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THE IMPACT OF LEARNING MANAGEMENT SYSTEM QUALITY ON STUDENT' PERFORMANCE: THE MEDIATING ROLE OF ACTUAL USAGE

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Abstract:

As a critical support platform for online learning, Learning Management Systems (LMS) play a vital role in modern higher education. While previous studies have confirmed a link between LMS use and academic success, the multi-stage pathways by which LMS quality affects learning performance have not been fully explored.This study employed a quantitative approach, distributing 447 questionnaires and analyzing 406 valid responses. PLS-SEM was used to examine the relationships among the variables. The results supported five hypotheses. Findings indicate that the quality of the U-Campus system positively influences perceived usefulness, which in turn is positively associated with actual usage. Moreover, actual usage significantly enhances students' English performance.The study confirms that actual system usage mediates the relationship between U-Campus quality and English performance, highlighting the critical role of frequent system engagement in improving academic outcomes. By offering empirical evidence on how LMS quality contributes to student learning, this research adds to the growing body of literature on digital learning platforms. Future research should expand the geographic scope and incorporate system-logged usage data to further validate these findings.

Keywords:

Learning Management System; LMS Quality; Actual Usage; Perceived Usefulness; English Performance

Introduction

With the continuous advancement of information technology, online education has experienced unprecedented growth and transformation. *China's 14th Five-Year Plan* (2020) highlights the strategic significance of harnessing the potential of online education, advocating for the enhancement of a lifelong learning system and the cultivation of a learning-oriented society (Xinhua News Agency, 2020). In alignment with this national vision, the *Guidelines for College English Teaching (2020 Edition)* underscore the importance of adopting a blended teaching model in college English instruction. These guidelines encourage educators to fully leverage online platforms to offer students flexible, self-directed learning pathways that integrate both online and offline resources.

The global outbreak of COVID-19 further accelerated the widespread adoption of online education, compelling institutions to reimagine traditional teaching paradigms(Butt et al., 2021; Destianingsih & Satria, 2020). Among various digital tools, learning management systems (LMSs) have emerged as a cornerstone of modern online education, experiencing significant advancements in functionality and usage (Veluvali & Surisetti, 2022). This digital shift presents a valuable opportunity to restructure and innovate college English curricula and pedagogical approaches, fostering a synergistic integration of online and face-to-face learning environments. Nevertheless, despite the widespread implementation of LMSs, a persistent challenge remains: students frequently display low levels of engagement in online learning contexts. This disengagement poses a serious threat to learning effectiveness and academic outcomes. Among the myriad factors influencing learner engagement, the overall quality of the learning management system has been identified as a critical determinant. A well-designed and user-friendly LMS can significantly enhance students' learning experiences by promoting active participation, sustained motivation, and improved performance(Saknee, 2024; Veluvali & Surisetti, 2022).

In recent years, learning effectiveness has garnered increasing attention in the field of higher education, and scholars have made notable progress in both theoretical and empirical studies (Panigrahi et al., 2021; Pichugin et al., 2022; Sharma et al., 2020; Shen & Lu, 2019; Tong et al., 2022) With the continued growth of online education, the use of LMSs in English teaching has become increasingly widespread, making it all the more urgent to accurately assess their impact on student performance. This study aims to fill this gap by investigating how overall quality of the LMS affects students' English learning outcomes, and by analyzing the mediating role of system usage. The goal is to provide valuable insights for optimizing English language instruction and improving student learning effectiveness.

The Learning Management System (LMS) is a comprehensive platform that integrates functions such as course management, learning resource distribution, online assignments, performance evaluation, and teacher-student interaction. It effectively supports the blended teaching model that combines online and offline instruction (Bradley, 2021). Through LMS platforms, universities can achieve standardized management of course content, visual monitoring of the teaching process, and precise analysis of student learning data. This assists instructors in refining their instructional design and enhancing teaching effectiveness. LMS platforms include systems such as Moodle, Blackboard, and Canvas. These platforms not only provide traditional course management functionalities but also incorporate intelligent features such as mobile learning, online quizzes, automatic grading, and progress tracking, which greatly expand the methods of teaching and learning (Bradley, 2021). The widespread adoption

of LMS in higher education has profoundly transformed language learning (Rulinawaty et al., 2023), creating new opportunities for broader and more flexible access to language education.

Despite LMS playing a central role in the innovation of teaching in higher education, its rapid adoption has also revealed several quality-related issues that impact the actual effectiveness of online instruction. System quality issues mainly involve the platform's stability, response speed, and user interface friendliness. Researchers have pointed out that some LMS platforms have overly complex interfaces, inconvenient navigation, and frequent crashes or slow response times—technical issues that negatively affect students' learning experience and motivation (Scoresby & Shelton, 2011).

Information quality is another key indicator for evaluating the effectiveness of LMS platforms, referring to the accuracy, comprehensiveness, and timeliness of course content (Abdallah et al., 2019). On some platforms, the content may be outdated, resources limited, or information scattered, making it difficult to meet students' diverse learning needs. Additionally, service quality is an equally critical factor, encompassing the timeliness of technical support, instructors' ability to provide online tutoring, and the platform's overall learning support services(Abdallah et al., 2019). Many students report that they are unable to receive timely and effective help when encountering technical problems or academic confusion, which results in a decline in learning efficiency.

Among the numerous published online learning initiatives, only 15% have succeeded in achieving their intended goals, while 40% have encountered partial setbacks (Al-araibi et al., 2019). Some university students do not adopt LMS and instead prefer traditional face-to-face communication (Abdel-Jaber, 2017). Technological and functional aspects not only determine students' willingness to use these platforms but also directly impact their learning efficiency and academic outcomes (Shah & Attiq, 2016).

Literature Review And Hypotheses Development

As a technological tool, various Learning Management System (LMS) platforms offer a broad range of functions to facilitate the delivery of learning materials to students. Salah and Thabet (2021) conducted a comparative study evaluating the features of 20 commercial and open-source LMS platforms. They identified commonly used features among educators and learners, including communication, collaboration, interface security, gamification, content and learning types, grading, reporting, and tools for creating and managing learning content (Salah & Thabet, 2021).

LMS platforms typically support essential functionalities such as course management, resource distribution, assignment submission, and grade tracking. The availability and stability of these functions directly influence students' learning experiences (Swerzenski, 2021). Research indicates that user-friendly and intuitive platforms significantly increase the frequency of student usage and improve learning efficiency (Sun et al., 2017). Besides delivering structured course content, LMSs also facilitate interaction among students and instructors, fostering personalized and flexible learning environments. Online discussion forums, for example, enhance communication by enabling instructors to respond more effectively to student inquiries and needs, thereby improving instructional support (Snowball & Mostert, 2010).

Interface design also plays a key role in promoting user engagement. Researchers argue that well-designed interfaces can induce flow states and enhance the overall user experience. Features such as cross-device compatibility and system responsiveness significantly affect user satisfaction. Conversely, inadequate mobile optimization can lead to technical difficulties and reduce students' motivation to engage in learning activities (Kauffman, 2015).

Perceived usefulness is a critical factor influencing technology adoption (Al-Adwan et al., 2023; Almaiah & Alismaiel, 2019; Liu & Ma, 2024). According to the Technology Acceptance Model (TAM), a user's evaluation of a tool's value—its perceived usefulness—is a strong predictor of their behavioral intention to use it. For instance, Liu and Ma (2024) found that students who perceived ChatGPT as useful for English learning were more likely to adopt and continue using it outside the classroom. Perceived usefulness thus plays a key mediating role; students who believe that a platform contributes to their academic success are more likely to immerse themselves in the learning process and use the system more frequently (Huang et al., 2023; Kong & Wang, 2021).

In Chinese higher education, numerous LMS platforms have been adopted to support language instruction. Equipped with comprehensive functionalities and mature web technologies, these systems have become indispensable tools for foreign language teaching and learning (Pichugin et al., 2022). Among them, U-Campus is one of the most widely used LMS platforms for English language teaching. As of July 2023, it had been adopted by 1,700 institutions nationwide, with 40,000 registered teachers and 8 million registered students, supporting 45,000 courses and 340,000 active classes (Foreign Language Teaching and Research Press, 2023).

Despite its widespread implementation over the past seven years, there is limited evidence that U-Campus has significantly improved college students' English performance. Official statistics indicate a steady decline in the passing rate of the College English Test Band 4 (CET-4) from 2017 to 2021, with no updated data available for 2022–2023 (Global Green Ivy, 2024). Additionally, the Global IELTS Candidate Performance Report (2023) shows that test-takers from mainland China ranked 29th out of 40 countries, consistently scoring below the global average in speaking and writing (IELTS, 2023).

The integration of online learning platforms into higher education has profoundly transformed language acquisition, offering students greater flexibility and accessibility (Rulinawaty et al., 2023). This transformation presents opportunities for more inclusive and scalable language learning. Therefore, exploring the impact of U-Campus quality on students' English performance is both timely and necessary. Although widely implemented, relatively few empirical studies have examined the actual effects of U-Campus on English achievement.

A keyword search on CNKI (China National Knowledge Infrastructure) using "U-Campus" yielded 145 relevant studies, comprising 131 journal articles, 12 theses, and 3 conference papers. Of these, only 51 (36%) were empirical studies, while the remaining 94 (64%) were conceptual or theoretical. This indicates a gap in evidence-based research and highlights the need for more rigorous data collection and analysis to improve research validity and reliability.

This study integrates the Technology Acceptance Model (TAM) (Davis, 1989) and the DeLone and McLean Information Systems Success Model (DMISM) (DeLone & McLean, 2003) to develop a comprehensive framework for examining the impact of U-Campus quality on students' English performance (Figure 1). In TAM, perceived usefulness (PU) is a key determinant of users' behavioral intention and actual usage, reflecting the extent to which an individual believes that using a particular system will enhance their performance. DMISM, on the other hand, emphasizes three dimensions of information system quality—system quality, information quality, and service quality—as critical predictors of system use and user satisfaction, ultimately influencing performance outcomes. In this study, U-Campus Quality (UCQ) represents a second-order construct encompassing system quality, information quality, and service quality, derived from DMISM. UCQ is hypothesized to influence Perceived Usefulness (PU), as a high-quality learning management system (LMS) can enhance students' perception of its value for learning. PU, in turn, is expected to promote Actual Usage (AU), which in this research is measured by usage frequency and duration. UCQ is also posited to have a direct effect on AU, reflecting the idea that a well-designed LMS encourages more frequent and sustained engagement. The model further hypothesizes that AU positively affects English Performance (EP), as more frequent and sustained use of the platform provides students with greater access to learning resources, practice opportunities, and timely feedback. Additionally, UCQ may have a direct effect on EP by creating a more efficient and supportive learning environment that facilitates academic achievement.

Building on this foundation, the present study investigates student engagement and performance in College English courses at three universities in Ganzhou, China. The research aims to answer the following questions:

1. To what extent does the quality of the learning management system enhance learners' actual usage (time and frequency)?
2. To what extent does actual usage (time and frequency) mediate the relationship between learning management system quality and student performance?
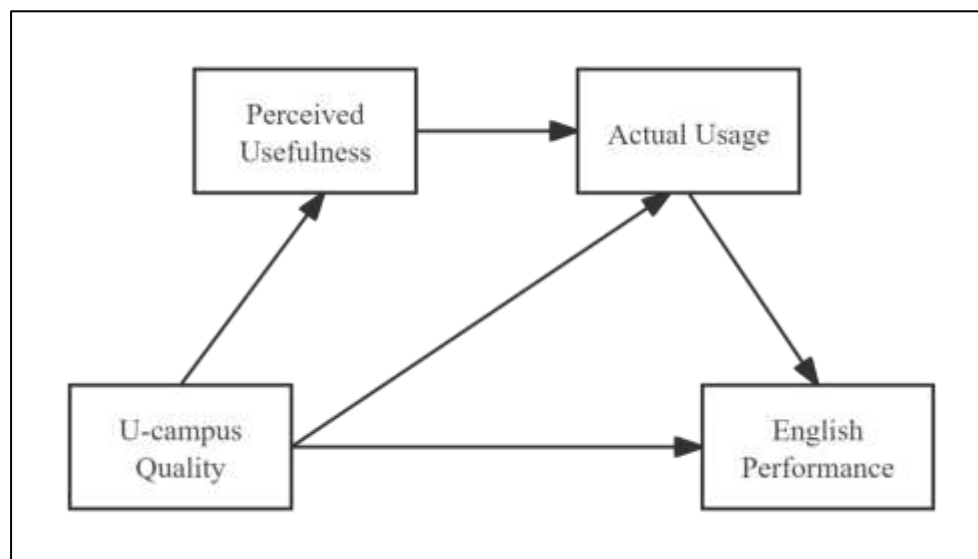
Figure 1: The Research Framework

Hypotheses Development

U-campus Quality and Perceived Usefulness

U-Campus quality, as a learning management system, encompasses system quality, information quality, and service quality (Butt et al., 2021; Kim et al., 2021). System quality refers to the platform's functionality, speed, features, content, and interactivity, and is a key determinant of perceived usefulness (Al-Fraihat et al., 2020; Alshurideh et al., 2019; Alyoussef, 2023; Boubker, 2024). For example, Jaber (2016) found that 70% of university students preferred e-learning systems that save time and effort and offer easy access and fast navigation (Jaber, 2016). Similarly, Mahmodi (2017) reported that system quality significantly affects perceived usefulness among Payam Noor University students (Mahmodi, 2017). Therefore, this study proposes the following hypothesis:

H1 : U-campus quality is positively related to perceived usefulness.

Perceived Usefulness and Actual usage

Perceived usefulness, as defined by Davis (1989), is the degree to which users believe a system enhances their performance. The greater the perceived performance benefit, the more likely users are to adopt the system. It is a key factor influencing users' intentions toward information technology and plays a crucial role in system adoption (Al-Adwan et al., 2023; Almaiah & Alismaiel, 2019; Larmuseau et al., 2018; Liu & Ma, 2024). Liu and Ma (2024) found that EFL learners' positive perceptions of ChatGPT's usefulness significantly predicted their intention to use it, which in turn led to higher actual usage in informal English learning. Similarly, Larmuseau et al. (2018) reported that greater perceived usefulness correlates with increased frequency and engagement in e-learning system use.Therefore, the following hypothesis is made:

H2: Perceived usefulness is positively related to actual usage.

Actual Usage and English Performance

Actual system usage is a key factor influencing academic performance in educational technology (Venkatesh et al., 2003). Research shows that the time and frequency of using learning management systems significantly impact student achievement (Larmuseau et al., 2018; Ni & Cheung, 2023; Nkomo & Nat, 2021; Russell et al., 2020; Sharma et al., 2020). Frequent engagement with these systems is linked to better learning outcomes, including improved comprehension, retention, and academic success (Isaac et al., 2017; Wang & Teo, 2020). This underscores the importance of consistent system use in enhancing student performance in digital learning environments.So, it is hypothesized that:

H3: Actual usage of the system is positively related to English performance.

Mediating Role of Perceived Usefulness &Actual Usage

It has been observed that a higher level of overall quality of the system leads to the enhanced perceived usefulness of the system and indirectly affects actual usage of the system via perceived usefulness. Here, perceived usefulness and actual usage are the keys to this postulate (Isaac et al., 2017). Thus, the literature indicates that performance can be influenced by actual usage, which in turn is affected by perceived usefulness. (Isaac et al., 2017). Perceived usefulness is significantly determined by the quality of the system (Aldholay et al., 2018). Evidently, U-campus quality has a positive influence on academic performance via perceived usefulnesss and actual usage of the system. Therefore, the following hypothesis is made:

H4:U-campus quality is positively related to actual usage through the mediating role of the perceived usefulness.

H5: U-campus quality is positively related to English performance through mediating role of perceived usefulness and actual usage of the system.

Methodology

This study employs a survey questionnaire as the primary data collection method. The rationale for using a survey is that this study aims to explore the relationships and correlations between variables, and surveys are well-suited for gathering behavioral and attitudinal data (Saunders, 2012).

Research Design

The questionnaire is designed using a 7-point Likert scale, where each statement provides seven possible responses ranging from "1 = Strongly Disagree" to "7 = Strongly Agree", with corresponding scores from 1 to 7. The estimated completion time for the survey is approximately 7 to 10 minutes. The items in the questionnaire are adapted from previous studies (Aldholay et al., 2020; Jackson et al., 2008; Venkatesh & Davis, 2000) to ensure content validity.

Data Collection and Sampling

This study employed a quantitative approach, distributing 447 questionnaires and analyzing 406 valid responses.The data were collected from three undergraduate universities in Ganzhou, China. The target participants were second-year non-English major students who had been using the U-Campus Learning Management System (LMS) for over a year. This group was selected because their consistent and prolonged exposure to the system allows them to provide more reliable evaluations of LMS quality and its impact on their learning experience and academic performance.

The questionnaire was distributed using Questionair Star (a Chinese online survey platform) to facilitate data collection. The variables and dimensions in the study are shown in the table 1 below.

Table 1: List of Variables and Dimensions

Variable	Dimensions / Measurement
U-Campus Quality	1.System quality (e.g., stability, response speed, ease of use)
	2.Information quality (e.g.,accuracy,completeness, relevance of content)
	3.Service quality (e.g., timeliness and effectiveness of technical support)
Perceived Usefulness	Assesses students' subjective evaluation of U-Campus's usefulness and value in their learning.
Actual Usage	1.Frequency (weekly usage count) .
	2.Duration (average study hours per week)
English Performance	Final English exam scores

A structured questionnaire was employed to collect data, and standardized scales were used to measure each variable, ensuring the reliability and validity of the data.

Data Analysis And Findings

All statistical data in this study were generated using SPSS 20 and SmartPLS 4.0 software. SPSS 20 was used for descriptive statistical analysis and reliability evaluation. SmartPLS 4.0 was employed for Structural Equation Modeling (SEM) analysis to test the hypothetical model and assess the relationships between U-Campus quality, perceived usefulness, actual usage, and English performance. Through these data analysis methods, the paper aim to deeply explore the impact mechanism of the U-Campus learning management system on students' English performance.

Descriptive Analysis

This study presents the descriptive statistics for each variable and dimension. U-Campus quality is divided into three dimensions: system quality, information quality, and service quality. The mean score for system quality was 4.594 with a standard deviation of 1.317; for information quality, the mean was 4.61 with a standard deviation of 1.264; and for service quality, the mean was 4.644 with a standard deviation of 1.347. Similarly, the mean of perceived usefulness was 4.744 with a standard deviation of 1.143, and the mean of actual usage was 4.616 with a standard deviation of 1.501. Finally, the mean score for English performance was 2.978 with a standard deviation of 1.195. These results indicate low coefficients of variation (CV = Mean/SD), suggesting the data are not widely dispersed, which is an indicator of reliable responses. Skewness and kurtosis values also suggest that the data follow a normal distribution, as skewness falls within the range of −1.0 to +1.0 and kurtosis values are below 10, indicating an acceptable normal distribution, as shown in Table 2.

Table 2: Descriptive Statistics

Items	Min	Max	Mean	Std.Deviation	Skewness	kurtosis
SQ	1	7	4.594	1.317	-0.811	0.363
IQ	1	6.75	4.61	1.264	-0.77	0.227
SEQ	1	7	4.644	1.347	-0.771	0.134
PU	1.5	6.75	4.744	1.143	-0.559	-0.122
AU	1	7	4.616	1.501	-0.574	-0.407
EP	1	5	2.978	1.195	-0.044	-0.816

Note: SQ=System Quality; IQ=Information Quality; SEQ=Service Quality; PU=Perceived Usefulness; AU=Actual Usage; EP=English Performance

Reliability And Validity

This study used SmartPLS 5 to calculate the reliability and validity of the latent variables (Table 3). Cronbach's alpha (α), which reflects internal consistency reliability, is one of the most commonly used methods in scientific research. A higher α value indicates greater consistency among questionnaire items, reflecting stronger reliability. An α below 0.6 suggests

low reliability, requiring a revision of the questionnaire or removal of problematic items, while values above 0.9 indicate highly stable results. Values between 0.7 and 0.8 are considered moderately stable.

In this study, all latent variables had Cronbach's alpha values above 0.8, indicating high internal consistency and good reliability. The Average Variance Extracted (AVE) for each latent variable exceeded 0.7, and Composite Reliability (CR) values were all above 0.9, demonstrating strong convergent validity of the scale.

Table 3: Reliability And Validity

Var	Cronbach's alpha (>0.7)	Composite reliability (>0.7)	AVE (>0.5)
SQ	0.916	0.94	0.798
IQ	0.911	0.937	0.789
SEQ	0.895	0.935	0.827
PU	0.891	0.924	0.754
AU	0.893	0.949	0.903

Note: SQ=System Quality; IQ=Information Quality; SEQ=Service Quality; PU=Perceived Usefulness; AU=Actual Usage; EP=English Performance

Path Analysis and Hypothesis Testing
In this study, the path effect test was conducted using smartpls software and the results include standardised coefficients, t-values, and p-values. According to Table 3, it can be seen that U campus quality has a significant positive effect on perceived usefulness with a path coefficient (β) of 0.498 and a standard error of 0.054. t-value of 9.303 and p-value of 0 indicate that U campus quality has a significant positive effect on perceived usefulness. The confidence interval is [0.387, 0.597] showing that this effect is highly statistically significant and reliable.

Perceived usefulness has a significant positive effect on actual use with a path coefficient of 0.334 and a standard error of 0.048. t-value of 6.978 and a p-value of 0 indicate that perceived usefulness significantly increases the frequency of actual use. The confidence interval is [0.236, 0.425] indicating that this effect is statistically significant.

Actual usage has a significant positive effect on English performance with a path coefficient of 0.4 and a standard error of 0.041. t-value of 9.779 and a p-value of 0 indicate that practical use behaviour has a significant and very strong positive effect on academic performance. The confidence interval is [0.318, 0.48], which further supports the critical role of practical use in academic performance improvement.

Table 4：Results for the Direct Hypothesis

Hypotheses	Path	β	Se	t	*P*	5%	95%	Result
H1	UCQ→PU	0.498	0.054	9.303	0.000	0.387	0.597	Accepted
H2	PU→AU	0.334	0.048	6.978	0.000	0.236	0.425	Accepted
H3	AU→EP	0.4	0.041	9.779	0.000	0.318	0.48	Accepted

Note: SQ=System Quality; IQ=Information Quality; SEQ=Service Quality; PU=Perceived Usefulness; AU=Actual Usage; EP=English Performance

The main method of mediation effect test is the product coefficient method test. If it shows significance, then it means that there is a mediating effect, and vice versa does not have significance, then it means that there is no mediating effect. The specific Bootstrap sampling method test is a*b this regression coefficient of the 97.5% confidence interval includes the number 0; if the confidence interval does not include the number 0, then it means that there is a mediating effect; if it says that the confidence interval includes the number 0, that is, it means that there is no mediating effect.The test results are as follows:

Table 5 Results for the Indirect Hypothesis

Hypotheses	Effect	Se	t	p	5%	95%	Result
UCQ→PU→AU	0.167	0.029	5.755	0.000	0.111	0.225	Accepted
UCQ→PU→AU→AP	0.067	0.014	4.823	0.000	0.042	0.095	Accepted

Note: SQ=System Quality; IQ=Information Quality; SEQ=Service Quality; PU=Perceived Usefulness; AU=Actual Usage; EP=English Performance

According to Table 5, in the path "UCQ → PU → AU," the indirect effect of perceived usefulness is 0.167 with a standard error of 0.029. The t-value is 5.755 and the p-value is 0, indicating a significant mediating effect. The confidence interval [0.111, 0.225] suggests that U-Campus quality increases actual usage through perceived usefulness.

In the path "UCQ → PU → AU → AP," the indirect effect of perceived usefulness and actual usage is 0.067 with a standard error of 0.014. The t-value is 4.823 and the p-value is 0, showing statistical significance. The confidence interval [0.042, 0.095] indicates that U-Campus quality indirectly influences academic performance through perceived usefulness and actual usage.

Discussion
This study investigated the relationships among U-Campus Quality (UCQ), Perceived Usefulness (PU), Actual Usage (AU), and English Performance (EP) by collecting empirical data from three universities in Ganzhou, China. The findings affirm that the quality of a learning management system (LMS) is significantly and positively associated with students' perceptions of its usefulness. In particular, when an LMS demonstrates excellence across multiple dimensions—namely system quality, information quality, and service quality— students are more likely to perceive it as beneficial and effective for their academic pursuits. A robust and well-functioning system, characterized by smooth performance, an intuitive and

user-friendly interface, accurate and timely information delivery, and responsive support services, contributes to students' positive attitudes toward the platform. These elements collectively foster trust, engagement, and reliance on the LMS, thereby enhancing its perceived usefulness and encouraging continued use in their learning processes. This finding is consistent with existing research (Al-Fraihat et al., 2020; Alshurideh et al., 2019; Alyoussef, 2023; Boubker, 2024; Rui-Hsin & Lin, 2018), further confirming the critical role of the quality of the technological system on the perceived usefulness of users, and provides an important reference for the design and optimisation of digital tools in education.

This study identified a positive relationship between perceived usefulness and actual usage of the U-Campus learning management system, consistent with earlier findings (Al-Adwan et al., 2023; Almaiah & Alismaiel, 2019; Larmuseau et al., 2018; Liu & Ma, 2024). Students who view the system as beneficial and effective tend to use it more often and engage with its features for longer periods. When they see the system as a tool that saves time, boosts efficiency, and supports their learning objectives, they are more likely to incorporate it into their routine. For example, if the platform's interactive tools help them understand complex English grammar, they are more motivated to log in regularly.

The positive correlation between actual system usage and student performance in English suggests that increasing the frequency and duration of system usage may improve student performance in English. On one hand, greater usage provides more opportunities to access learning resources and engage in online activities, reinforcing language knowledge and skills. On the other hand, consistent use may help students develop regular study habits, further boosting their learning efficiency(Larmuseau et al., 2018; Ni & Cheung, 2023; Nkomo & Nat, 2021; Russell et al., 2020; Sharma et al., 2020).In the context of U-Campus, actual usage is the key link between LMS quality and English performance. Continuous and frequent platform interactions are emphasised as an important strategy to enhance student learning outcomes.

Contribution to Theory, Practice
This study makes an important theoretical and practical contribution to understanding the impact of learning management system (LMS) quality on student performance. Theoretically, it integrates the Technology Acceptance Model (TAM) with the DeLone and McLean Information Systems Success Model (D&M IS Success Model) to provide a more comprehensive framework for analysing the relationship between LMS quality, user acceptance, and ultimately, learning outcomes from multiple perspectives. In addition, this study provides educators and policy makers with valuable practical references on how to optimise the functionality and design of LMSs to improve students' English language learning outcomes. By implementing the strategies and recommendations proposed in this study, educational organisations can make more effective use of digital technologies to promote a positive learning experience, which in turn will enhance the overall quality of education.

Challenges, Future Directions, and Improvement Plans
This study was limited to Ganzhou, China, which restricts the generalizability of the findings. Variations in educational systems, economies, and cultures elsewhere may influence how learning management systems affect student performance. Future research should broaden the geographic scope to include more diverse contexts. Additionally, due to administrative restrictions at one university, system-generated data on actual usage could not be obtained, leading to reliance on self-reported data. This may introduce self-selection bias and affect result

accuracy. Future studies should aim to use system-logged data for more objective and reliable measures. Addressing these limitations will help provide a more comprehensive understanding of LMS impacts on student outcomes

Acknowledgement

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