and utilize e-Learning has been examined in Park study that included 628 college learners. He highlighted that TAM was shown to be a relevant conceptual tool for comprehending e-Learning adoption, while e-Learning self-efficacy has been the highest significant component, preceded by subjective standard (Park, 2009).

A study conducted a research project with the support of 88 reliable studies, a quantitative meta-analysis of TAM was carried out in diverse sectors. They concluded that although TAM has been extensively tested and found to be accurate and reliable, it may have broader relevance. The findings validated the benefits of using undergraduates as a substitute for specialists in various TAM researches studies (King & He, 2006). Moreover, Ma applied a meta-analysis using 26 chosen scientific studies to summarize the data. The findings indicated a significant connection between usefulness and acceptability, as well as usefulness and simplicity of use. Nevertheless, the link among simplicity of use and acceptability seemed to be limited (Ma, 2004). TAM2 was a theoretical expansion of the TAM that Venkatesh & Davis proposed and evaluated in their research, which concluded that social impact and intellectual functional procedures impacted user approval (Venkatesh & Davis, 2000).

3. Methodology

3.1. Research design

The Mixed Methods Studies is a term used to describe research based on combined or mixing two research strategies of quantitative and qualitative approaches to produce a way for testing and investigating a phenomenon or clarifying certain situations. The main idea behind this methodology is that rather than building separate results from quantitative and qualitative data collection and analysis.

The evaluation of students' point of view is a clear opportunity for mixed methods studies to contribute to training, learning process, and updating teaching style for modules applying technology and e-learning in the university in the future. Also, it helps the researcher to identify which methods and recommendations raised by students help in building modules using technology in the future educational program at universities.

This research investigates how students perceived the e-Learning and technology, its impact on the learning, and how it can affect the Perceived Usefulness, Perceived Ease of Use, Attitude Toward Using Technology and Behavioral intention by the students. The data gathered was primary data in the questionnaire form, confirmed by PLA interviews with the target group using online focused group discussions.

3.2. Measurement Instruments

The questionnaire consists of a set of questions which ~~are~~ were given to a group of students selected randomly (students from different levels in the business studies), The questionnaire was composed of 16 questions including the gender identification for the responders, the scale adapted from Šumak and others (Šumak, Heričko, Pušnik, & Polančič, 2011), also included 15 statements that measure e-learning perspective of the students. The questions are closed ended questions in all the

sections, using Likert scale for rating from (1-5) that shows how strongly the employees agree or disagree on specific question.

3.3. Qualitative Approach PLA (Participatory Learning & Action)

The second approach and methodology chosen in this study is PLA. The PLA is an approach of different approaches of action research. According to Robert Chambers, a PLA research route creates various stakeholders to engage in a shared process to enriched learning-based member participation. A PLA 'mode of engagement' helps in co-operation, reciprocity, dialogue and mutual respect in research. This promotes in encounters within and across responds and stakeholder participated in the research study (de Brún, et al., 2015). According to different studies has been conducted PLA techniques are user-friendly and democratic, inclusive, verbal and tangible data, generating and combining visual, and to confirm the finding of any research (O'Reilly-de Brún & De Brún, 2010) & (Chambers, 2007). PLA researchers' performance as facilitators than directors or decision-makers which allow trusted strong relationships (Sussman & Rivera, 2008).

PLA tactic and style are to prompt for an active research process designed to encourage and support the responders' significant engagement. The approach as qualitative research using a collection of tools such as charting, mapping, ranking and assessment practices are with focus groups interviews. The concept of including the sample as stakeholder groups engage in PLA dialogue to recognize, in a democratic way the result. The findings of the self-report questionnaire presented to the students to increase their awareness with the value of their point of view and be oriented with the research they contributed in. In addition to confirm the results. PLA was conducted to confirm the findings and to ask students about their comments on the study results, using interviews with a focus group discussion that included students who participated in the questionnaire as well as those who did not.

4. Statistical Results

To test the validity of the used measures, two procedures were used. First, the three-part questionnaire was revised by a panel of 5 academics who assessed the content of each part and evaluated the clearness and appropriateness of this content to academic practices and environment. The academics indicated that the used questionnaires are clear, valid and culturally appropriate. Second, the reliability measures, in terms of Cronbach's alpha, were above the recommended level of 0.70 as an indicator for adequate internal consistency (Hair, Celsi, Ortinau, & Bush, 2010).

Table 1. Reliability Test for all Variables

Scale	Students whole view	Perceived Usefulness (PU)	Perceived Ease of Use (PEOU)	Attitude Toward Using Technology (ATU)	Behavioral intention (BI)
Alpha	.993	.973	.978	.957	.961

As shown in table (2) that there is no significant relationship between the variables and Gender, so if the learners male or female did not affect the results, however there is a significant positive relationship between Perceived Ease of Use, while there is no relation with the gender issue in the other variables. There is a significant relationship between the use of students of e-Learning and other variables as it is recorded in the Perceived Usefulness (PU) recorded (.977**), Perceived Ease of Use (PEOU) recorded (.975**), Attitude Toward Using Technology (ATU) recorded (.961**) and Behavioral intention (BI) recorded (.954**). This result shows that students are aware that using e-Learning in their education is considered useful for them, using e-Learning ease of use for them, their attitude is welcoming the e-Learning and technology and their behaviors are supporting this.

Table 2. Mean, SD and Correlation

Correlations								
	Mean	Std. Deviation	Gender	All varibles	PU	PEOU	ATU	BI
Gender	1.39	.487	1	.062	.032	.098*	.038	.076
All variables	42.2286	18.07239	.062	1	.977**	.975**	.961**	.954**
PU	12.2571	5.62984	.032	.977**	1	.948**	.908**	.901**
PEOU	12.4500	5.52191	.098*	.975**	.948**	1	.899**	.900**
ATU	11.6929	4.81034	.038	.961**	.908**	.899**	1	.947**
BI	8.7214	3.85551	.076	.954**	.901**	.900**	.947**	1
	*. Correlation is significant at the 0.05 level (2-tailed).							
	**. Correlation is significant at the 0.01 level (2-tailed).							

Perceived Usefulness (PU) **Attitude Toward Using Technology (ATU)**
Perceived Ease Of Use (PEOU) **Behavioural intention (BI)**

5. Conclusion and Discussion

The present study resulted in the empirical validation of the TAM research model in the context of the acceptance and applying the e-Learning and technology in higher education learners. This study applied the extended model of TAM on the use of e-learning in higher education in a private university in Egypt, using self-reported survey strategy to investigate and report the students' perspectives regarding using e-Learning and technology in their learning.

The results of the study revealed that the Perceived Usefulness (PU) and perceived ease of use are factors that directly affect students' attitudes toward using e-learning, whereas perceived usefulness is the strongest and most significant determinant of students' attitudes toward using e-Learning according to results of this study. This means that students like to use e-learning if they have good feelings about the usefulness of e-learning in getting better grades, knowledge and meeting the expectations of their program. Many existing studies have also suggested that noticed usefulness can play an important role in affecting students'

attitudes towards using e-learning systems (Lee, Cheung, & Chen, 2005) (Ngai, Poon, & Chan, 2007) (Liu, Liao, & Pratt , 2009).

Perceptions regarding students' "likeness" of the using of the system are also reflected by their comprehensions about how easy they can use the system. This result is supported by other and different studies' findings that perceived ease of use has a strong and significant impact on perceived usefulness, these two dimensions affected each other, or in sequence with each other's. Students' intentions for using e-Learning are not an outcome of students' perceptions about how much they are happy to use the e-learning. The study analysis also did not show a link between perceived ease of use and students' intention of using e-leaning. Higher education stuSdents' intention of using e-Learning/ interactive is fundamentally prompted by its perceived usefulness, meaning that students will use the e-learning system if they find it useful in their learning process. This study results support that the actual use of e-Learning is a result of two main dimensions and they are: Attitudes toward using and, Behavioral Intention, where the latter is e-learning the most significant and strongest predictor of actual use of e-Learning (Teo, 2009).

Implications: This study results have implications that the use of e-learning is a crucial in the education process. The majority whom participated in this study are students. Those students have no problems and fears of using technologies. the majority of students mostly like to use an e-learning portal as they find it useful for their studies, meaning that the e-learning system has to provide all the necessary e-services for students / learners needs in their learning process route.

It is important that students find the e-learning system more efficient, sufficient and useful if they would get adequate learning materials available on the system the presented findings in this study, can also be a direction for researchers in their future work. The research model should be extended in of this module should presented for more research, as the student's view one of the most important assets to build modules and e-Learning courses in order to find external variables to

investigate which factors have a significant influence on students' perceptions related to ease and use of e-Learning system and how its usefulness for the students.

Limitations: This study as an empirical study, it has limitations that need to be identified and discussed. First, the sample is limited to students at the business department at the BUE where the technology is already imbedded in its systems, therefore the BUE students are familiar and trained on its usage before the pandemic in different approaches related to e-Learning.

The results are limited to full-time undergraduate business students. The students that participated in this study are all obliged to use e-Learning in their studies and there is no different choice for them. This study is only limited to a particular e-learning system.

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