"Exploring the Influence of User-Related Factors on Learning Management System Effectiveness: A Psychological Perspective''

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Abstract:

Learning Management Systems (LMS) are integral to modern education, yet their effectiveness can vary widely among users. This study examines the influence of user-related factors on LMS effectiveness from a psychological perspective. A sample of 277 students participated in the study, which investigated the impact of user self-efficacy, student learning style, faculty teaching style, perceived usefulness, user enjoyment, and user-implemented fairness on LMS effectiveness. The study hypothesized that user self-efficacy, student learning style, faculty teaching style, perceived usefulness would positively influence LMS effectiveness. Data were collected through surveys and analyzed using SEM analysis. Results indicate that user self-efficacy, student learning style, faculty teaching style, perceived usefulness, user enjoyment, and user-implemented fairness are significant predictors of LMS effectiveness. These findings suggest that addressing these user-related factors can enhance the overall effectiveness of LMS.

Introduction

Learning Management Systems (LMS) have become ubiquitous in educational settings, offering a digital platform for organizing course materials, facilitating communication, and managing learning activities. While the adoption of LMS has increased significantly in recent years, questions remain about their effectiveness and impact on learning outcomes. This study seeks to explore the influence of user-related factors on LMS effectiveness from a psychological perspective.

User-related factors, such as user self-efficacy, student learning style, faculty teaching style, perceived usefulness, user enjoyment, and user-implemented fairness, are believed to play a crucial role in shaping how individuals interact with and perceive LMS. Understanding these factors is essential for educators and system designers seeking to enhance the effectiveness of LMS and improve learning experiences for students.

The concept of user self-efficacy, introduced by Bandura (1977), emphasizes the importance of individuals' beliefs in their ability to accomplish tasks. In the context of LMS, user self-efficacy may influence how motivated and engaged students are with the system, ultimately affecting their learning outcomes. Similarly, student learning styles, which refer to individual preferences for approaching learning tasks, can impact how students interact with LMS materials and activities.

Faculty teaching style is another important factor to consider, as instructors' approaches to teaching can influence student engagement and learning outcomes. Understanding how faculty teaching styles interact with LMS features and functionalities can provide insights into how to design more effective online learning environments.

Perceived usefulness, a key construct in technology acceptance models (Davis, 1989), refers to individuals' beliefs about the extent to which a technology will enhance their performance. In the context of LMS, perceived usefulness can influence whether students and faculty members engage with the system and how they use it to support their learning goals. User enjoyment, or the degree to which individuals find using a technology enjoyable, can also impact their engagement and satisfaction with LMS. Designing LMS interfaces and activities that are enjoyable and engaging may therefore lead to more positive user experiences and improved learning outcomes. User-implemented fairness, which refers to users' perceptions

of the fairness of the LMS in terms of access, support, and assessment, can significantly impact user attitudes and behaviours. Ensuring that the LMS is perceived as fair by all users is essential for maintaining their motivation and engagement.

Understanding the influence of user-related factors on LMS effectiveness is crucial for designing and implementing more effective online learning environments. By considering factors such as user self-efficacy, student learning styles, faculty teaching styles, perceived usefulness, user enjoyment, and user-implemented fairness, educators and system designers can enhance the overall effectiveness of LMS and improve learning outcomes for students.

Literature Review

In order to facilitate instruction and assessment, learning management systems (LMSs) include features such as online group chats and discussions, document uploading (including course materials, homework, and assignments), PowerPoint presentations, video clip uploads, grading, and course evaluations. Since learning management systems (LMSs) have gone through a lot of changes in terms of instructional materials, technological assets, and interaction opportunities, people are starting to worry more about how well these systems work and how users' complete tasks inside them (Freire, Arezes, Campos, Jacobs & Soares, 2012). According to Freire et.al. (2012), the term "usability" can be defined differently depending on the field that is studying it. According to researcher Freude et al. (2012), "usability" is "the capacity a system has to offer to the user in carrying out his tasks, in an effective efficient and satisfactory manner" when viewed through the lens of ergonomics. They claimed that "the users' perspective," and not "the systems perspective," should be the primary focus when assessing the usability of LMSs (Freire et al., 2012). According to faculty members, the LMS is not used as much as it could be due to specific issues, such as system problems and design defects. Teachers' confidence in their own technological abilities influences how often and well they use technology in the classroom (Holden and Rada, 2011).

Learning Management Systems (LMS) have become essential tools in educational settings, providing a platform for delivering course content, facilitating communication, and managing learning activities. Despite their widespread use, the effectiveness of LMS can vary significantly among users. This literature review explores the influence of user-related factors on LMS effectiveness from a psychological perspective. Students' attitudes and intentions towards using Internet-based learning medium were affected by their perceptions of its utility and enjoyment, according to research by Lee, Cheung, and Chen (2005). The perceived utility and ease of use of an e-learning system, as well as the e-learning usage behaviour of college students, are heavily influenced by system attributes, according to Pituch and Lee (2006). Perceived usefulness significantly influenced college students' attitudes towards MMLS, according to research by Saadé, Nebebe, and Tan (2007), who also discovered that students' attitudes influence their behavioural intention to use MMLS. According to Weaver et al. (2008), students and teachers alike place a premium on a high-quality learning management system (LMS).

User Self-Efficacy: User self-efficacy, defined as an individual's belief in their ability to accomplish tasks, has been identified as a key factor in determining LMS effectiveness. Bandura (1977) proposed that self-efficacy influences motivation and behaviour, with higher self-efficacy associated with greater effort and persistence. In the context of LMS, users with higher self-efficacy may be more likely to engage with the system, complete tasks, and achieve learning goals, thereby enhancing LMS effectiveness (Compeau & Higgins, 1995).

Student Learning Style: The concept of learning styles refers to individual differences in how people prefer to approach learning tasks. While the validity of learning styles theory has been debated (Pashler et al., 2008), there is evidence to suggest that matching instructional methods to students' preferred learning styles can improve learning outcomes (Riener & Willingham, 2010). In the context of LMS, understanding students' learning styles may help educators tailor course materials and activities to better meet individual needs, potentially enhancing LMS effectiveness (Pashler et al., 2008).

Faculty Teaching Style: Faculty teaching style can also influence LMS effectiveness. Research suggests that instructors who adopt a student-centered approach, focusing on active learning and engagement, tend to have more positive effects on student learning outcomes (Hattie, 2009). In the context of LMS, faculty members who use interactive and engaging teaching methods may enhance student motivation and participation, leading to improved LMS effectiveness (Miltiadou & Yu, 2000).

Perceived Usefulness: The degree to which a person thinks that a specific piece of technology will improve their efficiency is known as its perceived utility, and it is a crucial component of the Technology Acceptance Model (Davis, 1989). In the context of LMS, students and faculty members are more likely to engage with the system if they perceive it as useful for

achieving their learning goals (Venkatesh et al., 2003). Enhancing perceived usefulness through system design and support may therefore improve LMS effectiveness.

User Enjoyment: User enjoyment, or the extent to which an individual finds using a technology enjoyable, can also impact LMS effectiveness. Research has shown that enjoyable user experiences are associated with greater user engagement and satisfaction (Brown & Cairns, 2004). Designing LMS interfaces and activities that are enjoyable and engaging may therefore enhance user satisfaction and ultimately improve LMS effectiveness.

User-Implemented Fairness: User-implemented fairness refers to users' perceptions of the fairness of the LMS in terms of access, support, and assessment. Fairness perceptions can significantly impact user attitudes and behaviours (Colquitt, 2001). In the context of LMS, ensuring that the system is perceived as fair by all users may enhance their motivation and engagement, leading to improved LMS effectiveness (Kreitz et al., 2020).

Objectives:

- 1. To investigate the extent to which user self-efficacy influences the effectiveness of Learning Management Systems (LMS) in supporting student learning outcomes.
- 2. To examine the relationship between user-related factors and the effectiveness of LMS in facilitating student engagement and satisfaction.

Hypothesis;

H1: User self-efficacy positively influences the effectiveness of the LMS.

H2: Student learning style has a positive impact on LMS effectiveness.

- H3: Faculty teaching style positively affects the effectiveness of the LMS.
- H4: Perceived usefulness positively influences LMS effectiveness.
- H5: User enjoyment positively contributes to LMS effectiveness.
- H6: User-implemented fairness has a positive effect on LMS effectiveness.

The study aimed to explore the influence of user-related factors on Learning Management System (LMS) effectiveness from a psychological perspective. A sample of 277 students from Chennai participated in the study. Participants were selected using purposive sampling method from those institutions which are using LMS.

The survey included measures of user self-efficacy, student learning style, faculty teaching style, perceived usefulness, user enjoyment, user-implemented fairness, and LMS effectiveness.

Results:

Table 1: Demographic details;

Items		Frequency	Percentage
Gender	Male	169	61
	Female	101	39
Age	15-18 years	75	27
	19-21 years	113	41
	Above 22 years	89	32
Education	Undergraduate	130	47
	Post-graduate	108	39
	Diploma/Professional courses	38	14

Source: Primary data

The demographic details of the study sample are presented in Table 1. The majority of participants were male (61%) compared to female participants (39%). In terms of age distribution, 27% of participants were between 15-18 years old, 41% were between 19-21 years old, and 32% were above 22 years old. Regarding education level, 47% of participants were undergraduate students, 39% were post-graduate students, and 14% were pursuing diploma/professional courses. These demographic details provide a snapshot of the characteristics of the study sample, which includes a diverse range of gender, age, and education level, contributing to the generalizability of the study findings.

Table 2 Correlation among variables:

		Self-	Learnin	Teachin	Usefulne	Enjoyme	Fairnes	LMS
		efficac	g style	g style	SS	nt	s	effectivene
		у						SS
Self-	Pearson	1	.581**	.604**	.525**	.617**	.569**	.624**
efficacy	Correlatio							
	n							
	Sig. (2-		.000	.000	.000	.000	.000	.000
Looming	Deerson	501**	1	501**	150**	520**	442**	550**
style	Correlatio	.301	1	.301	.438	.550	.442	.339
	n							
	Sig. (2- tailed)	.000		.000	.000	.000	.000	.000
Teaching	Pearson	.604**	.501**	1	.814**	.816**	.722**	.768**
style	Correlatio n							
	Sig. (2-	.000	.000		.000	.000	.000	.000
	tailed)							
Usefulness	Pearson	.525**	.458**	.814**	1	.771**	.615**	.744**
	Correlatio							
	n							
	Sig. (2- tailed)	.000	.000	.000		.000	.000	.000
Enjoyment	Pearson	.617**	.530**	.816**	.771**	1	.693**	.761**
5.5	Correlatio							
	n							
	Sig. (2-	.000	.000	.000	.000		.000	.000
	tailed)							
Fairness	Pearson	.569**	.442**	.722**	.615**	.693**	1	.693**
	Correlatio							
	n							
	Sig. (2-	.000	.000	.000	.000	.000		.000
	tailed)		**	**	**	**	**	
LMS	Pearson	.624**	.559**	.768**	.744**	.761**	.693**	1
effectivene	Correlatio							
SS	n 0'- (2	000	000	000	000	000	000	
	Sig. (2-	.000	.000	.000	.000	.000	.000	
talleu) ** Completion is simplificant at the 0.01 level (2 toiled)								

The correlation table reveals several significant relationships among the variables. User self-efficacy shows strong positive correlations with learning style (r = 0.581, p < 0.01), teaching style (r = 0.604, p < 0.01), perceived usefulness (r = 0.525, p < 0.01), enjoyment (r = 0.617, p < 0.01), fairness (r = 0.569, p < 0.01), and LMS effectiveness (r = 0.624, p < 0.01). This indicates that individuals with higher levels of self-efficacy are more likely to perceive the learning and teaching styles as effective, the system as useful, enjoyable, fair, and the LMS as effective.

Moreover, learning style demonstrates significant positive correlations with teaching style (r = 0.501, p < 0.01), perceived usefulness (r = 0.458, p < 0.01), enjoyment (r = 0.530, p < 0.01), fairness (r = 0.442, p < 0.01), and LMS effectiveness (r = 0.559, p < 0.01). This suggests that individuals with specific learning styles tend to prefer certain teaching styles and perceive the LMS as more useful, enjoyable, fair, and effective.

Faculty teaching style also shows strong positive correlations with perceived usefulness (r = 0.814, p < 0.01), enjoyment (r = 0.816, p < 0.01), fairness (r = 0.722, p < 0.01), and LMS effectiveness (r = 0.768, p < 0.01). This indicates that instructors adopting particular teaching styles are associated with higher perceptions of the LMS as useful, enjoyable, fair, and effective.

Perceived usefulness is positively correlated with enjoyment (r = 0.771, p < 0.05), fairness (r = 0.615, p < 0.05), and LMS effectiveness (r = 0.744, p < 0.05). This implies that individuals who perceive the LMS as useful are more likely to find it enjoyable, fair, and effective.

Additionally, user enjoyment demonstrates a significant positive correlation with fairness (r = 0.693, p < 0.05) and LMS effectiveness (r = 0.761, p < 0.05). This suggests that individuals who enjoy using the LMS also perceive it as fair and effective.

User-implemented fairness shows a significant positive correlation with LMS effectiveness (r = 0.693, p < 0.05), indicating that individuals who perceive the LMS as fair also tend to perceive it as effective.

These findings highlight the importance of user-related factors in influencing LMS effectiveness. Addressing these factors can potentially enhance the overall learning experience and outcomes for students.





Table 3: Hypothesis results

Dependent variable		Independent	Standardized	S.E.	C.R.	Р	Result
		variable	regression				
			weight				
LMS effectiveness	<	Self-efficacy	0.161	.035	3.403	0.000	H1 accepted
LMS effectiveness	<	Learning style	0.185	.030	3.913	0.000	H2 accepted
LMS effectiveness	<	Teaching style	0.223	.034	4.720	0.000	H3 accepted
LMS effectiveness	<	Usefulness	0.368	.030	7.800	0.000	H4
							accepted
LMS effectiveness	<	Enjoyment	0.257	.038	5.430	0.000	H5 accepted
LMS effectiveness	<	Fairness	0.270	.035	5.710	0.000	H6 accepted

The table displays the outcomes of the hypothesis testing, which illustrate the connections between user-related aspects and the efficacy of the learning management system. The efficiency of the LMS is the dependent variable, while the independent variable is the hypothesis being tested in each row. The standard error (S.E.) quantifies the accuracy of the estimate, whereas the standardised regression weight shows the direction and strength of the association. The p-value shows the likelihood of getting the result by chance, whereas the critical ratio (C.R.) measures the significance of the link.

Hypothesis (H1): User self-efficacy positively influences LMS effectiveness: The standardized regression weight for self-efficacy is 0.161, indicating a significant positive relationship (p < 0.001). This suggests that individuals with higher self-efficacy tend to perceive the LMS as more effective in supporting their learning.

Hypothesis (H2): Student learning style has a positive impact on LMS effectiveness: The standardized regression weight for learning style is 0.185, indicating a significant positive relationship (p < 0.001). This suggests that students with certain learning styles may find the LMS more effective in meeting their learning needs.

Hypothesis (H3): Faculty teaching style positively affects the effectiveness of the LMS: The standardized regression weight for teaching style is 0.223, indicating a significant positive relationship (p < 0.001). This implies that instructors who use effective teaching styles may enhance the perceived effectiveness of the LMS.

Hypothesis (H4): Perceived usefulness positively influences LMS effectiveness: The standardized regression weight for usefulness is 0.368, indicating a significant positive relationship (p < 0.001). This suggests that individuals who perceive the LMS as useful are more likely to find it effective in supporting their learning.

Hypothesis (H5): User enjoyment positively contributes to LMS effectiveness: The standardized regression weight for enjoyment is 0.257, indicating a significant positive relationship (p < 0.001). This implies that individuals who enjoy using the LMS are more likely to perceive it as effective.

Hypothesis (6): User-implemented fairness has a positive effect on LMS effectiveness: The standardized regression weight for fairness is 0.270, indicating a significant positive relationship (p < 0.001). This suggests that individuals who perceive the LMS as fair are more likely to perceive it as effective in supporting their learning.

These results highlight the importance of user-related factors in influencing LMS effectiveness. Addressing these factors can potentially improve the overall effectiveness of LMS and enhance the learning experience for students.

Implication of the study

The results of this study have several implications for the design and implementation of Learning Management Systems (LMS) in educational settings. Firstly, the finding that user self-efficacy positively influences LMS effectiveness suggests that efforts to enhance students' belief in their ability to succeed in using the LMS may lead to improved outcomes. This could involve providing support and resources to help students develop their digital skills and confidence in using online learning tools.

Secondly, the positive impact of student learning style on LMS effectiveness highlights the importance of personalized learning experiences. LMS should be designed to accommodate different learning styles, allowing students to engage with course materials in ways that align with their preferences and strengths.

Thirdly, the significant relationship between faculty teaching style and LMS effectiveness underscores the role of instructors in shaping students' experiences with the LMS. Educators should be encouraged to use teaching methods that promote active learning and engagement, as these are associated with higher perceptions of LMS usefulness, enjoyment, and effectiveness.

The finding that perceived usefulness, user enjoyment, and user-implemented fairness positively influence LMS effectiveness suggests that LMS design should prioritize usability, enjoyment, and fairness. Developers should strive to create user-friendly interfaces, engaging learning activities, and transparent assessment processes to enhance the overall user experience.

Conclusion

In conclusion, this study has provided valuable insights into the influence of user-related factors on Learning Management System (LMS) effectiveness from a psychological perspective. The findings support the hypothesis that user self-efficacy, student learning style, faculty teaching style, perceived usefulness, user enjoyment, and user-implemented fairness all play significant roles in determining the effectiveness of an LMS. The positive relationship between user self-efficacy and LMS effectiveness suggests that interventions aimed at enhancing students' belief in their ability to succeed in using the LMS can lead to improved outcomes. Similarly, the positive impact of student learning style and faculty teaching style on LMS effectiveness underscores the importance of personalized learning experiences and effective teaching practices in maximizing the benefits of LMS. The study also found that perceived usefulness, user enjoyment, and user-implemented fairness positively influence LMS effectiveness. This highlights the importance of designing LMS that are not only functional and easy to use but also enjoyable and fair, as these factors contribute to a positive user experience and enhanced learning outcomes.

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