

ADOPTION OF EXTENDED UTAUT MODEL ON E-LEARNING IN UAE
HIGHER EDUCATION INSTITUTIONS

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“To Almighty Allah, who gave me strength and wisdom to complete this work,”

I dedicate this work to my beloved family, whose understanding and patience gave me the strength to pursue this program. My sincere appreciation goes to my wife, she has been a great inspiration to me. Her love, support and encouragement gave me the strength and the courage to complete my journey. My children endured the absence of my fatherly love and care patiently, in support of this journey. I say thank you for believing in me. Your sacrifice is not in vain. Likewise, I sincerely dedicated this work to members of the family and friends.



PTTA UTHM
PERPUSTAKAAN TUNKU TUN AMINAH

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ABSTRACT

The fast development of e-learning technology has become a crucial aspect of learning in higher institutions of learning. Just as with any other technology, important factors affect users' behavioural intention to adopt e-learning. Previous studies have explained the factors affecting e-learning adoption using the UTAUT model in western contexts. However, such factors or antecedents of e-learning adoption may be varied in non-western contexts. The propositions of the UTAUT model have been severally tested in the western and developed nations context, but there exist inadequate empirical validations of the propositions of the model in non-western, i.e. in developing nations. Therefore, building on already established antecedents and factors, the study sought to investigate the direct effect of the four determinants of e-learning adoption, including the added variable-service quality on HEI students' behavioural intention to use e-learning technologies in the UAE. Furthermore, the study also examined the mediating role of perceived satisfaction, behavioural intention and perceived usefulness in the relationship between the five determinants of e-learning adoption and the actual use of e-learning systems. Using a quantitative approach and a survey research design, data were obtained from a sample of 453 students selected from pioneering universities with e-learning infrastructures in the UAE. Data were analyzed using the partial least squares structural equation modelling (PLS-SEM). The results show that from a total of 16 direct hypotheses, only four hypotheses were rejected. Regarding the mediating analysis, the results show that perceived usefulness and perceived satisfaction significantly mediates the relationship between performance expectancy, effort expectancy, social influence, service quality, facilitating condition and the actual use of e-learning. However, students' behavioural intention only mediates the relationship between facilitating condition and actual use of e-learning; nonetheless not mediating the relationship between performance expectancy, effort expectancy, social influence, service quality, and e-learning usage. Interestingly, the study showed that service quality plays a crucial role in HEI students' perceived usefulness and perceived satisfaction regarding using e-learning technologies. This finding shows a novel contribution of the study in introducing a new antecedent of e-learning adoption, i.e. service quality, perceived usefulness and perceived satisfaction to the technology acceptance models in a higher education context. Consequently, future studies can explore service quality as an integral part of the antecedents of e-learning adoption in higher education in a context not covered by the scope of this study. Recommendations to relevant stakeholders in the higher education sectors were proposed.

ABSTRAK

Perkembangan teknologi e-pembelajaran yang pesat telah menjadi aspek penting dalam pembelajaran di institusi pengajian tinggi. Sama seperti teknologi lain, faktor penting mempengaruhi niat tingkah laku pengguna untuk menggunakan e-pembelajaran. Kajian terdahulu telah menjelaskan faktor-faktor yang mempengaruhi penggunaan e-pembelajaran menggunakan model UTAUT dalam konteks barat. Walau bagaimanapun, faktor atau anteseden penggunaan e-pembelajaran seperti ini mungkin berbeza dalam konteks bukan barat. Proposisi model UTAUT telah diuji secara parah dalam konteks negara-negara barat dan negara maju, tetapi ada pengesahan empirikal yang tidak tepat mengenai cadangan model tersebut di negara-negara barat, yakni di negara-negara membangun. Oleh itu, berdasarkan anteseden dan faktor yang telah ditetapkan, kajian ini bertujuan untuk mengkaji kesan langsung dari empat faktor penentu penggunaan e-pembelajaran, termasuk peningkatan kualiti perkhidmatan terhadap niat tingkah laku pelajar IPT untuk menggunakan teknologi e-pembelajaran di UAE . Selanjutnya, kajian ini juga mengkaji peranan pengantara kepuasan yang dirasakan, niat tingkah laku dan kegunaan yang dirasakan dalam hubungan antara lima penentu penggunaan e-condong dan penggunaan sistem e-pembelajaran yang sebenarnya. Dengan menggunakan pendekatan kuantitatif dan reka bentuk penyelidikan tinjauan, data diperoleh dari sampel 453 pelajar yang dipilih dari universiti perintis dengan infrastruktur e-pembelajaran di UAE. Data dianalisis menggunakan pemodelan persamaan struktur kuadrat separa separa (PLS-SEM). Hasil kajian menunjukkan bahawa dari keseluruhan 16 hipotesis langsung, hanya empat hipotesis yang ditolak. Mengenai analisis mediasi, hasilnya menunjukkan bahwa manfaat yang dirasakan dan kepuasan yang dirasakan secara signifikan memediasi hubungan antara harapan prestasi, harapan usaha, pengaruh sosial, kualiti layanan, keadaan pemudah cara dan penggunaan e-pembelajaran yang sebenarnya. Walau bagaimanapun, niat tingkah laku pelajar hanya memediasi hubungan antara keadaan pemudahcara dan penggunaan e-pembelajaran sebenar; namun tidak memediasi hubungan antara jangkaan prestasi, harapan usaha, pengaruh sosial, kualiti perkhidmatan, dan penggunaan e-pembelajaran. Menariknya, kajian menunjukkan bahawa kualiti perkhidmatan memainkan peranan penting dalam kegunaan dan kepuasan yang dirasakan oleh para pelajar IPT mengenai penggunaan teknologi e-pembelajaran. Penemuan ini menunjukkan sumbangan baru kajian dalam memperkenalkan anteseden baru penggunaan e-pembelajaran, iaitu kualiti perkhidmatan, kegunaan yang dirasakan, dan kepuasan yang dirasakan terhadap model penerimaan teknologi dalam konteks pendidikan tinggi. Oleh itu, kajian masa depan dapat meneroka kualiti perkhidmatan sebagai bahagian yang tidak terpisahkan dari anteseden penggunaan e-pembelajaran di pendidikan tinggi dalam konteks yang tidak

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LIST OF ABBREVIATIONS

ADL	-	Advanced Distributed Learning
CMC	-	Computer-Mediated Communication
DBMS	-	Database Administration System
DL	-	Distributed Learning
DL	-	Distance Learning
HCT	-	Higher Colleges of Technology
HEIs	-	Higher Education Institutions
IBT	-	Internet-Based Training
ICT	-	Information Communication technology
ISSM	-	DeLone and McLean Model of Information Systems Success
OL	-	Online Learning
PEOU	-	Perceived Simplicity of Using
PLS	-	Partial Least Squares
ROI	-	Return on Investment
SEM	-	Structural Equation Modelling
SPSS	-	Statistical Package for Social Sciences
SUT	-	Swinburne Technology University
TAM	-	Technology Acceptance Model
TPB	-	Theory of Planned Behaviour
TRA	-	Theory of Reasoned Action
UAE	-	United Arab Emirates
UAEU	-	Zayed University and the United Arab Emirates University
USA	-	United States of America
UTAUT	-	Unified Theory Of Acceptance And Use Of Technology
WBI	-	Web-Based Instruction
WBL	-	Web-based learning
WBT	-	Web-Based Training

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CHAPTER 1

INTRODUCTION

1.1 Introduction

E-learning or electronic learning has become a requirement for addressing the challenges posed by information technology growth and the desire for increased access to knowledge. At a time when the coronavirus pandemic is revolutionizing the way educational institutions deliver teaching and learning to learners, there is now more focus on e-learning as a panacea for the sustainability of education. The impact of information and communication technology (ICT) on learning is being studied extensively. Creative and innovative strategies are now being sought to enhance a higher rate of success and achievement in higher learning institutions to create a tailored learning environment wherein learners can pursue continuous learning in a motivated manner using various technology tools.

More universities are now beginning to nurture the use of electronic learning across their students and staff. E-Learning involves using electronic devices to promote online education via social media platforms and web-based training and technical delivery services (Smith, & Farah, 2011). According to Boateng *et al* (2016), e-learning involves applying information and communication technologies (ICT) to improve access to the resources that facilitate teaching and learning. However, the new norms of learning, especially in the context of the epidemic that has hit countries worldwide, have caused online learning to grow faster, driven by the circulation of Education 4.0, which is the direction for many countries in the world. Higher education delivery around the globe has been altered dramatically, with most institutions having shifted their teaching and assessment online (Maatuk *et al.*, 2021). Indeed, before the

global outbreak, some institutions were already laying the groundwork for a new approach to Higher Education. Universities are now investing in new technologies to deliver educational experiences and exploring how the sector might respond to the future needs of industry and jobs. Aligning with the latest trend in teaching and learning, more open courses are offered with the advancement of e-learning applications or systems developed to cater to the students' needs (Maatuk *et al.*, 2021).

Based on a study by Lederman (2018), more than 6 million students' enrolment was recorded with at least one electronic learning course in 2016. The proportion of students enrolled in at least one electronic learning course had risen to over 30 percent in Canada. The largest percentage of student's enrolment was recorded in public and non-profit institutions. Electronic learning programs' continued growth appears to be on the horizon in the next five years, particularly for business education. Mirroring global trends, Australia and the Asia Pacific region experienced dramatic growth in open access online education between 2000 – 2011 (Greenland, 2011). The Swinburne University of Technology (SUT), a pioneer in Australia's tertiary electronic learning education sector, reflected national growth in the online education scenario and the experience of many of Australia's tertiary electronic learning providers (Greenland & Moore, 2014). In partnership with Open Universities Australia (OUA), SUT's open access electronic learning growth has been achieved (OUA, 2013).

Similarly, in a study conducted by KPMG India and Google (2017), findings revealed that India's e-learning education system now stands at US\$ 247 million with an average of 1.6 million users. It is expected to grow to US\$ 1.96 billion, with around 9.6 million users by 2021. These e-learning developments in HEIs show the massive interest in providing education that can be accessed globally, especially in the COVID-19 pandemic era, without restrictions, thus making the world an interconnected village.

Technology adoption has become a crucial aspect of the integration of educational institutions. The rapid increase in the adoption of information and communication technologies by educational institutions indicates the perceived benefits educational institutions have of this educational tool in carrying out academic and administrative tasks (Yakubu & Dasuki, 2019). However, there is a growing interest in improving the adoption and application of these technologies for teaching and learning (Suki & Suki, 2017). Traditional teaching approaches such as lecturing, tutorials, and mentoring are principal teaching and learning approaches in universities.

However, more universities are investing massively in developing learning technologies (Mahdizadeh *et al.*, 2008). Personal computers, the Internet, and other technology-based learning tools are now common resources used in universities. Academics and students continue to use these tools to communicate, collaborate, and carry out research in a system generally referred to as computer-assisted learning, virtual learning, electronic or e-learning (Ozkan *et al.*, 2009). E-learning has become necessary to meet the challenges posed by the development of information technology and the propensity for increased access to knowledge.

Therefore, the adoption and diffusion of such technology by faculty members and students alike continue to be the main challenge among higher education institutions, particularly in a developing region such as the Middle East. The spread of e-learning in developed countries, unlike developing ones like the United Arab Emirates (UAE), is a well-researched phenomenon (Van Raaij & Schepers, 2008). The trend in e-learning adoption has seen a notable increase globally; the UAE lags behind other Middle-Eastern countries despite immense governmental intervention and investment in e-learning across HEIs. This slow-paced adoption of e-learning in higher education institutions is multifaceted, especially from faculty members and students' perspectives. This has been hinged on factors such as language, culture, accessibility, support, and personal preferences (Raman *et al.*, 2014; Yakubu & Dasuki, 2019). Another possible exploration of the causes of this challenge could be the fact that the pedagogical benefits of e-learning have been disputed or have not been fully embraced by students, educators as well as university management (Boateng *et al.*, 2016; Suki & Suki, 2010; Yakubu & Dasuki, 2019).

Similarly, the Government of most middle Eastern countries employs censorship in the use of internet facilities. For this reason, many of the countries in this region are reluctant to embrace e-learning for moral and ethical reasons. For instance, a study conducted in 2007 by the Saudi Arabian Communications and Information Technology Commission surveyed users' perception regarding e-learning. The survey results involving about 7,500 individuals revealed that only 49 percent of society members were aware of e-learning, while only about 5 percent of those familiar with e-learning have used it personally. This premise reflects the meagre percentage of e-learning knowledge at the academic level and the level of employee growth undertaken by either governmental or private organizations (CITC, 2007).

Many middle eastern governments' passive stance in response to e-learning adoption can be blamed largely on the general public's low internet usage rate. This factor can be attributed to several reasons, including the high initial costs of Internet access, low speed and quality Internet connections, and the perception that Internet connection will bring unethical values, moral disorientation and corruption to the average family (Mirza & Al-Abdulkareem, 2011).

1.2 Background of the Study

The rationale for integrating e-learning in Higher Education Institutions (HEIs) has its pros and cons, just like any other technology. According to Mahdizadeh *et al.* (2008), in developed countries like the United States of America (USA), where there are many of the world's highest computer use concentrations, general computer use in education is still limited to sporadic information searches. This preceding leads to questioning why countries with established infrastructure fail to adopt the technology that other nations flaunt as the solution to efficient and innovative educational delivery. The rapid development of global electronic learning systems has necessitated many educational institutions to adopt e-learning technologies in teaching and learning, management and administrative roles.

In the UAE, the Ministry of Education is one of the largest entities in the country to adopt remote learning through virtual environments in response to the current situation. The ministry consists of 56 departments led by a Minister of Education appointed by the country's leadership. The whole organizational hierarchy operates under the minister's direction with the assistance of a Minister of State for General Education Affairs and a Minister of State for Higher Education Affairs. To facilitate the implementation of decisions relevant to e-learning initiatives, the government of the United Arab Emirates has been keen to further enhance the ICT sector (Thabet *et al.*, 2021). Hence, the UAE is one of many nations that have begun investing massively in integrating e-learning systems into higher education institutions (HEIs). Since 2013, the UAE government initiated the country's federal electronic learning program piloted in three Federal higher educational institutions- the Higher Colleges of Technology (HCT), Zayed University and the United Arab Emirates University (UAEU).

In addition, the universities were accredited by the Ministry of Higher Education in the UAE, and it has some affiliation with international universities. The education system in the universities is based on offering taught modules for each programme. Students are required to achieve 70% of the classes offered (Thabet *et al.*, 2021). All course materials for all programmes are presented through the learning management system (LMS). This platform incorporates numerous functions and capabilities which would allow any institution to run its courses online without any physical presence of students. The initiative was one of the largest e-learning imitations reported globally, with about 14000 students participating in the program.

Despite the UAE government's massive investment in electronic learning in its higher education institutions, Mostafa *et al.* (2016) report that there is still a low adoption rate of e-learning systems by HEI students in the middle east. Statistics showing the current global internet usage rate is presented in Figure 1.1. The figure shows that as of 2019, the middle east is the second least ranking region for Internet usage. This figure places the internet user rate in the Middle East only above Australia. This is indicative of the low adoption of ICT tools in both business and academia in the region. This trend is undoubtedly worrisome as the aim of complementing traditional learning with e-learning initiatives is to ensure that learners maximize the benefits that e-learning offers. The UAE had a plan to spend about 3.3 billion dollars on the health and education sectors (Thabet *et al.*, 2021). The budget allocated for education was to be spent on purchasing ICT hardware that schools could use. The report also showed that the high income of a country does not positively correlate with having advanced technologies as there are some countries with high per capita income, such as Kuwait and the Kingdom of Saudi Arabia, while they occupy low positions compared to other countries with lower income (Thabet *et al.*, 2021).

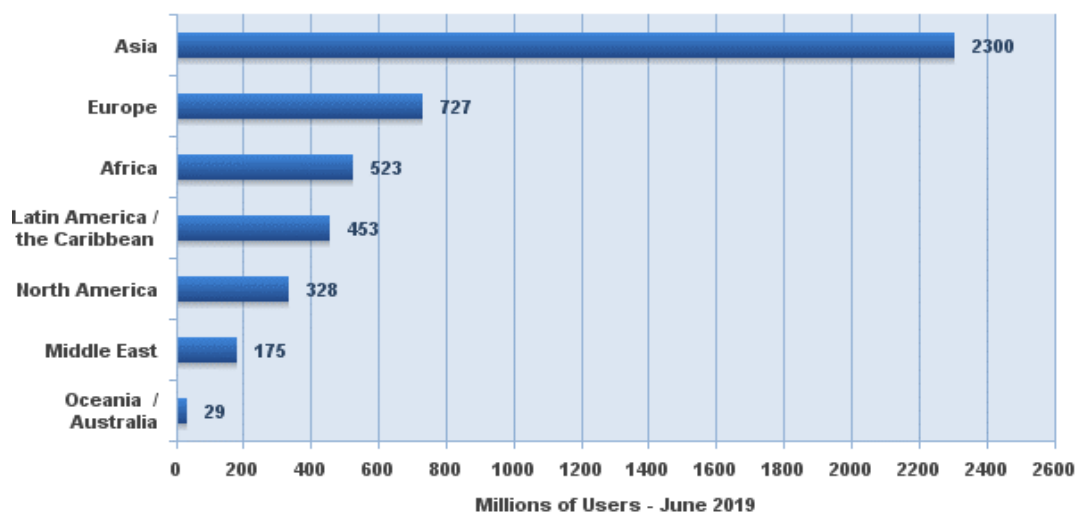


Figure 1.1: Global internet user rate (Internet World Stats, 2019)

Integrating Information and communication technologies such as e-learning into educational institutions can undoubtedly bring immense and significant benefits to educational institutions. Still, HEIs are faced with the challenges of introducing these informative systems into their work environment (Dasuki et al., 2015). Thus, with the various apps and platforms developed to support the e-learning process, it has become difficult for the university to choose which technology or tools are appropriate to the needs of students and achieve maximum effect on students learning. There are many technologies available for online teaching. Some are complex Learning management system (LMSs), like Moodle and Blackboard, and others are better suited for virtual classrooms or meetings, such as Teams and Zoom. Furthermore, before the pandemic, faculty only needed to be familiar with at least one LMS, but with the rapid transition to e-learning platforms, many faculty members had to learn how to use multiple platforms in a short period, as no best practices were defined at that time. This approach provided the flexibility needed to quickly transition between platforms when unexpected technical issues occurred to minimize classroom disruptions.

Furthermore, according to Mutula (2002), e-learning has been criticized for its lack of immediate feedback in asynchronous learning environments, apart from the lack of empirical evidence regarding its return on investment (ROI). Despite its potentially overwhelming value to higher education, e-learning is still not necessarily comfortable for everyone to use and is characterized by the potential for increased frustrations, anxieties, and confusions to users. Irrespective, the benefits and

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