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Technology Enhanced Learning in Undergraduate Level Education: A Case Study of Students of Mass Communication

Dina Naser Tahat [1], Mohammed Habes [2,*], Khalaf Tahat [3,4,*], Saadia Anwar Pasha [5], Razaz Waheeb Attar [6], Waleed Mugahed Al-Rahmi [7] and Fahad Alblehai [8]

1 Applied Sociology Department, Al Ain University, Abu Dhabi P.O. Box 112612, United Arab Emirates
2 Faculty of Mass Communication, Radio & TV Department, Yarmouk University, Irbid P.O. Box 21163, Jordan
3 Media & Creative Industries Department United Arab Emirates University UAE, Irbid P.O. Box 21163, Jordan
4 Journalism Department, Yarmouk University, Irbid P.O. Box 21163, Jordan
5 Department of Mass Communication, Allama Iqbal Open University, Islamabad 44000, Pakistan
6 Department of Business Administration, College of Business and Administration, Princess Nourah Bint Abdulrahman University, P.O. Box 84428, Riyadh 11671, Saudi Arabia
7 Faculty of Social Science and Humanities, School of Education, University Teknologi Malaysia, Skudai 81310, Johor, Malaysia; waleed.alrahmi@yahoo.com
8 Computer Science Department, Community College, King Saud University, Riyadh 11437, Saudi Arabia
* Correspondence: mohammad.habes@yu.edu.jo (M.H.); k.tahat@uaeu.ac.ae (K.T.)

Abstract: The incorporation of digital technology in education represents a substantial transformation in the realm of academia. In the present day, with new technology being readily available to both educators and students, educational institutions encourage their students to embrace it, enabling students facing geographical constraints to easily continue their education through internet-based learning. The primary objective of this study is to investigate the viewpoints of undergraduate students in the field of mass communication concerning the integration of Information and Communication Technology (ICT) in the UAE. Based on a Technology Acceptance Model (TAM), the data were gathered using structured questionnaires. Results revealed that knowledge sharing and accessibility are significant factors affecting the perceived ease of use and perceived usefulness among the undergraduate students. Further, perceived ease of use significantly affects perceived usefulness. Finally, both perceived ease of use and perceived usefulness remained as significant factors regarding ICT acceptance among the Emirati students. It is concluded that educational institutions must invest significantly in robust IT infrastructure. This step ensures that e-learning experiences are seamless and accessible to all students. Further, to address some students' connectivity challenges, offering alternative access options or providing offline resources can be beneficial. Finally, the practical implications and limitations are discussed.

Keywords: higher education; technology acceptance model; United Arab Emirates; information communication technology; learning

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1. Introduction

The question regarding changes in higher education directly relies on how we perceive education and its importance [1]. For example, the purpose of education is personal correction, fostering insight, and a desire to attain a better future life: Over the years, we have noticed that we are learning the same content, with the same objectives and a similar way of teaching and learning. However, if we observe the changes in educational patterns over time, we can see how technology, teaching methods, demands of learners, especially beginners, have mainly changed [2]. Over the years, we have noticed that students are learning the same content, with the same objectives [3] specifically before the COVID-19 pandemic [4].

Sixty years ago, the purpose and patterns of undergraduate-level education were the same: practical education was nearly absent and students had the same mindset [5]. It

is worth noting that, today, teachers are more lenient and have flexible attitudes towards learners compared to the older times. This might be because of increased exposure to new educational patterns due to technological revolution and integration in the educational arenas [6]. Massive technological changes in the educational systems, especially the university-level education system, are advancements of every individual in society [5]. Today, students seem comparatively more involved in their education as they find education interesting and better able to cope with the ever-increasing social challenges. Our new generation is benefiting from the revolutionized educational patterns, as the educational system is harnessing skills and potential abilities to increase problem solving, risk management, and other capabilities of the future generation [7]. It is currently seen that state governments are taking much interest in upgrading education to meet all the international standards. Even education as a birthright of children is today getting more attention as a government policy and priory for stakeholders [8].

The integration of digital technology in education is prominently a significant change in educational arenas [1,9,10]. Today, when we see that new technology is equally accessible for both teachers and students, educational institutions motivate their students to adopt it. These institutions provide them with all the means to access online learning material and resources to resume their educational and professional journey in the best possible manner. We can witness the education for all as possible and generalizable without any barriers. Now, access to education is just a click away as revolutionizing the educational system also altered the previous concept of "home-schooling." Back in the 20th century, apart from formal education, we had informal education available in tape players, record players, reel projectors, radio, and the TV. However, when technology has become a dominating factor in education, we need just a single device and an internet connection to resume the educational process. Even the traditional blackboards and chalkboards are being replaced by virtual boards [11,12].

Even students with a hearing or visual disability can quickly resume their education through internet-based education [13]. For example, children with a hearing disability can access Dynovox Fm system machines that boost their hearing capability [14]. Yet, the benefits of technology incorporation in education for children without disabilities are even enormous [15]. Notably, in a country like the United Arab Emirates where university-level education is going through several transitions, technology integration can be of greater significance [2]. However, although higher education institutions in the UAE are striving to incorporate technology in their existing academic systems, they are also confronting certain challenges that should be addressed [16]. The basic educational infrastructure lacks several concerns that affect the performance of these institutions trying to keep pace with modern educational trends. However, many institutions have still incorporated technology to provide students with increased educational opportunities and worldclass facilities regardless of geographical barriers [17]. As noted by [18], the local government designed many policies and committees to enhance the quality of the local educational system, but ironically their implementation remained a dream. Due to educational incapabilities, integration and acceptance of digital platforms is a big question. Thus, educational stakeholders in the UAE need to upgrade the existing educational system in the country. Although higher education-based institutions have well-adopted technology, public sector institutions still struggle to cope with technology adoption.

2. Study Aims

Hence, the focus of this research is to examine the perceptions of undergraduate students of mass communication regarding ICT incorporation in the UAE. Despite the fact that many Emirati researchers have conducted empirical investigations to assess ICT adoption in education [19–24], examining technology adoption on the undergraduate level from the instructors' point of view is still scarce. The main objective involves providing educational stakeholders and policymakers with instructors' opinions concerning digital technology incorporation in higher education that will help them design and implement

enormously effective strategies for Emirati educational well being and development. This research is novel in its narrow focus on undergraduate students in mass communication, allowing for a detailed examination of how technology impacts their learning experience. By narrowing down to this specific demographic, the study aimed to uncover insights and implications directly relevant to this field of study, which may not have been previously explored in depth. This research is based on a case study approach, which provides an in-depth exploration of the real-world application of technology in the education of mass communication undergraduates. This in-depth analysis enabled a detailed understanding of the challenges, benefits, and specific dynamics that arise when technology is incorporated into this academic domain.

3. Review of Literature

3.1. Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM), proposed by Davis in 1989, is a highly effective framework for understanding technology acceptance. It identifies two key factors that impact an individual's inclination to adopt new technology: their perception of its ease of use and usefulness. For example, an older adult who views digital media as overly complex or a frivolous use of time is less likely to embrace this technology [25]. Conversely, an older adult who sees digital media as providing useful mental engagement and easy to learn will be more inclined to learn how to use it. Embracing and using information technologies can yield immediate and sustained benefits for organizations and individuals. These benefits encompass improved performance, increased financial and time effectiveness, and amplified convenience. The primary goal of the Technology Acceptance Model (TAM) was to provide an understanding of the processes involved in accepting technology, aiming to predict behavior and offer a theoretical foundation for successful technology implementation [26]. On the practical level, TAM equipped practitioners with knowledge they could use before introducing new systems. According to TAM, the acceptance of technology is a three-step process with external factors, like system design features, initiate cognitive responses through perceived ease of use, and usefulness. These responses then lead to an emotional reaction, affecting one's attitude toward using the technology and intention to do so. The TAM portrays behavior as a result predicted by perceived ease of use, perceived usefulness, and behavioral intention [27]. Perceived ease of use and perceived usefulness encapsulate expectations of positive behavioral outcomes and the idea that the behavior would not be excessively demanding. In the following study, behavioral intention was proposed to be interchangeable with attitude toward behavior. This represents an emotional evaluation of the potential consequences of the behavior. A stronger emotional response increases the likelihood of the behavior occurring [28], see Figure 1.

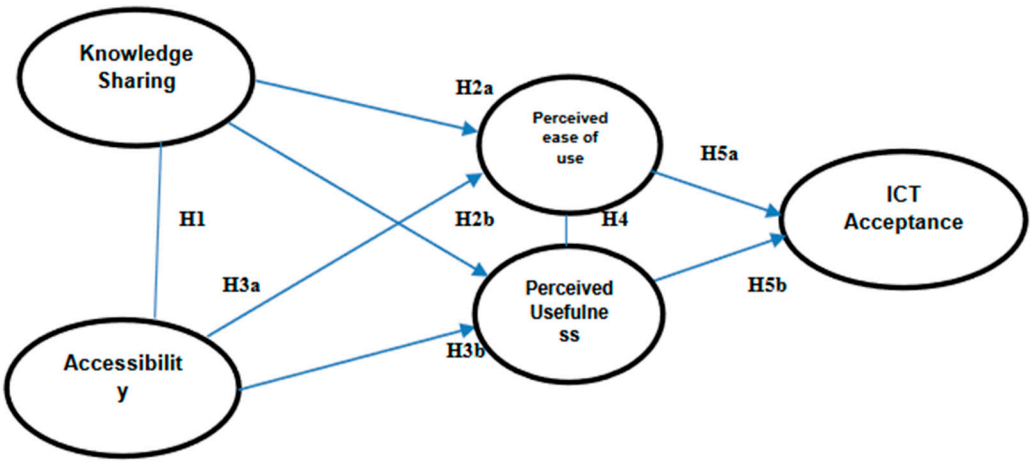

Figure 1. Conceptual model of the current study.

3.2. Knowledge Sharing and Internet Accessibility

Most institutions now acknowledge that knowledge is fundamental to maintaining a competitive edge. Within knowledge and information, sharing knowledge is identified as a critical aspect. Consequently, numerous institutions harness the power of the Internet, not just as a vast source of information but also as a means to facilitate the sharing of information and knowledge [29]. A study by Zaqout and Abbas [30] examined the factors affecting the exchange of knowledge and how they impact the performance of research-oriented graduate students. Data collected from 245 valid responses indicated that students showed a positive and constructive attitude toward sharing knowledge. Trust, social networks, and information and communications technology (ICT) were identified as affective variables, indicating significant positive direct effects on the mediating variables knowledge. Notably, only tacit knowledge demonstrated a notable direct impact on performance, the endogenous variable. Also, knowledge-sharing activities were prevalent within their respective campuses. Another study by Teh et al [31] examined how internet availability facilitates knowledge-sharing behavior within the Chinese community. The data were gathered from 135 Chinese students enrolled in Malaysian universities. Results showed that internet availability remained a substantial factor in affecting the knowledge-sharing among the students. Respondents also indicated their strong dependence on the internet, which further helped their academic performance, see Figure 1.

H1: *Knowledge sharing has a positive effect on accessibility.*

3.3. Knowledge Sharing, Perceived Ease of Use, and Perceived Usefulness

Many students utilize online resources for social interactions and online learning, sharing available content and exploring personalized career opportunities. The boundaries between gaining knowledge, learning, work, leisure, and entertainment increasingly blend into their lives [32]. A survey among college students found that 23% used online platforms for research purposes, 22% for entertainment, 15% for staying updated with the latest news, and 12% for chatting and connecting with friends and family. Digital platforms have brought innovative solutions, fresh perspectives, and knowledge-sharing avenues across different organizations, including hospitals and educational institutions. Through the fast exchange of information and knowledge on digital networks, there has been a profound transformation in lifestyles and an enhancement in individual and organizational learning [33]. A study by Moghavvemi et al. [34,35] analyzed the correlation between perceived enjoyment, perceived ease of use (perceived benefits concerning use), perceived status, outcome expectation, and the influence of knowledge gathering and how each aspect impacts knowledge sharing among students through digital platforms. Data obtained from 170 undergraduate university students revealed that outcome expectation emerged as the primary factor influencing students in sharing knowledge, followed by ease of use (perceived benefits concerning use and enjoyment). Students engaged in knowledge sharing and assisting others primarily due to the anticipated positive outcomes, i.e., gaining attention from peers and instructors, receiving positive feedback from friends, the chance to improve their knowledge, and gaining recognition. Al- Emran et al [36] examined another aspect of knowledge sharing towards the TAM: how knowledge-sharing (KS) elements affect M-learning acceptance among students. The study employed Partial Least Squares-Structural Equation Modeling (PLS-SEM) and found that knowledge sharing, application, and protection positively influence M-learning's perceived ease of use and usefulness. Overall, findings showed knowledge sharing as an effective pathway to motivate M-Learning acceptance among Malaysian students.

H2a: *Knowledge sharing has a positive effect on the perceived ease of use.*

H2b: *Knowledge sharing has a positive effect on the perceived usefulness.*

3.4. Internet Accessibility

According to Yakubu et al [37], internet accessibility plays a crucial role in how students perceive the ease of use and usefulness of e-learning platforms. Students with reliable and high-speed internet connections are more likely to find e-learning convenient and user friendly. A stable internet connection ensures students can access course materials, participate in online discussions, and submit assignments without disruptions. This contributes to a positive perception of ease of use as they can navigate the platform smoothly without frustrating delays or technical glitches. Also, internet accessibility directly impacts how students perceive the usefulness of e-learning [38]. With a reliable connection, students have uninterrupted access to many resources, including videos, articles, and interactive content. This allows them to engage with the material more effectively, enhancing their learning experience. Students who can easily access and utilize these resources are more likely to view e-learning as a valuable educational tool. A study by Patricia Aguilera-Hermida [39] delved into college students' perspectives about their adoption, utilization, and reception of emergency online learning. The factors under scrutiny encompassed the availability of the required equipment, attitude, affect, motivation, perceived behavioral control (which included ease of technology use, self-efficacy, and accessibility), and cognitive engagement. Data from 270 students through quantitative and qualitative means highlighted the significant effect of attitude, motivation, self-efficacy, and technology usage on students' cognitive engagement and academic performance. It was also noted that participants generally favored online learning over face-to-face alternatives. Another study by Pow and Li [40] analyzed the perceptions of internet access and information quality, and the application in their learning process. Also, the objective was to create a model for information acceptance that effectively measures and anticipates students' utilization of Internet-based information. The study involved undergraduate students from a university in Hong Kong, totaling 299 participants. The findings showed that internet availability and information quality are important in predicting students' incorporation of e-learning incorporation into their academic endeavors.

H3a: *Accessibility has a positive effect on the perceived ease of use.*

H3b: *Accessibility has a positive effect on the perceived usefulness.*

3.5. Perceived Ease of Use and Perceived Usefulness

According to Nugroho et al [41], a platform's perceived usefulness is closely linked to how easily students can access and utilize its features. If a platform provides various multimedia resources, interactive exercises, and timely feedback mechanisms, students are more likely to view it as a useful tool for their learning journey. These features directly affect the quality and effectiveness of the learning experience. When students readily access these resources without encountering barriers, they are more likely to see the platform as useful to their education. A study by Keržič et al. [42] explored the factors influencing how students perceive an e-course's usefulness within a blended learning environment. The data collection involved 539 students and indicated that the students consider e-learning as positively linked to easy use, accompanied by usefulness outcomes, especially when there is active teacher engagement in the e-course, coupled with a student's favorable attitude towards the subject matter and the lecturer's classroom performance. Also, technology acceptance indirectly contributed to this positive perception. According to Nuryakin et al. [43], if a platform is difficult to navigate or has technical glitches that hinder the learning process, students may perceive it as less useful. A frustrating user experience can overshadow the possible benefits of the platform's content. In such cases, even if the platform offers practical resources, students will not fully realize their usefulness due to the barriers they encounter.

3.6. Perceived Ease of Use, Perceived Usefulness, and ICT Acceptance

E-learning involves using information and communication technology (ICT) to promote and support learning. Its application in various educational processes aims to improve learning performance [44]. Modern ICT is often required to provide a flexible and adaptable learning experience in today's rapidly evolving work environment. This allows for improved access to continuous professional development. E-learning's advantage lies in its flexibility in terms of time and location, enabling higher education institutions and their students to engage with learning materials more accommodatingly. A study by Ku [45] examined how students perceive and accept the online learning system, known as World Wide Web Course Tools (WebCT). The study assessed responses from 115 students across two surveys conducted in courses using WebCT at a large public university. It was found that the relationship between perceived ease of use and perceived usefulness was found to be significant in both pre-test and post-test phases. Also, in the pre-test, the link between behavioral intention to use and actual system utilization was significant. The connection between perceived resources and usefulness was also significant in the post-test. Another study by Shah [46] assessed the e-learning acceptance regarding courses for professional qualifications provided by the Institute of Bankers Pakistan (IBP). Data from 172 participants through an online survey revealed an encouraging potential for introducing e-learning-based courses. Especially, the individual's learning style and age positively correlate with the perceived ease of use. Also, the learning style alone showed a positive correlation with perceived usefulness. This suggests a favorable inclination towards adopting e-learning approaches for professional qualification courses, especially among those with specific learning styles and age groups.

H4: *Perceived ease of use has a positive effect on ICT acceptance in undergraduate level education.*

H5: *Perceived usefulness has a positive effect on ICT acceptance in undergraduate level education.*

4. Methodology

The current study follows a case study approach to conduct an empirical study for a shorter time with greater generalizability. The researcher employed close-ended questionnaires using a five-point Likert scale, also recommended by the existing literature [47]. The questionnaires were designed by adopting measurement items and scales from the preexisting literature, summarized in Table 1 (the questionnaire is available in Appendix A). This survey method allowed the researchers to obtain quantitative data, as mentioned by Cousin [48]. The data were gathered from March 2023 to June 2023. Once the data were gathered and evaluated, they were analyzed using SPSS and Smart-PLS for Structural Equation Modelling.

Table 1. Sources of research measurements tool and scales.

Variables	Source	No. of Items
Knowledge Sharing	[48]	04
Accessibility	[47]	04
Perceived Ease of Use	[44]	03
Perceived Usefulness	[49]	03
ICT Acceptance	[45]	04

4.1. Construct Validity

The researchers meticulously curated items and scales from well-established studies in the field of organizational behavior in designing questionnaires to ensure construct validity. The selected items have been widely acknowledged and utilized in different existing studies, indicating their robustness in measuring key constructs. Also, the original studies themselves underwent rigorous validation processes, including factor analysis, reliability testing, and expert reviews, further attesting to the reliability and validity of the

chosen items. By adopting these well-designed measures, this study not only leveraged the collective wisdom of the academic community but also ensured that our questionnaire aligns seamlessly with established standards in the field.

4.2. Sampling Approaches

The population in this research involves undergraduate-level university students in public sector institutions in Pakistan. Further, as per the sampling requirements, n = 2 public sector universities were selected from Dubai. Notably, there are 5 public sector universities in Dubai [50]. However, after the selection of 2 universities, the total enrollment was 19,279 students (Zayed University 7000, Rawalpindi Women University 12,279). Thus, with the relevant population size, Krejci and Morgan's formula of sample calculation was applied [51]. The formula indicated that a sample of n = 384 individuals would be relevant for the current research. Thus, the researchers approached the department's administrators for formal permission and further randomly distributed survey questionnaires among the students. Once the surveys were distributed, the researchers remained with the respondents to answer their queries. Once the respondents filled and handed over the questionnaires, they were carefully counted and found six questionnaires as missing. Further, before the data entry, the gathered questionnaires were evaluated. It was found that nineteen questionnaires were wrongly filled by the respondents. Thus, with a response rate of 93.4%, 359 questionnaires were further processed for the analysis purposes.

4.3. Sample Demographics

The researchers calculated the descriptives of the respondents' demographic data. Descriptive analysis of the gathered data revealed that most of participants, 60.2%, were males and 39.2% were females. It was further found that 76.3% of respondents were from 18 to 20 years old, 21.2% were 21–22 years old, 1.9% were from 23 to 24 years old, and 0.6% of them were 25 years of age or above. Further, study respondents indicated that 28.9% had Journalism as their major, 16.9% had Advertisement and Public Relations, while 1.3% marked others as their university major. Only 19.7% of participants had post-graduation level qualifications. Table 2 shows the descriptives of respondents' demographics.

Table 2. Respondents' demographics.

Variable	Constructs	N	%	Mean	SD
Gender	Male	216	60.2	0.400	0.270
	Female	143	39.8		
Age	18–20	274	76.3	0.490	0.519
	21–22	76	21.2		
	23–24	7	1.9		
	25 or above	2	0.6		
Major	Journalism	289	75.1	0.210	0.440
	Advertising and PR	65	16.9		
	Others	5	1.3		

4.4. Test of Normality

Evaluating the normality of continuous data is a critical step in statistical analysis. This assessment is essential because it guides the selection of appropriate measures for describing the center of the data and determines the most suitable statistical methods for analysis [52]. When the data follow a normal distribution, parametric tests are typically employed for comparing groups. Thus, by employing the Kolmogorov–Smirnov test, all the significance values are found to exceed a significance value of 0.7. It means that the null hypothesis is accepted, and data are normally distributed in the study (See Table 3).

Table 3. Testing the data normality.

Variables	Statistics	Sign
Knowledge Sharing	0.352	0.938
Accessibility	0.195	0.421
Perceived Ease of Use	0.431	0.164
Perceived Usefulness	0.196	0.706
ICT Acceptance	0.106	0.513

4.5. Convergent Validity

The researcher also examined the internal consistency of the research tool through convergent validity analysis. According to Alarcón and Sánchez [53], convergent validity helps us examine the trait well estimated by the selected research measures. In other words, the relevant analysis affirms the extent to which variables have internal consistency. Table 4 shows the results of the convergent validity analysis.

Table 4. Convergent validity assessment.

Variables	Items	FL	CA	AVE	CR
Knowledge Sharing	KSH1	0.775	0.786	0.615	0.863
	KSH2	0.660			
	KSH3	0.869			
	KSH4	0.818			
Accessibility	ACC1	0.761	0.778	0.605	0.859
	ACC2	0.659			
	ACC3	0.854			
	ACC4	0.823			
Perceived Ease of Use	PE1	0.799	0.711	0.636	0.839
	PE2	0.721			
	PE3	0.866			
Perceived Usefulness	PUL1	0.737	0.716	0.642	0.842
	PUL2	0.766			
	PUL3	0.892			
ICT Acceptance	ICT1	0.837	0.797	0.625	0.868
	ICT2	0.865			
	ICT3	0.656			
	ICT4	0.787			

After examining the internal consistency, the researchers examined the model fit using the Smart PLS. As noted by Wong [54], despite many statistical programs provided with the Structural Equation Modelling, Smart PLS is the most preferred one due to its efficiency and in-depth analysis capability. Thus, results indicated that the Tucker and Lewis Index (TLI) value is 0.926, which is between the ideal range of 0–1. As noted by Chwialkowski et al [55], the TLI compares the fit of a target model to that of a baseline model, which in SEM is usually a null model (a model with no relationships specified between variables). According to Demler et al. (2015) [56], Normed Fit Indices estimate how well the observed variables in a research study correspond to the hypothetical model. NFI values range from 0 to 1, with higher values indicating better fit. The Normed Fit Index (NFI) value of 0.087 in the current research study is between 0 and 1, which is an ideal range. Finally, the chi-square value remained at 2.647, which is lower than the cutoff value of 3.00. Notably,

the Chi-square value is usually estimated and commonly used to assess whether there is a significant difference between observed and expected data. Finally, the Standardized Root Mean Square value is 0.149, which is lower than the minimum cutoff value of 0.85, as suggested by Hooper et al [57]. According to Demler et al [57], SRMR values range from 0 to 1, where lower values indicate a better fit. Generally, an SRMR value below 0.08 is deemed indicative of a good fit, but specific thresholds may vary depending on the context and the intricacy of the model.

Thus, it is concluded that the model sits well regarding the set of observations. Table 5 shows the goodness of fit.

Table 5. Goodness of fit.

Criteria	Obtained Value	Cutoff Value
SRMR	0.149	<0.85
TLI	0.926	b/w 0–1
Chi-square	2.647	<3.00
NFI	0.87	b/w 0–1

Additionally, the study tested discriminant validity using the Fornell Larcker Criterion and the Hetreotrait-Monotrait ratio to examine the distinctiveness and lack of correlation between study constructs [58]. The results first revealed the results of the Fornell–Larcker criterion, indicating that all the relevant values have no correlation between each other (Table 6). Furthermore, the Hetreotrait-Monotrait Ratio for each variable was also less than <0.90 (See Table 7 for details). In conclusion, the findings confirm discriminant validity within the inner model of the current research.

Table 6. Fornell–Larcker criterion scale.

	ACC	PE	ICT	KSH	PUL
ACC	0.778				
PE	0.795	0.798			
ICT	0.65	0.69	0.79		
KSH	0.829	0.73	0.671	0.784	
PUL	0.668	0.735	0.84	0.712	0.801

Table 7. Heterotrait-Monotrait Ratio Scale (HTMT).

	ACC	PE	ICT	KSH	PUL
ACC					
PE	0.062				
ICT	0.124	0.420			
KSH	0.066	0.069	0.434		
PUL	0.492	0.034	0.103	0.438	

To determine the predictive potential of our research model, the research calculated Coefficients of Determination R^2 as suggested by Dufour [59]. According to Figueiredo Filho et al. [60], the coefficient of determination R^2 is the sum of squares due to the regression divided by the sum of total squares, further indicating the extent to which predictor variables are causing variance in the dependent variables. Thus, in the current study, Coefficients of Determination found the R^2 values ranging from 0.604 to 0.717, indicating that the predictive power of the proposed research model is strong (ACC 69.3%, PE 64.3%, PUL 60.4%, and ICT 71.7%) (See Table 8).

Table 8. Coefficients of determination R^2.

Variables	R^2 Value	Strength
Accessibility	0.693	Strong
Perceived Ease of Use	0.643	Strong
Perceived Usefulness	0.604	Strong
Information Technology Acceptance	0.717	Strong

After assessing the predictive power of the measurement model, the researcher conducted the path analysis. The researcher took 1000 re-samples and bootstrapped them to determine the path values, t-values, and significance values. Table 9 summarizes the relevant analysis results and indicates the decisions regarding the validation of research hypotheses. Based on the analysis, it was found that Knowledge Sharing (KSH) has a positive effect on Accessibility ($p \geq 0.000$, $t = 7.383$), Perceived Ease of Use ($p \geq 0.000$, $t = 9.735$), and Perceived Usefulness ($p \geq 0.000$, $t = 5.091$). Further, Accessibility has a positive effect on Perceived Ease of Use ($p \geq 0.000$, $t = 7.832$); however, the effect of Accessibility on Perceived Usefulness remained insignificant ($p \geq 0.053$, $t = 0.045$). In addition, the effect of Perceived Ease of Use on Perceived Usefulness is significantly positive ($p \geq 0.010$, $t = 8.837$). Finally, there is a positive effect from Perceived Ease of Use ($p \geq 0.000$, $t = 10.839$) and Perceived Usefulness on Information Technology Acceptance ($p \geq 0.000$, $t = 07.827$). Thus, results of the path analysis showed that the gathered data remained consistent with most of the proposed hypotheses.

Table 9. Path Analysis, Correlation, and *t*-value.

Hypotheses	Path	*t*-Value	*p*-Value	Decision
KSH > ACC	0.832	7.383	0.000	Validated
KSH > PE	0.220	9.735	0.000	Validated
KSH > PUL	0.387	5.091	0.000	Validated
ACC > PE	0.609	7.832	0.000	Validated
ACC > PUL	−0.037	0.045	0.531	Rejected
PEE > PE	0.483	8.837	0.000	Validated
PE > ITC	0.158	10.839	0.000	Validated
PUL > ITC	0.724	7.827	0.000	Validated

5. Discussion

Several studies witnessed eLearning in higher education as providing more substantial support to enhance students' learning experiences [61–63]. Earlier research found integrating ICT in university-level education is complicated [64]. For example, students' hesitancy is one of the most influential factors halting technology integration in undergraduate-level education. This argumentation was earlier validated by Rosen and Weil [65]. They examined the relevant phenomenon and found that lack of sufficient computers, lack of I.T. exceptional instructors, lack of computer proficiency, and lack of financial support were some prominent reasons behind technological hesitancy among the teachers. Due to these problems, teachers were hesitant to integrate ICT under compulsion in the educational process. Also, Becta's survey conducted in 2004 also revealed that students do not feel confident to adopt technology in early education. They feel less confident entering the classroom with insufficient technology knowledge that can slow down their teaching process [66]. However, the current study shows contradictory results. We found that respondents consider Information Communication Technology integration in undergraduate-level education as a positive decision. Talking specifically about each hypothesis, the first assumption was "Knowledge sharing has a positive effect on Accessibility." The respondents agreed that they strongly believe that engaging in knowledge-sharing activities with peers or

instructors in e-learning significantly enhances their accessibility to learning resources and materials. Collaborative knowledge-sharing platforms or forums in e-learning have greatly improved their ability to access relevant course content and materials. Also, participating in knowledge-sharing activities with fellow learners has a positive and tangible impact on accessibility to learning resources within the e-learning platform. Overall, they have noticed a marked improvement in their ability to access course-related information or resources when engaging in knowledge-sharing practices, such as group discussions or collaborative projects, within the e-learning environment. Concerning H2a "Knowledge sharing has a positive effect on the perceived ease of use" and H2b "Knowledge sharing has a positive effect on the perceived usefulness" of the study, respondents revealed that having easy and convenient access to e-learning materials not only positively contributes to their perception of how user-friendly the platform is, but also makes it easier to navigate and utilize the platform effectively. Additionally, when they can access e-learning content seamlessly, it further improves their perception of the platform's ease of use. Regarding H3a of the study, respondents revealed that they find that the accessibility of Supplementary Materials and resources in e-learning significantly improves their overall experience with the platform. Engaging and interacting with e-learning materials becomes easier when they are readily accessible and well-organized. The availability of accessible content in e-learning positively impacts their perception of how useful the platform is for their learning needs. Further, regarding H3b, "Accessibility has a positive effect on the perceived usefulness," the respondents indicated that having a high level of accessibility to e-learning materials directly contributes to their perception of how valuable the platform is for the learning experience. When they can easily locate and utilize resources in e-learning, it enhances belief in the platform's usefulness for our education. When we find the e-learning platform easy to navigate and use, we are more likely to see it as a valuable tool for our learning. The more intuitive and straightforward the e-learning platform is, the more it enhances our learning experience. This result is strongly consistent with previously conducted studies [67,68] that also found ICT in education as mainly accelerated by perceived ease of use and perceived usefulness. Table 10 summarizes the descriptives of survey responses.

Table 10. Descriptives of survey responses.

Constructs	Range	Mean	SD	95% Confidence Interval	
				Lower	Upper
Knowledge Sharing	4.00	3.90	0.743	3.8802	4.0292
Accessibility	4.00	4.03	0.706	3.9680	4.1044
Perceived Ease of Use	4.00	3.92	0.706	3.8570	3.9990
Perceived Usefulness	3.67	3.84	0.792	3.7633	3.9304
ICT Acceptance	4.00	3.96	0.752	3.8858	4.0411

Similarly, Emirati students in higher education also consider Information Communication Technology integration as a step forward to keep face with the modern educational trends. However, the study respondents also expressed their concerns regarding institutions' behavior towards providing the students with necessary equipment as one of the primary factors halting the ICT integration in the undergraduate-level education. However, a general consensus towards ICT's advantages and productive outcomes remained predominant. H4 was "Perceived Ease of use has a positive effect on ICT acceptance in undergraduate-level education." According to the respondents, the more comfortable and confident we feel using the e-learning platform, the more we believe it supports our educational goals. If the e-learning platform is intuitive and user-friendly, we are more likely to perceive it as a valuable asset for our academic progress. When we find the e-learning platform easy to navigate and use, we are more inclined to accept and embrace Information and Communication Technologies (ICTs) in our learning process. Finally, H5 was "Perceived usefulness has a positive effect on ICT acceptance in undergraduate level education." The respondents revealed that the user-friendly interface and intuitive

design of the e-learning platform positively influence our acceptance of using ICTs as an integral part of our educational experience. When we recognize the e-learning platform as a valuable tool that enhances our learning experience, we are more inclined to embrace and utilize Information and Communication Technologies (ICTs) in our studies. If using ICT tools in conjunction with the e-learning platform is beneficial and enhances our learning outcomes, we are more likely to accept and actively engage with these technologies.

As noted by Aloulou and Grati [18] (p. 106), higher education institutions in the UAE have embraced adopting new technologies, and a significant portion of their financial resources has been dedicated to acquiring e-learning instructional technologies. Among these technologies, Blackboard Learn has garnered attention due to its high rate of innovation and compatibility, which are positive factors that promote its adoption. However, there are certain challenges that faculty members face when considering the implementation of e-learning. Increased complexity and a lack of ease in trialability and observability are adverse factors impeding the adoption rate. These factors are used as negative measures to evaluate the success of the diffusion of e-learning within the educational environment. This research provided us with an idea to bring educational reforms in Emirati undergraduate-level education, but it also shows the willingness of teachers to adopt contemporary educational patterns. This willingness is compatible with the proposition given by Teo [69], as they also highlighted ICT integration in education as the need of the day. As noted by Nortvig et al [70], we are much dependent on Information Communication Technology (ICT) from business to education. If Emirati universities starts depending on the internet for educational purposes, students will enjoy an updated and barrier-free education that will meet the international standards [71]. Thus, considering beneficial factors like perceived ease of use and usefulness, integrating Information Communication Technology (ICT) in university-level education is not a challenging task. Stakeholders, instructors, and students all acknowledge ICT as a source of upgrading the educational system in the UAE. We only need sufficient funds, teacher training programs, equipment to facilitate students, and strategic policies to allow the local education system to meet contemporary educational standards.

5.1. Practical Implications

By keeping in view the increased importance of the Internet in higher education, this research proposes some practical implications. First, it highlights the potential benefits of integrating technology into undergraduate education in mass communication. The findings encourage educators in Dubai and potentially beyond to investigate and implement tech-driven teaching methods. Further, the study's focus on Dubai offers localized insights. Educators in the region can draw practical lessons from the case study, tailoring their approaches to align with Dubai's unique educational landscape and technological infrastructure. This could lead to the development of targeted strategies for utilizing technology effectively in mass communication programs, enhancing the learning experience for students in the region.

Furthermore, institutions and policymakers in Dubai's education sector may consider the findings when formulating or revising policies related to technology integration in undergraduate education. This could involve investing in infrastructure, training faculty in tech-driven pedagogies, and designing a curriculum that optimizes the benefits of technology-enhanced learning. Therefore, the study's practical implications extend to curriculum design, faculty development, and institutional policy making, all of which can contribute to an improved educational experience for undergraduate mass communication students in Dubai. Further, encouraging and facilitating knowledge sharing among students and instructors in e-learning environments is also essential. Implementing forums, discussion boards, and collaborative projects to promote active participation and information exchange can also provide opportunities for students to share insights and resources, enhancing accessibility to learning materials. It is also implicated that focusing on optimizing the user interface and design of e-learning platforms to ensure they are intu-

itive and user-friendly is the need of the day; this can be fulfilled by conducting usability tests and gathering feedback from students to identify areas for improvement. A seamless and easy-to-use platform will positively influence students' acceptance of Information and Communication Technologies (ICTs).

5.2. Limitations and Future Research

Despite the current research extensively investigating Information Communication Technology integration in higher education, it also contains limitations. First, this research selected only two constructs from the TAM which are "perceived ease of use" and "perceived usefulness". Second, the researchers selected the sample participants only from Public Sector institutions, when several private sector institutions had similar problems regarding the TAM for education. Second, this study only addressed ICT integration in undergraduate-level education and did not highlight the situation of graduate- or post graduate- level education. Third, the researchers focused only on undergraduate-level students. Adding graduate-level or above students as participants could further extend the idea behind the current study. Therefore, the researchers recommend more studies to examine the ICT acceptance in the United Arab Emirates, especially at the graduate, postgraduate and doctorate levels. In addition, a qualitative study to examine the undergraduate level instructors' opinion about the current challenges in ICT integration to discover in-depth findings would be beneficial to make suggestions accordingly.

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Appendix A

Items	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I find that engaging in knowledge-sharing activities with peers or instructors in e-learning enhances my accessibility to learning resources and materials.					
Collaborative knowledge-sharing platforms or forums in e-learning have significantly improved my ability to access relevant course content and materials.					
Participating in knowledge-sharing activities with fellow learners positively impacts my accessibility to learning resources in the e-learning platform.					
I have noticed a tangible improvement in my ability to access course-related information or resources when engaging in knowledge-sharing practices, such as group discussions or collaborative projects, within the e-learning environment.					
Having easy and convenient access to e-learning materials positively contributes to my perception of how user-friendly the platform is.					

Items	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The availability of diverse resources and materials in e-learning makes it easier for me to navigate and utilize the platform effectively.					
When I can access e-learning content seamlessly, it enhances my perception of the platform's ease of use.					
The accessibility of Supplementary Materials and resources in e-learning significantly improves my overall experience with the platform.					
I find engaging and interacting with e-learning materials easier when they are readily accessible and well-organized.					
The availability of accessible content in e-learning positively impacts my perception of how useful the platform is for my learning needs.					
Having a high level of accessibility to e-learning materials directly contributes to my perception of how valuable the platform is for my learning experience.					
When I can easily locate and utilize resources in e-learning, it enhances my belief in the platform's usefulness for my education.					
When I find the e-learning platform easy to navigate and use, I am more likely to see it as a valuable tool for my learning.					
The more intuitive and straightforward the e-learning platform is, the more it enhances my learning experience.					
The more comfortable and confident I feel using the e-learning platform, the more I believe it supports my educational goals.					
If the e-learning platform is intuitive and user-friendly, I am more likely to perceive it as a valuable asset for my academic progress.					
When I find the e-learning platform easy to navigate and use, I am more inclined to accept and embrace Information and Communication Technologies (ICTs) in my learning process.					
The user-friendly interface and intuitive design of the e-learning platform positively influence my acceptance of using ICTs as an integral part of my educational experience.					
When I recognize the e-learning platform as a valuable tool that enhances my learning experience, I am more inclined to embrace and utilize Information and Communication Technologies (ICTs) in my studies.					
If I believe that using ICT tools in conjunction with the e-learning platform is beneficial and enhances my learning outcomes, I am more likely to accept and actively engage with these technologies.					

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