

Determinants of Intention to Adopt Gamified Moodle in LIS Education: Evidence from Federal Universities in North Central Nigeria

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Abstract

Digital transformation is reshaping higher education through the integration of emerging technologies into teaching and learning processes. In Library and Information Science (LIS) education, gamified learning management systems such as Moodle are increasingly recognised for enhancing student engagement and active learning. However, adoption in Nigeria remains constrained by inadequate infrastructure, limited digital competencies, and insufficient evidence on students' readiness and intention to adopt such systems. This study examined the readiness, willingness, and intention of LIS students in Federal Universities in North Central Nigeria to adopt gamified Moodle and investigated the relationship between readiness and intention. A quantitative descriptive survey design was adopted with a population of 639 final-year LIS students. Using Yamane's formula, a sample size of 246 was selected, while 152 valid responses were retrieved, representing a 61.8% response rate. Data were collected using a validated questionnaire and analysed with descriptive statistics and Pearson correlation in SPSS. Findings revealed high readiness and willingness to adopt gamified Moodle, alongside a strong intention to use the platform. Perceived usefulness emerged as a major determinant of adoption, while digital skills, infrastructure, and training significantly influenced behavioural intention. A strong positive relationship was found between readiness and intention ($r = 0.620$, $p < 0.001$). The study concludes that successful adoption depends on strengthened institutional support, improved digital infrastructure, and enhanced digital competencies, and recommends continuous capacity building and increased investment in digital infrastructure for sustainable integration in LIS education.

Keywords: Gamification, Moodle, Digital transformation, Technology adoption

Introduction

Digital transformation has become a central force reshaping higher education, extending beyond the digitization of instructional materials to include systemic integration of advanced technologies into teaching, learning, and institutional processes (Mohamed, Tlemsani & Matthews, 2022). The proliferation of technologies such as artificial intelligence, cloud computing, blockchain, and the Internet of Things (IOTs) has accelerated this shift, making digital transformation essential for building resilient and competitive educational systems (Matthew, Kazaure & Okafor, 2021). By transcending spatial and temporal constraints, digitalization promotes collaboration, resource sharing, and inclusive learning environments (Bayu, Ferdiana & Kusumawardani, 2021). The Transforming Education Summit further highlights the need to equip learners with digital competencies and critical thinking skills for meaningful participation in the knowledge economy.

Within this evolving landscape, Moodle has emerged as a widely adopted Learning Management System that supports collaborative and authentic learning. It facilitates project-based activities, diverse assessments, and practical skill acquisition, contributing to active student engagement (Maphosa, 2024). Empirical studies indicate that students' continued use

of Moodle is influenced by perceived usefulness, system quality, and satisfaction, with satisfaction playing a mediating role (Balaskas et al., 2025). Gamification further enhances Moodle's effectiveness by integrating game elements such as badges and challenges to improve motivation and participation (Coelho & Abreu, 2025). Evidence shows that gamified Moodle environments significantly improve students' motivation and learning outcomes (Haruna et al., 2018), while also increasing enjoyment and sustained engagement (Balaskas et al., 2025).

Statement of the Problem

Despite increasing global interest in gamification as an innovative pedagogical approach, its adoption in Library and Information Science (LIS) education in Nigeria remains limited and underexplored. LIS programmes continue to face challenges such as inadequate funding, weak digital infrastructure, outdated curricula, and limited faculty capacity, which hinder the integration of emerging technologies (Abubakar, 2021). Although gamified Moodle has the potential to enhance engagement, motivation, and learning outcomes, there is insufficient empirical evidence on students' readiness, willingness, and intention to adopt it, particularly in Federal Universities in North Central Nigeria. This gap in context-specific data makes it difficult to assess whether key adoption conditions are present. Therefore, this study examines readiness, willingness, and intention as determinants of gamified Moodle adoption in LIS education.

Purpose/Objectives of the Study

This study examines the readiness, willingness, and intention of Library and Information Science (LIS) students in Federal Universities in North Central Nigeria to adopt gamified Moodle. Specifically, the study seeks to:

1. assess the level of readiness and willingness of respondents to adopt gamified Moodle;
2. examine the level of respondents' intention to use gamified Moodle; and
3. analyse the relationship between readiness and intention to adopt gamified Moodle.

The study further provides empirical evidence on adoption readiness and the determinants of gamified learning uptake in LIS education.

Research questions

1. What is the level of readiness and willingness of respondents to adopt gamified Moodle?
2. What is the level of respondents' intention to use gamified Moodle?
3. What relationship exists between readiness and intention to adopt gamified Moodle?

Hypothesis

H₀: There is no significant relationship between readiness and intention

Theoretical framework

This study is anchored in the Technology Acceptance Model (TAM) and the Diffusion of Innovation (DOI) theory, which together provide a comprehensive framework for understanding the adoption of gamified Moodle in Library and Information Science (LIS) education. TAM focuses on individual-level determinants of technology acceptance, particularly perceived usefulness and perceived ease of use (Davis, 1989). In this study, students' perceptions of gamified Moodle's ability to enhance engagement, motivation, and learning outcomes influence their willingness to adopt it. Likewise, the ease of navigating

gamification features such as badges and leaderboards affects users' readiness and overall experience (Liébana-Cabanillas et al., 2020). TAM also links these perceptions to behavioural intention, with factors such as awareness, trust, perceived control, and system reliability shaping attitudes toward adoption (Alswaigh & Aloud, 2021). DOI theory complements TAM by providing a broader perspective on how innovations diffuse within a social system. It emphasizes attributes such as relative advantage, compatibility, and complexity as key drivers of adoption (Rogers, 2003; Jamshidi & Kazemi, 2020). In the context of gamified Moodle, adoption depends on how well the system aligns with existing LIS teaching practices, the perceived benefits it offers, and its ease of integration into institutional workflows. DOI also highlights the importance of institutional factors, including infrastructure, training, and policy support. The integration of TAM and DOI enhances the explanatory power of this study by combining individual perceptions with systemic influences (Liébana-Cabanillas et al., 2020). This combined framework enables a holistic understanding of how awareness, perceived usefulness, readiness, and barriers interact to shape the adoption of gamified Moodle. It therefore provides a robust theoretical basis for examining technology adoption within Nigerian LIS education.

Related studies

Readiness and Willingness to Adopt Gamified Moodle

The adoption of gamified Moodle in higher education is shaped by users' readiness and willingness, which reflect both technological capacity and behavioural disposition. Readiness encompasses access to digital resources, infrastructure, and users' digital competence, while willingness relates to their intention and motivation to engage with gamified learning environments. Effective adoption therefore requires not only technological availability but also confidence, positive attitudes, and institutional support. Empirical evidence highlights readiness as a critical determinant of adoption. Students with reliable internet access, appropriate devices, and strong digital skills demonstrate higher satisfaction and motivation in technology-mediated learning (Yilmaz, 2017). Similarly, lecturers' readiness influences their adoption of gamification, as their willingness depends on technological competence, attitudes toward ICT, and institutional support (Teo, 2011). However, infrastructural challenges such as poor connectivity and limited resources can constrain readiness and reduce motivation to adopt gamified tools (Xiomara & Esteban, 2025). Digital competence further reinforces readiness as a multidimensional construct influencing users' ability to interact effectively with gamified platforms (Denden et al., 2022). Willingness, on the other hand, is driven largely by users' perceptions and attitudes. When users perceive gamified Moodle as valuable, engaging, and beneficial to learning outcomes, they are more likely to adopt it (Denden et al., 2022). Gamification also enhances intrinsic motivation by fulfilling psychological needs such as autonomy, competence, and relatedness (Almisad & Aleidan, 2025). These relationships align with the Technology Acceptance Model, which posits perceived usefulness and ease of use as key predictors of behavioural intention. Overall, readiness and willingness are interdependent, and successful adoption requires integrating technological preparedness with positive user perceptions and institutional support.

Determinants of Intention to Adopt Gamified Moodle

The intention to adopt gamified Moodle is influenced by a combination of cognitive, technological, and contextual factors. Key determinants identified in the literature include awareness, perceived usefulness, readiness, and structural barriers, all of which shape users' willingness to integrate gamification into teaching and learning. Awareness is a foundational factor in driving adoption intention. When students and lecturers understand how gamification elements, such as enjoyment, challenge, and competition enhance learning, they

are more likely to adopt such systems. Nguyen-Viet and Nguyen-Viet (2023) found that engagement mediates the relationship between gamification features and adoption outcomes, indicating that awareness translates into increased satisfaction and stronger behavioural intention. Perceived usefulness also plays a central role. Learners are more inclined to adopt gamified Moodle when they believe it improves learning outcomes. Studies by Li (2026) demonstrate that perceived effectiveness and satisfaction significantly influence students' willingness to adopt e-learning systems, while gamification further strengthens perceived usefulness by linking motivation with improved academic performance. Beyond perceived usefulness, readiness also plays a critical role in shaping adoption intention, as it can either enable or constrain the adoption process. Readiness encompasses factors such as access to digital devices, internet connectivity, and users' digital competence. In this regard, Alanoglu et al. (2025) observed that limited digital skills hinder technology adoption in developing contexts, suggesting that readiness functions as both an enabler and a barrier to adoption. Despite these positive drivers, several challenges continue to limit adoption intention, including inadequate infrastructure, resistance from faculty, and insufficient empirical evidence on the effectiveness of gamified learning systems. Nascimento et al. (2025) further highlighted the existence of systemic constraints within higher education institutions that hinder successful implementation.

Research methodology

Research Approach and Design

This study adopted a quantitative research approach, which focuses on the collection and analysis of numerical data to identify patterns, relationships, and generalizations. A descriptive survey design was employed, as it enables the collection of standardized data from a relatively large population and supports the generalization of findings.

Population of the Study

The target population comprised 639 final-year students of Library and Information Science (LIS) in federal universities located in North Central Nigeria. Final-year students were considered appropriate for this study because they have acquired substantial exposure to their academic programme, are more likely to have engaged with the Moodle learning platform and possess relevant insights into its academic and professional use. Eight (8) federal universities in the North Central region offer LIS programmes, and population data were obtained directly from the respective departmental records, ensuring accuracy and currency.

Table 1: Population of LIS Students in Selected Federal Universities in North Central Nigeria

S/N	University Name	LIS Final Year Students Population
1	Federal University of Technology, Minna, Niger (FUTMINNA)	28
2	University of Ilorin, Kwara (UNILORIN)	206
3	University of Abuja, Abuja (UniAbuja)	59
4	Federal University of Lafia, Nasarawa (FULAFIA)	97
5	Federal University Lokoja, Kogi (FULOKOJA)	45
6	National Open University of Nigeria, Abuja	50

S/N	University Name	LIS Final Year Students Population
	(NOUN)	
7	University of Jos, Plateau (UniJos)	119
8	Joseph Sarwuan Tarka University, Makurdi, Benue	35
Total		639

Sample Size Determination

The sample size was determined using Yamane's (1967) formula for sample calculation:

$$n = \frac{N}{1+N(e)^2}$$

Where:

N = Total population of LIS students = 639

e = Margin of error (0.05)

$$n = \frac{639}{1+639(0.05)^2}$$

$$n = \frac{639}{1+639(0.0025)}$$

$$n = \frac{639}{1+1.5975}$$

$$n = \frac{639}{2.5975}$$

$$n \approx 246$$

Thus, the sample size =246 LIS students.

Sample Size and Sampling Technique

The sample size was determined using Yamane's (1967) formula, resulting in a sample of 246 respondents. A stratified sampling technique with proportional allocation was employed to ensure fair representation across the participating universities, with each institution constituting a stratum. See table 2.

Proportional Allocation Formula:

$$n_i = \frac{N_i \times n}{N}$$

Where:

n_i = sample size for each university

N_i = LIS final year student population in each university

N = Total final year LIS student population (639)

n = Total sample size (246)

Table 2: Allocated Samples per University

S/N	University Name	LIS Year Population	Final Students	Proportional Sample (n _i)
1	Federal University of Technology, Minna, Niger (FUTMINNA)	28		11
2	University of Ilorin, Kwara (UNILORIN)	206		79
3	University of Abuja, Abuja (UniAbuja)	59		23
4	Federal University of Lafia, Nasarawa (FULAFIA)	97		37
5	Federal University Lokoja, Kogi (FULOKOJA)	45		17
6	National Open University of Nigeria, Abuja (NOUN)	50		19
7	University of Jos, Plateau (UniJos)	119		46
8	Joseph Sarwuan Tarka University, Makurdi, Benue	35		14
Total		639		246

Research Instrument

Data were collected using a structured, closed-ended questionnaire administered electronically via Google Forms. The instrument was developed in line with the study objectives to ensure uniformity in responses and facilitate ease of analysis. To ensure validity, face and content validity were established through expert review by specialists in Library and Information Science and research methodology. Their feedback informed necessary revisions to improve clarity, relevance, and adequacy of the items. The reliability of the instrument was determined through a pilot study involving respondents outside the main study population. Internal consistency was assessed using Cronbach's alpha, which yielded a coefficient of .75, indicating acceptable reliability.

Data Collection

Data were collected electronically using Google Forms. The questionnaire was distributed through institutional mailing lists, departmental forums, and relevant social media platforms. A total of 246 questionnaires were administered, out of which 152 were completed and returned, yielding a response rate of 61.8%, which is considered adequate for survey research.

Data Analysis

Data collected were coded and analysed using the Statistical Package for the Social Sciences (SPSS) version 30. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarise the data and address the research questions.

Results

Demographic representation of respondent

Table 1: Gender Distribution of Respondents (N = 152)

Gender	n	%
Female	99	65.1
Male	53	34.9

The results in Table 1 indicate that the majority of respondents were female (65.1%, n = 99), while male respondents accounted for 34.9% (n = 53). This suggests a higher level of participation among female students in the study.

Table 2: Age Distribution of Respondents (N = 152)

Age Range	n	%
18–25	72	47.4
26–35	30	19.7
36–45	31	20.4
Above 45	19	12.5

As shown in Table 2, nearly half of the respondents (47.4%, n = 72) were within the 18–25 age range, indicating that the sample was predominantly composed of younger students. Respondents aged 26–35 (19.7%, n = 30) and 36–45 (20.4%, n = 31) were moderately represented, while those above 45 years constituted the smallest proportion (12.5%, n = 19).

Table 3: Institutional Distribution of Respondents (N = 152)

University	n	%
Federal University Lokoja, Kogi (FULOKOJA)	12	7.9
Federal University of Lafia, Nasarawa (FULAFIA)	24	15.8
Federal University of Technology, Minna, Niger (FUTMINNA)	9	5.9
Joseph Sarwuan Tarka University, Makurdi, Benue	7	4.6
National Open University of Nigeria, Abuja (NOUN)	16	10.5
University of Abuja, Abuja (UniAbuja)	15	9.9
University of Ilorin, Kwara (UNILORIN)	35	23
University of Jos, Plateau (UniJos)	34	22.4

Table 3 shows that respondents were drawn from multiple universities, with the highest representation from the University of Ilorin (23.0%, n = 35) and the University of Jos (22.4%, n = 34). Other institutions contributed smaller proportions, including the Federal University of Lafia (15.8%, n = 24) and the National Open University of Nigeria (10.5%, n = 16). The remaining universities each accounted for less than 10% of the sample. This distribution indicates a relatively broad institutional coverage

RQ 1: What is the level of readiness and willingness of respondents to adopt gamified Moodle?

Readiness and Willingness to Adopt Gamified Moodle

Table 4: Respondents' Readiness and Willingness to Adopt Gamified Moodle (N = 152)

Items Statement	SD	D	A	SA	Mean	SD*	Des.
I have the necessary digital skills to use gamified Moodle features effectively.	8 (5.3%)	32 (21.1%)	74 (48.7%)	38 (25.0%)	2.93	0.82	Agree
I am willing to adopt gamified Moodle if provided with adequate institutional support and training.	0 (0.0%)	0 (0.0%)	89 (58.6%)	63 (41.4%)	3.41	0.49	Agree
I feel confident that gamified Moodle is compatible with my learning and teaching practices.	0 (0.0%)	8 (5.3%)	112 (73.7%)	32 (21.1%)	3.16	0.49	Agree
Adequate access to internet and devices increases my willingness to use gamified Moodle.	4 (2.6%)	0 (0.0%)	107 (70.4%)	41 (27.0%)	3.22	0.57	Agree
Overall Mean / SD					3.18	0.59	Agree

SD = Strongly Disagree; D = Disagree; A = Agree; SA = Strongly Agree; SD = Standard Deviation

The results in Table 4 indicate that respondents generally demonstrate a high level of readiness and willingness to adopt gamified Moodle, as reflected in the overall mean score of 3.18 (SD = 0.59), which falls within the "Agree" range. This suggests that participants are positively disposed toward adopting gamified Moodle as a learning tool. At the item level, respondents expressed the strongest agreement with the statement that they would be willing to adopt gamified Moodle if provided with adequate institutional support and training (M = 3.41, SD = 0.49). This indicates that institutional factors such as training and support play a critical role in enhancing adoption willingness. Similarly, respondents agreed that adequate access to internet and devices increases their willingness to use gamified Moodle (M = 3.22, SD = 0.57), highlighting the importance of technological infrastructure in facilitating adoption. Confidence in the compatibility of gamified Moodle with existing learning and teaching practices was also relatively high (M = 3.16, SD = 0.49), suggesting that respondents perceive the system as fitting within their academic context. However, the lowest mean score was recorded for respondents' self-assessed digital skills (M = 2.93, SD = 0.82), although it still falls within the "Agree" category. The comparatively higher standard deviation for this item indicates more variability in responses, suggesting differences in digital competence among respondents. The findings imply that while respondents are generally ready and willing to adopt gamified Moodle, this readiness is strongly influenced by external factors such as institutional support, infrastructure, and access to resources, as well as individual differences in digital skills.

RQ 2: What is the level of respondents' intention to use gamified Moodle?

Intention to Use Gamified Moodle

Table 5: Respondents' Intention to Use Gamified Moodle (N = 152)

Items Statement	SD	D	A	SA	Mean	SD*	Des.
My awareness of gamified features in Moodle influences my intention to use them.	0 (0.0%)	11 (7.2%)	117 (77.0%)	24 (15.8%)	3.09	0.47	Agree
I am more likely to adopt gamified Moodle if I perceive it as useful for my academic success.	0 (0.0%)	0 (0.0%)	106 (69.7%)	46 (30.3%)	3.3	0.46	Agree
Readiness in terms of skills, infrastructure, and training determines my intention to use gamified Moodle.	0 (0.0%)	10 (6.6%)	109 (71.7%)	33 (21.7%)	3.15	0.51	Agree
Even if there are challenges, I still intend to use gamified Moodle because of its potential benefits.	0 (0.0%)	7 (4.6%)	111 (73.0%)	34 (22.4%)	3.18	0.49	Agree
Overall Mean / SD					3.18	0.48	Agree

SD = Strongly Disagree; D = Disagree; A = Agree; SA = Strongly Agree; SD = Standard Deviation

The results in Table 5 indicate that respondents have a strong and positive intention to use gamified Moodle, as reflected in the overall mean score of 3.18 (SD = 0.48), which falls within the "Agree" range. This suggests that participants are generally inclined toward adopting gamified Moodle for their academic activities. At the item level, the highest level of agreement was recorded for the statement that respondents are more likely to adopt gamified Moodle if they perceive it as useful for their academic success (M = 3.30, SD = 0.46). This highlights perceived usefulness as a key driver of intention to use. Respondents also agreed that even in the presence of challenges, they would still intend to use gamified Moodle due to its potential benefits (M = 3.18, SD = 0.49), indicating a strong positive attitude toward the system. Furthermore, respondents acknowledged that readiness in terms of skills, infrastructure, and training influences their intention to use gamified Moodle (M = 3.15, SD = 0.51), reinforcing the role of preparedness in shaping adoption behaviour. Awareness of gamified features was also seen as an important factor influencing intention (M = 3.09, SD = 0.47), although it recorded the lowest mean among the items, suggesting that while awareness is important, it may not be as influential as perceived usefulness or readiness. The relatively low standard deviations across items indicate a high level of consistency in responses. The findings imply that respondents' intention to use gamified Moodle is strongly driven by perceived benefits, supported by adequate readiness, and sustained even in the face of potential challenges.

Pearson Correlation between Readiness and Intention

Table 6: Pearson Correlation between Readiness and Intention (N = 152)

Variable	1	2
1. Readiness	—	.620**
2. Intention	.620**	—

* r = Pearson correlation coefficient. $p < .01$ (2-tailed).

Hypothesis Testing

H₀: There is no significant relationship between readiness and intention.

The results presented in Table 6 indicate a statistically significant and strong positive relationship between readiness and intention ($r = .620$, $p < .001$). This finding suggests that higher levels of readiness are associated with increased intention among respondents. In practical terms, individuals who are more prepared, through improved skills, awareness, or access are more likely to demonstrate a higher level of intention.

Given that the p -value is less than the 0.05 level of significance ($p < .05$), the null hypothesis (H_0) is rejected. This implies that a significant relationship exists between readiness and intention. The strength of the correlation further indicates that readiness is an important factor influencing intention within the context of this study.

Discussion of findings

Readiness and Willingness to Adopt Gamified Moodle

The findings indicate that LIS students exhibit a high level of readiness and willingness to adopt gamified Moodle ($M = 3.18$), reflecting a generally positive disposition toward its integration into learning. However, this readiness is conditional, shaped by both individual capabilities and institutional support. Strong agreement on willingness to adopt gamified Moodle when supported by training highlights the critical role of institutional backing, consistent with evidence that organizational support enhances adoption readiness (Teo, 2011). Similarly, access to internet and devices significantly influences willingness, reinforcing the importance of infrastructural readiness for effective engagement (Yilmaz, 2017; Xiomara & Esteban, 2025). Students also perceived gamified Moodle as compatible with existing learning practices, aligning with the Diffusion of Innovation (DOI) theory, which identifies compatibility as a key adoption factor (Rogers, 2003; Jamshidi & Kazemi, 2020). However, variability in digital skills suggests disparities in competence, supporting the view that readiness is multidimensional and dependent on users' ability to interact with digital platforms (Denden et al., 2022). From a Technology Acceptance Model (TAM) perspective, the high willingness reflects strong perceived usefulness and ease of use, which drive behavioural intention (Davis, 1989; Liébana-Cabanillas et al., 2020). Positive perceptions further enhance motivation (Denden et al., 2022; Almisad & Aleidan, 2025). Nonetheless, without adequate infrastructure, training, and skill development, willingness may not translate into actual usage.

Intention to Use Gamified Moodle

The findings show that LIS students have a strong and positive intention to use gamified Moodle ($M = 3.18$), indicating favourable attitudes toward its adoption in teaching and learning. Low standard deviations suggest a high level of consensus among respondents. At

the item level, perceived usefulness emerged as the most influential determinant, with students more willing to adopt gamified Moodle when it enhances academic success. This aligns with studies identifying perceived usefulness as a key predictor of behavioural intention in e-learning contexts (Li, 2026). Additionally, students' willingness to use the system despite potential challenges suggests that perceived benefits can outweigh barriers. Readiness also plays a significant role, as factors such as digital skills, infrastructure, and training influence intention. This supports findings that readiness acts as both an enabler and constraint in technology adoption Alanoglu et al. (2025). Although awareness contributes to intention, it is less influential, indicating that awareness alone is insufficient without deeper engagement (Nguyen-Viet & Nguyen-Viet, 2023). The results support the Technology Acceptance Model (TAM), where perceived usefulness and ease of use drive intention (Davis, 1989; Liébana-Cabanillas et al., 2020), and the Diffusion of Innovation (DOI) theory, particularly relative advantage (Rogers, 2003; Jamshidi & Kazemi, 2020). However, structural barriers may hinder actual usage (Nascimento et al., 2025).

Relationship between Readiness and Intention

The Pearson correlation results show a strong and statistically significant positive relationship between readiness and intention to use gamified Moodle ($r = .620$, $p < .001$), indicating that higher readiness corresponds with greater intention to adopt. The rejection of the null hypothesis confirms readiness as a significant predictor of behavioural intention. This aligns with existing literature, which identifies readiness, comprising digital skills, infrastructure access, and training as a key determinant of technology adoption. Users with higher readiness levels tend to exhibit greater confidence, motivation, and satisfaction in digital learning environments, thereby increasing adoption likelihood (Yilmaz, 2017), whereas limited readiness can hinder adoption despite positive attitudes (Alanoglu, Karabatak, & Yang, 2025). From a theoretical standpoint, the findings support the Technology Acceptance Model (TAM). Although TAM emphasizes perceived usefulness and ease of use (Davis, 1989), readiness functions as an enabling condition that strengthens these constructs, as users with adequate skills and access are more likely to perceive systems as easy to use (Liébana-Cabanillas et al., 2020). The results also align with the Diffusion of Innovation (DOI) theory, particularly the concept of complexity, where higher readiness reduces perceived difficulty and facilitates adoption (Rogers, 2003; Jamshidi & Kazemi, 2020). Institutional support further enhances this process. The strong correlation suggests that readiness is a substantive driver of intention, emphasizing the need to improve digital competence, infrastructure, and training to support adoption.

Summary

The study examined LIS students' readiness, willingness, and intention to adopt gamified Moodle, as well as the relationship between readiness and intention. Findings revealed a generally high level of readiness and willingness to adopt gamified Moodle, although this readiness is conditional on factors such as institutional support, infrastructure, and digital competence. Students demonstrated a strong intention to use gamified Moodle, largely driven by perceived usefulness and positive attitudes toward its benefits. The results also showed that while awareness contributes to intention, it is less influential than perceived usefulness and readiness. Importantly, a strong positive correlation was found between readiness and intention ($r = .620$), confirming that students who are better prepared are more likely to adopt gamified Moodle. These findings are consistent with the Technology Acceptance Model (TAM) and Diffusion of Innovation (DOI) theory, which emphasize perceived usefulness, ease of use, compatibility, and reduced complexity as key drivers of adoption.

Conclusion

The study concludes that LIS students are positively disposed toward the adoption of gamified Moodle, with both readiness and intention levels being high. However, the successful implementation of gamified Moodle is not guaranteed by willingness alone; it is significantly influenced by institutional, infrastructural, and skill-based factors. Readiness emerges as a critical determinant of intention, highlighting the need for a supportive environment that enhances users' digital competence and access to resources. While students recognize the benefits of gamification and are willing to adopt it, structural barriers may limit actual usage. Therefore, bridging the gap between intention and practice requires deliberate efforts to strengthen both individual capabilities and institutional support systems.

Recommendations

1. Federal universities offering Library and Information Science programmes should strengthen institutional support for gamified Moodle adoption by providing reliable internet access, adequate digital devices, and regular technical support services. This will enhance students' readiness and willingness to effectively engage with gamified learning environments.
2. University management and LIS departments should organize continuous digital literacy and capacity-building programmes for both students and lecturers to improve digital competence, confidence, and effective utilization of gamified Moodle. Emphasis should be placed on demonstrating the academic benefits and practical usefulness of gamified learning systems in order to sustain students' intention to use the platform.
3. Policymakers and university administrators should develop strategic policies and investment plans that promote sustainable integration of gamified Moodle into LIS education through improved infrastructure, training opportunities, and institutional support systems. Strengthening these readiness factors will enhance students' behavioural intention and facilitate successful adoption of gamified learning technologies.

References

- Abubakar, B. M. (2021). Library and information science (LIS) education in Nigeria: Emerging trends, challenges and expectations in the digital age. *Journal of Balkan Libraries Union*, 8(1), 57–67. <https://doi.org/10.16918/jblu.932134>
- Alanoglu, M., Karabatak, S., & Yang, H. (2025). Understanding university students' self-directed online learning in the context of emergency remote teaching: the role of online learning readiness and digital literacy. *Journal of Computing in Higher Education*, 1-27. <https://doi.org/10.1007/s12528-025-09458-0>
- Almisad, B. M., & Aleidan, A. A. (2025). Perceptions of gamification in education: Evidence from a developing country context. *Eurasia Journal of Mathematics, Science and Technology Education*, 21(10), 16. <https://doi.org/10.29333/ejmste/17177>
- Alswaigh, N. Y., & Aloud, M. E. (2021). Factors affecting user adoption of e-payment services available in mobile wallets in Saudi Arabia. *International Journal of Computer Science and Network Security*, 21(6), 222–230. <https://doi.org/10.22937/IJCSNS.2021.21.6.29>
- Balaskas, S., Tsiantos, V., Chatzifotiou, S., Lourida, L., Rigou, M., & Komis, K. (2025). Understanding behavioral intention to use Moodle in higher education: The role of

- technology acceptance, cognitive factors, and motivation. *Systems*, 13(6), 412. <https://doi.org/10.3390/systems13060412>
- Bayu, A., Ferdiana, R., & Kusumawardani, S. S. (2021). Digital transformation in higher education: A barrier framework. *Association for Computing Machinery journals*, 100-106. <https://doi.org/10.1145/3468978.3468995>
- Coelho, F., & Abreu, A. M. (2025). Systemic gamification theory (SGT): A holistic model for inclusive gamified digital learning. *Multimodal Technologies and Interaction*, 9(7), 70. <https://doi.org/10.3390/mti9070070>
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340. <https://doi.org/10.2307/249008>
- Denden, M., Tlili, A., Abed, M., Bozkurt, A., Huang, R., & Burgos, D. (2022). To Use or Not to Use: Impact of Personality on the Intention of Using Gamified Learning Environments. *Electronics*, 11(12), 1907. <https://doi.org/10.3390/electronics11121907>
- Haruna, H., Hu, X., Chu, S. K. W., Mellecker, R. R., Gabriel, G., & Ndekao, P. S. (2018). Improving sexual health education programs for adolescent students through game-based learning and gamification. *International Journal of Environmental Research and Public Health*, 15(9), 2027. <https://doi.org/10.3390/ijerph15092027>
- Jamshidi, D., & Kazemi, F. (2020). Innovation diffusion theory and customers' behavioral intention for Islamic credit card: Implications for awareness and satisfaction. *Journal of Islamic Marketing*, 11(6), 1245–1275. <https://doi.org/10.1108/JIMA-02-2018-0039>
- Li, Y. (2026). Assessing Graduate Student Satisfaction with E-Learning: A Case Study of Sichuan Conservatory of Music. *AU-GSB E-Journal*, 19(1), 196-208. <https://doi.org/10.14456/augsbejr.2026.19>
- Liébana-Cabanillas, F., Marinkovic, V., Ramos de Luna, I., & Kalinic, Z. (2018). Predicting the determinants of mobile payment acceptance: A hybrid SEM-neural network approach. *Technological Forecasting and Social Change*, 129, 117–130. <https://doi.org/10.1016/j.techfore.2017.12.015>
- Maphosa, V. (2024). Enhancing authentic learning in a rural university: Exploring student perceptions of Moodle as a technology-enabled platform. *Cogent Education*, 11(1), 2410096. <https://doi.org/10.1080/2331186X.2024.2410096>
- Matthew, U. O., Kazaure, J. S., & Okafor, N. U. (2021). Contemporary development in E-Learning education, cloud computing technology & internet of things. *EAI Endorsed Trans. Cloud Syst.*, 7(20), 1-20. <https://doi.org/10.4108/eai.31-3-2021.169173>
- Mohamed Hashim, M., Tlemsani, I. & Matthews, R. (2022). Higher education strategy in digital transformation. *Educ Inf Technol*, 27, 3171–3195. <https://doi.org/10.1007/s10639-021-10739-1>
- Nascimento, S. A. G. C., Souza, C. A. de, Oliveira, E. D. de, Lima, G. S., Nascimento, I. J. B. M. F. do, Fagundes, J. M., Viana, M. C. V., Cardoso, R. S., & Júnior, T. S. C. (2025). Gamification in Education: A Systematic Review of the Literature. *Journal of Tertiary Education and Learning*, 3(3), 128-133. <https://doi.org/10.54536/jtel.v3i3.5590>
- Nguyen-Viet, B., & Nguyen-Viet, B. (2023). Enhancing satisfaction among Vietnamese students through gamification: The mediating role of engagement and learning

- effectiveness. *Cogent Education*, 10(1), 2265276.
<https://doi.org/10.1080/2331186X.2023.2265276>
- Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). Free Press.
- Teo, T. (2011). Factors influencing teachers' intention to use technology: Model development and test. *Computers & Education*, 57(4), 2432–2440.
<https://doi.org/10.1016/j.compedu.2011.06.008>
- Xiomara, R., & Esteban, I. (2025). Transforming Inclusive Education Through Gamification and Active Learning Strategies. *Information*, 16(9), 753.
<https://doi.org/10.3390/info16090753>
- Yilmaz, R. (2017). Exploring the role of e-learning readiness on student satisfaction and motivation in flipped classroom. *Computers in Human Behavior*, 70, 251–260.
<http://dx.doi.org/10.1016/j.chb.2016.12.085>