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The Impact of External Dynamics on eLearning Acceptance and Adoption in Higher Educational Institutions: A Theory of Planned Behavior

Shakeel Ahmed[1]| Asim Mehmood[2]| Reema Shaheen[3]| Muhammad Usama Shakeel[4]| Toheed Fatima[5]

[1,3]Department of eLearning Center (ELC), Jazan University, Saudi Arabia
Email: shakeel@jazan.edu.sa
Email: rima@jazan.edu.sa
[2]Department of Health Informatics, College of Public Health and Tropical Medicine, Jazan University, Saudi Arabia.
Email: assimrza@gmail.com
[4]Department of Computer Science, Sir Syed Case University Islamabad, Pakistan
Email: usamawahcantt@gmail.com
[5]Allama Iqbal Open University Islamabad, Pakistan
Email: toheedasim@gmail.com

Correspondence
Shakeel Ahmed
Email: shakeel@jazan.edu.sa

ABSTRACT
The domain of technology acceptability has emerged as a crucial area of investigation within the sphere of information technology. Over time, numerous theories and models have been suggested to clarify individual behaviors towards technology adoption and assess the level of acceptance and satisfaction with technological advancements. This research conducts a thorough examination of diverse hypotheses concerning technological acceptance and evaluates their explanatory capacity critically. The analysis demonstrates that these theories can be broadly classified into two primary domains: practical application and scientific inquiry. Concentrating primarily on recognizing the external factors impacting the acceptability and implementation of technology, this study aims to illuminate the dynamics both preceding and during the global pandemic. Specifically, it explores the subtle influence of external factors on the adoption and usage of eLearning platforms in higher education environments. By examining existing literature and empirical research, this investigation seeks to offer valuable insights into the intricate relationship between external variables and the acceptance of technological developments. Through a comprehensive analysis of elements like socio-economic circumstances, institutional regulations, and technological frameworks, this study strives to enhance comprehension of the intricate interplay between external influences and technology adoption procedures. Ultimately, the outcomes of this study are positioned to guide future strategies and interventions designed to promote greater acceptance and utilization of technology in various contexts, particularly considering unprecedented global challenges like the Pandemic.

KEYWORDS
E-Learning, Higher Educational Institutions, Theory of Planned Behavior

1 | INTRODUCTION

The primary objective of learning is to cultivate and design an individual's intellectual, psychological, and emotional development. Education offers a route to acquiring specialized knowledge in specific subjects. Learning refers to the acquisition of knowledge or abilities through the process of studying, experiencing, or receiving instruction. The occurrence of global events, such as the Pandemic, can potentially influence the educational systems worldwide. According to UNESCO, on April 1, 2020, colleges higher education institutes (HEIs) closed in 185 different

nations., impacting 15.4 billion students, which accounts for 89.4% of the worldwide student population. The challenging conditions during the lockdown compelled education experts to devise unique teaching methodologies. It facilitated access to education through the internet, generally referred to as online learning or e-learning. eLearning, also called electronic learning, has become a widely adopted method of instruction utilized by many educational institutions (Momani et al., 2017).

Online training enables students to engage in diverse activities inside a virtual learning environment. Consequently, online studies engage students in classroom activities using technology as an instructional tool. They utilize a variety of technologies to engage in communication with others and acquire knowledge. Information and communication technology (ICT) has profoundly altered and redesigned all characteristics of the recent lifecycle, including education. ICT has profoundly affected education by facilitating the incorporation of various technologies, such as technological advancements, including gadgets, the World Wide Web, and handheld devices, for instructional purposes. Learning via the Internet is typically described or explained as utilizing internet-connected devices to participate in educational activities, enabling learning to occur without limitations of location or time. Learning management systems (LMSs) are commonly employed to deliver and administer electronic training and provide accompanying resources. Colleges and universities employ learning management systems (LMSs) to facilitate many learning modes, including in-person, hybrid, and remote activities (Al-Rahmi et al., 2018).

Several models and frameworks have been developed to elucidate the reasons behind users' adoption of new technologies. Some theories, such as the Diffusion of Innovation Theory (DIT), the Theory of Planned Behavior (TPB), and the Technology Acceptability Model (TAM), encompass factors that influence customer acceptance of new technologies. Several studies have explored these frameworks, many of which have integrated or improved existing models. Previous studies have identified several barriers that hinder the adoption of technology by instructors and students. These include a lack of academic preparation, limited network connectivity, minimal self-confidence in computers, technical anxiety, and resistance to change. These obstacles also increased the level of difficulty in effectively implementing eLearning. Due to the significant impact of the COVID-19 epidemic on schooling, scientists have prioritized technological efficacy over efficiency. With online learning now being the main method of delivering education, recent studies on eLearning have focused on enhancing the existing infrastructure to reach more users. Pandemic anxiety has an impact on the relationship between external factors and the behavioral intentions of eLearning students (Qiao et al., 2021).

This review uses multiple technological acceptance models to investigate the influence of external factors on the adoption and utilization of online instruction in colleges and universities before and during the pandemic. The primary aim of this research is to examine publicly accessible information that discusses the variables that impact the acceptance and implementation of technologies. before and after the COVID-19 pandemic. This paper examines the external factors influencing faculty's widespread embrace and use of online instruction in colleges and universities. It also investigates the technological acceptance models used to analyze these external factors before and during the COVID-19 pandemic. The analysis is based on a survey of many research and conclusions.

2 | TECHNOLOGY ACCEPTANCE AND ADOPTION MODELS

Various approaches and platforms, including TRA, TPB, TAM, TAM2, TAM3, UTAUT, and UTAUT2, have been employed to evaluate the acceptability and utilization of technology in information systems [3]. Various frameworks add complexity to the decision-making process, but the range of these concepts enhances the flexibility of the evaluation. To address the limitations of TRA, TPB underwent expansion. Both perspectives suggest that user intention is shaped by attitudes and subjective norms regarding behaviour. Ajzen incorporated perceived behavioural control into the Theory of Planned Behaviour (TPB), which impacts user intention and behaviour. To address the limitations of TRA in predicting user behaviour in contexts characterised by limited user control, the concept of planned behaviour was introduced (Ahmed, 2023).

TAM was established as an extension of TRA. Both perspectives agree that behavioural intention is directly impacted by an individual's attitude towards a particular activity. Subjective norms are the area where the Theory of Reasoned Action (TRA) and the Technology Acceptance Model (TAM) differ the most. Unlike TAM, many frameworks, such as TRA, consider the significance of subjective criteria in forecasting behavioural intention (Ahmed, 2023). The researcher suggests that subjective norms may have little impact on behavioural intention, particularly when individuals employ knowledge in deliberate situations. Furthermore, defendants are not

adequately given information about social impact at the acceptance testing stage. The relevance of TAM in adopting computer-based technologies stems from its origin in the technology sphere. On the other hand, TRA was recognized in the realm of societal sensibility and finds application in various other disciplines (Tarhini, 2015). The extensive technology acceptance model (TAM) was created to improve the original TAM. Both models indicate that behavioural intention directly impacts the actual use of the technology. Notably, TAM2 does not address attitude towards conduct. The extended technology acceptance model was designed to rectify the deficiencies of TAM and offer a framework for understanding the reasons behind an individual's favourable perception of technology when subjected to thorough scrutiny (Tarhini, 2015).

The PU construct in TAM2 was expanded by incorporating cognitive instrumental processing aspects (task relevance, output quality, outcome demonstrability, and perceived simplicity of use) and social influence processing components (subjective norms, image, and voluntariness). TAM2 possesses two contextual traits that TAM lacks: knowledge and self-motivation. These variables influence the connections between behavioural intention and subjective norms, as well as subjective norms and perceived utility. Both models still require identification of the external elements that impact the perceived ease of use, despite TAM2 effectively updating the external variables that affect the perceived usefulness. Davis, Bagozzi, and Warshaw have calculated that TAM2 can forecast approximately 52% of the variability in user intention, whereas TAM can only explain around 40%. The Technology Acceptance Model (TAM) should be expanded to include external factors to discover the factors that influence usability and convenience and to enhance its ability to explain user behaviour (Davis, 1989).

The latest iteration, TAM3, is supposed to be a fusion of TAM2, TAM, and the determinants framework of perceived ease of use Venkatesh, 2000 which assumes specific essentials of PU. TAM3 has incorporated the concept of perceived ease of use and its predictions into its framework. TAM3 recognizes the impact of perceived utility and ease of use, which sets it apart from TAM, TAM2, and the perceived ease of use predictor framework. The variables TAM, TAM2, and TAM3 account for 40%, 52%, and 53% of consumer intent differences, respectively. TAM3 encompasses a greater number of correlations and components compared to TAM2. However, it needs to fully elucidate the range of user intention (Robinson, 2010; Davis, 1989).

To investigate the variables that impact the acceptability and integration of online instruction in educational institutions, Figure 1 illustrates the categorization of the scientific subject into three distinct sub-divisions: societal sensibility, social sciences, and IT. On the other hand, theories on the acceptability of technology are categorized into two distinct divisions. Before the COVID-19 pandemic, various external factors affected the willingness and implementation of eLearning by faculty members in higher education (Venkatesh, & Davis, 1996). These factors included difficulties with technology, insufficient technical assistance, limited awareness, the preparedness of universities, the availability of high-quality course materials, the localization of content, and the IT proficiency of faculty members. The acceptability and implementation of eLearning in higher education during COVID-19 are influenced by several external issues, including the absence of adequate technology infrastructure, pedagogical learning, socio-economic circumstances, budgetary considerations, and technological aspects (Davis, 1992).
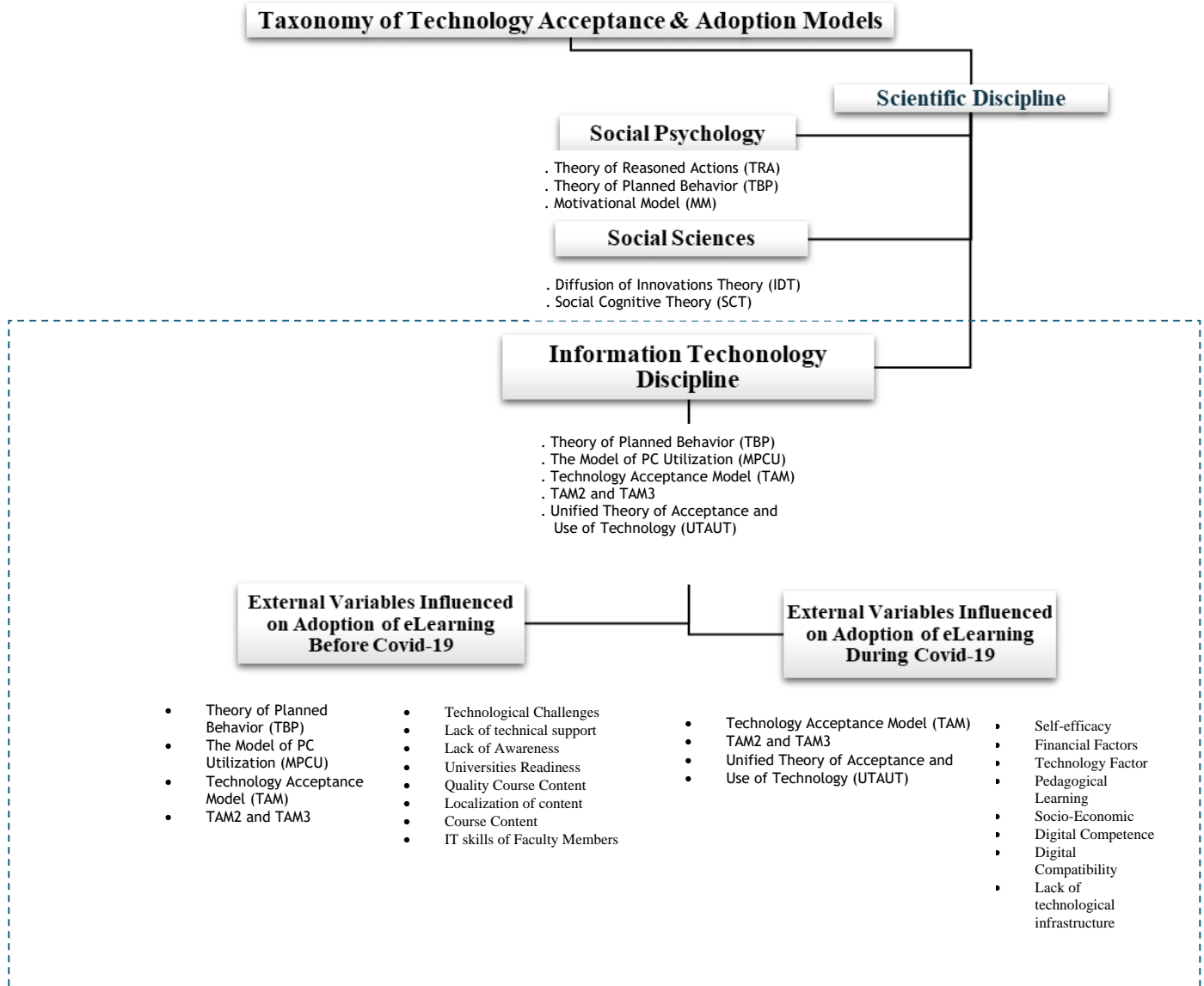
Figure 1: Taxonomy of Technology Acceptance Models & External Factors (Momani, A. M., 2017)

3 | EXTERNAL FACTORS INFLUENCING TECHNOLOGY ACCEPTANCE IN HIGHER EDUCATION BEFORE PANDEMIC

The Technology Acceptance Model (TAM) is used as the basis for a modified conceptual framework (Ahmad, S., Mohd Noor, 2023). PU (perceived usefulness), PEOU (perceived ease of use), university support, and computer self-efficacy are crucial factors that influence the acceptability of eLearning in a university setting. The mediating function of the Technology Acceptance Model's perceived usefulness constructs (Ahmed, S., 2023). Nowadays, experts suggest novel approaches that utilise eLearning to enhance higher education. Despite the increasing prevalence of eLearning research, the higher education industry still needs a comprehensive evaluation of the theoretical models and frameworks of eLearning (Al-Mushasha, 2013). Most conceptual frameworks and models are utilised during the post-adoption stage (Baig, M. I., 2022). The adoption of eLearning by using a modified Technology Acceptance Model (TAM) includes six factors: instructor characteristics, computer self-efficacy, course design, perceived usefulness (PU), perceived ease of use (PEOU), and intention to use. Computer self-efficacy has a

substantial and favourable impact on Perceived Ease of Use (PEOU) (Ibrahim, 2017). The faculty members' perception of the Learning Management System (LMS) was significantly enhanced due to the implementation of SQ (Fathema, 2015). A new perspective was also introduced to explore the relationship between SQ (system quality) and PEOU (perceived ease of use) by considering the influence of external factors. A significant external factor influencing consumers' perceptions of technology use was deemed trustworthy. SQ significantly and positively affects both PU and PEOU (Fearnley, M. R., 2020). The relationship between the PEOU and content quality is also influenced by gender (Binyamin, 2018; Dlalisa, 2020). Two external variables of TAM (usage and experience) positively influence teachers' propensity to use online learning. The primary determinant of a teacher's behavioural intention is their attitude towards embracing online learning (Mailizar, 2021). Furthermore, teachers' views towards e-learning are significantly and favorably influenced by their prior experience. The perceived utility and convenience of use did not significantly impact the behavioural intentions of experienced educators. The content distribution of the web portal effectively stimulates student engagement and facilitates substantial interaction, enhancing their understanding of each issue to a greater extent. Furthermore, there are additional crucial factors to consider when utilizing technology for educational purposes, including the originality of students' ideas, the distinctiveness of the content, comments and feedback, and the level of participation from the group (Hamid, 2020).

4 | EXTERNAL FACTORS INFLUENCING TECHNOLOGY ACCEPTANCE IN HIGHER EDUCATION DURING PANDEMIC

The abrupt shift to online instruction and digital learning due to the Pandemic resulted in a significant dependence on eLearning in higher education. During the pandemic, student well-being was considered a crucial parameter in online education, although further investigation is required to explore its determinants in emerging economies (Jiang, 2021). The level of confidence in using computers substantially impacts their perception of the ease of use and usefulness of online learning platforms. Students are more likely to understand the benefits of using online learning platforms in the long run if they have enhanced digital self-efficacy. PEOU (Perceived Ease of Use) and PU (Perceived Usefulness) are the most crucial motivational factors in the majority of TAM (Technology Acceptance Model) models. While assessing the acceptance, adoption, and enjoyment of new technology, it is important to consider individual traits, as computer self-efficacy significantly impacts these parameters (Jiang, 2021; Zalat et al., 2021). This study investigated the lecturer's perspectives on this alteration and its impact on their readiness to instruct online. Despite the online teaching experience being unplanned, unanticipated, and potentially stressful and resistant to change, the positive emotions exceeded the negative ones (Meishar-Tal, 2021). The effective deployment of eLearning systems during the pandemic has important implications for decision-makers, specialists, and designers (Al Kurdi, 2020). The perception of one's ability to perform a task and the quality of the system had a substantial influence on how beneficial the technology was thought to be. This perception of usefulness, in turn, indirectly influenced the inclination to utilize the technology and the attitudes towards it (Fearnley, 2020). Moreover, the utilization of technology and the apparent simplicity of its use were directly influenced by the system's quality. The eLearning system (ELS) was influenced by infrastructural factors (INF), economic and technology factors (ETF), and various other characteristics during the pandemic. Nevertheless, the human elements, characterised by skills and knowledge (SKF) and compatibility factor (COF), did not exert any influence on the eLearning system (Tawfik, 2023).

5 | DISCUSSION

The research models that have been chosen are based on existing theories from several disciplines. For instance, the IDT theory is derived from sociology, while the TRA, TIB, TPB, and SCT theories are derived from social psychology. These theories have demonstrated their efficacy in forecasting and elucidating human behaviour across many circumstances (Davis, 1989). However, the theories of reasoned action (TRA) and theory of planned behaviour (TPB) diverge from the diffusion of innovation (DOI) theory in their primary focus. TRA and TPB primarily aim to elucidate individual behaviour, whereas DOI primarily examines adoption decisions within the context of organizational features (Venkatesh et al., 2003). In addition, the Social Cognitive Theory (SCT) and the Theory of Planned Behaviour (TPB) incorporate the concept of perceived outcomes when predicting behaviour, whereas the Diffusion of Innovation (DOI) and the Technology Acceptance Model (TAM) center around beliefs regarding technology. In addition, the DOI (Diffusion of Innovations), TAM (Technology Acceptance Model), and TPB (Theory of Planned Behaviour) support a one-way understanding of causal links, where environmental factors impact behavioural assumptions, which in turn shape attitudes and behaviors (Rogers et al., 2014).

On the other hand, SCT is based on the reciprocal relationship between cause and effect, where behaviour, emotional and cognitive variables, and environment mutually influence each other. The Model of PC Usage (MPCU) is an extra framework based on the philosophy of human behaviour. While TIB, TPB, and SCT theories share similarities, SCT and TPB have been more commonly used in behaviour studies than TIB (Venkatesh et al., 2008). TIB encompasses all aspects of the TPB model but includes additional elements like habits and facilitating conditions, enhancing its predictive capabilities. DOI and TAM have common factors: complexity, PEOU, relative advantage, and PU. The enabling condition encompasses the notions of perceived behavioural control, facilitating conditions, and compatibility construct.

It is imperative to assess academic fulfilment with instructional environments due to the substantial number of pupils depending on these podiums to pursue their lessons amidst the Epidemic (Arshad et al., 2018). The current research emphasizes the primary determinants that impact the recognition and utilization of Internet-based learning as a pedagogical tool in higher education. Therefore, it can be employed to construct a strategic blueprint for the effective implementation of eLearning in the future, particularly in developing nations where its utilization is still necessary. The recent global pandemic has compelled Universities worldwide to adopt it. Before the Pandemic, multiple studies investigated the determinants of technology acceptance. These included technological challenges, insufficient technical assistance, lack of awareness, preparedness of universities, quality of course content, localization of content, course content itself, and the IT skills possessed by faculty members (Al-Emran et al., 2016; Rosli et al., 2022). The adoption and implementation of electronic learning in colleges and universities for professors throughout the COVID-19 pandemic is impacted by several external factors, such as self-efficacy, financial considerations, technological aspects, pedagogical training, socioeconomic variables, digital reliability, and inadequate technical support.

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