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A REVIEW OF THE ACCEPTANCE ON LEARNING MANAGEMENT SYSTEM (LMS) USING UNIFIED THEORY ACCEPTANCE AND USE OF TECHNOLOGY (UTAUT)

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Abstract:

Technology advancement in the world nowadays has dramatically evolved, especially in education trends. LMS has become increasingly popular in higher education institutions because it provides a centralised platform for course materials, assignments, and communication. However, despite the benefits that LMS can offer, its adoption by students is only sometimes guaranteed. Conversely, The Unified Theory of Acceptance and Use of Technology (UTAUT) is a popular model for understanding and forecasting whether people will adopt a technology. This review looked at how UTAUT has been applied to examine the acceptance of Learning Management Systems (LMS). It was found that the four main factors in the UTAUT model, "Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions", can all be important predictors of whether users will accept and use an LMS. The UTAUT model provides a relevant framework for discerning key drivers of user acceptance of learning technologies like LMS. The review found that the relative importance of these constructs can vary depending on the context of use. For example, social influence may be more critical in the context of mandatory LMS adoption. At the same time, facilitating conditions may be essential in voluntary LMS adoption. This review shows things that affect whether people use a new LMS. LMS setup should address user concerns and expectations. Thinking about these user factors can lead to better LMS success. Developers and implementers of LMSs should consider the four key constructs of UTAUT when designing and implementing their systems. Hence, it can increase users' likelihood of accepting and using the LMS. The findings of this review provide a valuable overview of the factors that influence the acceptance of LMS.

Keywords:

UTAUT, LMS, Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions

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Introduction

The influence of the COVID-19 virus on the education sector has been widely studied. Over 1.5 billion youngsters were impacted by school closures, according to a UNESCO study from 2020. Teachers and students also faced several difficulties because of the abrupt switch to online learning. The digital divide has been identified as one of the primary issues in online learning, with many students needing access to technology and high-speed internet at home (Chandra et al., 2020). This has resulted in unequal access to education and exacerbated existing achievement gaps. Additionally, existing research has demonstrated that student engagement and motivation pose significant challenges within the context of distance learning environments. The absence of direct interpersonal interaction in these settings often results in the emergence of sentiments characterised by isolation and detachment (Namboodiri, 2022). The importance of teacher training and support for online learning has also been highlighted, with many educators needing help to adapt to the new mode of instruction (Geverola et al., 2022). Thus, concerns have been raised about the quality of online learning programs and the need for rigorous assessments and evaluations to ensure that they meet the same standards as traditional in-person education.

Malaysian educational institution has implemented a Learning Management System (LMS) in response to the COVID-19 pandemic. While online learning can offer flexibility and convenience for students, there are also potential issues that can arise. This section will discuss issues related to Learning Management System (LMS) implementation and its implications for student learning. One issue is limited access to technology. According to Hazlin's (2021) findings, the household Internet penetration rate in Malaysia witnessed a rise from 87% in 2018 to 90.1% in 2019. However, despite this increase, media outlets continue to highlight instances where students are compelled to ascend trees or hills in order to access improved Internet connectivity. This phenomenon has emerged as a consequence of the COVID-19 pandemic, which necessitated the shift to online learning platforms. This can limit their ability to participate in online learning fully and access course materials. Another issue is technical difficulties and system errors. Learning Management System (LMS) platforms may experience technical difficulties or system errors that can disrupt online classes, assignments, or assessments (Mahyoob, 2020). This can frustrate students and result in a loss of learning time or incomplete assignments. Furthermore, the issues raised are the need for online learning engagement and interaction. Students may need face-to-face interaction to stay motivated and engaged in their coursework. It was reported that the absence of regular interaction with instructors and peers could lead to isolation and disconnection from the learning community (Abuhassna et al., 2022).

The Unified Theory of Acceptance and Use of Technology (UTAUT) framework is a highly prevalent theoretical paradigm employed for the examination of technology adoption across many domains encompassing the field of education. Venkatesh et al. (2003) proposed that the UTAUT framework has four fundamental categories, namely “performance expectancy, effort expectancy, social influence, and facilitating condition” factors. These constructs elucidate the variables that impact individuals' intention to adopt technology and their eventual utilisation of it. According to an analysis conducted by Samartha et al. (2022), it has been determined that the UTAUT framework is an appropriate tool for evaluating the acceptance and utilisation of mobile banking applications. The UTAUT framework can be employed to examine the Learning Management System (LMS) application similarly. Given the increasing significance of Learning Management Systems (LMS) in the field of education, the objective of this study is to conduct a thorough examination of the current body of literature pertaining to the

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acceptance and utilisation of LMS. This examination will be conducted within the framework of the Unified Theory of Acceptance and Use of Technology (UTAUT). By examining the key factors that influence users' acceptance and usage of LMS, this review seeks to contribute to understanding how LMS can be effectively implemented and utilised to enhance user experience and promote adoption. The following sections will provide an overview of the UTAUT model, discuss its application to LMS, and highlight the key findings from previous studies on the acceptance and usage of LMS.

Learning Management System (LMS)

The term "Learning Management System" (or "LMS") refers to a form of online software that facilitates the organisation of instructional materials, student evaluations, and teacher-student interaction (Bradley, 2021). LMS has seen extensive application in a variety of educational settings, most notably in higher education, to facilitate pedagogical endeavours (Aljaloud, 2022). Moreover, LMSs provide a centralised repository for many course materials, from lectures to readings and assignments. This repository ensures easy access for learners, irrespective of their geographical location or time zone (Watson, 2023). On the other hand, all the education institutes can gain many benefits from using the LMS, such as enhanced communication. Through features such as discussion forums, chat interfaces, and email capabilities, LMSs foster enhanced communication between instructors and learners. This dynamic communication enriches the quality of instruction, and fosters heightened student engagement (Alshuraiaan, 2023). Furthermore, LMSs are suitable for flexibility and convenience use for education. The online accessibility of LMSs transcends physical limitations, enabling learners to engage with course content from any location with an internet connection. Similarly, Lhota (2023) mention that “working professionals and people with other obligations will appreciate this adaptability a lot”. Despite that, Turnbull et al. (2023) reported that while LMSs exhibit substantial benefits, their effective deployment is accompanied by various security concerns. LMSs house sensitive student data, necessitating robust security measures against cyber threats. Their susceptibility to cyberattacks underscores the imperative of stringent security protocols (George et al., 2023). Similarly, Watson (2023) stated that the intricate setup and operation of LMSs demand technical expertise that might pose barriers for organisations lacking the necessary resources for technical staff training (Watson, 2023). Recent studies also proved that LMSs had a challenge with a lack of user adoption. The efficacy of LMSs hinges on user adoption rates among learners and instructors. Challenges in navigating and utilising LMS interfaces can impede adoption (Munyaradzi et al., 2023). The acceptance of LMS by users is an essential factor that affects the success of its implementation. Thus, this literature review aims to analyse prior research on adopting LMSs utilising the Unified Theory Acceptance and Use of Technology (UTAUT) framework.

Theory Acceptance Model (TAM)

The TAM model, which describes how students' attitudes about the use of digital technology in the classroom develop and change over time (Davis et al., 1989), has attracted the interest of scholars all around the globe. This model, which is based on the TRA framework, uses two components to make predictions about students' actual conduct with respect to their embrace of technological innovations. Researchers examine factors including perceived utility and simplicity of use when examining acceptability (Venkatesh & Bala, 2008). The perceived ease of use evaluates how much people think they can save time and energy by using a piece of technology. However, the extent to which a person believes that using a technological tool would enhance their performance is what is known as its perceived utility (Davis et al., 1989). Therefore, the individual's acceptable conduct is a determinant of whether or not they would

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engage in real activity that shows a good perception of the technology's ease of use and usefulness (Unal & Uzun, 2021). Perceived usefulness is influenced, in turn, by perceived easiness, and both of these factors may be affected by external factors, which in turn affect individual adoption of the technology (Rafique et al., 2020). The purpose of this study is to examine how the Unified Theory of Acceptance and Use of Technology (UTAUT) predictors of user acceptance—performance expectancy, effort expectancy, social influence, and facilitating condition—affect students' acceptance of a learning management system (LMS). According to Almarashdeh et al. (2021), TAM principles were added to understand better the complex interplay between users' expectations and their responses to these elements. The study sought to illuminate how these elements intertwine, shaping users' cognitive landscape and impacting their inclinations towards future engagements (Almarashdeh et al., 2021). As the technological landscape evolved, the Unified Theory of Acceptance and Use of Technology (UTAUT) emerged, encompassing additional factors such as facilitating conditions enhancing the predictive power of technology adoption. UTAUT's comprehensive nature facilitates a deeper grasp of the intricate interplay between human psychology and technological integration. By embracing UTAUT, researchers can gain a more holistic perspective, enriching the study of technology adoption with nuanced insights and creating more effective strategies to promote technology acceptance and utilisation. Thus, it can be concluded that the Theory of Acceptance Model (TAM) is a foundational framework for understanding individuals' adoption of new technologies.

Unified Theory Acceptance and Use of Technology (UTAUT)

The Unified Theory of Acceptance and Use of Technology (UTAUT) is a popular and important framework that seeks to clarify the reasons behind people's tendency to accept new technologies. The UTAUT model, proposed by Venkatesh et al. (2003), is an extensive framework for analysing the variables that influence the adoption and utilisation of technology, especially in business contexts. UTAUT has been extensively tested and deployed in a variety of settings since its creation, and its validity has been shown via substantial empirical study (Teng et al., 2021). The Technology Acceptance Model (TAM) and the Theory of Reasoned Action (TRA) are only two of the preexisting models of technology acceptance. The UTAUT model integrates significant features to make its unique addition (Granic, 2023). Users' performance expectations, their effort expectations, the influence of others, and the environment in which they operate are all incorporated into UTAUT (Venkatesh & Bala, 2008). Users' hopes for the technology's usefulness and efficiency are known as "performance expectancy," while their perceptions of how easy it will be to implement are known as "effort expectancy" (Wang et al., 2020). The amount to which an organisation offers the resources and infrastructure to facilitate technology usage is an example of social influence, and Mensah (2019) defines enabling circumstances as the extent to which others' opinions and actions impact an individual's choice to accept and utilise technology. There have been many empirical tests and validations of the UTAUT model since its inception. A large body of research supports the concept, with performance and effort expectations appearing as the most important determinants of technology adoption and usage (Teng et al., 2021). The relevance of each of these four factors will change based on the specifics of the situation and the technology under investigation. The adoption of medical technologies is a crucial field of study that has benefitted from the UTAUT paradigm. According to a literature analysis conducted by Wang et al. (2020), UTAUT has been widely utilised in research examining the uptake of healthcare IT, and its predictive power has been proven to hold up. Similar results were reported in a study of nurses' use of Electronic Health Records (EHRs) by Gu et al. (2021), who also concluded that UTAUT provided a sufficient explanation for the phenomenon.

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The use of mobile technologies is another area where UTAUT has been used. Abbad (2021) discovered that among college students, performance expectation, effort expectation, and social influence were important predictors of mobile technology uptake, but enabling circumstances were not. Consumers' performance and effort expectations were shown to be robust determinants of mobile banking uptake in research by Purwanto et al. (2020). As a result, the UTAUT model has become a valuable resource for studying how technologies are adopted and used in different settings (Wang et al., 2020). Its considerable empirical validation and incorporation of essential features from a variety of other models have led to its broad acceptance in both academic and applied contexts. Given the growing importance of technology in modern life, the UTAUT model is likely to continue being a valuable tool for researchers and practitioners alike.

Performance Expectancy

When people believe a system will help them accomplish their jobs better, they are more likely to use it, as shown by the study of Venkatesh et al. (2003). Performance anticipation was also shown to have its origins in the Technology Acceptance Model (TAM), a popular theoretical framework for researching the uptake of novel technologies. Performance expectations were revealed to be one of the greatest determinants of user acceptability in a meta-analysis conducted by Venkatesh et al. (2003). The Technology Acceptance Model (TAM) states that an individual's desire to utilise technology is based on their opinion of the technology's utility and its usability. As a measure of how much people believe technology will improve their productivity at work, perceived usefulness is strongly linked to performance expectations because it measures how much people believe technology will boost job performance (Granic, 2023). All of these theories focus on the interplay between intrinsic and external factors, such as how much one enjoys their work and how much of an edge they have over others. The expectation of a technology's performance is a key factor in determining whether or not that technology will be adopted and used. Intention to employ LMSs was shown to be significantly influenced by performance expectation, a key feature of the UTAUT paradigm. Perceived ease of use, social influence, and enabling circumstances were also important, according to the research (Alfalah, 2023; Altalhi, 2021). The UTAUT model suggests that performance expectations in the adoption of technology are directly related to behavioural intention. In a similar vein, Altalhi (2021) argued that there is a direct correlation between technological adoption intentions and expected outcomes via the UTAUT model. Researchers have shown that raising users' expectations of how well a technology would perform increases its uptake, especially on digital platforms (Altalhi, 2021). According to recent research by Alfalah (2023) on student LMS adoption intentions, high expectations for learning outcomes had a substantial impact. If students have faith that LMSs may improve their education, they are more likely to make use of them. How well the system functions is a major factor in whether or not a student or teacher will embrace its utilisation. However, Widjaja et al. (2020) found that the behavioural desire to adopt LMS was unaffected by Performance Expectancy factors. New research argues that LMS designers, developers, and suppliers should prioritise making their systems simple to use, applicable to learning, and supported by peers and instructors to avoid any drop in performance standards. According to the findings of this study, people's expectations of how well new LMS technologies would work play a major role in whether or not they will accept and utilise such technologies. The processes driving performance expectation and its connections with other elements, including social influence and education organisational culture, should continue to be investigated in future studies.

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Effort Expectancy

Technology acceptance and usage may be forecast in large part by individuals' expectations about the amount of effort required to make use of the new tool. Perceived ease of use, of which effort expectancy is a crucial component, has been proven to be a powerful predictor of technology adoption in several studies (Davis et al., 1989). Researchers have also shown that those with lesser levels of technological literacy and older persons had higher expectations for the amount of work required to use a new piece of technology. As defined by Venkatesh et al. (2003), effort expectation measures how simple a user believes a system to be. Perceived ease of use, complexity, and TAM-derived ease of use are all examples of models whose components are comparable to those used to build effort expectations (Abbad, 2021). Furthermore, Ozkan et al. (2020) discovered that user acceptability of a learning management system (LMS) among college students was strongly predicted by their effort expectations. These results indicate that system administrators should prioritise making the LMS as intuitive as feasible for students. The research also indicated that of the UTAUT components, effort expectation was the most important in determining user acceptability. These results verify the use of effort expectation in e-learning settings (Altalhi, 2021) and are consistent with previous studies. Similar results were observed in another research by Balkaya and Akkucuk (2021), where they discovered that a teacher sample's effort expectation substantially influenced their adoption of a learning management system. The research also indicated that among the UTAUT components, effort expectation influenced user acceptance the most, followed by enabling conditions. Effort expectation has been shown to be a substantial predictor of technology adoption, which is consistent with the results of previous research. Because even if they lack the means and assistance, individuals are more likely to adopt a technology if they perceive that it is simple to use. A person's level of commitment to learning and using a new technology depends heavily on their expectations of how much work would be involved. The processes that underlie effort expectation and the ways in which it interact with other aspects like social influence and organisational culture should be investigated further in future studies. Therefore, the design and deployment of technology to improve the user experience and increase adoption may be informed by an enhanced knowledge of effort expectations.

Social Influence

Acceptance of LMS has been demonstrated to be heavily influenced by peer pressure. For instance, Alasmari and Zhang's (2019) research on students in Saudi Arabia discovered that peer pressure had a major role in shaping their LMS adoption intentions. Students are more inclined to adopt LMSs if they have a strong sense that their peers are already making use of and recommending them. Social pressure was also revealed to be a major factor influencing Korean students' usage of learning management systems by Fianu et al. (2018). The acceptability of LMS among educators was also heavily influenced by social pressure. Raza et al. (2021) found that among Chinese educators, social influence was a strong predictor of future LMS adoption. The significance of peers, teachers, and parents as social influencers has been emphasised in a number of studies. Peer pressure has a major impact on whether or not Jordanian college students plan to utilise a learning management system (LMS), according to research by Al-adwan et al. (2021). Similar results were obtained in research conducted in Saudi Arabia by Alharbi et al. (2022), who discovered that teacher influence significantly affected students' desire to adopt LMS. Therefore, the intention and acceptability to use LMS are significantly predicted by several social factors, including classmates, teachers, and parents. Therefore, while introducing LMS in educational settings, educators and administrators must take into account the impact of these factors. Therefore, according to the findings of this new

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research, social influence may play an even bigger role when it comes to mandatory LMS adoption.

Facilitating Condition

The importance of conducive settings in LMS adoption has been the subject of several research. Among university students in Jordan, for instance, Al-adwan et al. (2021) discovered that conducive settings strongly affected the propensity to utilise LMS. Similarly, Fianu et al. (2018) discovered that conducive environments significantly influenced students' adoption of LMS in Korea. The availability of conducive settings was also crucial in determining whether or not instructors would embrace LMS. Raza et al. (2021) found that among Chinese educators, enabling factors were strong predictors of the desire to utilise LMS. Technical assistance, training, and compatibility are just a few of the helpful circumstances that have been emphasised by several research. Students' plans to utilise learning management systems (LMS) were shown to be significantly influenced by the availability of technical assistance, according to research by Alasmari Zhang (2019). Training was also shown to be a strong predictor of LMS usage among Taiwanese primary school pupils in a study by Huang et al. (2020). Park et al. (2018) discovered that compatibility was a strong indicator of LMS adoption among Korean college students. The extent to which LMS is adopted is strongly influenced by the availability of favourable circumstances. Understanding the significance of supportive circumstances in technology adoption is facilitated by the UTAUT paradigm. Therefore, favourable circumstances are crucial in voluntary LMS adoption, as this review has shown. Factors including technical support, training, and compatibility significantly influence the intention to utilise a learning management system (LMS). In order to guarantee the required infrastructure and support are in place to enable its uptake and usage, educators and administrators must take these considerations into account while introducing LMS in educational settings.

Conclusions

The review revealed that the significance of these elements can shift based on the specific usage context. To illustrate, social influence might hold greater importance when LMS adoption is mandatory. Conversely, when LMS adoption is voluntary, facilitating conditions becomes crucial. The outcomes of this examination have implications for the development and rollout of LMSs. Those responsible for creating and implementing such systems should factor in the four core components of UTAUT during their design and deployment. This approach can heighten the probability of users embracing and engaging with the LMS. Beyond the fundamental UTAUT components, the study identified additional factors influencing LMS acceptance. These factors encompass a user's past technology experience, their attitude towards the LMS, and their perception of the LMS's overall quality.

The importance of implementing and making use of Learning Management Systems (LMS) has been growing in recent years within the educational sector. Understanding the elements that influence users' adoption and use of learning management systems (LMS) has been greatly aided by the framework offered by the Unified Theory of Adoption and Use of Technology (UTAUT). During this literature review, the previous study on the acceptance of LMS utilising UTAUT was analysed, and a number of noteworthy results were discovered. The UTAUT model offers a complete knowledge of the aspects that impact users' acceptance of learning management systems (LMS), including performance expectation, effort expectancy, social influence, and facilitating conditions. The degree to which a user feels that utilising an LMS would increase performance is referred to as their performance expectation. The level of difficulty that is often associated with using the system is referred to as the effort expectation.

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The term "facilitating conditions" refers to the external elements that encourage or discourage the use of learning management systems (LMS). In contrast, the term "social influence" refers to the effect that other people have in promoting or discouraging the usage of LMS.

The UTAUT paradigm has been used in a variety of settings in a number of research, including higher education, vocational training, and corporate training, to name a few. The particular elements that impact the adoption and use of LMS in certain settings have been determined as a result of these investigations. For instance, social influence from classmates and teachers is a strong predictor of the adoption of a learning management system (LMS) in higher education. At the same time, it is vital for vocational training to have circumstances that are conducive to learning, such as training and technical assistance. Additionally, UTAUT has been implemented in a variety of Learning Management Systems (LMS), including open-source, commercial, and adapted LMS. According to the findings of this research, the UTAUT constructs are applicable across all of these distinct systems; however, the particular elements that impact the acceptance and use of LMS may change from one kind of LMS to another, depending on the nature of the LMS.

In conclusion, the study concentrated on UTAUT since an earlier phase of the study is sufficient to assess and investigate the users' acceptance and use of LMS, particularly within the education sectors. This information can then be utilised to guide the design and implementation of LMS in order to improve the user experience and encourage adoption. Nevertheless, further study is required to investigate the precise variables that impact the acceptance and utilisation of LMS in a variety of situations, as well as the development of more detailed measurements of the UTAUT components as they pertain to the LMS context. As a result, it is best to perform and broaden the empirical studies in future.

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