Unveiling the Nexus: Exploring TAM Components Influencing Professors' Satisfaction With Smartphone Integration in Lectures: A Case Study From Oman

Boumedyen Shannaq [1]

[1] *Department of Management Information Systems, College of Business, University of Buraimi, Sultanate of Oman*

Abstract— **The study explores the factors influencing instructors' decisions to allow smartphone usage during lectures and its impact on educational quality amidst evolving technological trends. Using the technology acceptance model (TAM), the research examines key determinants affecting instructors' acceptance and satisfaction with student mobile technology usage in classrooms. The hypothesis suggests that instructors' acceptance is positively influenced by perceived usefulness (PU) and negatively by attitude toward use (ATU) and behavioral intention (BI). Quantitative surveys were conducted on a sample of 277 instructors and analyzed using SPSS and SmartPLS4. This analysis aimed to identify critical factors influencing acceptance and their relationship with smartphone use during lectures. The results revealed that PU significantly impacted instructor judgement (B = 0.432, t = 7.920, p < 0.001). ATU also had a significant impact (B = 0.187, t = 2.757, p = 0.006).**

BI significantly affected instructor opinion (B = 0.206, t = 2.379, p = 0.017) However, actual use (AU) did not significantly impact instructor judgement (B = 0.052, t = 0.618, p = 0.537). These findings enhance understanding of mobile technology integration in education and provide insights for improving instructor support and engagement.

Keywords— **Mobile technology, instructor satisfaction, technology acceptance model (TAM), educational settings.**

DOI: 10.18421/TEM133-63
https://doi.org/10.18421/TEM133-63

Corresponding author: Boumedyen Shannaq,
Department of Management Information Systems, College of Business, University of Buraimi , Sultanate of Oman
Email: boumedyen@uob.edu.om

Received: 06 April 2024.
Revised: 20 July 2024.
Accepted: 27 July 2024.
Published: 27 August 2024.

1. Introduction

Through extensive investigation encompassing field research, opinion polls, and local, national, and international studies, a prevailing sentiment emerges among the new generation [1], [2], [3]. Mobile technologies are primarily perceived as tools for entertainment, gaming, socializing, and multimedia creation [4], [5], [6]. Unfortunately, there exists a widespread misconception, particularly among educators, that mobile phones have no place in the classroom [7]. This misconception is reinforced by many educational institutions enforcing strict bans on mobile phone usage, sometimes resulting in disciplinary actions such as expulsion [8], [9].

What sets our research apart is its proposition of a novel approach to reshape perceptions regarding the utility of smartphones in education. We aim to instill within users a profound understanding of the significant role mobile phones can play as potent educational tools. Currently, the prevailing belief among mobile phone users is that since their use is restricted in educational settings, they are inherently unsuitable for academic purposes [10], [11], [12].

By identifying and implementing a suitable framework to integrate mobile technologies into classroom settings, we anticipate a paradigm shift in attitudes towards mobile phone usage for educational purposes.

This shift has the potential to transform the current perception of mobile phones from mere distractions to invaluable aids in learning and cognitive development. Such a transformation not only benefits individual students by fostering self-directed learning but also brings joy to parents who witness their children utilizing mobile phones for educational pursuits rather than mere entertainment.

Ultimately, fostering a generation that values learning and innovation contributes significantly to societal development and economic prosperity. Thus, our research endeavors not only to revolutionize educational practices but also to strengthen the foundations of progress and innovation, thereby enhancing the socioeconomic standing of our nation.

1.1. Importance of the Study

Understanding user behavior towards mobile technology and its applications is crucial for their success. The satisfaction and acceptance of users are key criteria in determining this success, especially in educational environments. It is not just about identifying interaction; it is about delving into behavioral factors that influence acceptance levels. Teachers, students, and educational systems collectively determine participation rates based on acceptance factors, underscoring the importance of studying technology acceptance in education. Various models, including the technology acceptance model (TAM), predict technology use [13], [14]. TAM, developed by [16], posits that perceived benefit and ease of use influence acceptance, moderated by external factors. TAM's stages explain how external factors affect perceptions, attitudes, intentions, and ultimately usage levels [15], [13]. TAM's flexibility in academic settings provides a comprehensive understanding of technology acceptance dimensions. Figure 1 illustrates the expansion of the technology acceptance model (TAM).

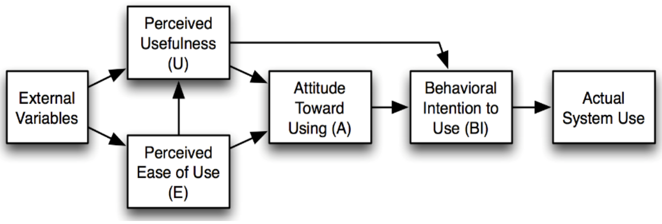

Figure. 1. Extension TAM [15]

Studies have validated TAM's applicability across different contexts, from secondary school teachers' tablet use to elderly mobile phone users and university students' satisfaction with internet-based tests. TAM has also been applied in predicting student acceptance of electronic courses, reflecting local trends in higher education.

Institutions strive to enhance learning opportunities by adopting technologies accessible to all students, addressing language barriers and ensuring equal access. This research leverages TAM to assess mobile technology effectiveness and professor satisfaction, aiming to facilitate inclusive learning environments for all students.

1.2. Statement of Problem

This study employs a structured methodology to investigate how mobile applications used in learning, particularly during lectures, can positively shape the attitudes of Omani youth towards education. The research aims to understand the increasing preference for educational technologies, especially mobile education, among young individuals. Statistics from the Oman national center for statistics and information highlight a significant rise in mobile phone subscriptions, emphasizing the need to harness this technology for educational purposes and nurture interest in technical fields [17]. The research focuses on evaluating the actual utilization of mobile phone applications within education institutions in Oman and assessing their impact on students' attitudes towards education from professor’s perspectives.

1.3. Research Questions

The primary inquiry is: How does the use of mobile applications during lectures influence Omani youths' attitudes towards education, as perceived by faculty members in higher education institutions? Additionally, the study seeks to answer specific questions:

- What is the level of satisfaction among subject professor regarding students' use of mobile phones during lectures?
- From the professor' perspective, what are the perceived benefits of using mobile phones during lectures?
- How do smartphone applications influence students' educational attainment levels?

1.4. Objectives

Taking into account the formulated research inquiries and aiming to address the identified issue, the study delineates the following research objectives:

- To assess the impact of mobile applications used during lectures on Omani youths' attitudes towards education, as perceived by faculty members in higher education institutions.

- To investigate the level of satisfaction among subject professors regarding students' utilization of mobile phones during lectures.
- To examine the influence of smartphone applications on students' educational attainment levels, aiming to provide insights into the effectiveness of integrating mobile technology into educational settings.

1.5. Hypothesis

In alignment with the outlined objectives, the subsequent hypotheses emerge to elucidate the research methodology that will be employed in this study. These hypotheses are delineated as follows: In the context of the technology acceptance model (TAM), it is hypothesized that the opinion and consideration of professors regarding the perceived usefulness of mobile phones when used by students during class time will positively influence the perceived education quality. Specifically, as professors perceive mobile phones as useful tools for facilitating learning activities in the classroom, they will perceive a higher quality of education delivery, characterized by increased engagement, comprehension, and personalized learning experiences.

- H1 (Alternative Hypothesis): There is a significant relationship between the availability of the benefits of using a mobile phone during lecture times and the quality of education received, as perceived by the professor.
- H2 (Alternative Hypothesis): There is a significant relationship between the availability of the ease of using a mobile phone during lecture times and the quality of education received, as perceived by the professor.
- H3(Alternative Hypothesis): There is a negative and significant relationship between the availability of the attitude toward of using a mobile phone during lecture times and the quality of education received, as perceived by the professor.
- H4 (Alternative Hypothesis): There is a negative and significant relationship between the availability of the behavioral intention of using a mobile phone during lecture times and the quality of education received, as perceived by the professor.
- H5 (Alternative Hypothesis): There is a negative and significant relationship between the availability of the actual use of using a mobile phone during lecture times and the quality of education received, as perceived by the professor.

This study not only enhances education practices but also fosters academic excellence and global recognition. Moreover, it offers crucial insights for Omani higher education managers, emphasizing the significance of utilizing mobile technology in fostering mobile education engagement and organizational commitment among academics. This study marks a significant milestone by investigating the use of mobile technology in the time of the lecture from the instructor perspectives in non-Western settings, specifically focusing on the sultanate of Oman as a potential model for other gulf countries in the Middle East and Arabic regions. Based on our knowledge and investigation in the literature, most of the research's considering and studying the technology and students perspectives not the instructor perspectives and this make this research unique. Moreover there is a lack in conducting similar research considering the instructor perspectives in the Middle East. It underscores the paramount significance of this approach in higher education. By advocating for the integration of TAM, this study contributes to the global discourse on mobile education engagement, organizational commitment, and the innovation in academia.

2. Literature Review

In today's dynamic global landscape, driven by technological advancements across sectors there is a pressing need for adaptable integration of technology within educational institutions [18], [19], [20]. Technical education emerges as pivotal, aligning with evolving job market demands [21], [22]. Mobile learning, facilitated by communication technologies, extends educational reach beyond traditional boundaries, offering flexibility and accessibility [23]. Harnessing mobile education applications becomes imperative due to their potential to boost interest in technical education among youth. Research explores online and blended learning's role in enhancing higher-order thinking skills, such as creativity and critical thinking, in higher education [24]. In-person learning often yields better results for such skills, but blended and flipped learning offer potential benefits. Practical solutions for challenges faced by female Arab entrepreneurs are outlined in [25], emphasizing the need for collaboration among policymakers, telecommunication companies, and banks. Government support is crucial for fostering women's entrepreneurship and economic growth. A pioneering study, investigates gender differences in consumer behavior across the Middle East, extending the 'UTAUT2' framework to reveal factors influencing smartphone adoption among Arab women [26].

A systematic literature review on the Internet use (IU) and problematic Internet use (PIU) explores terminology, instruments, and significant findings across 29 studies [27]. E-learning methods are pivotal in higher education however, questions persist regarding their efficacy and integration with traditional pedagogies [28]. A study on mobile literacy among Arabic speaking migrants in Sweden aims to enhance language acquisition [29]. Advancements in wireless networks have prompted widespread mobile app development [30]. Social media's role in aiding language learning among EFL university students in Saudi Arabia is explored in [31]. Studies investigate smartphone app usage patterns among university students in Egypt and Oman [32], [33]. A proposed visual search method aims to enhance students' search capabilities in digital libraries [34]. Computer-based technology's potential to enhance student engagement is reviewed in [35], and a reliability analysis method for gauging student engagement was introduced in [36]. The intersection of emotions, technology, design, and learning is explored by [37] emphasizing the importance of understanding pedagogy's impact on learning outcomes [40]. Greek educators' perceptions of Web 2.0 activities in education are examined in [41]. The impact of mobile phones on communication and information access among university students from different countries is studied in [42]. Educational video game genres' impact on pedagogical value is investigated in [43]. Various models of habit in information systems research were reviewed in [2]. Mobile learning's transformative potential is discussed by [45]. An exploration of mobile technology's societal impact in the Arab states is undertaken by [46]. The influence of Arab culture on mobile phone adoption is analyzed by [39]. While research explores mobile learning's transformative potential, there's a gap regarding its specific impact from the instructor's perspective. Addressing this gap can provide valuable insights into the adoption and efficacy of mobile learning, enhancing educational opportunities.

3. Research Methodology

This work extends a technology acceptance model as a framework to assess the efficacy of technology, particularly mobile learning applications, in terms of usability during lectures, focusing on the viewpoint of instructors. The proposed methodology in this work employs a descriptive analytical approach to assess the present situation, utilizing both quantitative and qualitative analysis. It also investigates the efficacy of mobile technology, specifically its usability during lectures, from the perspective of teachers. The technology acceptance model was utilizied to explore how mobile technology enhances learning in educational settings. This work delves into a university setting where this work embarks on a mission to expand the technology acceptance model. The objective is to understand the intricate dynamics that influence instructors' satisfaction when utilizing mobile systems during educational lectures. This proposed and enhanced model as shown in Figure 2, aims to capture the nuanced perspectives of instructors, shedding light on their deep-seated opinions regarding the integration of mobile technology in educational settings.

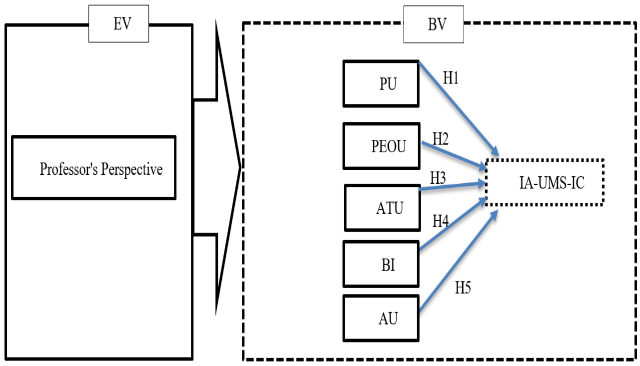

Figure. 2. Proposed conceptual model

The questionnaire was developed with seven sections. The first section aimed to gather demographic information about faculty members, including age, years of experience, and country of PhD graduation. Sections two through six encompassed independent variables such as perceived usefulness (PU), perceived ease of use (PEOU), and attitude toward using (ATU), behavioral intention (BI), and actual use (AU). Each independent variable consisted of five questions, or indicators. Descriptions of indicators for the other variables were omitted to conserve space. However, interested readers can request the questions via access the survey by following the link provided in [38]. The seventh section of the questionnaire addressed the dependent variable, instructor acceptance of utilizing mobile systems in the classroom during lectures (IA-UMS-IC). This section also comprised five indicators to assess instructor acceptance.

3.1. Data Collection and Sampling Process

After conducting a thorough review of relevant literature and identifying the research problem, questions, objectives and hypotheses, a clear understanding of the necessary data emerged. Consequently, a questionnaire was designed comprising five independent variables and one dependent variable. Each variable included five indicators to accurately reflect them.

To ensure clarity and simplicity for respondents, all questions underwent expert review to avoid ambiguity or misunderstanding.

The questionnaire was then created and uploaded onto Google Drive as an E-questionnaire to streamline distribution and data collection processes. Prior to dissemination, strict adherence to the sampling process was followed. The population was defined solely as instructors working in higher institutions in the Sultanate of Oman, based on their availability via email or mobile phones. The majority of participants were affiliated with the same university, with others sourced from previous professional relationships and engagements in webinars and conferences. The E-questionnaire was administered from 11/12/2023.The sampling frame was established using instructor emails, employing a non-probability sampling design due to constraints in time and email availability. The sample size of 533 instructors was determined in accordance with research objectives and the population's variability. Within this sampling framework, judgment sampling was utilized, targeting instructors best positioned to provide relevant information.

On 11/04/2024, 277 responses were received from the 533 instructors initially contacted. Based on previous literature, it was determined that a sample size of 250 or more would yield comparable results. Consequently, 277 responses were deemed sufficient for subsequent analysis and progression in the research. References to prior studies informed the decision-making process regarding sample size considerations [18], [19], [20].

3.2. Data Cleaning Process

Upon downloading the data from Google form as a CSV file, the data cleaning process was initiated using SPSS software. Initially, the study examined minimum and maximum values. In the dataset, the minimum value was one (1), and the maximum value was five (5), as five-point Likert measurement scale ranging from strongly disagree to strongly agree was employed. Since the values were automatically calculated by Google form, there was no risk of manual data entry errors.

Subsequently, missing data was addressed, which were nonexistent as all questions in the Google form were set as mandatory entries. Moving forward, outlier detection was conducted to identify any extreme values. However, no outliers were detected, as all data were auto-calculated by Google form.

In the fourth step of data cleaning, any misconduct responses were examined by applying the standard deviation. The standard deviation for all variables ranged between 0.884 and 2.006.

According to statistical guidelines values within plus or minus two standard deviations (SD) are considered close to the true value .Therefore, the absence of values exceeding ± 2 SD suggests minimal deviation from the expected norms, as noted in the literature [21], [22], [23].

4. Data Analysis and Evaluation

The study utilized the partial least squares (PLS) path modeling method [24]. The analysis involved a thorough examination of the measurement model, which encompassed factors such as 'Factor Loading,' 'Cronbach's Alpha', 'Reliability (both Alpha and Composite Reliability)', and 'Rho a'. Constructs accurately measured their intended concepts through assessments of 'Construct Validity', which included 'Convergent Validity' determined by 'Average Extracted Variance (AVE)', and 'Discriminant Validity', assessed by criteria such as 'Fornell & Larcker Criterion', 'Heterotrail-Monotrait Ratio (HTMT)', and 'Cross-Loading'. This process ascertained the distinctiveness of constructs, essential for accurate modeling. Following the measurement model assessment, the structural model underwent evaluation focusing on aspects like collinearity, significance of relationships (through bootstrapping), and bootstrapping path coefficients, T statistics, and P values. The findings, guided by statistical thresholds, provided insights into the relationships between variables, thereby enabling to test hypotheses, address research questions, and achieve study objectives effectively.

4.1. Reliability and Validity

Reliability and validity were assessed through Cronbach's alpha and composite reliability (CR). Initially, all items with factor loadings below 0.600 were eliminated from the overall sample. The PUE construct was excluded from the analysis because it showed no significant relationship with the dependent variable and exhibited misconduct with the PU variable. This decision followed a thorough process, including AVE and HTMT tests, along with assessing the standard deviation between the two variables. More than 20 records had a standard deviation of 0.000, and others were less than 0.2, possibly due to similar responses between the variables. Consequently, the removal of the PUE construct ensures a coherent and understandable model, reflecting reliability and accuracy concerns. The PU-5 =0.651, IA-UMS-IC5=0.621 and AU-1 =-0.756 indictors were under the recommended threshold 0.7.The IA-UMS-IC5=0.698 was not removed because its value was improved after performing the first process of removing.

The AU-1 =-0.756 was removed because negative indicators in Smart PLS, are often eliminated to preserve model validity and clarity [38]. Despite their high absolute values, negative loadings can complicate interpretation, suggesting an inverse relationship with the construct. Removal ensures a coherent, understandable model, reflecting Hair's principles of simplicity and accuracy. Thus, eliminating negative indicators safeguards the integrity of Smart PLS analysis.

The remaining items' reliability and validity, as well as their factor loadings, were presented in Table 1. All alpha values and CRs exceeded the recommended threshold of 0.700 as indicated by [20], indicating high reliability. Convergent validity was confirmed by average variance extracted (AVE) and CR values, all of which were equal to or greater than 0.500 and 0.700, respectively.

Discriminant validity was established through cross-loadings, where factor loadings exceeded cross-loadings for all items, indicating distinctiveness. Additionally, multicollinearity was assessed with variance inflation factor (VIF) values below 5 for each indicator, indicating no multicollinearity issues. Finally, Table 1 displayed the cross-factor loadings of all items, demonstrating that factor loadings were consistently higher than their cross-loadings, further confirming discriminant validity.

4.2. Discriminant Validity

Discriminant validity was further confirmed using criteria proposed by Heterotrait-Monotrait method (HTMT), with results reported in Table 2.

Table 1. Item loadings, reliability, and validity

	Factor-Loading	Cronbach's-alpha	Composite-reliability (rho_a)	Composite -Reliability (rho_c)	Average-variance-extracted (AVE)
1.usefulness		0.759	0.766	0.847	0.581
1.PU1 <- 1.usefulness	0.781				
2.PU2 <- 1.usefulness	0.815				
3.PU3 <- 1.usefulness	0.719				
4.PU4 <- 1.usefulness	0.731				
2.Attitude		0.796	0.799	0.859	0.549
11.ATU1 <- 3.Attitude	0.781				
12.ATU2 <- 3.Attitude	0.758				
13.ATU3 <- 3.Attitude	0.738				
14.ATU4 <- 3.Attitude	0.716				
15.ATU5 <- 3.Attitude	0.745				
3.Behavioural		0.807	0.809	0.866	0.565
16.BI1 <- 4.Behavioural	0.728				
17.BI2 <- 4.Behavioural	0.755				
18.BI3 <- 4.Behavioural	0.782				
19.BI4 <- 4.Behavioural	0.751				
20.BI5 <- 4.Behavioural	0.739				
4.Actualuse		0.776	0.782	0.856	0.598
22.AU2 <- 5.Actualuse	0.789				
23.AU3 <- 5.Actualuse	0.735				
24.AU4 <- 5.Actualuse	0.814				
25.AU5 <- 5.Actualuse	0.754				
5.InstructorAcceptence		0.750	0.753	0.842	0.571
26.IAUMSIC1 <- 6.InstructorAcceptence	0.755				
27.IAUMSIC2 <- 6.InstructorAcceptence	0.786				
28.IAUMSIC3 <- 6.InstructorAcceptence	0.772				
29.IAUMSIC4 <- 6.InstructorAcceptence	0.708				

Table 2 describes discriminant validity using the criterion by Fornell and Larcker and Heterotrait-Monotrait method (HTMT).

Table 2. Heterotrait-monotrait ratio (HTMT) – List

	1.Pu	3.ATU	4.Bi	5.AU	Al6.IA_UM
1.Pu					
3.ATU	0.674				
4.Bi	0.708	0.881			
5.AU	0.544	0.835	0.853		
Al6.IA_UM	0.870	0.769	0.776	0.645	

4.3. Structural Model

Structural model evaluation was the subsequent phase of analysis, aimed at examining the proposed hypotheses.

Table 3. Path-coefficients-STDEV, T values, p values

	Path-coefficients	(STDEV)	T statistics	P values
H1.Pu -> Al6.IA_UM	0.432	0.055	7.920	0.000
H3.ATU -> Al6.IA_UM	0.206	0.075	2.757	0.006
H4.Bi -> Al6.IA_UM	0.187	0.079	2.379	0.017
H5.AU -> Al6.IA_UM	0.052	0.083	0.618	0.537

4.4. Hypothesis Testing

A two-tailed test with a 95% significance level and a t-value of -1.96 was chosen, as no assumptions were made regarding the sign of the coefficient. This decision was influenced by the results reported in [38].

Table 3 demonstrates the hypothesis results revealed a significant impact of PU on instructor opinion (B=0.432, t=7.920, p=0.000) hence h1 was supported, PEU was removed therefore h2 not applicable for testing. A significant impact of ATU on instructor opinion (B=0.187, t=2.757, p=0.006) hence h3 was supported. A significant impact of Bi on instructor opinion (B=0.206, t=2.379, p=0.017) hence h4 was supported. A non-significant impact of AU on instructor opinion (B=0.052, t=0.618, p=0.537) hence h4 was rejected.

5. Result and Discussions

This study delved into professors' opinions and perspectives on students' mobile usage during class time, aiming to understand why many instructors do not support the idea of allowing students to use their mobile phones in class. Professors believe that students do not employ mobile phones for learning purposes; instead, they use them for various other activities, impacting their performance. Such beliefs create an issue with students' perception that mobile phones are inappropriate for learning, as they are prohibited by professors. Therefore, when analyzing and understanding the reasons behind professors' negative opinions of using mobile phones in class, a new research field is opened to discuss and find solutions for the obstacles stated by instructors, making them unsupportive of mobile phone use during class time. It is believed that giving students the freedom to use mobile phones in class will change their behavior in using their mobile phones, not only for entertainment but also for learning, making them more aware and fostering lifelong learning. The work identified five reasons that could affect instructors' opinions on mobile usage during class time. These reasons were mapped with the technology acceptance model, which includes perceived usefulness, perceived ease of use, and attitude toward using, behavioral intention, and actual use.

Through the analysis process, it was found that professors could positively support the idea of using mobile phones in class because of many bene-fits, such as PU and the (PEOU), as stated in hypotheses H1 and H2. H1 was supported; however, H2 was not applicable for testing since it was removed from the analysis process due to its similarity and misconducting with the PU variable. It was found that students' attitude toward using mobile phones in class negatively affected professors' perspectives, as tested by H3, and students' behavioral intention to use mobile phones in class negatively affected professors' perspectives, as tested by H4. The actual use of mobile phones in class did not affect professors' perspectives, as tested by H5. Therefore, this work explored and identified two factors, attitude toward using and behavioral intention, which could play a major role in affecting professors' decisions to allow the usage of mobile phones in class. Why do instructors and teachers hold negative opinions about students using mobile phones? This study explores the reasons behind professors' adverse attitudes toward smartphone use in the teaching process. It investigates the most common reasons for this perspective and identifies the true underlying causes. The study's objective is to examine the use of smartphones in education, while the focus is on the conflict between professors and students arising from smartphone use during learning. The purpose of the work was to explore the conflict between professors and students due to the use of smartphones in the educational process and to find the most appropriate solutions and ways to resolve them. The conflict resolution methods obtained as a result of the study can be used by psychologists to work with students, as well as with professors to improve the quality of the educational process. In the current century, each of us is faced with modern technologies in the form of smartphones. The acceleration of the pace of life, the development of modern technologies, and an increase in information flow are all integral parts of progress. Therefore, it is necessary to accept and process a large amount of information, and modern technologies allow us to easily find and use this information for our own purposes, including education. When used effectively smartphones, can significantly improve the educational process and make it easier for professors. However, there are also negative aspects of using smartphones in education, as evidenced by the results collected in this work. Since students do not always use smartphones to obtain necessary information, they become distracted during lessons, spend time on social networks, and play games. This work revealed the perspectives and opinions of 277 instructors, including 70 (25.2%) who obtained their higher degree from Arabic institutions, 65 (23.4%) from Indian institutions, 50 (18.0%) from Pakistani institutions, and others from different countries. It was found that professors who obtained their higher degree from Indian institutions were more flexible in the usage of mobile technology during class time. However, professors who obtained their higher degree from Arabic and Pakistani institutions were very strict and against the use of mobile technology during class time. Professors from other institutions, such as those in Malaysia, the UK, the USA, Russia, Western countries, and Europe, exhibited varying levels of flexibility in their decisions. Thus, few respondents believe in the absolutely negative impact of mobile technology usage during class time, particularly smartphones, on the learning process. However, the majority are against smartphones as a means to improve the learning process during the class time. The reason for this is the excessive conservatism of representatives of institutions and the regulations of education, which is conveyed through the media. Very often, the media assures us that mobile technology distracts students during classes, affecting their education. Additionally, many professors believe that smartphones cause unstable attention in class, negatively impacting the quality of education. However, is this a valid reason to ban smartphones during lessons? Not all professors who participated in this survey absolutely adhere to this position; however, the older generation of professors aged more than 53, accustomed to traditional education, exerts pressure with their authority, hindering the development of education using modern technology. While professors of the older generation are often categorically against the use of smartphones and other gadgets in their lessons, this work involved instructors aged from 27 to 34, 41 to 48, 43 to 40, 49 to 55, and older than 56, showing a range of perspectives. Students often switch to their smartphone screens when they get bored, while professors also use devices to find educational information. Thus, smartphones cannot be excluded, as their roots are deeply ingrained in our nature, posing a problem not only for current generations but also for future ones. There are enough reasons for professors to have a negative attitude toward smartphones during lessons; however, many of these reasons are just fears that need to be overcome to improve education. Education plays a crucial role in shaping the future generation of Oman, and it is professors who can help students become better, so it is necessary to understand not only the benefits of using smartphones in the learning process but also their negative impact as well.

6. Conclusion

The study delved into instructors' perspectives on students using mobile phones during class, aiming to understand why many oppose this practice. Professors fear students misuse phones for non-academic purposes, impacting learning. This belief contradicts students' views, hindering their academic use of mobiles due to prohibitions. By dissecting professors' negative stance, it is possible to find potential solutions for integrating mobiles in class, fostering student engagement and lifelong learning. Four recommendations emerge: 1. Examine professors' concerns to foster dialogue. 2. Arrange for training on mobile integration to alleviate resistance. 3. Stimulate flexible policies accommodating mobile use for learning. 4. Inspire innovative teaching methods leveraging mobile technology for greater engagement and educational outcomes.

These steps can bridge the gap between instructors' apprehensions and the benefits of mobile integration, advancing education in particular in Oman and in other countries.

References:

[1]. Ameen, N., Willis, R., & Hussain Shah, M. (2018). An examination of the gender gap in smartphone adoption and use in Arab countries: A cross-national study. *Computers in Human Behavior, 89, 148–162*. Doi: 10.1016/j.chb.2018.07.045.

[2]. Mohtar, S., Jomhari, N., Mustafa, M. B., & Yusoff, Z. M. (2023). Mobile learning: Research context, methodologies and future works towards middle-aged adults – a systematic literature review. *Multimedia Tools and Applications*, *82*(7), 11117–11143. Doi: 10.1007/s11042-022-13698-y.

[3]. Al-Gahtani, S. S., Hubona, G. S., & Wang, J. (2007). Information technology (IT) in Saudi Arabia: Culture and the acceptance and use of IT. *Information & Management, 44*(8), 681–691. Doi: 10.1016/j.im.2007.09.002.

[4]. Ibahrine, M. (2008). Mobile Communication and Sociopolitical Change in the Arab World. In J. E. Katz (Ed.), *Handbook of Mobile Communication Studies*, 257–272. The MIT Press. Doi: 10.7551/mitpress/9780262113120.003.0019.

[5]. Shannaq, B., Devarajanayaka, K. M., Shakir, M., & Abbas, A. D. (2023). Generating an integrated SWOT strategy from the SERVQUAL survey results-the need for a comparative assessment of telecommunication companies in Oman. In *AIP Conference Proceedings*, *3015*(1). AIP Publishing. Doi: 10.1063/5.0188360.

[6]. Segumpan, R. G., & McAlaney, J. (2023). *Challenges and reforms in Gulf higher education: Confronting the Covid-19 pandemic and assessing future implications*. Taylor & Francis.

[7]. O'Bannon, B. W., & Thomas, K. (2014). Teacher perceptions of using mobile phones in the classroom: Age matters! *Computers & Education*, *74*, 15–25. Doi: 10.1016/j.compedu.2014.01.006.

[8]. InnerDrive team. (2019). *The (negative) impact of phones on grades, InnerDrive. Inner drive.* Retrieved from: https://www.innerdrive.co.uk/blog/impact-of-phones-on-grades/ [accessed: 04 April 2024].

[9]. Kevin, C. (2018). Smartphones in the classroom and students' misperceptions: Faculty development. *Journal of Higher Education Management*, *33*(1), 119-135. Doi: 10.2139/ssrn.3038013.

[10]. Grigic Magnusson, A., Ott, T., Hård af Segerstad, Y., & Sofkova Hashemi, S. (2023). Complexities of managing a mobile phone ban in the digitalized schools' classroom. *Computers in the Schools*, *40*(3), 303-323. Doi: 10.1080/07380569.2023.2211062.

[11]. Ng, S. F., Hassan, N. S. I. C., Nor, N. H. M., & Malek, N. A. A. (2017). The Relationship between Smartphone Use and Academic Performance: A Case of Students in A Malaysian Tertiary Institution. *Malaysian Online Journal of Educational Technology*, *5*(4), 58-70.

[12]. Meddage, D. N. R. (2024). Smartphone Use and Academic Performance of Students in Tertiary Education. *International Journal of Research Publication and Reviews, 5*(2).

[13]. Marikyan, D. & Papagiannidis, S. (2023) Unified Theory of Acceptance and Use of Technology: A review. In S. Papagiannidis (Ed), *TheoryHub Book.*

[14]. Pak, R., Visser, E.J. & Rovira, E. (2019). *Living with Robots.* Elsevier. Doi: 10.1016/C2017-0-03348-7.

[15]. Venkatesh, V., & Davis, F. D. (2000). A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. *Management Science*, *46*(2), 186–204. Doi: 10.1287/mnsc.46.2.186.11926.

[16]. Davis, F. D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, *13*(3), 319. Doi: 10.2307/249008.

[17]. *Home—DATA PORTAL* (2024). Retrieved from: https://data.gov.om/ [accessed: 05 April 2024].

[18]. Kraus, S., Jones, P., Kailer, N., Weinmann, A., Chaparro-Banegas, N., & Roig-Tierno, N. (2021). Digital Transformation: An Overview of the Current State of the Art of Research. *SAGE Open*, *11*(3), 215824402110475. Doi: 10.1177/21582440211047576.

[19]. Al Shabibi, A. S., & Silvennoinen, H. (2018). Challenges in Education System Affecting Teacher Professional Development in Oman. *Athens Journal of Education*, *5*(3), 261-282.

[20]. Poláková, M., Suleimanová, J. H., Madzík, P., Copuš, L., Molnárová, I., & Polednová, J. (2023). Soft skills and their importance in the labour market under the conditions of Industry 5.0. *Heliyon*, *9*(8), e18670. Doi: 10.1016/j.heliyon.2023.e18670.

[21]. Naveed, Q. N., Choudhary, H., Ahmad, N., Alqahtani, J., & Qahmash, A. I. (2023). Mobile Learning in Higher Education: A Systematic Literature Review. *Sustainability*, *15*(18), 13566. Doi: 10.3390/su151813566.

[22]. Schuck, S., Kearney, M., & Burden, K. (2017). Exploring mobile learning in the Third Space. *Technology, Pedagogy and Education*, *26*(2), 121–137. Doi: 10.1080/1475939X.2016.1230555.

[23]. Kumar Basak, S., Wotto, M., & Bélanger, P. (2018). E-learning, M-learning and D-learning: Conceptual definition and comparative analysis. *E-Learning and Digital Media*, *15*(4), 191–216. Doi: 10.1177/2042753018785180.

[24]. OECD Education. (2024). *Fostering higher-order thinking skills online in higher education: A scoping review* (OECD Education Working Papers, No. 306). OECD Education Working Papers. Doi: 10.1787/84f7756a-en.

[25]. Ameen, N. A., & Willis, R. (2016). The use of mobile phones to support women's entrepreneurship in the Arab countries. *International Journal of Gender and Entrepreneurship*, *8*(4), 424–445. Doi: 10.1108/IJGE-10-2015-0037.

[26]. Anderson, E. L., Steen, E., & Stavropoulos, V. (2017). Internet use and Problematic Internet Use: A systematic review of longitudinal research trends in adolescence and emergent adulthood. *International Journal of Adolescence and Youth*, *22*(4), 430–454. Doi: 10.1080/02673843.2016.1227716.

[27]. Shannaq, B., & Al Shamsi, I. (2024). Integrating Digital Transformation: Analyzing New Technological Processes for Competitiveness and Growth Opportunities in the Oman Economy. In *The AI Revolution: Driving Business Innovation and Research, 2*, 443-454. Cham: Springer Nature Switzerland. Doi: 10.1007/978-3-031-54383-8_34.

[28]. Bradley, L., Bartram, L., Al-Sabbagh, K. W., & Algers, A. (2023). Designing mobile language learning with Arabic speaking migrants. *Interactive Learning Environments*, *31*(1), 514-526. Doi: 10.1080/10494820.2020.1799022.

[29]. Cabellos, B., Sánchez, D. L., & Pozo, J.-I. (2023). Do Future Teachers Believe that Video Games Help Learning? *Technology, Knowledge and Learning*, *28*(2), 803–821.

[30]. Jemni, M., & Khribi, M. K. (2017). ALECSO mobile apps initiative. *Scientific Phone Apps and Mobile Devices*, *3*(1), 2. Doi: 10.1186/s41070-017-0014-0.

[31]. Alshabeb, A., & Almaqrn, R. (2018). A study of EFL Saudi students' use of mobile social media applications for learning. *Arab World English Journal (AWEJ) Special Issue on CALL*, (4). Doi: 10.24093/awej/call4.17.

[32]. Mansour, E. (2016). Use of smartphone apps among library and information science students at South Valley University, Egypt. *International journal of internet education*, *15*(1), 30-62. Doi: 10.21608/ijie.2016.3681.

[33]. Rao, V. V., Alwaaili, M. A., Al-abdali, Z. J., & Alshaaili, F. S. (2023). A Study on Mobile Phone Usage by the University Students in Oman. *Saudi J Bus Manag Stud*, *8*(1), 1-9. Doi: 10.36348/sjbms.2023.v08i01.001.

[34]. Shannaq, B. (2024, March). Digital Formative Assessment as a Transformative Educational Technology. In *Future of Information and Communication Conference*, 471-481. Cham: Springer Nature Switzerland. Doi: 10.1007/978-3-031-54053-0_32.

[35]. Schindler, L. A., Burkholder, G. J., Morad, O. A., & Marsh, C. (2017). Computer-based technology and student engagement: a critical review of the literature. *International journal of educational technology in higher education*, *14*, 1-28. Doi: 10.1186/s41239-017-0063-0.

[36]. Rashid Al-Shamsi, I., & Shannaq, B. (2024). Leveraging clustering techniques to drive sustainable economic innovation in the India–Gulf interchange. *Cogent Social Sciences*, *10*(1), 2341483. Doi: 10.1080/23311886.2024.2341483.

[37]. Tettegah, S. Y., & Gartmeier, M. (Eds.). (2015). *Emotions, technology, design, and learning.* Academic Press. Doi: 10.1016/C2014-0-01127-6.

[38]. Google Forms (2024). *Instructor satisfaction (Using Mobile during lectures).* Google Forms. Retrieved from: https://docs.google.com/forms/d/1H-XhwdcQ8lbJ3j0Zy-VVToR81IBDhEX_TakVIU_j8F0/ [accessed: 05 April 2024].

[39]. Ameen, N., & Willis, R. (2015). The effect of cultural values on technology adoption in the Arab countries. *International Journal of Information Systems*, *2*, 1-7.

[40]. Paniagua, A., & Istance, D. (2018). Teachers as designers of learning environments. *Educational Research and Innovation*, 17-42. Doi: 10.1787/9789264085374-en.

[41]. Palaigeorgiou, G., & Grammatikopoulou, A. (2016). Benefits, barriers and prerequisites for Web 2.0 learning activities in the classroom: The view of Greek pioneer teachers. *Interactive Technology and Smart Education*, *13*(1), 2-18. Doi: 10.1108/ITSE-09-2015-0028.

[42]. Mihailidis, P. (2014). A tethered generation: Exploring the role of mobile phones in the daily life of young people. *Mobile Media & Communication*, *2*(1), 58-72. Doi: 10.1177/2050157913505558.

[43]. López-Fernández, D., Gordillo, A., Lara-Cabrera, R., & Alegre, J. (2023). Comparing effectiveness of educational video games of different genres in computer science education. *Entertainment Computing*, *47*, 100588. Doi: 10.1016/j.entcom.2023.100588.

[44]. Jeyaraj, A. (2022). Models of information systems habit: An exploratory meta-analysis. *International Journal of Information Management*, *62*, 102436. Doi: 10.1016/j.ijinfomgt.2021.102436.

[45]. Bartram, L., Bradley, L., & Al-Sabbagh, K. (2018). Mobile learning with Arabic speakers in Sweden. In *Proceedings of the Gulf Comparative Education Symposium (GCES) in Ras Al Khaimah, UAE*, 5-11.

[46]. Deloitte. (2013). *Arab States Mobile Observatory 2013, Important Notice from Deloitte.* Y Deloitte LLP ("Deloitte") for the GSM Association (GSMA). Retrieved from: https://www.gsma.com/spectrum/wp-content/uploads/2013/04/GSMA_MobileObservatory_ArabStates2013.pdf [accessed: 05 April 2024].