JOURNAL OF CULTURAL ANALYSIS AND SOCIAL CHANGE

Journal of Cultural Analysis and Social Change,
2025, 10(2), 290-302
ISSN: 2589-1316

Determining the Most Important Factors of Learning Management System Quality Measures That Are Related to Students' Academic Performance

Hazem Aldabbas [1]*, Liza Gernal [2], Abdallah M. Elamin [3], Ahmed ZE. Ahmed [4]

[1] *College of Business Administration, Fujairah University, Fujairah,* UAE, *hazem.aldabbas@outlook.com, https://orcid.org/0000-0002-0632-1732.*
[2] *College of Business Administration, Fujairah University, Fujairah,* UAE, *l.gernal@fu.ac.ae, https://orcid.org/0000-0002-2219-7866.*
[3] *College of Business Administration, Fujairah University, Fujairah,* UAE, *a.elamin@fu.ac.ae, https://orcid.org/0000-0003-4984-9307.*
[4] *College of Business Administration, Fujairah University, Fujairah,* UAE, *a.zainelabdin@fu.ac.ae, https://orcid.org/0000-0002-1158-4350.*

*__Corresponding Author:__ hazem.aldabbas@outlook.com

Citation: Aldabbas, H., Gernal, L., Elamin, A. E. and Ahmed, A. ZE. (2025). Determining the Most Important Factors of Learning Management System Quality Measures That Are Related to Students' Academic Performance, *Journal of Cultural Analysis and Social Change*, 10(2), 290-302. https://doi.org/10.64753/jcasc.v10i2.1597

Published: November 11, 2025

ABSTRACT

Learning Management Systems (LMS) have become indispensable in today's higher education landscape, offering flexible, technology-driven learning environments for students worldwide. Yet, one key question remains: what truly drives student academic success in these digital platforms? This study explores that question by examining the role of various quality dimensions in shaping academic performance. Grounded in the well-established DeLone and McLean Information System Success Model (2003), the research analyzes responses from 103 business students at two universities in the United Arab Emirates (UAE), using regression analysis to test the proposed model. The results reveal that four dimensions—learner quality, course content quality, educational system quality, and instructor quality—have a significant and positive impact on students' academic achievement. Surprisingly, technical system quality, service quality, and support system quality did not show a meaningful influence. Collectively, the seven quality factors explain an impressive 75% of the variation in academic performance. These findings highlight where universities should focus their efforts: enhancing the quality aspects that directly shape students' learning experiences. By doing so, institutions can not only improve student outcomes but also elevate the overall effectiveness of LMS platforms—ultimately supporting the advancement of higher education in the UAE and beyond.

Keywords: Learning Management System (LMS); Quality Measures; Students' Academic Performance; United Arab Emirates (UAE)

INTRODUCTION

The Learning Management System (LMS) has become a cornerstone of contemporary education, widely embraced by higher education institutions for delivering courses and facilitating learning (Al-Fraihat et al., 2020; Turnbull et al., 2022). LMS is a crucial 21st-century educational tool that has a big impact on the design and feel of academic settings (Aparicio et al., 2016). Universities have shifted away from traditional teaching methods as a

result of students' increased dependence on digital platforms (Al-Adwan et al., 2021). These days, learning management systems (LMS) offer a complete learning environment that includes digital course materials, syllabi, tests, and interactive online forums (Firman et al., 2021). Additionally, it has been shown that traditional LMSs are crucial for tracking student progress and arranging instructional materials (Pansri et al., 2024). In addition to providing tools to manage student registration and monitor academic performance, they enable educators to create, oversee, and distribute organized content, such as documents, videos, quizzes, and assignments. For example, according to Bradley (2021, p.92), an LMS is a technological tool that offers features like management tracking, tailored instruction, and facilitative learning that go beyond the instructional contest.

Various LMS platforms—such as Moodle, Blackboard, Canvas, or custom-developed systems—offer dynamic and interactive features including forums, announcements, assignment submissions, plagiarism checks through Turnitin, and grade reporting. These platforms create a virtual classroom environment that enhances the educational experience for both instructors and learners (Bradley, 2021). However, in several Arab countries, the effectiveness of LMS remains uncertain (Snoussi, 2019). Therefore, educators in these regions are encouraged to lead the integration of innovative digital tools into teaching practices (Snoussi, 2019). Although many universities in the Arab Gulf Countries (AGC) have adopted LMS successfully, research into how these systems are used remains limited (Sulaiman, 2024).

This study emerges from an urgent need, as universities in the United Arab Emirates (UAE) are increasingly acknowledging the strong correlation between the quality of e-learning systems and student academic performance (Abdellatif et al., 2023; Aldabbas et al., 2025; Shahin & Arfaj, 2022; Shishakly, 2021). Although the relationship between e-learning quality and educational outcomes has been extensively explored in the global context, our research seeks to address this topic within the UAE's unique educational environment. The UAE government has invested heavily in strengthening higher education, paving the way for the widespread use of e-learning platforms in universities across the country. While these digital advancements mark important progress, challenges still persist. Many institutions face issues such as low adoption rates, limited user engagement, and high dropout levels. What's more, there remains a clear gap in empirical research exploring how the quality of e-learning systems directly impacts students' academic success within the UAE context (Vuckovic et al., 2023).

A growing body of research has examined how different aspects of e-learning systems influence students' academic performance (Al-Adwan et al., 2021; Aldabbas et al., 2025; Al-Fraihat et al., 2020; Al Mulhem, 2020; Mohammadi, 2015; Seta et al., 2018). However, there is still limited clarity on which specific factors play the most influential role. These factors typically include Learner Quality (LQU), Course Content Quality (CCQ), Educational System Quality (ESQ), Instructor Quality (INQU), Technical System Quality (TSQ), Service Quality (SQU), and Support System Quality (SSQ), each contributing differently to students' academic outcomes.

The purpose of this study is to investigate how various facets of e-learning quality impact students' academic achievement at two UAE universities. Although earlier studies have emphasized the general significance of LMS quality in influencing student results, this investigation delves deeper to identify the precise quality elements that actually have an impact. One main issue drives the investigation: Which aspects of LMS quality significantly affect students' academic performance?

The Technology Acceptance Model (TAM), which has been the most popular framework in LMS research throughout AGC, is the theoretical foundation upon which this study is based (Sulaiman, 2024). In the world of information systems, TAM has demonstrated remarkable efficacy in forecasting user acceptance and usage patterns (Davis & Venkatesh, 1996). Furthermore, TAM has been used in recent research to investigate how associated factors influence students' intentions to stick with their studies (Ashrafi et al., 2022). The following section presents the development of our research hypotheses.

HYPOTHESES DEVELOPMENT

The Relationship Between Learner Quality and Students' Academic Performance

This literature discusses the linkage between learner quality and academic performance. Learner quality is a determining factor for e-learning services to have an effect on sustainable learning and academic performance (Alam et al., 2021). Parental motivation and the learning environment's quality, such as living conditions, enhance students' academic performance (Kamaruddin et al., 2009). Environmental quality and time perspective explain about 14% of the variation in Grade 12 students' academic performance, even though the practical relevance of time perspective is modest (van der Linde et al., 2010). For forecasting academic performance, machine learning methods, most notably classification techniques, have been utilized by educational institutions to examine student information and enhance educational management (Molina-Astorayme & Cabanillas-Carbonell, 2020). Moreover, an empirical study involving 258 participants in China found that academic self-efficacy directly predicts academic

achievement and also indirectly influences it through the mediating role of academic engagement (Meng, & Zhang, 2023).

These studies highlight just how complex and multifaceted the factors influencing academic performance truly are. They also emphasize the value of using data-driven approaches to improve student outcomes. Understanding how different elements—like learner engagement or system quality—connect to academic results is essential for evaluating how well institutions are supporting their students and for identifying areas that need improvement. Often overlooked in traditional assessments, external influences—such as how actively students interact with their learning materials—can have a big impact on academic success (Bonney et al., 2015). Moreover, research has shown that students who regularly attend school tend to achieve better academically, suggesting that a supportive environment and strong attendance culture can meaningfully contribute to student achievement (Blömeke et al., 2016).Therefore, effective use of LMS and its features can foster student engagement and contribute to improved academic performance (Oguguo et al., 2021). Based on this understanding, the following hypothesis is proposed
H1. Learner quality positively influences their academic performance

The Relationship Between Course Content Quality and Students' Academic Performance

Studies have shown that co-creating content and course quality have a profound effect on academic outcomes. Students co-creating their own study materials like multiple-choice questions and videos displayed enhanced academic performance (Doyle et al., 2020). A vocational teacher training study, however, observed very little correlation between learning media course academic scores and learning media production quality, indicating discrepancy between knowledge and skills (Ramadhan et al., 2024). In online mixed-mode courses, some tracking variables such as the number of online sessions and posts published were determined to forecast academic performance (Lin & Chiu, 2013). Furthermore, nursing students' attitudes towards the dimensions of course quality such as instructor traits and teaching approach exhibited a positive association with their grades (Awad, 2015). An empirical analysis involving 250 university students in Saudi Arabia found that quality dimensions—specifically course content quality, system quality, and service quality—positively and significantly impact students' satisfaction with the e-learning system (Al Mulhem, 2020). Quality aspects—such as course content, instructional approaches, and technological support—directly shape students' learning experiences (Moore & Kearsley, 2012). Nonetheless, this relationship is multifaceted and may be moderated by psychological and behavioral factors, including perceived usefulness, satisfaction, and system use (Venkatesh et al., 2003). These results emphasize the quality of course content and student involvement as determinants in the improvement of academic performance in different educational settings. Based on this understanding, the following hypothesis is proposed
H2. Course Content Quality positively influences students' academic performance

The Relationship Between Educational System Quality and Students' Academic Performance

Current literature examines the link between educational system quality and academic performance. Academic performance is considered a multifaceted construct that can be affected by a variety of variables beyond just numerical grades (Ariza et al., 2018). Educational Recommender Systems (ERS) have been proposed to improve the quality of education by recommending resources to learners and instructors with a view to enhancing graduation rates and academic performance (Aucancela et al., 2023). Classification approaches are the most common machine learning method used to predict academic success, and these methods are growing in popularity (Molina-Astorayme & Cabanillas-Carbonell, 2020). According to a comparative study of 19 countries, equality and educational quality are positively correlated, suggesting that less varied educational systems provide higher levels of equality and quality. This contradicts the idea of a trade-off between these factors and emphasizes the role of institutional structures in determining educational outcomes (Pfeffer, 2015). According to TAM, individuals' perceptions of new technology significantly influence their willingness to adopt and use it. The model asserts that users form their decisions based on how they assess available information and their intentions, enabling rational and informed choices (Nasir et al., 2021). Students' satisfaction with e-learning played a significant mediating role in the relationship between e-learning quality and their academic performance (Keržič et al., 2021).

Students' academic engagement and achievement are significantly shaped by their access to internet-connected devices, high-quality educational resources, and general convenience of accessing education, in addition to internal learning elements (Dey, 2017). These results demonstrate that how well students and teachers utilize the skills and resources at their disposal frequently determines how quality measures affect academic performance. LMS can improve learning at all educational levels when used carefully, providing significant assistance for both online and in-class settings (Prahani et al., 2022). Likewise, students are expecting more and more rich, high-quality educational experiences from LMS platforms (Alsabawy et al., 2016). The following theory is put forth in light of these arguments.

H3. Educational system quality positively influences students' academic performance

The Relationship Between Instructor Quality and Students' Academic Performance

Although the complexity of the subjects is a moderating factor, beginner students' performance is improved by excellent instruction from seasoned teachers (Berger & Hänze, 2015). The findings indicate a strong connection between teacher quality, instructional effectiveness, and students' perceived usefulness, highlighting the critical role of quality measures in influencing academic achievement (Blömeke et al., 2016). Academic staff quality is an essential factor in higher education accreditation, and different facets of staff quality interrelate (Wike & Cahyasari, 2019). Both 'quality teaching' and 'teacher quality' are significant determinants of student outcomes in comparative tests (Belsito, 2016). Research indicates that students who are taught by well-qualified instructors generally achieve higher academic performance (Engida et al., 2024). A total of 242 undergraduate students from a university in China participated in this study, the findings revealed that teaching quality is associated with student academic performance both directly and indirectly, with student engagement acting as a mediator in this relationship (Yilmaz, 2023).

Curiously, students' definitions of effective teaching are influenced by achievement goals. Students with mastery goals prefer teachers who intellectually challenge them and have topic expertise, while students with performance goals prefer straightforward presenters who offer signals for success (Senko et al., 2012). These results reinforce the intricate interaction between teaching quality and academic performance, calling for multidimensional solutions to improve teaching competence. Based on this understanding, the following hypothesis is proposed

H4. Instructor quality positively influence students' academic performance

The Relationship Between Technical System Quality and Students' Academic Performance

Studies have shown that frustration with information technology use can impact the learning environment and academic performance (Khanlarian & Singh, 2015). Additionally, research indicates that heavy technology use is correlated with lower academic performance, especially among adolescents (Sampasa-Kanyinga, et.al. 2022). Technical aspects—such as the reliability, usability, and accessibility of the learning platform—also play a critical role in shaping students' satisfaction with online learning. A study involving 254 students demonstrated a strong and direct relationship between e-service quality, system use, and user satisfaction (Shams et al., 2022).

In the realm of academic subjects, mathematics and science have been the focus of many studies regarding the relationship between academic performance and ICT use (Valverde-Berrocosoe, et.al. 2022). Another study aims to explore the relationship between educational technology, academic passion, and academic performance among English Foreign Language learners (Zhou, & Izadpanah, 2023). Furthermore, academic performance is a good indicator of meta-creativity and that it has a beneficial effect on academic performance (Villalustre, Cueli, & Zarzuelo, 2024). Based on this understanding, the following hypothesis is proposed

H5. Technical system quality positively influences students' academic performance

The Relationship Between Service Quality and Students' Academic Performance

Service quality has been identified as a key determinant of student satisfaction in higher education. Research highlights that service quality, along with students' expectations and perceived value, significantly influences their overall satisfaction (Keržič et al., 2021). In the context of higher education, an empirical study verified a favorable relationship between perceived quality and student happiness (Kanwar et al., 2022).

According to research, service quality significantly influences how students experience their academic careers, especially when it comes to aspects like assurance, empathy, and dependability that are directly related to student satisfaction (Twum & Peprah, 2020). In the context of higher education, excellent academic services can help students succeed academically overall in addition to increasing the value of education. The effectiveness of technical support and responsiveness—more especially, how quickly and consistently users receive assistance, as well as how well support services exhibit empathy and assurance—are frequently used to assess service quality within LMS (Simelane-Mnisi & Mthimunye, 2025). The significance of service quality in promoting student loyalty and satisfaction in academic contexts is further supported by empirical data (Nguyen et al., 2024). This study aims to investigate how service quality, particularly in digital learning environments, shapes student satisfaction and engagement, even though a large portion of the literature currently in publication concentrates on teaching quality as a driver of student motivation and success (Ahmed et al., 2010).

Furthermore, studies have shown that social integration can greatly reduce academic pressure, improve performance, and raise student satisfaction levels overall (Chen et al., 2023). Students are more likely to succeed academically when they experience social support and connection. The importance of service quality in influencing the educational experience is further supported by research showing a high and positive correlation between

student satisfaction and the caliber of academic and administrative services (Amoako et al., 2023). These results imply that students' achievement can be significantly influenced by a well-rounded learning environment where they feel engaged and supported. In light of this knowledge, the following hupothesis is put forth.

H6. Service quality positively influences students' academic performance

The Relationship Between Support System Quality and Students' Academic Performance.

Research suggests that academic performance and achievement in higher education might be positively impacted by support networks and indoor environmental quality. University students' improved academic performance and adaptability have been associated with high-quality learning support systems (Rostami et al., 2019). It has been discovered that students' academic performance may be enhanced by electronic performance support systems (EPSS) (Sezer, 2021). Although their effect on long-term performance is unknown, indoor environmental factors like temperature, acoustics, lighting, and air quality may improve learning outcomes and short-term academic performance (Brink et al., 2020).

Although typically employed for advertising, university ranking mechanisms can be unreliable indicators of research and academic quality. Most ranking systems significantly emphasize research performance indicators over teaching quality measures, which may restrict their applicability to enhancing overall academic performance (Vernon et al., 2018). These results underscore the need to consider various factors when evaluating and improving academic performance in higher education institutions. Based on this understanding, the following hypothesis is proposed

H7. Support system quality positively influences students' academic performance

Figure 1 illustrates the proposed conceptual model examining the relationship between LMS quality measures and students' academic performance (APE). It consists of seven independent variables— (1) Learner Quality (LQU), (2) Course Content Quality (CCQ), (3) Educational System Quality (ESQ), (4) Instructor Quality (INQU), (5) Technical System Quality (TSQ), (6) Service Quality (SQU), and (7) Support System Quality (SSQ)—collectively labeled as "Quality Measures." Each of these variables is hypothesized to directly influence the dependent variable, Academic Performance (APE), through hypotheses H1 to H7. The model visually represents a structural relationship that aims to evaluate how different aspects of LMS quality contribute to academic outcomes in a higher education context.

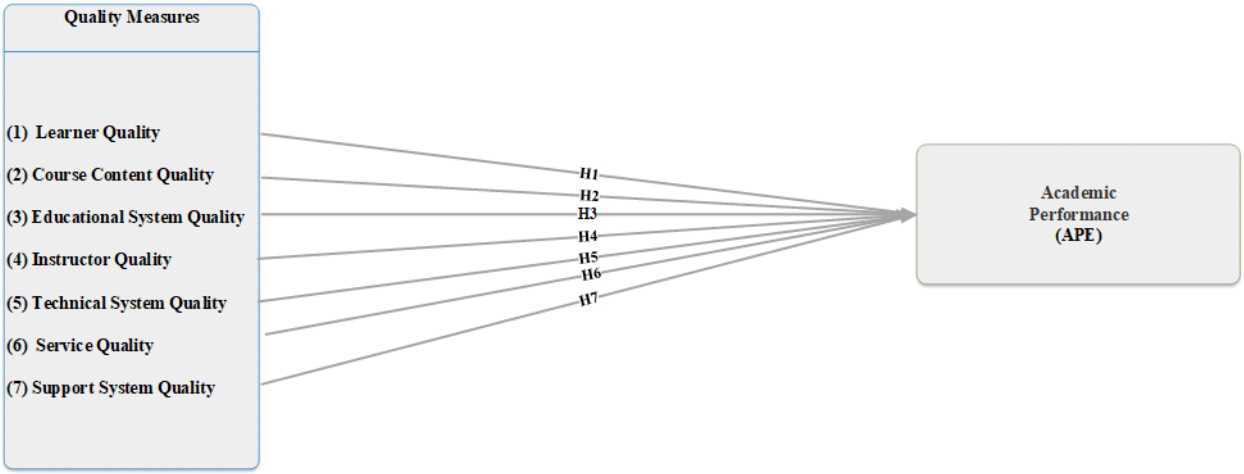

Figure 1. Hypothesized framework

METHODOLOGY

Sample and Data Collection

A sample size calculation was conducted using G*Power software, targeting an effect size (f^2) of 0.15, a statistical power of 95%, and a significance level of 5%. Based on the presence of four predictor variables, the required sample size was estimated at 112 participants. To collect data, an online survey was administered across two universities in the UAE. In accordance with Etikan et al. (2016), a non-probability convenience sampling strategy was used to improve accessibility. By November 2024, there were 118 completed replies to the survey, which was distributed via Smart Survey. The participants were business students who were enrolled in two different UAE universities.

Ethical approval for the study was obtained under [Application No. USTF/REC/2024-10/04]. Before starting the survey, participants received a comprehensive and unambiguous informed consent statement to guarantee the validity and moral integrity of the data gathering procedure. The statement described the study's objectives, the fact that participation was entirely voluntary, the freedom to discontinue participation at any moment without facing repercussions, and the guarantees of confidentiality and anonymity. The statement also clarified that the study posed no risks beyond those encountered in everyday life and that there were no right or wrong answers. Only participants currently enrolled in higher education were invited to take part. By proceeding with the survey, participants confirmed their understanding and agreement to these terms. This approach aligns with standard research ethics and enhances the reliability and validity of the results.

The data were collected from 118 respondents. After carefully removing 15 outliers, a total of 103 valid responses were retained for further analysis. Table 1 summarizes the demographic profile of 103 business school students from the UAE. Female participants represent the majority at 60.19%, while males account for 39.81%. The largest age group falls between 21 and 30 years old (51.46%), followed by those over 30 (30.10%), and a smaller segment under 21 years old (18.45%). Most participants (65.05%) are enrolled in undergraduate programs, whereas 34.95% are postgraduate students. Additionally, 66.02% of respondents reported having more than two years of experience with the e-learning system, suggesting strong platform familiarity. Details can be found in Table 1

Table 1. Demographic information

Factor	Category	Number	Percentage (%)
Gender	Male	41	39.81%
	Female	62	60.19%
Age	< 21	19	18.45%
	21 – 30	53	51.46%
	> 30	31	30.10%
Enrolled Course	Undergraduate	67	65.05%
	Postgraduate	36	34.95%
Experience with E-learning	Less than a year	11	10.68%
	1-2 years	24	23.30%
	More than 2 years	68	66.02%

Measurements

Quality Measures

The reliability of the survey tool used in this study was assessed using Cronbach's alpha, a widely accepted measure of internal consistency. The overall reliability score for the full scale was 0.964, indicating a high level of consistency across the items. Each quality dimension was measured using well-established items from prior literature and demonstrated strong internal reliability, as outlined below. The full list of survey items is available in Appendix A.

Learner Quality (LQU). This construct was measured using five items adapted from Al-Fraihat et al. (2020). These items focused on students' perceptions of their own readiness, motivation, and attitudes toward using the LMS. A sample statement from this section is: "I believe it is good to use the Learning Management System (LMS)." The dimension yielded a Cronbach's alpha of 0.887, reflecting high internal reliability.

Course Content Quality (CCQ). This dimension included four items adapted from Al-Adwan et al. (2021), originally based on the work of Al Mulhem (2020). It assessed the relevance, timeliness, and clarity of course materials delivered through the LMS. An illustrative item reads: "The content and information available in the LMS is timely." The internal consistency was strong, with a Cronbach's alpha of 0.906.

Educational System Quality (ESQ). Comprised of four items adopted from Al-Fraihat et al. (2020), this dimension examined how well the LMS supports communication, interaction, and engagement through features such as forums, announcements, and chat tools. A sample statement is: "The LMS provides interactivity and communication facilities such as chat, forums, and announcements." The reliability score for this scale was 0.870.

Instructor Quality (INQU). This dimension was measured using five items from Al-Fraihat et al. (2020). It focused on students' perceptions of instructor involvement, clarity in communication, and availability within the LMS environment. One example item reads: "I think communicating and interacting with instructors is important and valuable in the LMS." The dimension showed strong reliability, with a Cronbach's alpha of 0.878.

Technical System Quality (TSQ). Four items, based on work by Al-Adwan et al. (2021) and originally drawn from Seta et al. (2018), were used to assess how easy and intuitive the LMS is to navigate and operate. A representative item states: "It is easy to understand the structure of the LMS and how to use it." This dimension demonstrated excellent reliability, with a Cronbach's alpha of 0.950.

Service Quality (SQU). This scale included five items from Al-Fraihat et al. (2020), focusing on user support services such as help desks and responsiveness to student needs. A typical statement is: "The LMS provides proper online assistance and help." The internal consistency of this dimension was also high, with a Cronbach's alpha of 0.913.

Support System Quality (SSQ). Measured using four items also adapted from Al-Fraihat et al. (2020), this construct examined how the LMS supports ethical academic practices, including guidance on plagiarism and content access rules. A sample item is: "The LMS provides appropriate information about plagiarism issues when submitting assignments." This scale had a Cronbach's alpha of 0.885.

Academic Performance

To evaluate students' perceptions of how the Learning Management System (LMS) influenced their academic experience, a structured survey was administered. Responses were captured using a 7-point Likert scale, where 1 indicated "strongly disagree" and 7 indicated "strongly agree." Each section of the questionnaire was designed to measure a specific construct, with corresponding source references, example items, and reliability scores reported.

Academic Performance (APE) was assessed using four items adapted from the work of Al-Adwan et al. (2021). These items explored how students perceived the LMS in supporting their academic progress. One example statement was: "The LMS has helped me meet the learning goals of the module." This construct demonstrated a high level of internal consistency, with a Cronbach's alpha of 0.906, suggesting that the items reliably captured students' academic perceptions. A full list of the survey items is included in Appendix A.

RESULTS

Correlation Results

The indicator that has the strongest positive link with academic achievement is Learner Quality (LQU) (r = 0.809). This shows that students' personal traits, like self-discipline and motivation, greatly affect their academic results. Next is Course Content Quality (CCQ) (r = 0.791) and then Instructor Quality (INQU) (r = 0.665). This emphasizes how important engaging course materials and good teaching are for student success. Support System Quality (SSQ) (r = 0.572) and Educational System Quality (ESQ) (r = 0.557) also have moderate positive correlations. This indicates that institutional support and the overall learning environment are key factors. System Quality (SQU) (r = 0.492) and Technical System Quality (TSQ) (r = 0.314) show positive correlations too, but to a lesser extent. This suggests that while technical and system-related aspects are important, they may not be as significant as factors related to learners or teaching.

Table 2. Correlations, Mean and Standard Deviation

Variables	APE	TSQ1	IQU	SQU	ESQ	SSQ	LQU	INQU	CCQ
APE	1								
TSQ	.314**	1							
SQU	.492**	.640**	.863**	1					
ESQ	.557**	.584**	.845**	.841**	1				
SSQ	.572**	.612**	.885**	.831**	.863**	1			
LQU	.809**	.327**	.474**	.433**	.467**	.558**	1		
INQU	.665**	.354**	.604**	.575**	.524**	.615**	.794**	1	
CCQ	.791**	.319**	.514**	.537**	.496**	.559**	.815**	.828**	1
Mean	5.728	5.580	5.645	5.431	5.573	5.692	5.887	5.794	5.818
Std. Deviation	1.129	1.335	1.056	1.173	1.142	1.137	1.029	0.999	0.995

Notes: APE: Academic Performance; TSQ: Technical System Quality; SQU: Service Quality; ESQ: Educational System Quality; SSQ: Support System Quality; LQU: Learner Quality; INQU: Instructor Quality; CCQ: Course Content Quality.

**. Correlation is significant at the 0.01 level (2-tailed).

Regression Results

This section examines nine hypotheses outlined in Table 3 using linear regression. The analysis yields the following results. Hypothesis 1 demonstrates a positive and significant relationship between learner quality and students' academic performance ($B = 0.583$, $t = 5.243$, $p < 0.001$). Hypothesis 2 confirms a significant positive association between course content quality and students' academic performance ($B = 0.522$, $t = 4.327$, $p < 0.001$). Hypothesis 3 shows that educational system quality has a positive and significant effect on students' academic performance ($B = 0.277$, $t = 2.461$, $p < 0.05$). Hypothesis 4 indicates a significant positive link between instructor quality and students' academic performance ($B = 0.265$, $t = 2.250$, $p < 0.05$). Hypothesis 5 reveals weak and negative relationship technical system quality and students' academic performance ($B = -0.045$, $t = -0.775$, $p > 0.05$).

Hypothesis 6 shows that service quality is not associated with academic performance ($B = -0.039$, $t = -0.352$, $p > 0.05$). finally, Hypothesis 7 confirms that support system quality does not have a significant relationship with students' academic performance ($B = -0.039$, $t = -0.109$, $p > 0.05$).

Table 3. Regression results

Independent Variables	B (Academic Performance)	Std. Error	t	p-value	Hypotheses Supported
Learner Quality (LQU)	.583	.111	5.243	.000	Yes
Course Content Quality (CCQ)	.522	.121	4.327	.000	Yes
Educational System Quality (ESQ)	.277	.113	2.461	.016	Yes
Instructor Quality (INQU)	.265	.118	2.250	.027	Yes
Technical System Quality (TSQ)	-.045	.058	-.775	.440	No
Service Quality (SQU)	-.039	.110	-.352	.725	No
Support System Quality (SSQ)	-.013	.119	-.109	.914	No
(Constant)	-.212	.389	-.546	.587	

The regression model is statistically strong, with an R^2 value of 0.75. This means that the quality measures of the LMS (7 factors) explain 75% of the differences in students' academic performance. This implies that improving these LMS quality factors can greatly improve academic outcomes.

DISCUSSION AND IMPLICATIONS

This study explored how different aspects of LMS quality influence the academic performance of business students. By drawing on established frameworks such as the Technology Acceptance Model and the DeLone and McLean Information System Success Model (Alfalah, 2023; Baber, 2021), the research offers fresh insights into how students engage with digital learning environments and which quality dimensions contribute most significantly to their academic outcomes.

The analysis confirmed that four key factors—learner quality, course content quality, instructor quality, and the broader educational system—are significantly associated with improved academic performance. These components are closely linked to the learning process itself, as they shape how students absorb, process, and apply new knowledge. For example, students who are better prepared, motivated, and equipped to manage their learning tend to perform better academically. Likewise, access to clear, structured course materials and engaging instructional methods promotes deeper understanding and sustained participation. The presence of supportive, knowledgeable instructors who provide timely guidance and feedback further enhances students' ability to succeed. These findings are consistent with prior studies highlighting the importance of these dimensions in e-learning success (Al Mulhem, 2020; Keržič et al., 2021; Marlina et al., 2021; Meng & Zhang, 2023; Yilmaz, 2023).

By contrast, the remaining three dimensions—technical system quality, service quality, and support system quality—did not show a statistically significant effect on academic performance. These findings echo the conclusions of earlier research, which suggests that students tend to continue using institutional LMS platforms even when technical features are suboptimal (Al-Fraihat et al., 2020). One possible explanation for the non-significant role of service quality is the way it was conceptualized in this study. Unlike previous research that treated service quality as a multidimensional concept, this study used a narrower focus, emphasizing basic responsiveness and user support (Rasheed et al., 2022; Subrahmanyam, 2017). As a result, the impact of this variable may have been underrepresented. Similarly, the support system dimension, which includes features like access to plagiarism guidelines, behavioral policies, and user preferences, appears to play a more indirect role. While such elements

contribute to a responsible and structured learning environment, they do not directly enhance students' academic understanding or performance, aligning with findings from Guill et al. (2020).

In summary, the study underscores the importance of prioritizing learning-centered elements—such as the quality of instruction, course content, and student readiness—as these have the most immediate and measurable impact on academic success. On the other hand, infrastructure-related features, though valuable for ensuring system functionality and promoting responsible engagement, may serve a more background role. These insights offer practical direction for institutions aiming to improve student outcomes by focusing resources and efforts on the factors that most directly support learning and academic achievement.

Practical Implications

This study offers several practical recommendations to help universities enhance the effectiveness of their Learning Management Systems (LMS) and support stronger academic outcomes for students:

Gathering Regular Student Feedback. Universities are encouraged to actively seek input from students through structured surveys and feedback tools. This helps identify issues related to usability, functionality, and relevance of the LMS, enabling timely improvements that align with students' real needs and expectations (Al-Fraihat et al., 2020).

Providing Targeted Training for LMS Use. To maximize the potential of LMS platforms, institutions should invest in training programs for both students and faculty. Workshops that introduce users to the platform's key features can build confidence, increase engagement, and lead to more effective use of digital learning resources (Alduaij, 2024).

Embedding Ethical Use and Digital Literacy. Incorporating content related to plagiarism, copyright, and responsible online behavior into the LMS helps cultivate a culture of academic honesty. Educating students on how to responsibly access and apply digital materials builds awareness and trust in the learning process (Al-Fraihat et al., 2020).

Investing in Teaching Excellence. The study emphasizes the role of instructional quality in shaping academic success. Universities should prioritize professional development opportunities for faculty members, equipping them with strategies to enhance their teaching methods and better support student learning.

Encouraging Use of Interactive Tools. Instructors should be supported in using LMS features such as quizzes, discussion boards, and multimedia content. These tools can help create more dynamic and interactive learning experiences, reducing reliance on traditional assessments and supporting deeper student engagement.

LIMITATIONS AND FUTURE STUDIES

While this study provides meaningful insights into how Learning Management System (LMS) quality influences academic performance, several limitations should be noted that may affect the interpretation and generalizability of the findings. First, the research was conducted with a relatively small group of students from only two universities. This limited sample may not fully capture the diversity of experiences and perspectives found across broader student populations. Future studies would benefit from drawing on larger and more diverse samples to improve the representativeness of the results. Second, the study focused exclusively on university students. While this demographic provides valuable insights into higher education, the results may not apply to learners in other educational settings, such as high schools or community colleges. Expanding future research to include these groups could offer a more comprehensive view of how LMS quality impacts student performance across different academic levels. Third, all participants were based in the United Arab Emirates, which narrows the geographical scope of the study. Including students from other countries—especially those within the Gulf Cooperation Council (GCC) region—could provide richer regional comparisons and enhance the broader applicability of the findings. Fourth, the methodology relied solely on a quantitative, survey-based approach. While effective for identifying patterns, this method may overlook deeper insights into students' lived experiences with LMS platforms. Incorporating qualitative methods—such as interviews or focus groups—alongside surveys could offer a more nuanced understanding of how LMS quality dimensions affect academic outcomes. Fifth, the study followed a cross-sectional design, capturing data at a single point in time. This approach limits the ability to observe how students' perceptions and use of LMS platforms evolve over time. Future research could adopt a longitudinal design to explore long-term trends and better assess the sustained impact of LMS engagement on academic performance. Additionally, the analysis was based on students' self-reported perceptions, which can introduce subjectivity or bias. Individual differences in LMS usage, engagement, or interpretation may influence responses. To strengthen the reliability of future findings, researchers are encouraged to include objective academic indicators—such as official grades or standardized test scores—alongside perception-based data.

Finally, while this study treated LMS platforms as a general category, different systems—such as Moodle, Blackboard, or institution-specific platforms—may offer varying experiences and functionalities. Future studies could explore how the features of specific LMS platforms uniquely contribute to or hinder academic performance.

Funding Statement: No financial support was received for the research, authorship, or publication of this article.
Authors' Contributions: The conception and design (HA, LG, AME); data collection, analysis, and interpretation (HA, LG, AME, AZEA); literature review (HA, LG); drafting of the paper (HA); critical revision for intellectual content (AME, AZEA); final approval of the version to be published (HA, LG, AME, AZEA). All authors agree to be accountable for all aspects of the work.
Data Availability: The datasets generated and analyzed during this study can be obtained from the corresponding author upon reasonable request.
Conflict of Interest Statement: The authors declare no conflicts of interest.

REFERENCES

Al-Adwan, A. S., Albelbisi, N. A., Hujran, O., Al-Rahmi, W. M., & Alkhalifah, A. (2021). Developing a holistic success model for sustainable e-learning: A structural equation modeling approach. Sustainability, 13 (16), 9453. https://doi.org/10.3390/su13169453

Abdellatif, S., Shomotova, A., Trabelsi, S., Husain, S., Alsalhi, N. & Eltahir, M. (2023). Transition to Distance Learning: Student Experience and Communication during the COVID-19 Pandemic in the United Arab Emirates. Sustainability, 15 (8), https://doi.org/10.3390/su15086456

Ahmed, I., Nawaz, M. M., Ahmad, Z., Ahmad, Z., Shaukat, M. Z., Usman, A., & Ahmed, N. (2010). Does service quality affect students' performance? Evidence from institutes of higher learning. African journal of business management, 4(12), 2527.

Alam, M. M., Ahmad, N., Naveed, Q. N., Patel, A., Abohashrh, M., & Khaleel, M. A. (2021). E-learning services to achieve sustainable learning and academic performance: An empirical study. Sustainability, 13(5), 2653.

Aldabbas, H., Elamin, A. M., Ahmed, A. Z., & Gernal, L. (2025). Assessing Learning Management System success in the UAE universities: how quality measures linked to students' academic performance. Frontiers in Education (Vol. 10, p. 1554641).

Alduaij, M. Y., Alterkait, M. A., & Alainati, S. (2024). Using the Delone and McLean Success Model to Evaluate Moodle's Information System Success. Engineering, Technology & Applied Science Research, 14 (4), 15008-15015.

Alfalah, A. A. (2023). Factors influencing students' adoption and use of mobile learning management systems (m-LMSs): A quantitative study of Saudi Arabia. International Journal of Information Management Data Insights, 3 (1), https://doi.org/10.1016/j.jjimei.2022.100143

Al-Fraihat, D., Joy, M., Masa'deh, R. & Sinclair, J. (2020). Evaluating E-learning systems success: An empirical study. Computers in Human Behavior, 102, 67-86.

Al Mulhem, A. (2020). Investigating the effects of quality factors and organizational factors on university students' satisfaction of e-learning system quality. Cogent Education, 7 (1), https://doi.org/10.1080/2331186X.2020.1787004Page 9 of 16

Alsabawy, A. Y., Cater-Steel, A., & Soar, J. (2016). Determinants of perceived usefulness of e-learning systems. Computers in Human Behavior, 64, 843-858.

Amoako, G. K., Ampong, G. O., Gabrah, A. Y. B., de Heer, F., & Antwi-Adjei, A. (2023). Service quality affecting student satisfaction in higher education institutions in Ghana. Cogent Education, 10(2), 2238468.

Aparicio, M., Bacao, F., & Oliveira, T. (2016). Cultural impacts on e-learning systems' success. The Internet and Higher Education, 31, 58-70.

Ariza, C. P., Toncel, L. Á. R., & Blanchar, J. S. (2018). El rendimiento académico: una problemática compleja. Revista Boletín Redipe, 7(7), 137-141.

Ashrafi, A., Zareravasan, A., Rabiee Savoji, S., & Amani, M. (2022). Exploring factors influencing students' continuance intention to use the learning management system (LMS): A multi-perspective framework. Interactive Learning Environments, 30 (8), 1475-1497.

Aucancela, M., González Briones, A., & Chamoso, P. (2023). Educational recommender systems: A systematic literature review. The Barcelona Conference on Education 2023: Official Conference Proceedings, 11 November 2023.https://www.semanticscholar.org/paper/Educational-Recommender-Systems%3A-A-Systematic-Aucancela-Briones/e8ff0e4daa97820dafcb5f267d8ccae13109df50

Awad, Y. M. (2015). Quality of nursing courses as perceived by students: relationship with their academic performance in Palestine college of nursing. Open Journal of Nursing, 5(1), 36-48.

Baber, H. (2021). Modelling the acceptance of e-learning during the pandemic of COVID-19-A study of South Korea. The International Journal of Management Education. 19 (2), https://doi.org/10.1016/j.ijme.2021.100503

Belsito, C. (2016). The importance of 'teacher quality' and 'quality teaching' on academic performance. Journal of Student Engagement: Education Matters, 6(1), Article 5. University of Wollongong.

Berger, R., & Hänze, M. (2015). Impact of expert teaching quality on novice academic performance in the jigsaw cooperative learning method. International Journal of Science Education, 37(2), 294-320.

Brink, H. W., Loomans, M. G., Mobach, M. P., & Kort, H. S. (2021). Classrooms' indoor environmental conditions affecting the academic performance of students and teachers in higher education: A systematic literature review. Indoor air, 31(2), 405-425.

Blömeke, S., Olsen, R. V., & Suhl, U. (2016). Relation of student achievement to the quality of their teachers and instructional quality. In Teacher quality, instructional quality and student outcomes (Vol. 2, pp. 21-50).

Bonney, E. A., Amoah, D. F., Micah, S. A., Ahiamenyo, C., & Lemaire, M. B. (2015). The relationship between the quality of teachers and pupils' academic performance in the STMA Junior High Schools of the Western Region of Ghana. Journal of Education and Practice, 6 (24), 139-150.

Bradley, V. M. (2021). Learning Management System (LMS) use with online instruction. International Journal of Technology in Education, 4 (1), 68-92.

Bravo-Agapito, J., Romero, S. J., & Pamplona, S. (2021). Early prediction of undergraduate Student's academic performance in completely online learning: A five-year study. Computers in Human Behavior, 115, 106595.

Chen, Q., Chen, N., & Yang, Y. (2023). The impact of college students' perceived service quality in the context of regional integration of education. SAGE Open, 13(3), 21582440231197505.

Davis, F. D., & Venkatesh, V. (1996). A critical assessment of potential measurement biases in the technology acceptance model: three experiments. International Journal of Human-Computer Studies, 45 (1), 19-45.

DeLone, W. H., & McLean, E. R. (2003). The DeLone and McLean model of information systems success: a ten-year update. Journal of Management Information Systems, 19 (4), 9-30.

Dey, E. S. (2017). An examination of educational resources on student performance (Doctoral dissertation, New England College).

Doyle, E., Buckley, P., & McCarthy, B. (2021). The impact of content co-creation on academic performance. Assessment & Evaluation in Higher Education, 46(3), 494-507.

Etikan, I., Musa, S. A., & Alkassim, R. S. (2016). Comparison of convenience sampling and purposive sampling. American Journal of Theoretical and Applied Statistics, 5 (1), 1-4.

Engida, M. A., Iyasu, A. S., & Fentie, Y. M. (2024, July). Impact of teaching quality on student achievement: Student evidence. Frontiers in Education, 9,. https://doi.org/10.3389/feduc.2024.1367317

Firman, F., Muhsin, M. A., & Goestina, G. (2021). Online based learning management system (LMS) on student academic performance. AL-ISHLAH: Jurnal Pendidikan, 13 (1), 788-793.

Guill, K., Lüdtke, O., & Köller, O. (2020). Assessing the instructional quality of private tutoring and its effects on student outcomes: Analyses from the German National Educational Panel Study. British Journal of Educational Psychology, 90(2), 282-300.

Kamaruddin, R., Zainal, N. R., Aminuddin, Z. M., & Jusoff, K. (2009). The quality of learning environment and academic performance from a student's perception. International journal of business and management, 4(4), 171-175.

Kanwar, A., & Sanjeeva, M. (2022). Student satisfaction survey: A key for quality improvement in the higher education institution. Journal of Innovation and Entrepreneurship, 11 (1), 27.

Khanlarian, C., & Singh, R. (2015). Does technology affect student performance. Global Perspective on Accounting Education, 12, 1-22)

Keržič, D., Alex, J. K., Balbontín Alvarado, P., Bezerra, D. D. S., Cheraghi, M., Dobrowolska, B., ... and Aristovnik, A. (2021). Academic student satisfaction and perceived performance in the e-learning environment during the COVID-19 pandemic: Evidence across ten countries. PLOS One, 16 (10), e0258807.

Lin, C. C., & Chiu, C. H. (2013, July). Correlation between course tracking variables and academic performance in blended online courses. In 2013 IEEE 13th International Conference on Advanced Learning Technologies (pp. 184-188). IEEE.

Marlina, E., Tjahjadi, B., & Ningsih, S. (2021). Factors affecting student performance in e-learning: A case study of higher educational institutions in Indonesia. The Journal of Asian Finance, Economics and Business, 8(4), 993-1001.

Meng, Q., & Zhang, Q. (2023). The influence of academic self-efficacy on university students' academic performance: The mediating effect of academic engagement. Sustainability, 15(7), 5767.

Mohammadi, H. (2015). Investigating users' perspectives on e-learning: An integration of TAM and IS success model. Computers in Human Behavior, 45, 359-374.

Molina-Astorayme, J., & Cabanillas-Carbonell, M. (2020, October). Predicting academic performance using automatic learning techniques: a review of the scientific literature. In 2020 IEEE Engineering International Research Conference (EIRCON) (pp. 1-4). IEEE.

Moore, M. G., & Kearsley, G. (2012). Distance education: A systems view of online learning (3rd ed.). Wadsworth.

Nasir, F. D. M., Hussain, M. A. M., Mohamed, H., Mokhtar, M. A. M., & Karim, N. A. (2021). Student satisfaction in using a learning management system (LMS) for blended learning courses for tertiary education. Asian Journal of University Education, 17 (4), 442-454.

Nguyen, H. V., Vu, T. D., Saleem, M., & Yaseen, A. (2024). The influence of service quality on student satisfaction and student loyalty in Vietnam: the moderating role of the university image. Journal of Trade Science, 12(1), 37-59.

Oguguo, B. C., Nannim, F. A., Agah, J. J., Ugwuanyi, C. S., Ene, C. U., & Nzeadibe, A. C. (2021). Effect of learning management system on Student's performance in educational measurement and evaluation. Education and Information Technologies, 26, 1471-1483.

Pansri, B., Sharma, S., Timilsina, S., Choonhapong, W., Kurashige, K., Watanabe, S., & Sato, K. (2024). Understanding Student Learning Behavior: Integrating the Self-Regulated Learning Approach and K-Means Clustering. Education Sciences, 14(12).

Pfeffer, F. T. (2015). Equality and quality in education. A comparative study of 19 countries. Social Science Research, 51, 350-368.

Prahani, B., Alfin, J., Fuad, A., Saphira, H., Hariyono, E., & Suprapto, N. (2022). Learning management system (LMS) research during 1991-2021: How technology affects education. International Journal of Emerging Technologies in Learning (iJET), 17 (17), 28-49.

Ramadhan, M. O., Rohendi, D., & Handayani, M. N. (2024, July). Rethinking Learning Media and ICT Literacy Courses for Future Vocational Teachers: Ensuring Quality in Learning Media. In 2024 9th International STEM Education Conference (iSTEM-Ed) (pp. 1-9). IEEE.

Rasheed, H. M. W., He, Y., Khalid, J., Khizar, H. M. U., & Sharif, S. (2022). The relationship between e‐learning and academic performance of students. Journal of Public Affairs, 22(3), e2492.

Rostami, B., Ramazani Badr, F., & Moein, Z. (2019). The Relationship among Students' Perceptions of Learner Support System´ s Quality with Academic Performance and Academic Adaptation in Zanjan University of Medical Sciences. Research in Medical Education, 11(3), 12-21.

Sampasa-Kanyinga, H., Hamilton, H. A., Goldfield, G. S., & Chaput, J. P. (2022). Problem technology use, academic performance, and school connectedness among adolescents. International Journal of Environmental Research and Public Health, 19(4), 2337.

Shahin, N. & Arfaj, H.A. (2022). Learning technologies among academics in the United Arab Emirates: One academic year since COVID-19. International Journal of Information and Education Technology, 12 (2), 141-149.

Shams, M. S., Niazi, M. M., Gul, H., Mei, T. S., & Khan, K. U. (2022). E-Learning adoption in higher education institutions during the COVID-19 pandemic: A Multigroup analysis. Frontiers in Education, 6, https://doi.org/10.3389/feduc.2021.783087

Shishakly, R. (2021). A Further Understanding of the Dominant Factors Affecting E-Learning Usage Resources by Students in Universities in the UAE. EURASIA Journal of Mathematics, Science and Technology Education, 17 (11).

Senko, C., Belmonte, K., & Yakhkind, A. (2012). How students' achievement goals shape their beliefs about effective teaching: A 'build‐a‐professor' study. British Journal of Educational Psychology, 82(3), 420-435.

Seta, H. B., Wati, T., Muliawati, A., & Hidayanto, A. N. (2018). E-learning success model: An extention of DeLone and McLean IS'Success model. Indonesian Journal of Electrical Engineering and Informatics (IJEEI), 6 (3), 281-291.

Sezer, B. (2021). Developing and investigating an electronic performance support system (EPSS) for academic performance. Australasian Journal of Educational Technology, 37(6), 88-101.

Simelane-Mnisi, S., & Mthimunye, J. M. (2025). Establishing Students' Satisfaction with a Learning Management System Using a Modified DeLone and McLean Model: A South African Sample Perspective. Education Sciences, 15(2), 130.

Snoussi, T. (2019). Learning management system in education: Opportunities and challenges. International Journal of Innovative Technology and Exploring Engineering, 8 (12S), 664-667.

Subrahmanyam, A. (2017). Relationship between service quality, satisfaction, motivation and loyalty: A multi-dimensional perspective. Quality Assurance in Education, 25(2), 171-188.

Sulaiman, T. T. (2024). A systematic review on factors influencing learning management system usage in Arab gulf countries. Education and Information Technologies, 29 (2), 2503-2521.

Turnbull, D., Chugh, R., & Luck, J. (2022). An overview of the common elements of learning management system policies in higher education institutions. TechTrends, 66 (5), 855-867.

Twum, F. O., & Peprah, W. K. (2020). The impact of service quality on students' satisfaction. International Journal of Academic Research in Business and Social Sciences, 10.

Valverde-Berrocoso, J., Acevedo-Borrega, J., & Cerezo-Pizarro, M. (2022). Educational technology and student performance: A systematic review. Frontiers in Education, Vol. 7, p. 916502.

van der Linde, G., Naudé, L., & Esterhuyse, K. (2010). Exploring the role of Environmental Quality and time Perspective in the academic Performance of grade 12 learners. Southern African Journal of Environmental Education, 27.

Venkatesh, V., et al. (2003). User acceptance of information technology: Toward a unified view. MIS Quarterly, 27 (3), 425-478.

Vernon, M. M., Balas, E. A., & Momani, S. (2018). Are university rankings useful to improve research? A systematic review. PloS one, 13(3), e0193762.

Villalustre, L., Cueli, M., & Zarzuelo, D. (2024). The bidirectional relationship between meta-creativity and academic performance in university students. Education Sciences, 14(3), 252. doi:https://doi.org/10.3390/educsci14030252

Vuckovic, T., Stefanovic, D., Ciric Lalic, D., Dionisio, R., Oliveira, Â. & Przulj, D., 2023. The extended information systems success measurement model: E-learning perspective. Applied Sciences, 13 (5).

Wike, W., & Cahyasari, E. (2019, August). The quality of higher education assessed from the academic staff performance: literature review. In Annual International Conference of Business and Public Administration (AICoBPA 2018) (pp. 253-256). Atlantis Press.

Yilmaz, A. B. (2023). The relationship between satisfaction, interaction, e-learning readiness, and academic achievement in online learning. Open Praxis, 15(3), 199-213.

Zhou, C., & Izadpanah, S. (2023). Relationship between using educational technology and academic passion with academic performance and creative self-efficacy: structural equations modelling approach. Current Psychology, 1-18.

