User contentment as a mediator between service quality factors and active digital engagement in ubiquitous library services

Mad Khir Johari Abdullah Sani[1*], Nur Syafiqa Soffiya Zakaria [1],Noor Zaidi Sahid[1], Tamara Adriani[2] and Yeni Budi Rachman[2]
[1] Faculty of Information Science, Universiti Teknologi MARA, Puncak Perdana Campus, MALAYSIA
[2] Faculty of Humanities, Department of Library and Information Science Universitas, INDONESIA
Email: *madkhirjohari@uitm.edu.my (corresponding author); shaffiqa7785@uitm.edu.my; zaidisahid@uitm.edu.my; tamaraas@ui.ac.id; yeni.budi@ui.ac.id
ORCID ID: Mad Khir Johari Abdullah Sani: https://orcid.org/0000-0001-5968-5532
Nur Syafiqa Soffiya Zakaria: https://orcid.org/0009-0000-3625-1432
Noor Zaidi Sahid: https://orcid.org/0000-0003-1528-1514
Tamara Adriani: https://orcid.org/0000-0002-6528-3705
Yeni Budi Rachman: https://orcid.org/0000-0002-6644-1955

ABSTRACT

Although U-Pustaka provides anytime, anywhere access to Malaysia's digital library resources and services, access alone does not ensure sustained Active Digital Engagement (ADE). This study examines how system, information, and service quality influence ADE through user contentment. A quantitative cross-sectional survey of 296 U-Pustaka users was conducted between November and December 2024, and the extended Information Systems Success Model (ISSM) was evaluated using partial least squares structural equation modelling. The findings show that all three quality dimensions enhance user contentment, with information quality exerting the strongest influence. User contentment subsequently strengthens ADE and mediates the relationships between the quality dimensions and engagement. The study extends the ISSM by establishing user contentment as an affective mechanism that translates perceived quality into active engagement. It also provides empirical evidence from Malaysia's national ubiquitous digital library context, where such engagement mechanisms remain underexplored. The findings guide U-Pustaka administrators in prioritising reliable information, intuitive and stable systems, and responsive support services. More broadly, the study supports Malaysia's national digital transformation agenda by demonstrating how user-centred digital library services can promote inclusive participation, trustworthy access to knowledge, and greater public value from national digital investments.

Keywords: Ubiquitous digital libraries; Information Systems Success Model; Service quality; System quality; Information quality; User contentment; Active Digital Engagement.

INTRODUCTION

In today's fast-paced expansion of the global information network environment, national information resource centres have become dynamic rather than static spaces, where active

user involvement is essential. In Malaysia, the U-Pustaka ubiquitous library is regarded as a crucial driver of digital inclusion. However, the focus on "active digital engagement" within the community, rather than platform stickiness, is becoming increasingly relevant. Specifically, the Information Systems Success Model (ISSM) suggests that system, information, and service quality are key drivers of user satisfaction, which in turn leads to the use of the digital library. The latest meta-analysis by Ali and Warraich (2024) empirically demonstrated that ISSM remains a benchmark for evaluating library success, as high-quality information search is key to developing a satisfied user community.

Research provides strong evidence of the positive impact of quality dimensions on user behaviour. Afthanorhan et al. (2020) employed a common factor-based structural equation modelling technique to demonstrate that digital library success in Malaysia requires close links between system and information quality. Iqbal et al. (2022) analysed the impact of these quality dimensions on users' decisions to utilise the digital library and concluded that information quality had the most significant influence. Ahammad et al. (2026) argued that information literacy significantly increased user satisfaction and enhanced interaction with digital content. Finally, a recent validation of ISSM conducted by Riady and Habibi (2025) at an Indonesian open university showed that user satisfaction is a key driver of "net benefits."

Digital libraries may be understood as an umbrella concept encompassing networked digital collections, online catalogues, information-retrieval systems, data archives, and internet-based library services. Their institutional functions include organising, preserving, managing, and providing sustained access to digital information for identified user communities (Borgman, 2025; Jalaludin et al., 2025). U-Pustaka fits this service-oriented classification because it is a national networked library initiative that enables registered users to remotely discover and access organised electronic resources and services through participating Malaysian libraries (Perpustakaan Negara Malaysia, 2026). Accordingly, U-Pustaka is more precisely described as Malaysia's national ubiquitous library service, as it performs the principal access, organisation, resource-discovery, and service-delivery functions associated with digital libraries.

Having established U-Pustaka as a service-oriented digital library, the discussion now turns to how users evaluate and emotionally respond to the quality of its information, systems, and services. While user satisfaction and user contentment represent related but conceptually distinct responses to digital-library use, user satisfaction is an evaluative judgement concerning whether U-Pustaka's information, system, and service performance meets users' expectations. It is an established ISSM outcome through which perceived system qualities influence continued use and engagement (Ali & Warraich, 2024; Kuo et al., 2022; Saba et al., 2025). Contentment is considered a relatively enduring affective state of feeling comfortable, satisfied, and assured because of cumulative positive experiences with U-Pustaka. Contentment, therefore, refers to the emotional well-being that results from these positive experiences, while satisfaction refers to users' evaluation of service delivery.

Empirical research indicates that satisfaction connects perceived service quality with continued use, loyalty, and digital engagement (Riady and Habibi, 2025; Sahid et al., 2026). However, because contentment is not an established ISSM construct, its distinctiveness must be demonstrated through separate measurement items, discriminant validity assessment, and evidence of incremental explanatory value. Accordingly, this study treats user contentment as a theoretically proposed affective extension of ISSM rather than as an alternative label for user satisfaction. Integrating these user-response mechanisms with ISSM quality factors provides a basis for examining how U-Pustaka's service delivery and

technological capabilities may encourage active digital engagement and support broader digital citizenship objectives.

Three connected gaps motivate this study: 1) U-Pustaka-specific evidence on how information, system, and service quality relate to users' active digital engagement remains limited; 2) it is unclear whether user contentment offers explanatory value beyond the satisfaction construct conventionally used in ISSM; and 3) active digital engagement requires validation as an outcome distinct from conventional system use. Therefore, it tests a context-specific extension of ISSM rather than claiming that the established quality–satisfaction relationship is new (Ali & Warraich, 2024; DeLone & McLean, 2003). To address this issue, the present study focuses on investigating whether the quality dimensions lead to higher engagement by promoting user contentment. This study was guided by the following three objectives:

i. To examine the influence of system quality, information quality, and service quality on user contentment in ubiquitous library services
ii. To examine the relationship between user contentment and active digital engagement in ubiquitous library services
iii. To examine the mediating role of user contentment in the relationship between system quality, information quality, service quality, and active digital engagement in ubiquitous library services.

LITERATURE REVIEW

U-Pustaka, which stands for “Ubiquitous Library”, is an innovative initiative of the National Library of Malaysia (MIMOS Berhad, nd). It aims to close the digital gap through a comprehensive portal that provides anytime, anywhere access to diverse library resources and information. Among the most important services provided are e-book borrowing, access to reputable academic databases, and access to heritage collections (Afthanorhan et al., 2020). In other words, the quality of U-Pustaka is expected to depend on information quality and system quality, which play critical roles in meeting the needs of Malaysia’s heterogeneous population (Perpustakaan Negara Malaysia, 2025).

The transition from “stickiness”, which refers to merely retaining users on the platform, to digital engagement can be considered a paradigm shift within the discipline of Library and Information Science. According to Iqbal et al. (2022) and Ali and Warraich (2023), contemporary research focuses on the level of user engagement with digital content on the platform rather than relying on the older metric of visit frequency. Empirical evidence of the importance of digital engagement in the context of Malaysia’s U-Pustaka is provided by Afthanorhan et al. (2020), who found that success in digital libraries is determined not only by access but also by quality dimensions that enable a smoother user experience. This view is supported by Ononogbu and Agubosim (2025), who argue that modern information needs should involve greater behavioural expectations and proactive engagement rather than passive browsing.

Information quality should be considered one of the most important factors in determining user engagement with digital libraries. According to Engku Alwi et al. (2022) and Ahammad et al. (2026), information quality, represented by its accuracy, currency, and relevance, is a prominent predictor of customer satisfaction. The importance of quality in academic and national libraries should be noted, as, according to Azib et al. (2024), higher education institutions require highly relevant information, and the value of retrieved information can

become the main criterion for users' evaluation. Another means of enhancing quality in academic organisations is the use of modern technologies such as artificial intelligence, which can provide a personalised information layer that reduces cognitive load and promotes positive user engagement (Gajbhiye, 2024; Gulati et al., 2024).

The mediating role of user satisfaction is discussed in relation to continuous usage intentions. Roma and Himang (2025) and Sayed and Pirani (2025) provide empirical evidence that factors such as system quality, information quality, and service quality do not foster active engagement and loyalty until user satisfaction is achieved. Riady and Habibi (2025) provide evidence that satisfaction is a key driving force behind the net benefits of Indonesian digital libraries. This implies that, to move "beyond stickiness" and promote continuous usage intentions, U-Pustaka should consider the mediating role of user contentment (Anser et al., 2023; Misra et al., 2023).

Theoretical framework and hypothesis development

This study was theoretically grounded in the updated DeLone and McLean Information Systems Success Model (ISSM), as shown in Figure 1. Information quality, system quality, and service quality were retained as the principal quality dimensions because recent research confirms their relevance to user evaluations and behavioural responses across contemporary information systems (Saba et al., 2025). Specifically, a meta-analysis of library information systems found that all three quality dimensions were positively related to user satisfaction and intention to use, supporting their application to U-Pustaka (Ali & Warraich, 2024).

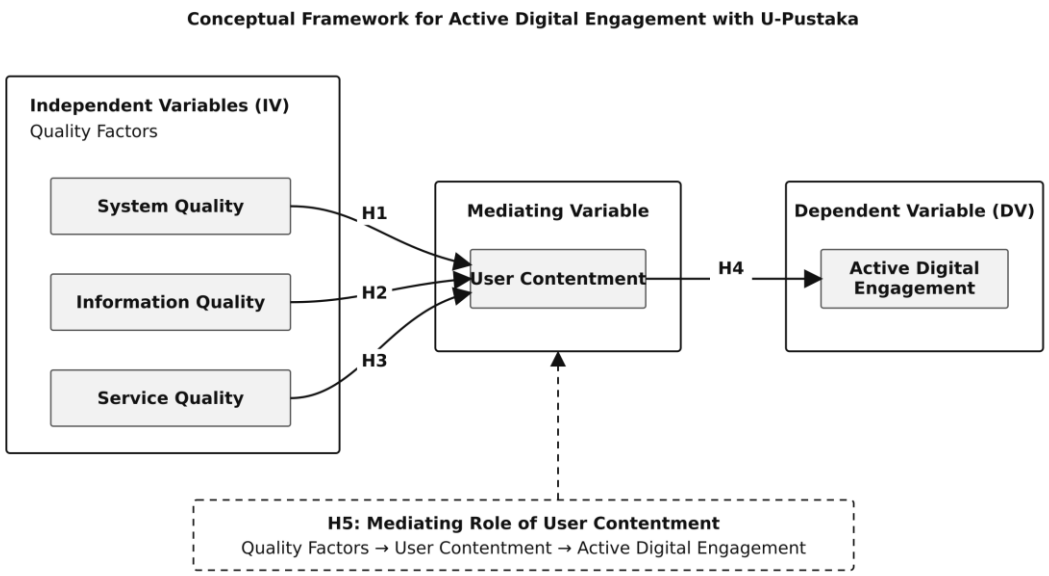

Figure 1: Conceptual Framework for Active Digital Engagement adapted from Information Systems Success Model (DeLone & McLean, 2003)

User Contentment was treated as a mediator, while Active Digital Engagement was treated as an outcome in the extended version of the initial model. The choice of User Contentment as a mediator and Active Digital Engagement as an outcome in the proposed model aligns with findings from recent studies in LIS, which indicate that users' perceptions of the quality and experience of digital libraries can mediate their future continued use and engagement

(Kumar et al., 2023; Marzuki et al., 2025; Haider et al., 2025). In this study, User Contentment refers to a positively charged affective evaluation based on users' accumulated experience of using U-Pustaka, involving feelings of comfort, satisfaction, completeness, and acceptance. However, since User Contentment is not a novel variable in the DeLone and McLean Information Systems Success Model, it must be justified conceptually and operationally for inclusion in the research model. It needs to capture the unique affective attributes of contentment, including satisfaction, pleasure, comfort, and positive evaluation, without relying on typical measures of user satisfaction. When User Contentment and User Satisfaction are both included in the model, it will be necessary to establish their empirical distinctiveness using discriminant validity approaches such as HTMT (Azam & Ahmad, 2024; Haider et al., (2025). Meanwhile, Active Digital Engagement goes beyond usage frequency and encompasses users' active engagement, participation, attention, and affective involvement with U-Pustaka. This is consistent with the conceptualisation of LIS scholars, who define library engagement as a multidimensional variable encompassing behavioural activity and psychological involvement, rather than just library usage (Zhu et al., 2025).

System quality relates to the technical aspects of a digital library, including ease of use, speed of access, and reliability. Altrad et al. (2026) note that the absence of bugs, crashes, and other technical problems helps reduce user dissatisfaction. An intuitive and efficient system automatically contributes to a feeling of contentment with the resource. This quality can be viewed as a hygiene factor: while its presence may go unnoticed, its absence immediately leads to dissatisfaction. According to the findings of Fitria et al. (2024), system quality positively influences customer satisfaction through the mediating effects of perceived ease of use and usefulness. Technical stability in Malaysian digital libraries can be considered an important condition for success. Afthanorhan et al. (2020) confirmed the positive impact of interface quality on user satisfaction via PLS-SEM, stating that users associate a smooth interface with professional services. Furthermore, Riady et al. (2025) concluded that technical reliability and accessibility can be regarded as hygiene factors, meaning that their absence leads to immediate dissatisfaction, whereas their presence alone does not necessarily increase satisfaction. Thus, the following hypothesis is proposed: H1: System Quality significantly and positively influences User Contentment.

Service quality is a concept that reflects users' assessments of the level of support and assistance they receive during their interactions with a digital library. In the digital library context, it encompasses human factors such as skill, responsiveness, dependability, communication, and willingness to help users through virtual reference and helpdesk services. According to Maesaroh et al. (2024), librarian expertise and responsiveness have a significant impact on the quality of virtual reference services, indicating that human support remains relevant in digitally mediated library settings. Valentino and Nurdiansyah (2025) found that users' perceptions of library service quality – including affective service, information control, and the library environment – are linked to their levels of satisfaction.

More recently, service quality has begun to include technology-enabled support such as chatbots, virtual assistants, intelligent search, and recommendation systems. Such support may increase the accessibility, responsiveness, and efficiency of service delivery by providing immediate or continuous assistance to users. However, its effectiveness depends on information accuracy, system integration, data quality, usability, and the availability of human assistance when automated answers are insufficient (Mosha, 2025). Consequently, recent LIS research recommends a hybrid model in which AI-based support complements professionals' expertise in libraries (Adewojo & Olatunji, 2026).

Moreover, empirical library research demonstrates that higher service quality leads to more positive users' evaluations of library services. For instance, Malik et al. (2024) found that service-related library quality has a significant impact on users' satisfaction, which, in turn, influences user loyalty. Overall, it is evident that responsive personnel, reliable virtual reference services, and efficient technology-enabled support can create a more reassuring and rewarding experience in the digital library setting. Therefore, the reviewed literature justifies the following hypothesis: H2: Service quality significantly and positively influences user contentment.

Furthermore, information quality, defined by accuracy, currency, and completeness, acts as a core pillar of user satisfaction in digital library systems. According to Soltani-Nejad et al. (2020), the value users attach to digital libraries is determined by the quality of their content and the extent to which their informational needs are met. Moreover, a study by Iqbal et al. (2022) revealed that, for academic digital libraries, information quality emerges as the primary determinant of both usage and user satisfaction. In agreement with that study, Ahammad et al. (2026) reported that the availability of quality information reduces search efforts and therefore significantly enhances user satisfaction. In U-Pustaka, the quality of metadata and the relevance of collected sources play an important role, as users' cognitive satisfaction is achieved when they consistently find high-quality documents during their searches. This aligns with the following hypothesis: H3: Service Quality significantly and positively influences User Contentment.

User contentment refers to a user's psychological state following his or her evaluation of the experience. According to the ISSM, contentment does not exist on its own; however, this state becomes one of the major drivers of subsequent behaviour. For example, satisfied users tend to develop a 'continuance intention' towards the resource, meaning they intend to continue using it (Al-Hawamleh, 2024; Riady and Habibi, 2025). Thus, contentment may be seen as the first stage of Active Digital Engagement. According to Misra et al. (2023), the intention to use the digital library system on a continuous basis is much greater among students who demonstrate a high level of contentment in using library resources. Similar conclusions were drawn by Riady and Habibi (2025) who found that satisfaction is the only significant predictor of net benefits and sustained behavioural engagement. In terms of the current investigation, this means that 'stickiness' (retention) is the first step before engaging in such activities as content sharing, discussion, or AI-based personalisation (Ononogbu & Agubosim, 2025). Thus, the following hypothesis is proposed: H4: User Contentment significantly and positively influences Active Digital Engagement.

High-quality information, good system performance, and efficient services may contribute to the utilisation of U-Pustaka; however, their mere presence does not guarantee active digital engagement among users. It is believed that this process takes place through users' psychological evaluation of the service experience. Within the framework of the Information Systems Success Model (ISSM), user satisfaction usually acts as an intermediary variable that mediates the effects of perceived system quality on behaviour, including continued usage and engagement (Alshammari & Alshammari, 2024; Riady et al., 2023). Likewise, Roma and Himang (2025) point out that favourable evaluations of library services can promote satisfaction and loyalty. In this research, contentment is seen as an affective variant of the traditional satisfaction variable. It represents users' sustained feelings of comfort, fulfilment, and assurance arising from their accumulated experiences with U-Pustaka. Accordingly, information quality, system quality, and service quality are expected to promote active digital engagement when they generate contentment by meeting users' informational, personal, or professional needs. Therefore, even a technically reliable and well-designed

digital library service may not sustain engagement unless users perceive the overall experience as meaningful and fulfilling. The following mediation hypothesis is proposed: H5: User Contentment significantly mediates the relationship between quality factors and Active Digital Engagement.

METHODS

The target population comprised registered U-Pustaka users aged 18 years and above who had direct experience accessing its digital resources and services. The age criterion ensured that respondents could independently provide informed consent, understand the study information, and meaningfully evaluate their experiences with U-Pustaka. A non-probability purposive sampling technique was employed because respondents needed relevant service experience, and a complete and current sampling frame of eligible users was unavailable (Saunders et al., 2023). Data were collected through a Google Forms questionnaire between November and December 2024. Participation was voluntary, and electronic informed consent was obtained before respondents completed the questionnaire (see Appendix 1). After screening the data for validity and quality, 296 valid responses were retained. Sample size adequacy was determined based on statistical power, model complexity, and the maximum number of predictors of the endogenous variable (Hair et al., 2022).

Information quality, system quality, service quality, user contentment, and active digital engagement were measured using a structured online questionnaire. The questionnaire included multi-item measures adapted from previous studies that were consistent with the extended Information Systems Success Model. The items were applied in the U-Pustaka context without altering their conceptual meaning. Participants' answers were obtained using Likert-type scales for the items listed below. The exogenous quality dimensions of the model were information, system, and service quality, while user contentment was treated as a mediating variable and active digital engagement as an outcome variable. The measurement model was assessed for indicator reliability, internal consistency reliability, convergent validity, and discriminant validity before examining the structural relationships (Hair et al., 2022). Following the specification of the research model, an a priori power analysis was conducted to determine the minimum sample size. A total of 296 valid responses were collected and analysed, although the minimum required sample was 77 respondents. This minimum was calculated using GPower version 3.1.9.7, based on an alpha level of .05, statistical power of .80, three predictors, and a medium effect size ($f^2 = .15$). GPower was used solely for sample-size estimation, whereas the measurement and structural models were analysed using partial least squares structural equation modelling in SmartPLS 4. Therefore, the 10-times rule was not used as the sole justification for sample adequacy.

Instrumentation and variable measurement

The items used to measure these five constructs are presented in Appendix 1. The instrument was developed based on the following five main variables:

- Independent variables: System Quality, Service Quality, and Information Quality
- Mediating variable: User Contentment (defined as users' satisfaction/fulfilment)
- Dependent variable: Active Digital Engagement (Content Engagement)

The constructs were measured using a five-point Likert scale ranging from 1 ("strongly disagree") to 5 ("strongly agree"). The items were adapted from established measures and contextualised for U-Pustaka. Appendix 1 presents the constructs, operational definitions,

item codes, complete item wording and original sources. User contentment and active digital engagement were treated as distinct constructs subject to satisfactory indicator loadings and HTMT evidence of discriminant validity (Hair et al., 2022). The structured questionnaire used for data collection was developed and adapted from various measurement tools reported in previous LIS literature, specifically those by O'Brien and Toms (2008, pp. 938–940), O'Brien et al. (2018, pp. 28–29), Bhattacherjee (2001, pp. 354–355, 369), DeLone and McLean (2003, p. 24), Parasuraman et al. (2005, pp. 220–222); and Soltani-Nejad et al., (2020.)

Data analysis procedures

IBM SPSS version 25.0 was used to analyse the collected data, including demographic information and users' search behaviour. To obtain a clear profile of the users, descriptive statistics, correlation analysis and ANOVA were conducted. To test the theoretical hypotheses regarding the mediating role of User Contentment between the quality factors and Active Digital Engagement in the study of digital libraries, Partial Least Squares Structural Equation Modelling (PLS-SEM) using SMART-PLS software was employed.

RESULTS

Respondent profile and descriptive statistics

Table 1 shows that most respondents were aged 35–44 years (38.9%), followed by those aged 45 years and above (23.6%). Respondents aged 18–24 years accounted for 20.6%, while the 25–34 age group formed the smallest proportion (16.9%). Overall, the sample mainly comprised mature adults. The same table indicates that female respondents constituted the majority (70.3%), compared with males (29.7%). This gender imbalance should be considered when interpreting and generalising the findings. Most respondents were public-sector employees (78.0%), followed by students (18.6%). Private-sector, unemployed, and retired respondents represented only small proportions.

Table 1: Demographic profile of respondents (N = 296)

Demographic characteristic	Category	Frequency (n)	Percentage (%)
Age	18–24 years	61	20.6
	25–34 years	50	16.9
	35–44 years	115	38.9
	45 years and above	70	23.6
Gender	Male	88	29.7
	Female	208	70.3
Employment status	Public sector	231	78.0
	Private sector	6	2.0
	Unemployed	2	0.7
	Retired	2	0.7
	Student	55	18.6

Descriptive analyses of the variables were reported as the mean value of each individual variable. User contentment recorded the highest mean (4.080), followed by information quality, system quality, service quality, and active digital engagement. The standard deviations indicate relatively consistent responses across all five variables overall. Table 2 shows the mean values for the variables.

Table 2: Descriptive analysis of overall variables

Variables	Mean	SD
Active Digital Engagement (ADE)	3.935	0.718
Information Quality (INQ)	4.059	0.644
Service Quality (SEQ)	3.952	0.669
System Quality (SYQ)	4.014	0.750
User Contentment (UC)	4.080	0.677

Model assessment and path coefficient analysis

The measurement model in the current study employs psychometric methods based on PLS-SEM to assess five main constructs: Active Digital Engagement, Information Quality, Service Quality, System Quality, and User Contentment, as shown in Appendix 1. The process ensures the reliability and validity of the measures by applying established standards for Cronbach's alpha, Composite Reliability (CR), Average Variance Extracted (AVE), and Factor Loadings (FL), as also presented in the appendix. The measurement model analysis of the U-Pustaka ubiquitous digital library indicates that this study has extremely high internal reliability and consistency across all five constructs.

Complementing the construct-level results, the item-level statistics reported in Appendix 1 show satisfactory convergent validity and reliability for all five constructs. Indicator loadings range from .749 to .896, meeting or exceeding the recommended threshold of .70. Cronbach's alpha values range from .900 to .929, while composite reliability ranges from .926 to .946, confirming strong internal consistency. AVE values lie between .714 and .778, exceeding the minimum criterion of .50 and thus establishing convergent validity. Mean scores range from 3.588 to 4.149, with the overall response to individual items being favourable. In general, all constructs are reliable. Therefore, the model is theoretically valid and statistically reliable and can serve as a foundation for testing the hypotheses and validating the mediation effects.

Table 3 shows that the square root of AVE for each construct – ACE (.848), IQ (.877), SEQ (.872), SYQ (.845), and UC (.882)—exceeds its correlations with the other constructs. Therefore, the measurement model satisfies the Fornell–Larcker criterion, supporting discriminant validity among the five constructs. Before testing the hypotheses, inner VIF values were examined for collinearity. The VIF values range from 1.000 to 3.260, indicating no critical collinearity problem.

Table 3: Fornell -Larcker criterion values

Construct	Active Digital Engagement	Information Quality	Service Quality	System Quality	User Contentment
Active Digital Engagement (ADE)	0.848				
Information Quality (INQ)	0.748	0.877			
Service Quality (SEQ)	0.688	0.794	0.872		
System Quality (SYQ)	0.620	0.694	0.732	0.845	
User Contentment (UC)	0.799	0.842	0.761	0.712	0.882

Structural model assessment

The results of the structural model analysis depicted in Figure 2 show that all the proposed relationships were statistically significant, demonstrating strong paths to Active Digital Engagement through User Contentment.

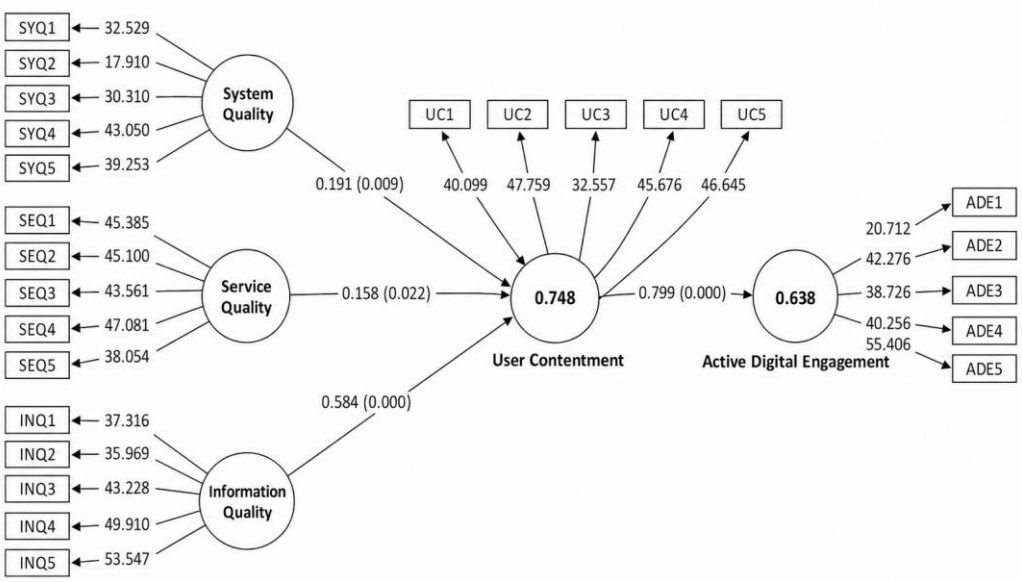

Figure 2: PLS-SEM results for the quality factors model

Path Coefficient analysis of the research hypothesis

H1: Information quality has a significant positive effect on user contentment.

Information Quality had a strong, positive, and statistically significant effect on User Contentment (β=.584, p<.001). This finding implies that users' contentment with U-Pustaka greatly relies on the availability of accurate, relevant, current, understandable and adequate digital information that is needed for their learning and research. Information resources form the main focus of the digital library offering; and thus, users are more likely to be satisfied and fulfilled when the information provided in the digital library directly meets their specific information needs. Hence, the most important quality-related factor in determining User Contentment in the model is Information Quality.

H2: Service quality has a significant positive effect on user contentment.

There was a positive and statistically significant relationship between Service Quality and User Contentment (β=.158, p=.035). However, with the relatively low path coefficient, the effect would be considered weak rather than moderate. The finding indicates that responsive, reliable, helpful and competent support has a positive effect on the contentment of U-Pustaka users, , but Service Quality is not the main factor contributing to their contentment. This relatively modest impact may be due to the nature of service assistance: users may use a digital library primarily for its information and resources, while staff support or technical assistance may be more important when users encounter difficulties. However, the significant relationship indicates that User Contentment is influenced by the interaction of content, system performance, and service support. Therefore, it is vital to ensure that users can easily access support and receive prompt responses to enhance their overall experience

H3: System quality has a significant positive effect on user contentment.
H3 is supported. The impact of System Quality on User Contentment was positive and statistically significant (β=.191, p=.015). The effect however should be described as relatively weak, not moderate. This finding suggests that the usability, reliability, responsiveness, and technical stability of U-Pustaka have a positive impact on users' satisfaction by making it easier and less frustrating to use. While not as influential as Information Quality, System Quality is still a key technical underpinning which allows individuals to focus on their desired learning or information-seeking activities.

H4: User contentment has a significant positive effect on active digital engagement
User Contentment had a strong, positive, and statistically significant impact on Active Digital Engagement (β=.799, p< .001). For Active Digital Engagement (R2=.638), User Contentment was a strong predictor, accounting for 63.8% of the variance. Therefore, users who are more content with U-Pustaka can be considered to be more active in utilizing digital resources and features offered by U-Pustaka.

To test the mediating hypothesis, the bootstrapped indirect effect was examined, while the coefficient of determination and effect size were used to assess the model's explanatory power and substantive relevance, as presented in Figure 3.

H5: User contentment mediates the relationship between information quality, system quality, service quality, and active digital engagement.
User contentment was significantly predicted by system, information and service quality (β = .850, p < .001) and, in turn, significantly predicted active digital engagement (β = .799, p < .001). The indirect effect was substantial and statistically significant (β = .679, p < .001) and was computed as .850 × .799 = .679. The results show that the three quality factors have a significant impact on active digital engagement through the mediation of user contentment.

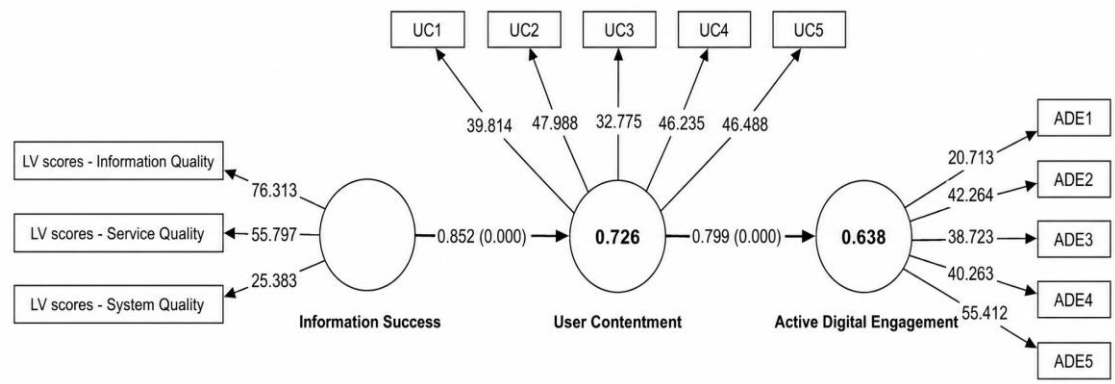

Figure 3: PLS-SEM results mediator effect

Coefficient of determination (R^2)
The quality factors jointly explained 74.8% of the variance in user contentment (R^2 = .748), indicating explanatory power approaching a substantial level. User contentment explained 63.8% of the variance in active digital engagement (R^2 = .638), demonstrating moderate-to-substantial explanatory power and confirming the model's strong explanatory relevance.

Effect size (f^2)

Information quality had a large effect on user contentment (f^2 = .463), whereas system quality (f^2 = .062) and service quality (f^2 = .030) had small effects. User contentment had a large effect on active digital engagement (f^2 = 1.763), demonstrating its dominant contribution to users' engagement with U-Pustaka.

DISCUSSION

The influence of system quality, service quality, and information quality on user contentment

Consequently, the results met the stated objective by identifying that System Quality, Service Quality, and Information Quality jointly affect user contentment with U-Pustaka. This finding is in line with the meta-analysis carried out by Ali and Warraich (2024) on the application of the Information Systems Success Model in the library context. Nonetheless, the differing impacts of the three factors suggest that contentment with the digital library is generated through different processes. Information Quality emerged as the key factor determining contentment with the digital library. These findings correspond to those of Iqbal et al. (2022) and demonstrate the importance of relevant and reliable information in enhancing users' perceptions of the digital library. Additionally, the results are consistent with those of Riady and Habibi (2025), who demonstrated the role of information system qualities in creating digital library satisfaction. Importantly, the results also show that technological efficiency alone cannot overcome problems related to the information provided by the library. Users access the digital library to obtain the information they need; thus, the content is the core value offered.

As expected, system quality positively influenced contentment with the digital library, which is in line with the findings of Khan et al. (2022). Technological modernisation increases library users' satisfaction and trust. Nevertheless, this result contradicts the study of Azib et al. (2024), who identified system quality as one of the key satisfaction determinants. This dissimilarity can be explained by the nature of users' contexts and expectations. Experienced users of U-Pustaka may regard accessibility, reliability, and ease of navigation as basic requirements rather than special features that generate a sense of contentment.

Determining the relationship between user contentment and active digital engagement

In this study, user contentment is defined as a psychological state after use that is positively correlated with, but distinct from, user satisfaction. Accordingly, findings on user satisfaction from earlier studies of digital libraries are used to interpret the relationship between contentment and engagement. These findings indicate a positive relationship between user contentment and active engagement. This result is consistent with Kaba et al. (2025), who found that satisfaction leads to continued digital library use. In addition, the meta-analysis by Ali and Warraich (2024) shows that satisfaction is important for the use of library information systems.

Taken together, these studies imply that contentment is a psychological process that translates positive evaluation into further engagement. Supporting this interpretation, Vandana and Kumar (2025) link positive attitudes to e-resource engagement and continuous use, while Haider et al. (2025) emphasise that accessible digital services and meaningful technological interaction strengthen library engagement. Evidence from cloud services also indicates that satisfaction encourages continued participation, although habit exerts additional influence (Vafaei-Zadeh et al., 2024).

However, these findings contradict any assumption that contentment alone guarantees engagement. Engagement also depends on accessibility, digital literacy, habit, perceived usefulness and opportunities for meaningful interaction. Moreover, continuance intention does not fully represent active engagement, which includes behavioural, cognitive and affective participation. Therefore, contentment should be understood as an important – but not exclusive – driver of active digital engagement.

The mediating role of user contentment in the relationship between quality factors and active digital engagement

User contentment, defined as a favourable post-use psychological evaluation, significantly mediates the relationships between information, system, and service quality and active digital engagement. This finding supports the Information Systems Success perspective, suggesting that quality factors encourage engagement by first creating positive user experiences (Ali & Warraich, 2024; Riady & Habibi, 2025). Information quality produced the strongest indirect influence. This finding is consistent with Iqbal et al. (2022) and Kaba et al. (2025), who revealed that relevant, accurate, and useful digital resources positively impact user evaluations and subsequent use.

System quality showed a similar effect through contentment, which was consistent with the findings of Azib et al. (2024), Khan et al. (2022), and Vafaei-Zadeh et al. (2024), who established that reliable, accessible, and easy-to-use systems alleviate frustration and motivate further engagement. Service quality also exerted a significant but less pronounced indirect effect. This finding supports the results of Alam and Mezbah-ul-Islam (2023) and Salamah et al. (2022), who linked responsiveness to service quality, satisfaction, and subsequent usage. The smaller effect might be due to the largely self-service nature of U-Pustaka. Thus, the findings confirm the importance of contentment as a psychological construct mediating quality and engagement. However, since no direct quality-to-engagement relationships were estimated, the mediating effect cannot be considered complete or partial.

CONCLUSION

This study provides empirical support for the mediating role of user contentment between service quality factors and active digital engagement in Malaysian ubiquitous library services. These results confirm user contentment mediates service quality factors and active digital engagement in U-Pustaka. Drawing on the ISSM, the findings demonstrate that information, system, and service quality strengthen user contentment, with information quality exerting the strongest influence. User contentment subsequently produces a strong positive effect on active digital engagement. Therefore, user contentment represents the central mechanism or engine, through which information systems success promotes meaningful digital participation. The study contributes to LIS theory by shifting attention beyond retention-based outcomes, such as stickiness, towards active behavioural engagement. For Malaysian libraries, this implies that enhancing users' contentment should be prioritised to encourage sustained and active use of U-Pustaka. Nevertheless, the purposive, cross-sectional sample limits geographical representativeness and causal inference, and the model excludes emerging AI-related service features. Future research should employ longitudinal or probability-based sampling across Malaysian regions and incorporate AI personalisation, chatbot quality, transparency, and trust to examine their effects on contentment and active digital engagement.

ACKNOWLEDGMENTS

The authors sincerely thank all participants and individuals who contributed to or supported this study. This research received no specific grant from any public, commercial, or non-profit funding organisation. The authors acknowledge the use of OpenAI's ChatGPT in preparing this manuscript. The tool was used solely to improve the clarity, language, grammar, and presentation of the text. All AI-assisted outputs were critically reviewed, verified, and revised by the authors. The authors retain full responsibility for the accuracy, integrity, originality, and final content of the manuscript, in accordance with applicable COPE guidelines and the journal's ethical standards.

CONFLICT OF INTEREST

The document does not explicitly state any specific conflict of interest. However, the research was conducted in accordance with strict confidentiality and anonymity protocols to maintain the integrity of the study.

ETHICAL APPROVAL AND INFORMED CONSENT STATEMENTS

Ethical approval (100-KPPIM(PI.9/10/)(MR/1107)) was granted by the Institutional Research Ethics Committee of Universiti Teknologi MARA (UiTM). Informed consent was obtained from all participants, who were briefed on the aims of the study.

AUTHOR CONTRIBUTIONS

Conceptualisation: [Abdullah Sani, M.K.J., Zakaria, N.S.S., Sahid, N.Z., Adriani, T., Rachman, Y.B.]; Methodology: [Abdullah Sani, M.K.J., Adriani, T.]; Formal analysis and investigation: [Abdullah Sani, M.K.J., Zakaria, N.S.S.]; Writing – original draft preparation: [Abdullah Sani, M.K.J., Sahid, N.Z.]; Writing – review and editing: [Abdullah Sani, M.K.J.].

REFERENCES

Adewojo, A. A., Olatunji, O. M., & Olalere, P. M. (2026). Effects of AI-driven tools on reference services and staff roles in academic libraries. *Reference Services Review, 54*(1), 15–30. https://doi.org/10.1108/RSR-02-2025-0008.

Afthanorhan, A., Foziah, H., & Majid, N. A. (2020). Investigating digital library success using the DeLone and McLean Information System Success 2.0: The analysis of common factor-based structural equation modeling. *Journal of Physics: Conference Series, 1529*(4), 042052. https://doi.org/10.1088/1742-6596/1529/4/042052.

Ahammad, N., Rahman, Z., & Aziz, A. (2026). Role of information literacy for the user satisfaction of a university library. *Performance Measurement and Metrics, 27*(2), 152–176. https://doi.org/10.1108/PMM-04-2025-0021.

Al-Hawamleh, A. (2024). Exploring satisfaction and continuance intention to use e-learning systems. *International Journal of Electrical and Computer Engineering Systems, 15*(2), 201–214. https://doi.org/10.32985/ijeces.15.2.8.

Alam, M. J., & Mezbah-ul-Islam, M. (2023). Impact of service quality on user satisfaction in public university libraries of Bangladesh using structural equation modeling. *Performance Measurement and Metrics, 24*(1), 12–30. https://doi.org/10.1108/PMM-06-2021-0033.

Ali, I., & Warraich, N. F. (2024). Information systems success in libraries: A meta-analysis of ISSM and future direction. *The Electronic Library, 42*(1), 158–171. https://doi.org/10.1108/EL-06-2023-0163.

Alshammari, S., & Alshammari, R. (2024). An integration of expectation confirmation model and information systems success model to explore the factors affecting the continuous intention to utilise virtual classrooms. *Scientific Reports, 14*, 18491. https://doi.org/10.1038/s41598-024-69401-8.

Altrad, A., Hasan, M. K., Kharma, Q. M., Al-Mekhlafi, M. A., Saeed, A., & Mustafa, S. A. (2026). Enhancing multimodal information retrieval strategies to improve access and discovery in digital library services. *International Journal of Information Sources and Services, 16*(1), 223–230. https://doi.org/10.51983/ijiss-2026.16.1.23.

Anser, M. K., Tabash, M., Nassani, A., Aldakhil, A., & Yousaf, Z. (2023). Toward the e-loyalty of digital library users: Investigating the role of e-service quality and e-trust in digital economy. *Library Hi Tech, 41*(4), 1006–1021. https://doi.org/10.1108/LHT-07-2020-0165.

Kaba, A., Aburezeq, I. M., & ElRefae, G. A. (2025). The impact of users' experience and satisfaction on users' intention to use digital library resources. Performance Measurement and Metrics, 26(1), 1–16. https://doi.org/10.1108/PMM-09-2024-0042.

Azam, M., & Ahmad, K. (2024). Adoption of big data analytics for sustainability of library services in academic libraries of Pakistan. *Library Hi Tech, 42*(5), 1457–1476. https://doi.org/10.1108/LHT-12-2022-0584.

Azib, N. A., Abu, R., Rafie, S. K., & Tokiran, N. S. M. (2024). Evaluating user satisfaction with digital library services: A study of academic libraries in higher education institutions. *International Journal of Research and Innovation in Social Science, 8*(12), 4511–4517. https://doi.org/10.47772/ijriss.2024.8120379.

Bhattacherjee, A. (2001). Understanding information systems continuance: An expectation-confirmation model. *MIS Quarterly, 25*(3), 351–370. https://doi.org/10.2307/3250921.

Borgman, C. L. (2025). Libraries, digital libraries, and data: Forty years, four challenges. *arXiv*. https://doi.org/10.48550/arXiv.2506.15055.

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. https://doi.org/10.1080/07421222.2003.11045748.

Engku Alwi, S. S., Azmi Murad, M. A., Abdullah, S., & Kamaruddin, A. (2022). Development and validation of the quality of online health information seeking: Psychometric properties and a confirmatory factor analysis. *Malaysian Journal of Library and Information Science, 27*(3), 49–68. https://doi.org/10.22452/mjlis.vol27no3.3.

Fitria, F., Yahya, M., Ali, M. I., Purnamawati, P., & Mappalotteng, A. M. (2024). The impact of system quality and user satisfaction: The mediating role of ease of use and usefulness in e-learning systems. *International Journal of Educational Technology and Learning, 6*(2), 119–131. https://doi.org/10.55151/ijeedu.v6i2.134.

Gajbhiye, C. K. (2024). Impact of artificial intelligence (AI) in library services. *International Journal of Multidisciplinary Research and Growth Evaluation, 6*(3), 22452. https://doi.org/10.36948/ijfmr.2024.v06i03.22452.

Gulati, N., Sharma, S., & Tyagi, S. (2024). Transforming digital libraries through AI: Analysing personalization strategies for improved user satisfaction. *ShodhKosh: Journal of Visual and Performing Arts, 5*(5), 605–612. https://doi.org/10.29121/shodhkosh.v5.i5.2024.2077.

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2022). A primer on partial least squares structural equation modeling (PLS-SEM) (3rd ed.). SAGE Publications.

Haider, M., Shah, N. U., & Khan, A. (2025). Enhancing user experiences by service value and digital engagement in public libraries of Pakistan: A TAM-model approach. *Information Development, 41*(2). https://doi.org/10.1108/IDD-04-2024-0061.

Iqbal, M., Rafiq, M., & Soroya, S. H. (2022). Examining predictors of digital library use: An application of the information system success model. *The Electronic Library, 40*(4), 359–375. https://doi.org/10.1108/EL-01-2022-0008.

Jalaludin, U. N., Rosly, N. E., Sahriman, S. H., Rosihidin, A. Z., & Abdul Kadir, M. R. (2025). Digital preservation in digital libraries: A systematic literature review. *International Journal of Research and Innovation in Social Science, 9*(1), 4186–4199. https://doi.org/10.47772/IJRISS.2025.9010326.

Khan, A. U., Rafi, M., Zhang, Z.-Q., & Khan, A. (2022). Determining the impact of technological modernization and management capabilities on user satisfaction and trust in library services. *Global Knowledge, Memory and Communication, 72*(6/7), 593–611. https://doi.org/10.1108/GKMC-06-2021-0095.

Kumar, P., Shukla, B., & Singh, G. (2023). Continuous usage intention for digital library systems among students at higher learning institutions: Moderating role of academic involvement. *Journal of Applied Research in Higher Education, 15*(5), 1752–1766. https://doi.org/10.1108/JARHE-06-2022-0185.

Kuo, C.-S., & Hsu, C.-L. (2022). Continuance intention to use and perceived net benefits as success measures of cloud-based information systems. *Behavioral Sciences, 12*(5), 124. https://doi.org/10.3390/bs12050124.

Maesaroh, I., Haddow, G., Kholis, N., & Mujib, A. (2024). Librarian expertise, responsiveness, and virtual reference service quality: Do communication channels matter? *TEM Journal, 13*(3), 2036–2045. https://doi.org/10.18421/TEM133-31.

Malik, S. A., Fatima, T., Jia, Y., & Pannu, H. (2024). The influence of library service quality, library image, place, personal control and trust on loyalty: The mediating role of perceived service value and satisfaction. *International Journal of Quality & Reliability Management, 41*(4), 1111–1129. https://doi.org/10.1108/IJQRM-05-2023-0167.

Marzuki, M., Azero, S. F. Z., Mohd Zamzuri, N. A. A., & Abdul Kadir, M. R. (2025). A systematic literature review of user behavior and personalization in digital libraries. *International Journal of Research and Innovation in Social Science, 9*(1), 4830–4842. https://doi.org/10.47772/IJRISS.2025.9010372.

MIMOS Berhad. (n.d.). *National information hub (U-Pustaka).* https://www.mimos.my/national-information-hub-u-pustaka/.

Misra, P., Chopra, G., & Bhaskar, P. (2023). Continuous usage intention for digital library systems among students at higher learning institutions: Moderating role of academic involvement. *Journal of Applied Research in Higher Education, 15*(5), 1752–1766. https://doi.org/10.1108/JARHE-06-2022-0185

Mosha, N. F. (2025). The role of artificial intelligence tools in enhancing accessibility and usability of electronic resources in academic libraries. *Library Management, 46*(1–2), 132–157. https://doi.org/10.1108/LM-08-2024-0088.

Ononogbu, P. U., & Agubosim, A. E. (2025). Rethinking information needs in the digital age: An exploration of user behavior, expectations, and engagement in digital libraries. *Journal of the Australian Institute of Special Librarians*, 202501802, 1–25. https://doi.org/10.70118/jaist.202501802.12.

O'Brien, H. L., & Toms, E. G. (2008). What is user engagement? A conceptual framework for defining user engagement with technology. *Journal of the American Society for Information Science and Technology, 59*(6), 938–955. https://doi.org/10.1002/asi.20801.

O'Brien, H. L., Cairns, P., & Hall, M. (2018). A practical approach to measuring user engagement with the refined User Engagement Scale (UES) and new UES Short Form. *International Journal of Human–Computer Studies, 112*, 28–39. https://doi.org/10.1016/j.ijhcs.2018.01.004.

Parasuraman, A., Zeithaml, V. A., & Malhotra, A. (2005). E-S-QUAL: A multiple-item scale for assessing electronic service quality. *Journal of Service Research, 7*(3), 213–233. https://doi.org/10.1177/1094670504271156.

Perpustakaan Negara Malaysia. (2025). *Ask u-Pustaka (Tanyalah u-Pustaka) and portal service menus.* [Official u-Pustaka portal].

Perpustakaan Negara Malaysia. (2026). *Portal u-Pustaka.* https://www.u-library.gov.my/portal/.

Riady, Y., & Habibi, A. (2025). TAM and IS success model on digital library use, user satisfaction and net benefits: Indonesian Open University context. *Library Management, 46*(1/2), 173–188. https://doi.org/10.1108/LM-06-2024-0065.

Roma, M. G., & Himang, C. (2025). Factors affecting library loyalty in academic libraries. *MAIN: Malaysian Alternative Information and Knowledge Network, 8*(2), 131–153. https://doi.org/10.52006/main.v8i2.1315.

Saba, P., DeLone, W., Ul-Ain, N., & Harfouche, A. (2025). The DeLone and McLean Information Systems Success Model: What is the future evolution for its foundations, components, and applications? *Communications of the Association for Information Systems, 57*, 878–898. https://doi.org/10.17705/1CAIS.05738.

Sahid, N. Z., Abdullah Sani, M. K. J., Mohamad, A. N., Saleh, A. A., Baba, J., & Salim, T. A. (2026). AI-enabled quality as a driver of user satisfaction and digital content engagement in Malaysian ubiquitous libraries: An ISSM approach. *Journal of Librarianship and Information Science*. Advance online publication. https://doi.org/10.1177/09610006261442582.

Salamah, A. A., Hassan, S., Aljaafreh, A., Zabadi, W. A., AlQudah, M. A., Hayat, N., Al Mamun, A., & Kanesan, T. (2022). Customer retention through service quality and satisfaction: Using hybrid SEM-neural network analysis approach. *Heliyon, 8*(9), e10570. https://doi.org/10.1016/j.heliyon.2022.e10570.

Saunders, M. N. K., Lewis, P., & Thornhill, A. (2023). Research methods for business students (9th ed.). Pearson.

Sayed, M., & Pirani, S. A. (2025). The role of e-service quality in shaping user loyalty on educational platforms: Mediating effects of user satisfaction. *Economic Sciences, 21*(1), 635–640. https://doi.org/10.69889/efthhp65.

Shah, N. U., Haider, S., Hamid, A., Mehmood, T., & Rehman, A. (2025). Mobile APP adoption in academic libraries of Pakistan: Probing influential factors through technology-based services integration. *Information Development*. Advance online publication. https://doi.org/10.1177/02666669251394361.

Soltani-Nejad, N., Taheri-Azad, F., Zarei-Maram, N., & Saberi, M.K. (2020). Developing a model to identify the antecedents and consequences of user satisfaction with digital libraries. *Aslib J. Inf. Manag*., 72, 979-997.

Soltani-Nejad, N., Taheri-Azad, F., Zarei-Maram, N., & Saberi, M. K. (2020). Developing a model to identify the antecedents and consequences of user satisfaction with digital libraries. *Aslib Journal of Information Management, 72*(6), 979–997. https://doi.org/10.1108/AJIM-04-2020-0099

Vafaei-Zadeh, A., Nikbin, D., Loo, J., & Hanifah, H. (2024). Unlocking Generation Y's continuance intentions in personal cloud storage services: An extended expectation-confirmation model analysis. *The Electronic Library, 42*(5), 827–847. https://doi.org/10.1108/EL-03-2024-0097.

Valentino, R. A., & Nurdiansyah, A. (2025). Measuring user satisfaction: A service quality analysis of the Bengkulu Province library and archives. *Informatio: Journal of Library and Information Science, 5*(3), 280–298. https://doi.org/10.24198/inf.v5i3.64291.

Vandana, & Kumar, S. (2025). Examining the impact of online service convenience on user engagement and intention to continuously use e-resources: Mediating role of attitude. *Global Knowledge, Memory and Communication*. https://doi.org/10.1108/GKMC-05-2024-0272.

Zhu, X., Whitaker, E., Cho, M., & Zhang, M. (2025). Student engagement in academic libraries: A conceptual framework. *College & Research Libraries, 86*(2), 275. https://doi.org/10.5860/crl.86.2.275.

Appendix 1: Measurement instrument and assessment results

NO.	Research Construct (Source)	ITEM	STATEMENT	Scale Item Mean	Scale Item SD	VIF	α	ρ_a (rho-A)	λ	CR	(AVE)
1	System Quality *Users' perceptions of U-Pustaka's usability, response time, availability, reliability, and technical stability (DeLone & McLean, 2003, p. 24).*	SYQ1	The u-Pustaka portal is easy to navigate and user-friendly across different devices.	4.108	0.679	0.900	0.904	0.853	0.926	0.714	0.679
		SYQ2	The U-Pustaka portal responds quickly when I search for digital resources.	4.081	0.702			0.803			0.702
		SYQ3	The U-Pustaka portal provides a seamless "ubiquitous" experience (accessible anytime, anywhere).	3.939	0.795			0.837			0.795
		SYQ4	The search and filtering functions of the U-Pustaka portal operate reliably.	3.953	0.796			0.858			0.796
		SYQ5	The U-Pustaka portal remains stable and does not unexpectedly stop while I am using it.	3.990	0.778			0.873			0.778
2	Information Quality *Refers to users' perceptions of the accuracy, relevance, currency, understandability, and completeness of information provided through U-Pustaka (DeLone & McLean, 2003, p. 24).*	INQ1	The information available through U-Pustaka is accurate.	4.118	0.612	0.925	0.926	0.852	0.943	0.770	4.118
		INQ2	The information available through U-Pustaka is relevant to my needs.	4.030	0.694			0.874			4.030
		INQ3	The information available through U-Pustaka is current.	4.054	0.607			0.879			4.054
		INQ4	The information available through U-Pustaka is easy to understand.	4.000	0.683			0.885			4.000
		INQ5	U-Pustaka provides sufficient information to complete my tasks.	4.095	0.624			0.896			4.095
3	Service Quality *Users' perceptions of the quality of human and platform-based assistance provided by U-Pustaka, particularly its responsiveness, reliability, helpfulness, competence, and accessibility (DeLone & McLean, 2003, p. 24; Parasuraman et al., 2005, pp. 220–222).*	SEQ1	When I request support, the U-Pustaka support team responds promptly.	3.936	0.631	0.922	0.924	0.878	0.941	0.761	3.936
		SEQ2	The U-Pustaka support team provides assistance that is helpful for my needs.	3.831	0.743			0.863			3.831
		SEQ3	I can rely on U-Pustaka's digital support services when I need assistance.	4.000	0.631			0.883			4.000
		SEQ4	U-Pustaka personnel are competent in addressing my technical inquiries.	3.902	0.693			0.889			0.693
		SEQ5	U-Pustaka provides clear instructions and FAQs when I need assistance.	4.091	0.649			0.848			0.649

4	User Contentment *Refers to users' favourable affective evaluation of their accumulated experience with U-Pustaka, reflected in feelings of satisfaction, pleasure, contentment, and delight (Bhattacherjee, 2001, pp. 354–355, 369).*	UC1	Overall, I feel contented with my experience of using U-Pustaka	4.064	0.707	0.929	0.929	0.868	0.946	0.778	0.707
		UC2	Overall, I feel satisfied with my experience of using U-Pustaka.	4.111	0.705			0.890			0.705
		UC3	I feel pleased when using U-Pustaka.	4.125	0.664			0.878			0.664
		UC4	My overall experience with U-Pustaka is enjoyable.	4.051	0.648			0.896			0.648
		UC5	Using U-Pustaka provides me with a fulfilling experience.	4.047	0.661			0.880			0.661
5	Active Digital Engagement *Refers to the depth of users' voluntary behavioural and cognitive investment when interacting with U-Pustaka's digital resources and platform features (O'Brien & Toms, 2008, pp. 938–940; O'Brien et al., 2018, pp. 28–29).*	ADC1	I actively use U-Pustaka's interactive features when exploring digital resources.	3.588	0.826	0.902	0.912	0.749	0.927	0.719	3.588
		ADC2	I become deeply focused when exploring U-Pustaka's digital resources.	4.149	0.671			0.864			4.149
		ADC3	I voluntarily explore additional U-Pustaka resources beyond those I initially intended to use.	3.845	0.760			0.859			3.845
		ADC4	I actively interact with U-Pustaka's digital collections rather than merely viewing them	4.071	0.672			0.866			4.071
		ADC5	I participate in available activities such as saving, sharing, organising, or recommending U-Pustaka resources.	4.024	0.660			0.893			4.024

Note: VIF = Variance Inflation Factor; α = Cronbach's alpha; ρ_a (rho-A) = composite reliability coefficient; **λ** = factor Loadings; CR = Composite reliability; AVE = Average variance extracted