

Bilgi ve Belge Araştırmaları Dergisi

The Journal of Information and Documentation Studies




Research Article | Araştırma Makalesi

Open Access | Açık Erişim

Evaluating User Perceptions and the Effectiveness of Gamification Elements in Enhancing Engagement with Library Resources

Kütüphane Kaynaklarıyla Etkileşimin Artırılmasında Kullanıcı Algılarının ve Oyunlaştırma Unsurlarının Etkinliğinin Değerlendirilmesi



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Abstract

This study investigates user perceptions of gamification and its effectiveness in enhancing engagement with academic library resources. A descriptive survey research design was adopted, employing a two-stage sampling technique across two geopolitical zones in Nigeria—North Central and South-West. Four universities with Library and Information Science programs were purposively selected. The study population included 296 undergraduate and graduate students, from which a purposive sample of 198 respondents was drawn. Data were collected using a questionnaire administered via Google Forms, yielding a response rate of 97.5%. The questionnaire was distributed through WhatsApp, with research assistants facilitating participation and ensuring completion, thereby enhancing the reliability and validity of the responses. Frequency, percentage mean, standard deviations and Chi-square analysis were used to analyse the data.

The findings revealed that 56.0% of respondents had no prior experience with gamification, although a notable 33.7% expressed open, varied reflections, indicating emerging interest and latent potential. In terms of motivation, social features (45.1%) and virtual rewards (32.1%) were the most preferred gamification elements, followed by points and badges. Clear goals and objectives were deemed essential (47.7%) or extremely important (11.4%) by most users, highlighting the role of structured frameworks in enhancing user participation.

Öz

Bu çalışma, oyunlaştırmaya ilişkin kullanıcı algılarını ve oyunlaştırmının akademik kütüphane kaynaklarına katılımı artırmadaki etkinliğini araştırmaktadır. Nijerya'nın iki jeopolitik bölgesi olan Kuzey Merkez ve Güney-Batı'da iki aşamalı örneklemleme tekniği kullanılarak betimsel bir anket araştırma tasarımı benimsenmiştir. Araştırma için kütüphane ve bilgi bilimleri programı olan dört üniversite seçilmiştir. Çalışma evreni, 296 lisans ve yüksek lisans öğrencisinden oluşmakta olup, 198 katılımcıdan oluşan amaçlı bir örneklem seçilmiştir. Veriler, Google Formlar aracılığıyla uygulanan bir anket kullanılarak toplanmış ve %97,5'lik bir yanıt oranı elde edilmiştir. Anket, WhatsApp aracılığıyla dağıtılmış, araştırma asistanları katılımı kolaylaştırmış ve anketin doldurulmasını sağlamış, böylece yanıtların güvenilirliği ve geçerliliği artırılmıştır. Verilerin analizinde frekans, yüzde ortalaması, standart sapma ve Ki-kare analizi kullanılmıştır.



Bulgular, katılımcıların %56,0'sının oyunlaştırma konusunda daha önce bir deneyimi olmadığını ortaya koymuş, ancak %33,7'lik kayda değer bir kesim, ortaya çıkan ilgi ve gizli potansiyele işaret eden açık ve çeşitli düşünceler ifade etmiştir. Motivasyon açısından, sosyal özellikler (%45,1) ve sanal ödüller (%32,1) en çok tercih edilen oyunlaştırma unsurları olurken, bunları puanlar ve rozetler takip etmiştir. Net amaçlar ve hedefler çoğu kullanıcı tarafından gerekli (%47,7) veya son derece önemli (%11,4) olarak görülmüş ve yapılandırılmış çerçevelerin kullanıcıyı geliştirmedeki rolünü vurgulamıştır.


Keywords


Librarianship · fourth industrial revolution · artificial intelligence · gamification · digital badges · academic libraries



Citation | Atıf: Durodolu, O., Onaade Ojo, J. & Ajayi, T. A. (2025). Evaluating user perceptions and the effectiveness of gamification elements in enhancing engagement with library resources. *Bilgi ve Belge Araştırmaları Dergisi—The Journal of Information and Documentation Studies*, (23), 21-34. <https://doi.org/10.26650/bba.2025.23.1633527>

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 2025. Durodolu, O., Onaade Ojo, J. & Ajayi, T. A.

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Introduction

Librarianship in the 21st century has been impacted by advancements in information communications technology (ICT) and the emergence of the Fifth Industrial Revolution (5thIR). Best practices in librarianship are universally seen in areas such as Artificial Intelligence (AI), robotics, blockchain, and gamification. Gone are the days when a library was supposed to be a quiet and noiseless environment where serious library clients go to use information resources. The highest resource the library boasted of was the audio-visual section, which users could visit for relaxation after serious reading and consultation. One of the best practices in the modern library is gamification.

Gamification is a novel application of game mechanics and design to non-game contexts to engage users in problem-solving, performance maximisation and learning (Deterding et al., 2011). It helps users to be more engaged with a task or subject by introducing badges, leader boards, points, levels, rewards, and challenges. Gamification has been applied in education, business, and marketing to improve the effectiveness of activities with positive results. Likewise, libraries and information centres can adopt gamification techniques to enhance user engagement in library services. Bigdeli et al. (2016) suggested that gamification elements in library operations could improve services by improving the engagement of users in library-related activities. Sukovic et al. (2011) argued that such a play engagement is a potential form of the exploration of possibilities. This suggests that gamification provides libraries with the opportunity to serve users better with the new dynamics of the digital information environment.

Recent studies have further explored gamification in educational contexts. For instance, Hamari et al. (2021) conducted a meta-analysis of gamification's impact on user engagement in educational settings, which showed that gamification elements significantly enhance participation and motivation across diverse learning environments. Similarly, Benedek et al. (2023) examined gamification's role in libraries, emphasising the importance of designing tailored experiences that align with users' needs and expectations. These more recent studies align with the findings of this study and provide a broader understanding of gamification's potential in non-game settings. The literature reviewed here serves as the foundation for understanding how gamification can be effectively applied to library services.

Gamification is a popular phenomenon in the field of education and marketing (Adeyemi, Esan and Abdulmalik, 2021). It involves the adoption of game-like elements in a particular process. The emergence of AI and robotics and the inclusiveness of makers-space and cybercafé are some elements of gamification. Some of these elements have been in practice at the University of Lagos, Akoka, contributing to its overall outlook and providing an ambient, relaxed atmosphere where students can have a cup of tea in the cyber-café, experience flexible seating arrangements and discuss their tutorials as a group with their lecturers. This suggests that gamification can be adopted to attract the attention of library users, engage them in game-like library activities, and subsequently influence their overall behaviour towards library usage (Adeyemi, Esan & Abdulmalik, 2021).

Gamification is a strategy that increases engagement and motivation. It is not a fad but a proven method that can be used to achieve desired results. It is also not about adding games to a product or service. Games are just one type of engagement that can be used in gamification. The goal is not to make things more fun but to increase engagement by providing value to users. Badges and leader boards can be used as part of a gamification strategy, but they are not the be-all and end-all. The key is to find the right balance of rewards that encourages the desired behaviour without becoming a crutch. Engagement should be voluntary, not

mandatory, and the goal is to create healthy engagement, not addiction (Dogan, 2023). According to Alaban (2024), gamification can effectively address the barriers to student engagement with library services, particularly the perception of libraries as outdated institutions in an increasingly digital world. By reimagining library interactions through gamified elements, libraries can foster a more dynamic and interactive learning environment.

In his finding, Jug (2023) noted that library gamification projects are rarely formalised and publicised in Slovenia. He investigated the attitudes of Slovenian Library and Information Science (LIS) educators towards the inclusion of games and gamification in their courses and in academic library services. The results showed that they rarely cover games and gamification-related topics in their lectures, nor do they use them for knowledge transfer. However, they especially see the potential to design games and gamification activities that would promote the departmental library, its services and activities, motivate students for independent research and support the educational process. The effectiveness of role-playing games requires students to evaluate sources and synthesise information, thereby promoting active learning and critical thinking (Jung and Wang, 2021). Scavenger hunts are another innovative application of gamification in libraries. These activities encourage users to explore library resources playfully.

George (2025) noted that gamification can offer several advantages for library instruction, like increasing student motivation and interest in learning about library resources and services, particularly for topics that may appear dull or complicated. It can also improve student engagement and participation in library activities, such as workshops, tutorials, orientations, and scavenger hunts. Jacobs (2018) observed that library applications are great tools for the implementation of gamification. As noted by the author, some applications include Mozilla Open Badges, which are paired with reading programs to reward and track user participation. It was further expressed that some youth librarians and children have maximised video game tournaments to entrench their relationship with respect to information service provision. Moreover, Jacobs (2018) reported that some libraries have designed and created games that allow students to search through the shelves or databases to solve a mystery. This kind of game will prepare library users to become familiarised with available resources in the library.

Colasanti, Fiori, and Frondizi (2020) argued that implementing points-based reward systems can incentivize user engagement with library resources. By awarding points for activities such as borrowing books or attending workshops, libraries can encourage users to explore offerings they might otherwise overlook. This approach fosters a sense of loyalty and connection to the library community. Adeyemi, Esan and Abdulmalik (2021) posit that gamification “has been proven to be a useful tool in attracting, engaging, and motivating users to use library services if applied correctly”, while Kim (2015a) notes that gamification can help to capture people’s attention and engage them in a particular activity, as well as influence their behaviour. Hrčková (2011) buttressed that the right application of gamification can help promote libraries and reading, but it requires an alignment with the library’s goals. Therefore, the efficacy of gamification may be lost if its design does not align with the non-game environment’s goal. Hence, libraries must ensure that the game design corresponds with their overall goal of providing efficient library services.

Evaluating user perception and the effectiveness of gamification elements in enhancing the engagement of library resources in academic libraries is a must for developing countries. The acceptance of saying that the library is still in an embryonic stage should by now be a thing of the past. As libraries are ever-growing and changing, librarians should consider using their digital library environments to implement innovative techniques to meet the growing demands of users. Libraries and information centres can adopt gamification techniques to enhance user engagement in library services (Adeyemi, Esan & Abdulmalik, 2023). The user perception and effectiveness of gamification should focus on the benefits, taking into consideration that

it is a way of motivating users to make use of library resources in a more relaxed mood while the modus operandi of reading in the library is not defeated.

This study contributes to the growing body of literature on gamification in academic libraries, with a specific focus on Nigerian universities. While gamification has been widely studied in various educational and commercial contexts, its direct application to library resources in Nigerian universities remains underexplored. This research fills that gap by examining how gamification can enhance user engagement with library resources, thus providing fresh, actionable insights for academic librarians in Nigeria and similar settings. By directly addressing user perceptions, this study offers practical recommendations for libraries looking to implement gamification strategies that resonate with local student populations. Moreover, this research contributes original findings on the potential of gamification as a tool for increasing users' engagement with library services in an era of digital transformation.

Literature Review

Gamification can be defined as a game-like platform designed in non-game settings, which was developed as a fascinating strategy for stimulating user engagement in a library environment (Deterding et al., 2011). Generally, as academic and public libraries gradually move towards digital platforms, gamification is being incorporated into library systems to expand user motivation, encourage exploration of resources, and foster sustained interaction (Werbach & Hunter, 2012).

Numerous studies have investigated user perceptions of gamification in library services. For instance, Hamari, Koivisto, and Sarsa (2014) underscored that users mostly perceive gamification as a positive perception when the game elements are well affiliated with inherent motivations, such as inquisitiveness and the desire for achievement. In the context of libraries, most students use digital resources frequently, underscoring the importance of digital literacy, but some face barriers like awareness and usability (Durodolu et al., 2025). Extant research revealed that these elements not only promote user satisfaction but also strengthen learning outcomes and the level of information literacy skills (Tang & Ho, 2021).

Nevertheless, the usefulness of gamification differs with demographic factors, library settings, and the design of the game elements. For instance, Toda et al. (2019) claimed that inappropriately designed gamification systems can lead to user exhaustion or disengagement if the rewards appear inconsequential or manipulative. Hence, appraising user perceptions becomes critical in enhancing the deployment of gamified structures.

In a related study on academic library users, Mekler et al. (2017) confirmed that meaningful gamification, especially those that support user independence and capability, is most likely to result in greater engagement than those that focus on external rewards. In addition, feedback mechanisms, such as real-time progress tracking and custom-made rewards, are indispensable in supporting user interest (Landers et al., 2018).

Research Gap

Even though gamification has suddenly become popular has received attention in the educational environment, its applicability and assessment in relation to academic libraries has remained under researched. Most of the existing studies have focused on classroom-based learning activities, whereas only a few efforts have systematically appraised how gamification affects users' interaction with library systems and services (Koivisto & Hamari, 2019; Mekler et al., 2017).

In addition, extant literature often measures immediate effects, such as the early usage spikes or satisfaction levels, without evaluating the longstanding engagement, behavioural changes or learning outcomes

(Seaborn & Fels, 2015). Therefore, there is a shortage of longitudinal studies to evaluate the continuous impact of gamification on user behaviour in libraries.

Problem Statement

Evaluating user perception of the effectiveness of gamification elements in enhancing engagement with library resources in this part of the world is a challenge in the field of librarianship. The concept of gamification is very futuristic in the sense that most features of information communications technology required for its practice in our libraries are yet to be implemented. Libraries in various forms, such as public, school, special and academic libraries, are still getting out of their embryonic stage of development in this 21st century where the Fifth Industrial Revolution (5IR) is knocking on the door through Artificial intelligence (AI). Various factors are attributed to the detriment of gamification practice in developing countries. An enabling environment within our modern libraries has to be created, such as a library maker-space and library literacy through library orientation, where the issue of gamification will be seen as a way of marketing the available library and information resources.

Significance of the study

This research work is significant in terms of providing insights into the emergency of a new concept in the field of librarianship that will galvanise the profession to greater heights. This will be a shift from this not-fully-modernised way of information service delivery for our numerous users who are eager to access research materials in their various formats. To put things differently, gamification as a fresh area of study is yet to be fully researched in terms of librarians' evaluation, users' perception and effectiveness of gamification elements in enhancing the engagement of library resources in Nigeria and, by extension, Africa. Thus, this study will provide relevant insights into the evaluation, perception, and readiness of librarians in Nigeria to apply gamification to library services. This study espouses the need for the engagement of the new phenomenon of gamification in library services. This paper also presents librarians' perceptions of the relevance of gamification to library services. There are highlights of the factors that determine the readiness to apply gamification to library services so that libraries can recognise their level of effectiveness when they choose to apply gamification to library services.

Originality/value

This study contributes significantly to the original insight into the growing discourse on user engagement strategies in academic and public library ecosystems by exploring the under-researched area of gamification and library resource usage. While gamification has become relatively popular in the educational technology and commercial sectors, its practical application, especially in the context of library science, remains scanty and limited, mostly in assessing how definite game elements can influence user behaviour, motivation, and information-seeking patterns. Therefore, this research is also appropriate because it responds to a wider alteration in how digital-native users interrelate with information systems. It offers a replicable model for upcoming studies and make contribution to the growing body of knowledge by focusing on improving the relevance, appeal, and instructive impact of library services through gamified user experiences.

Aims of the Study

This research aims to evaluate user perceptions of gamification elements and assess their effectiveness in enhancing user engagement with library resources. Therefore, this research strives to determine the extent to which gamification can improve the overall experience and promote greater use of library services and resources.

Research Questions

1. How do users perceive the implementation of gamification in libraries, and what is its impact on their engagement with library resources?
2. Which gamification elements are most effective in motivating users to actively engage with and explore library resources?
3. How do clear goals and objectives influence user preferences for gamification elements in a library exploration activity?
4. How do user preferences for specific gamification elements influence the perceived effectiveness of gamification in motivating library resource exploration?

Hypotheses

The effectiveness of gamification elements in motivating users to actively engage with library resources is not significantly associated with the primary areas of study within the Library and Information Science.

Methodology

This study is guided by a post-positivist research paradigm in which a qualitative research approach was embraced. In this case, the researchers recognised that reality exists independently of their knowledge but can only be identified imperfectly and probabilistically through human interpretation. Therefore, in qualitative studies like this, the approach seeks to contextualise, in-depth insight whilst maintaining rigorous and systematic methods to approach "truth" as closely as possible (Creswell & Poth, 2018).

This study adopted a descriptive survey research design to examine user perceptions of gamification in academic libraries. A two-stage sampling method was employed, and the research was conducted across two major geopolitical zones in Nigeria: The North Central and South-West regions. From these zones, four universities—comprising both public and private institutions offering Library and Information Science programs—were randomly selected to ensure institutional diversity. The study population consisted of 296 students, including both undergraduate and postgraduate students enrolled in the Library and Information Science programs. From this population, a purposive sampling technique was used to select 198 respondents, based on their availability, willingness to participate, and relevance to the study's objectives.

This study used survey-based, cross-sectional quantitative design, using a structured questionnaire that was administered to a statistically significant sample size of students. The questionnaire was developed using validated constructs from prior studies and tested for reliability (Cronbach's alpha scores reported below). Descriptive statistics were used to analyse user perceptions and the relationship between gamification elements and engagement levels.

Data were collected using a structured questionnaire administered through Google Forms. The instrument was distributed digitally via WhatsApp, leveraging the platform's wide usage among students for efficient reach and participation. A response rate of 97.5% was achieved, which was considered both sufficient and valid for analysis. To ensure data quality and maximise response accuracy, research assistants were designated in each university's department of Library and Information Science (LIS). These assistants were responsible for monitoring participation, clarifying any ambiguities in the questionnaire, and encouraging timely completion. This method enhanced both the reliability of responses and overall participant engagement, as the digital format allowed students to complete the survey conveniently within a familiar online environment. A Cronbach's Alpha reliability test was conducted on the instrument used in this research to test users' perceptions and preferences regarding gamification in libraries. The result yielded an $\alpha = 0.81$, indicating good internal consistency and reliability of the scale.

Analysis of results

Table 1

Demographic information

Variable	Frequency	Percentage
Academic level		
Undergraduates	168	87.0%
Graduates	16	8.3%
Postgraduates	9	4.7%
Total	193	100.0%
Primary area of study		
Academic library	88	45.6%
Public library	7	3.6%
Archives and preservation	10	5.2%
Information technology	83	43.0%
Others	5	2.6%
	193	100.0%

Table 1 presents the demographic and academic characteristics of the 193 respondents. A significant majority (87.0%) are undergraduate students, while graduate students constitute 8.3%, and postgraduate students account for 4.7%. This suggests that the findings are largely reflective of undergraduate experiences and digital library needs, which may differ from those of more advanced researchers. In terms of the primary area of specialisation within Library and Information Science (LIS), 45.6% of respondents focused on academic librarianship, closely followed by 43.0% who specialise in information technology. A smaller proportion of respondents were engaged in archives and preservation (5.2%), public librarianship (3.6%), and other related areas (2.6%). The dominance of academic library and IT specialisations indicates a high potential demand for digital infrastructure, access to electronic academic materials, and technical skill development. Regarding the frequency of digital library resource usage for academic purposes, 31.1% of respondents reported daily usage, 17.1% access resources weekly, and 33.2% use them occasionally. Monthly use was reported by 2.6%, while 16.1% indicated they rarely use digital library resources. While a fair number of students engage with digital resources daily or occasionally, the combined 18.7% who use them monthly or rarely suggests potential gaps in awareness, training, or accessibility. This highlights the need for increased digital literacy initiatives, infrastructure improvements, and promotional strategies to boost consistent usage.

Research Question 1: How do users perceive the implementation of gamification in libraries, and what is its impact on their engagement with library resources?

Table 2

Analysis of responses on participation and perception of gamified activities in the library

Category	Frequency	Percentage
No Experience/No Participation	108	56.00%
Positive Experience	13	6.70%
Unclear/Neutral	7	3.60%
Other Opinions	65	33.70%
Total	193	100%

As seen in Table 2, the data analysis reveals that most respondents, accounting for 108 responses or 56.0%, reported no experience with gamified activities in the library. Meanwhile, 13 respondents, representing 6.7%, shared positive experiences, highlighting increased engagement and enjoyment. A small group of 7 respondents, or 3.6%, expressed neutral or unclear feelings towards these activities. Lastly, 65 responses, making up 33.7%, provided varied opinions or detailed reflections on the concept of gamification in general. This distribution suggests that, while many have not participated in gamified activities, there is an interest in and potential appreciation of these experiences among library users.

Research Question 2: Which gamification elements are most effective in motivating users to actively engage with and explore library resources?

Table 3

Respondents' preferences for gamification elements to enhance library resource exploration

Gamification Element	Yes (Frequency, Percentage)	No (Frequency, Percentage)	Total (Frequency, Percentage)
Points and badges	52 (26.9%)	141 (73.1%)	193 (100%)
Leaderboards	52 (26.9%)	141 (73.1%)	193 (100%)
Quests or missions	38 (19.7%)	155 (80.3%)	193 (100%)
Virtual rewards (e.g., virtual items, coins)	62 (32.1%)	131 (67.9%)	193 (100%)
Social features (e.g., sharing achievements, collaborating with others)	87 (45.1%)	106 (54.9%)	193 (100%)
Others (e.g., Online Scrabble, Football)	3 (1.6%)	190 (98.4%)	193 (100%)

Table 3 reveals that most respondents were motivated by social features, with 87 respondents (45.1%) indicating that these elements would encourage them to explore library resources more actively. Virtual rewards closely followed, with 62 respondents (32.1%) expressing a preference for these incentives. Points and badges are favoured by 52 respondents (26.9%), while leader boards and quests or missions are preferred by 38 respondents (19.7%) and 25 respondents (13.0%), respectively. Only a small proportion, 3 respondents (1.6%), selected other options such as Online Scrabble and Football. These findings suggest that incorporating social features and virtual rewards into library systems could significantly boost engagement and resource use. Libraries may benefit from prioritising these elements to better engage users and enhance their interaction with available resources.

Research Question 3: How do clear goals and objectives influence user preferences for gamification elements in a library exploration activity?

Table 4

Descriptive statistics showing how clear goals and objectives influence user preferences for gamification elements in a library exploration activity

Parameter	Frequency	Percent
Not important	4	2.1
Slightly important	34	17.6
Moderately Important	41	21.2
Very Important	92	47.7
Extremely Important	22	11.4
Total	193	100.0

Table 4 presents data on how clear goals and objectives influence user preferences for gamification elements in library exploration activities. The majority of respondents (92 individuals, or 47.7%) rated clear goals and objectives as essential for engaging with gamified activities in the library. Additionally, 41

respondents (21.2%) considered them moderately important, while 22 respondents (11.4%) viewed them as extremely important. A smaller portion, 34 respondents (17.6%), felt that clear goals were slightly important, and 4 respondents (2.1%) believed they were not important at all. These findings suggest that most library users place a high value on having clear, well-defined goals in gamified library activities. Clear goals appear to be a significant factor in increasing user engagement, highlighting the importance of setting specific and measurable objectives in gamification strategies.

Research Question 4: How do user preferences for specific gamification elements influence the perceived effectiveness of gamification in motivating library resource exploration?

Table 5

Descriptive statistics showing how user preferences for specific gamification elements influence the perceived effectiveness of gamification in motivating library resource exploration

Parameter	Frequency	Percent
Not Effective	7	3.6
Fairly Effective	17	8.8
Effective	71	36.8
Very Effective	58	30.1
Extremely Effective	40	20.7
Total	193	100.0

Table 5 shows how user preferences for specific gamification elements influence their perceived effectiveness in motivating library resource exploration. A significant portion of respondents (71 or 36.8%) rated gamification as effective, with an additional 58 respondents (30.1%) considering it very effective. Moreover, 40 respondents (20.7%) felt that gamification was extremely effective in motivating them to explore library resources. However, a small segment, 17 respondents (8.8%), found it to be fairly effective, while 7 respondents (3.6%) considered it not effective. These results suggest that most users perceive gamification as an effective or very effective tool for increasing engagement with library resources. While some users still perceive limited effectiveness, the overall data indicate that well-designed gamification elements can significantly enhance the motivation and exploration of library resources.

Hypothesis 1: The effectiveness of gamification elements in motivating users to actively engage with library resources is not significantly associated with the primary areas of study within Library and Information Science.

Table 6

Chi-Square test analysis of the association between the effectiveness of gamification elements in motivating users to actively engage with library resources and the primary areas of study within the Library and Information Science

Primary Area of Study	Not Effective	Fairly Effective	Effective	Very Effective	Extremely Effective	Total	Chi-Square Tests (p-value)
Academic Libraries	3	7	37	22	19	88	17.012 (0.385)
Public Libraries	0	0	0	4	3	7	
Archives and Preservation	0	1	6	2	1	10	
Information Technology	3	9	27	28	16	83	
Others	1	0	1	2	1	5	
Total	7	17	71	58	40	193	

The Chi-Square results in [Table 6](#) suggest that there is no significant association between the effectiveness of gamification elements in motivating library users to engage with library resources and their primary areas of study within the Library and Information Science. The p-value for the test was 0.385, which is greater than the commonly used significance level of 0.05. This indicates that, despite some variation in the responses across different areas of study (e.g., Academic Libraries, Public Libraries, Information Technology), these differences are not statistically significant. Hence, the null hypothesis is accepted. This result suggests that gamification is perceived similarly in terms of its effectiveness across various primary areas of study within the field of Library and Information Science.

Discussions of Findings

The study found that a significant portion of library users (56%) reported no experience with gamified activities, suggesting a general unfamiliarity with gamification in library contexts. This may be due to limited implementation or lack of awareness. Anderson et al. (2021) emphasise that the visibility and awareness of gamification are crucial for its success. Libraries should therefore invest in promotional efforts to increase user engagement and familiarise them with gamified activities. Interestingly, 6.7% of the respondents reported positive experiences with gamification, aligning with Hamari, Koivisto, and Sarsa (2014), who found that gamification can effectively motivate users through rewards, achievements, and other game-like characteristics. Positive experiences are linked with higher-quality engagement, reinforcing the concept that gamified systems can encourage meaningful interactions with library resources (Deterding, Dixon, Khaled, & Nacke, 2011).

However, 12.4% of participants rated gamification as "Not Effective" or "Fairly Effective", highlighting potential gaps in the design or execution of gamification features. This suggests that some users' expectations do not align with the gamification elements provided. As Seaborn and Fels (2015) suggested, aligning gamification features with user preferences is essential for its success. Further research could explore these preferences and refine the elements to improve effectiveness. This study also indicates that social features (e.g., sharing achievements, collaborating with others) and virtual rewards (e.g., badges, coins) were the most favoured gamification elements, which supports existing research on the importance of social interaction in learning environments (Vygotsky, 1978). Incorporating these features into library systems could significantly enhance user engagement.

Furthermore, most respondents (47.7%) emphasised the importance of clear goals in gamified activities, confirming that well-defined objectives are critical to guiding user behaviour and increasing engagement. These findings align with those of Deterding et al. (2011), who argued that clear objectives are essential for motivating participants and enhancing the learning experience. The Chi-Square test result shows that the effectiveness of gamification is not significantly associated with the primary areas of study within the Library and Information Science. This suggests that gamification is perceived similarly across different library types, regardless of the academic focus. As a result, libraries should adopt a user-centred approach when designing gamified systems, ensuring that the elements appeal to a broad user base rather than targeting specific academic groups.

Implications

The study has some theoretical and practical implications. Previous gamification frameworks primarily focused on education, business, and marketing contexts. This study extends these frameworks by investigating the unique challenges and opportunities of gamification in libraries. It enhances Deterding et al.'s (2011) framework of game design elements (e.g., badges, leader boards, rewards) by applying it to the library environment and showing how these elements can foster deeper user engagement and enhance learning

outcomes in academic libraries. In terms of practical implications, the findings provide actionable recommendations for libraries seeking to leverage gamification strategies to enhance user engagement. Libraries can implement these strategies based on the study's insights. The study revealed that users prefer social features and virtual rewards to engage with library resources. Libraries should consider incorporating these elements into their gamification designs. For example: they can create leader boards, achievement sharing, and collaborative missions to allow users to interact and collaborate with peers, thus enhancing engagement and fostering a sense of community. A significant portion of respondents emphasised the importance of having clear goals in gamified activities. Libraries should ensure that each gamified task comes with specific objectives and measurable outcomes that guide users towards their goals. For instance, creating reading challenges with set milestones, such as a specific number of articles to read or resources to explore, can help users track their progress and stay motivated.

Limitations

This study, while providing valuable insights into the effectiveness of gamification in academic libraries, is limited by several factors. The research is geographically constrained to two regions in Nigeria, North Central and South-West, which restricts the ability to generalise the findings to other regions or countries with different cultural or educational contexts. Furthermore, while the sample size of 198 respondents was sufficient, it may not fully represent the diversity of library users, particularly across different types of institutions and user demographics. The absence of longitudinal data further limits the study, as it does not assess the long-term effects of gamification on sustained user engagement and library resource utilisation.

Conclusion

This study presents a significant opportunity for libraries to enhance user engagement through the strategic use of gamification. The findings suggest that, while there is some unfamiliarity with gamified activities, there is considerable potential to boost engagement by making gamification visible and accessible to users. Libraries can achieve this by focusing on increasing the awareness of gamified services, setting clear, actionable objectives, and adapting gamified experiences to meet the diverse preferences of their user base. This would not only create a more interactive and inclusive environment but also ensure that users feel more motivated and rewarded for interacting with library resources.

Considering the findings, it is evident that clear goals play a pivotal role in the success of gamification initiatives. Libraries that provide well-defined objectives for users to achieve within gamified activities are more likely to see increased engagement and satisfaction. This is especially important in a library context, where users may be navigating unfamiliar resources. While many users found gamification to be effective, a smaller group expressed that it was not effective or only moderately effective. This suggests that libraries must remain flexible in their approach to gamification, constantly adapting the features and activities based on user feedback and evolving preferences. To maximise the impact of gamification, libraries should consider expanding their efforts to gather user feedback at multiple stages—before, during, and after the implementation of gamified features. The lack of significant differences in the effectiveness of gamification across library types suggests that libraries, regardless of their nature, can adopt gamified systems to improve user engagement.

Looking forward, future research should aim to expand on these findings by exploring longitudinal studies that assess the long-term impact of gamification on user engagement and learning outcomes. Such studies would provide valuable insights into whether the initial boost in engagement from gamification is sustained over time and whether it translates into more significant academic or personal benefits for users. Experimental designs could also be used to isolate the effects of specific gamification elements (e.g.,

badges, leader boards, social features) on user motivation and performance, helping libraries identify the features that are most effective in different contexts.

Incorporating perspectives from library staff and faculty will also provide a more comprehensive understanding of the challenges and opportunities involved in gamification implementation. While the focus of this study was on the user experience, understanding the staff and faculty perspective will be critical for designing and implementing gamification strategies that are both practical and sustainable in the long run. Collaboration among library users, staff, and faculty will be key in creating a gamified system that aligns with both the needs of users and the operational realities of libraries.

Ultimately, this study highlights the immense potential of gamification as a tool for enhancing library engagement and resource use. By embracing innovative gamification strategies, libraries can create more engaging, interactive, and rewarding environments for their users. Libraries that invest in continuous evaluation, feedback, and adaptation will be better equipped to keep up with the changing needs of their users in the digital age. Through ongoing research and thoughtful implementation, libraries can ensure that their gamification initiatives remain relevant, effective, and impactful for years to come.

Recommendation

1. The library management should increase awareness through marketing campaigns and promote gamified activities via library websites and social media.
2. They should prioritise the integration of social features (e.g., leader boards, achievement sharing) in gamified systems to foster collaboration and peer interaction among library users.
3. Feedback should be regularly collected from users via surveys or direct engagement to identify areas for improvement and tailor gamification experiences.
4. Library staff should organise orientation sessions or tutorials to educate users about gamified activities, emphasising how clear objectives can guide their experience and enhance resource exploration.

Funding Statement

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Declaration on the Use of Artificial Intelligence (AI):

Artificial Intelligence (AI) tools were not employed in the conceptualisation, design, data collection, analysis, or interpretation of this research. The only use of AI was limited to basic grammatical corrections and language refinement to enhance clarity and readability. All intellectual content, arguments, and findings presented in this work are the product of the researcher's original effort.



Ethics Committee Approval

The author has declared that no ethical committee approval was required in the country where the research was conducted. Therefore, no ethical committee approval document has been provided. However, the author has confirmed that all necessary ethical procedures were carefully followed throughout the research.

Peer Review

Externally peer-reviewed.

Author Contributions

O.D., O.O.J., T.A.A.; Data Acquisition- O.D., O.O.J., T.A.A.; Data Analysis/ Interpretation- O.D., O.O.J., T.A.A.; Drafting Manuscript- O.D., O.O.J., T.A.A.; Critical Revision of Manuscript- O.D., O.O.J., T.A.A.; Final Approval and Accountability- O.D., O.O.J., T.A.A

Conflict of Interest

The authors have no conflict of interest to declare.

Grant Support

The authors declared that this study has received no financial support.



Etik Kurul Onayı	Yazar, araştırmanın yürütüldüğü ülkede etik kurul onayı zorunluluğu bulunmadığını beyan etmiştir ve bu nedenle etik kurul onay belgesi mevcut değildir. Bununla birlikte, yazar bu araştırma boyunca gerekli tüm etik prosedürleri özenle takip ettiğini beyan etmiştir.
Hakem Değerlendirmesi	Dış bağımsız.
Yazar Katkısı	Çalışma Konsepti/Tasarım- O.D., O.O.J., T.A.A.; Veri Toplama- O.D., O.O.J., T.A.A.; Veri Analizi/Yorumlama- O.D., O.O.J., T.A.A.; Yazı Taslağı- O.D., O.O.J., T.A.A.; İçeriğin Eleştirel İncelemesi- O.D., O.O.J., T.A.A.; Son Onay ve Sorumluluk- O.D., O.O.J., T.A.A.
Çıkar Çatışması	Yazarlar çıkar çatışması bildirmemiştir.
Finansal Destek	Yazarlar bu çalışma için finansal destek almadığını beyan etmiştir.

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