



User Behaviour towards the Use of Library Mobile Applications in Universities in Ekiti State, Nigeria

Abstract

This study examines the behavioural patterns, frequency of use, and determinants of how university students in Ekiti State, Nigeria, interact with library mobile applications. The study investigated how often users access mobile library applications, the primary purposes of use, and the factors influencing their usage decisions. The study adopted a survey research design, collecting data from 418 students through structured questionnaires which were analyzed using frequency counts, percentage, mean scores, and inferential statistical techniques. Findings reveal that respondents use mobile library applications at least three times per week, with information retrieval and catalogue search. The study revealed there is a significant positive relationship between users' behavior with mobile library application services ($r = 0.206, N = 418, P < 0.05$), indicating a positive relationship between user behavior and service utilization. The study also found that users reported using mobile library apps only occasionally due to limited awareness of features and low digital literacy levels. The findings suggest that enhancing user training, promoting advanced features, and improving mobile interface design may increase mobile library application engagement and user satisfaction among university users.

Keywords: Digital library tools; Information access; Library service; Library technology; Library users.

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Introduction

Globally, the integration of Information and Communication Technologies (ICTs) has transformed the way information is created, accessed and disseminated across various sector including education and libraries. In academic libraries, ICT has enabled the automation of services and provision of digital resources, to extend services beyond physical spaces, allowing users to search catalogues, access electronic databases, renew borrowed materials, and receive updates anytime and anywhere. Libraries are evolving to meet the demands of the digital age, with library mobile applications playing a significant role in transforming how users access and interact with information resources. With the rapid growth of mobile technologies, many academic libraries have further extended their services through mobile platforms and application, enabling users to convenient access library resources and services anytime. In Nigerian universities, particularly in Ekiti State, mobile technologies are increasingly being adopted to enhance service delivery, promote flexible learning, and improve user engagement (Adegoke, Adegbite-Badmus, & Ojo, 2022).

Empirical studies have shown that mobile library services significantly influence information-seeking behavior and academic engagement. Sunday and Shehu (2020) observed that mobile-based services such as Mobile Online Public Access Catalogues (MOPAC) and customized library applications have enhanced accessibility and convenience in academic environments. Similarly, Udem and Ogungbeni (2023) reported a positive relationship between mobile library service usage and students' satisfaction with their academic information needs. Adegoke et al. (2022) further established that mobile application integration in academic libraries contributes to increased resource utilization and improved service delivery.

User behaviour towards mobile library applications is often shaped by perceived usefulness, ease of use, accessibility, and system quality among others. Oyewumi, Oyesiku, and Oladokun (2020) found that students prefer mobile platforms for searching resources and accessing digital collections due to convenience and immediacy. Likewise, Moyo and Bashir (2021) revealed that mobile library services enhance user engagement and promote continuous interaction with academic resources. In addition, Agina-Obu and Oyinkepreye (2023) emphasized that usability, interface design, responsiveness, and technical support

significantly influence user engagement and continued usage. These findings align with technology adoption perspectives, which suggest that users are more likely to engage with digital platforms when they perceive them as accessible, reliable, and beneficial.

The COVID-19 pandemic further demonstrated the strategic importance of mobile technologies in sustaining academic library services. Ekwueme, Eze, and Ogbodo (2020) noted that mobile applications became essential tools for remote access to resources during institutional shutdowns, accelerating digital transformation within higher education libraries. Despite these documented advantages, the actual usage of library mobile applications in Nigerian universities appears inconsistent. In universities in Ekiti State, although students widely use smartphones and digital platforms for communication and entertainment, their engagement with library mobile applications for academic purposes remains uncertain. Challenges such as limited awareness, poor internet connectivity, inadequate digital literacy, technical issues, and insufficient user orientation may hinder effective usage (Udem & Ogungbeni, 2023). Furthermore, some mobile library platforms may not fully address users' diverse information needs, thereby affecting usability and engagement levels (Agina-Obu & Oyinkepreye, 2023).

The gap between the availability of mobile library applications and their optimal utilization presents a critical concern for academic libraries in Ekiti State. Without clear empirical evidence on accessibility, usability, patterns of use, and influencing factors, libraries may struggle to design user-centered mobile services capable of meeting students' academic demands. Therefore, it becomes necessary to systematically examine user behavior toward the use of library mobile applications in universities in Ekiti State, Nigeria, with emphasis on accessibility, usability, engagement patterns, and influencing factors.

Objectives of the Study

The main objective of this study is to investigate user behaviour towards the use of library mobile applications in Universities in Ekiti State, Nigeria. The specific objectives are to:

- i. examine the perceived-ease-of-use-of mobile library applications in meeting users' diverse information needs in universities in Ekiti State, Nigeria;

- ii. determine the patterns of user behaviour while accessing library services through library mobile applications in Universities in Ekiti State, Nigeria; and
- iii. identify the key factors influencing user engagement with mobile library applications in Universities in Ekiti State, Nigeria.

Review of related literature

Mobile Library Applications and Ease of Use

Scholarly literature has extensively examined the usability and accessibility of mobile library applications among undergraduate students. Studies generally emphasize that ease of use, system reliability, and accessibility are central to the adoption and effective utilization of mobile library services. Adebayo and Adeyemi (2020) explained that mobile library applications should be designed to accommodate diverse academic resources in order to enhance usability and user satisfaction. Their study highlighted that systems which integrate multiple formats of information tend to be perceived as more flexible and user-friendly. Okiki (2019) revealed that the importance of accessibility features, particularly under poor internet conditions. The author found that offline capabilities and low-bandwidth optimization significantly enhance user engagement and ensure continuous access to information resources. Owolabi and Jimoh (2021) asserted that persistent technical challenges such as application crashes and irregular updates, which negatively affect the reliability of mobile library systems despite improvements in accessibility. A study conducted by Kolawole and Enang (2025) that perceived ease of use and perceived usefulness are critical determinants of technology adoption. According to their study, intuitive interfaces and streamlined workflows significantly improve user satisfaction and frequency of use among students.

Search Functionality and System Efficiency

The efficiency of search functions in mobile library applications has also received considerable attention in the literature. The study conducted by Adeniran (2021) explained that effective information retrieval tools play a crucial role in enhancing academic productivity by enabling quick and accurate access to scholarly materials. Eze and Uzochukwu (2020) identified ease of installation and offline accessibility as strong

predictors of mobile library adoption. Their findings indicate that users are more likely to adopt applications that are easy to install and can function without continuous internet access. Ojo (2020) asserted that many students experience difficulties when using certain features of mobile library applications, pointing to weaknesses in interface design and usability. This highlights the need for continuous improvement in system design to enhance user experience.

Student Engagement with Mobile Library Applications

Empirical studies have shown that undergraduate students actively engage with mobile library applications for both academic and non-academic purposes. Adeniran (2021) emphasized that mobile applications facilitate academic productivity by providing quick access to scholarly resources, thereby supporting learning and research activities. Students commonly use mobile library applications to check borrowed materials, monitor due dates, download study resources, and prepare for examinations. These functions reinforce the role of mobile technologies in supporting academic tasks. However, Owolabi and Jimoh (2021) identified persistent technical instability, including application crashes and poor update mechanisms, as major challenges affecting user experience. Adekunle (2019) maintained that inadequate ICT investment constrains the performance of digital library systems, limiting their effectiveness. Ojo (2020) further observed that interface design and support tools in many Nigerian digital libraries are underdeveloped, resulting in usability challenges for students. These contrasting views suggest that while mobile library applications promote engagement and convenience, they are still faced with structural and technical limitations.

Behavioural Factors Influencing the Use of Mobile Library Applications

Behavioural factors also play a significant role in the adoption and use of mobile library applications. Olatunji and Ogunyemi (2022) identified integration with academic tools and effective technical support as key drivers of user engagement and academic productivity. Their study emphasized that seamless integration enhances the overall learning experience. On the other hand, Adekunle (2019) argued that inadequate ICT infrastructure undermines service delivery and limits the effectiveness of digital library systems. This highlights the importance of institutional investment in supporting mobile technologies. Furthermore, Okiki (2019) noted that fast and reliable internet connectivity is

essential for the successful adoption of mobile learning applications. Supporting this view, Owolabi and Jimoh (2021) observed that connectivity remains uneven across regions, thereby limiting equitable access and reducing the effectiveness of mobile library services.

Personalization, Multimedia Resources, and System Updates

Recent studies have also focused on the role of personalization and multimedia content in enhancing user engagement. Adebayo and Adeyemi (2020) found that multimedia resources significantly improve student engagement by making learning more interactive and accessible. This limitation affects the efficiency of recommendation systems and reduces user satisfaction. In addition, Eze and Uzochukwu (2020) highlighted the importance of regular system updates, noting that irregular updates can undermine user confidence and hinder sustained adoption of mobile library applications. Consistent system improvements are therefore necessary to maintain reliability and user trust. The effectiveness of mobile library applications depends largely on system design, technological infrastructure, user competence, and institutional support.

Methodology

This study adopted survey research design and a semi structured questionnaire was used for data collection for the study in EKSU, FUYOYE, ABUAD, Venite University and BOUESTI. A sample size of 460 respondents was determined using Cochran formula at a 95% confidence level with an acceptable margin error. Stratified random sampling was employed by grouping students according to faculties and department. A total of 418 copies were retrieved and valid for analysis. This gives a response rate of 90.9%.

$$\text{Response Rate(\%)} = \frac{\text{Number of Questionnaire retrieved}}{\text{Number of Questionnaire Distributed}} \times 100 = \frac{418}{460} \times 100 = 90.86\% = 90.9$$

The reliability of the research instrument was assessed using Cronbach's alpha which yielded a coefficient of 0.78, indicating acceptable internal consistency. Data collected were analyzed using descriptive statistics, including frequency counts and percentages, to summarize demographic and response characteristics. A frequency of occurrence were established using SPSS (Statistical Package for and Social Science) version 24.0. Furthermore, the hypotheses formulated were tested using Pearson correlation coefficient



analysis at 0.05 level of significance. The Pearson correlation coefficient were based on the scale value for each variable, rather than the raw data, ensuring accurate measurement of the relationships.

Results and Analysis

Table 1 shows the Distribution of the Respondents by Demographic Variables in Universities in Ekiti State, Nigeria.

Table 1: Distribution of the Respondents by Demographic Variables

Gender	Frequency	Percent
Male	219	52.4
Female	199	47.6
Total	418	100.0
Age	Frequency	Percent
Below 18	101	24.2
18 – 22	158	37.8
23 – 27	123	29.4
28 and above	36	8.6
Total	418	100.0
Faculty	Frequency	Percent
Sciences	95	22.7
Arts	152	36.4
Social Sciences	114	27.3
Education	57	13.7
Total	418	100.0
Level of Study	Frequency	Percent
100	105	25.1
200	132	31.6
300	140	33.5
400	18	4.3
500	23	5.5
Total	418	100.0

Source: Author's Field Work, 2025

Table 1 shows the distribution of the respondents by demographic variables. A total of 219 (52.4%) respondents were male and 199 (47.6%) respondents were female. Analysis of age distribution of respondents showed that majority 158 (37.8%) was between 18 and 22 years old while the least age range was those 28 years and above, comprising just 36 (8.6%) respondents. Regarding academic faculties, students from Arts constituted the largest group at 152 (36.4%) respondents while lowest from Education with 57 (13.7%). As

for the level of study, highest respondents were in the 200 level with 132 (31.6%), while those in the 400 and 500 levels made up smaller portions, at 18 (4.3%) and 23 (5.5%) respectively.

Presentation of Research Questions

This study presents the following research questions:

Research Question 1: What is the perceived-ease-of-use of library mobile applications services by undergraduate students in universities in Ekiti State, Nigeria?

Table 2: Perceived-ease-of-use of Library Mobile Applications Services by Undergraduate Students in Universities in Ekiti State, Nigeria

Statement	SA	A	N	D	SD	Mean	SD
The mobile library application services is easy to download and install.	140 (33.5%)	121 (28.9%)	100 (23.9%)	24 (5.7%)	33 (8.0%)	3.85	1.061
The app interface is intuitive and easy to navigate.	90 (21.5%)	179 (42.8%)	59 (14.1%)	60 (14.3%)	30 (7.3%)	4.15	0.639
I can quickly find the information I need using the app.	102 (24.4%)	101 (24.2%)	136 (32.5%)	45 (10.8%)	34 (8.1%)	3.89	0.865
The app provides clear instructions on how to use its features.	70 (16.7%)	188 (45.0%)	74 (17.7%)	63 (15.1%)	23 (5.5%)	4.05	0.631
The search function is efficient in retrieving relevant materials.	131 (31.3%)	104 (24.9%)	104 (24.9%)	44 (10.5%)	35 (8.4%)	4.09	0.863
The app works well on my smartphone without frequent crashes.	102 (24.4%)	119 (28.5%)	104 (24.9%)	53 (12.7%)	40 (9.5%)	4.00	0.703
The app supports multiple file formats (PDF, EPUB, etc.).	98 (23.4%)	134 (32.1%)	106 (25.3%)	45 (10.8%)	35 (8.4%)	3.90	0.750
I receive timely notifications about due dates and new resources.	115 (27.5%)	142 (34%)	51 (12.2%)	63 (15.1%)	47 (11.2%)	4.15	0.612
The app is accessible even with a slow internet connection.	126 (30.2%)	105 (25.1%)	110 (26.3%)	42 (10%)	35 (8.4%)	4.14	0.805
The app provides offline access to some materials.	90 (21.5%)	151 (36.1%)	60 (14.4%)	67 (16%)	50 (12%)	4.07	0.595
The app allows easy account login and password recovery.	103 (24.6%)	131 (31.3%)	105 (25.2%)	44 (10.5%)	35 (8.4%)	3.91	0.758
The app supports multiple languages (if applicable).	70 (16.7%)	133 (31.8%)	112 (26.8%)	59 (14.2%)	44 (10.5%)	3.90	0.653
The app integrates well with other university digital services.	110 (26.3%)	143 (34.2%)	81 (19.4%)	48 (11.5%)	36 (8.6%)	4.27	0.766
The app has a help section or chatbot for user support.	84 (20.1%)	165 (39.5%)	41 (9.8%)	73 (17.5%)	55 (13.1%)	4.10	0.538
The app meets my academic information needs effectively.	110 (26.3%)	124 (29.6%)	110 (26.3%)	37 (8.9%)	37 (8.9%)	4.00	0.840



Table 2 shows the use of library mobile applications services by undergraduate students in universities in Ekiti State, Nigeria. Based on the data, the highest mean was received timely notifications about due dates and new resources (mean=4.15, SD= 0.612) while the lowest mean was the mobile library application services was easy to download and install (mean=3.85, SD= 1.061) .These findings demonstrate that students perceive the mobile library applications as versatile, reliable, and user-friendly, with particular strengths in support features, integration, and accessibility.

Research Question 2: What are the usage patterns of library mobile applications services among the undergraduate students in Universities in Ekiti State, Nigeria?

Table 3: Usage Patterns of Library Mobile Applications among the Undergraduate Students in Universities in Ekiti State, Nigeria

Statement	SA	A	N	D	SD	Mean	SD
I use the app to access e-books.	124 (29.7%)	103 (24.5%)	111 (26.6%)	45 (10.8%)	35 (8.4%)	4.02	0.763
I use the app to search for journal articles.	95 (22.7%)	141 (33.8%)	73 (17.5%)	62 (14.8%)	47 (11.2%)	4.05	0.633
I use the app to check my borrowed books and due dates.	101 (24.3%)	125 (30%)	118 (28.2%)	41 (9.7%)	33 (7.8%)	4.04	0.776
I use the app to download study materials.	92 (22.0%)	107 (25.6%)	115 (27.5%)	53 (12.7%)	51 (12.2%)	3.94	0.702
I use the app for exam preparation.	112 (26.8%)	121 (28.9%)	111 (26.6%)	40 (9.5%)	34 (8.2%)	4.03	0.816
I use the app for assignment and research purposes.	130 (31.1%)	122 (29.2%)	70 (16.7%)	55 (13.3%)	41 (9.7%)	4.14	0.677
I use the app to read leisure materials (novels, magazines).	143 (34.2%)	122 (29.2%)	65 (15.6%)	48 (11.5%)	40 (9.5%)	4.30	0.723
I use the app to request books not available in the library.	67 (16.0%)	137 (32.8%)	108 (25.8%)	61 (14.6%)	45 (10.8%)	3.90	0.640
I use the app to interact with librarians (chat, queries).	108 (25.8%)	118 (28.2%)	117 (28%)	39 (9.4%)	36 (8.6%)	3.88	0.813
I use the app to attend virtual library training/webinars.	114 (27.3%)	129 (30.9%)	75 (17.9%)	57 (13.6%)	43 (10.3%)	4.09	0.667
I spend more than 30 minutes per session on the app.	117 (28.0%)	104 (24.8%)	116 (27.8%)	46 (11.0%)	35 (8.4%)	4.00	0.747
I prefer using the app services over visiting the physical library.	72 (17.2%)	124 (30.0%)	126 (30.1%)	55 (13.1%)	41 (9.6%)	3.87	0.677
I recommend the app to other students.	122 (29.2%)	93 (22.2%)	131 (31.3%)	41 (9.7%)	31 (7.6%)	3.98	0.779
I encounter difficulties when using certain app features.	98 (23.4%)	147 (35.2%)	59 (14.1%)	65 (15.6%)	49 (11.7%)	4.09	0.606
I have uninstalled and reinstalled the app due to technical issues.	117 (28.0%)	118 (28.3%)	105 (25.1%)	39 (9.3%)	39 (9.3%)	4.12	0.782



Table 3 reveals the usage patterns of library mobile application services among undergraduate students in universities in Ekiti State, Nigeria. Based on the data, the highest mean was using the app for assignment and research purposes (mean=4.14, SD= 0.677) while the lowest mean was preferred using the app services over visiting the physical library (mean=3.87, SD= 0.677). Majority Most undergraduate students in Ekiti State frequently utilize the library mobile applications for a variety of academic and leisure activities, spend considerable time on the app, and hold a generally positive outlook on its utility despite some technical challenges.

Research Question 3: What are the factors influencing users' behaviour with the use of library mobile applications?

Table 4: Factors Influencing Users' Behaviour with the Use of Library Mobile Applications

Statement	SA	A	N	D	SD	Mean	SD
Fast internet connectivity influences me to use the app more.	121 (28.9%)	143 (34.2%)	75 (17.9%)	47 (11.2%)	33 (7.8%)	4.02	0.773
Availability of updated academic materials increases my app usage.	77 (18.4%)	137 (32.8%)	98 (23.4%)	61 (14.6%)	45 (10.8%)	3.95	0.646
User-friendly design motivates me to use the app frequently.	129 (30.9%)	110 (26.3%)	108 (25.8%)	36 (8.6%)	35 (8.4%)	3.97	0.807
Positive peer recommendations influence my app engagement.	65 (15.6%)	157 (37.5%)	74 (17.7%)	70 (16.8%)	52 (12.4%)	3.98	0.577
Regular app updates improve my experience.	122 (29.2%)	84 (20.1%)	119 (28.5%)	53 (12.7%)	40 (9.5%)	3.78	0.869
Personalised recommendations (e.g., suggested books/articles) would increase my app usage.	36 (8.6%)	162 (38.7%)	95 (22.7%)	71 (17.1%)	54 (12.9%)	3.86	0.542
Integration with academic tools (e.g., Google Scholar, citation managers) would enhance my engagement.	119 (28.5%)	147 (35.2%)	61 (14.6%)	49 (11.7%)	42 (10.0%)	4.22	0.704
Gamification features (e.g., rewards for frequent use) would motivate me to use the app more often.	110 (26.3%)	141 (33.7%)	90 (21.5%)	47 (11.2%)	30 (7.3%)	3.97	0.752
Availability of multimedia resources (e.g., videos, podcasts) would make the app more appealing.	68 (16.3%)	171 (40.9%)	92 (22.0%)	57 (13.5%)	30 (7.3%)	3.81	0.695
Quick resolution of technical issues by support staff would improve my reliance on the app.	104 (24.9%)	153 (36.6%)	73 (17.5%)	46 (11.0%)	42 (10.0%)	4.22	0.817



Table 4 illustrates the key factors influencing users' behaviour towards library mobile applications. Based on the data, the highest mean was quick resolution of technical issues by support staff would improve my reliance on the app (mean=4.22, SD= 0.817) while the lowest mean was availability of multimedia resources (e.g., videos, podcasts) would make the app more appealing (mean=3.81, SD= 0.695).

Hypothesis: There is no significant relationship between users' behaviour and library mobile application services among undergraduate students in universities in Ekiti State, Nigeria.

Table 5: Test of Relationship between Users' Behaviour and Library Mobile Application Services among undergraduate Students in Universities in Ekiti State, Nigeria

Variable	N	Mean	SD	r.-value	P	Decision
Library Mobile Application Services	418	4.03	0.228	0.206**	0.000	Rejected
Users' Behaviour	418	4.03	0.234			

Source: Computed Data, 2025_** Correlation is Significant at the 0.05 level (2 tailed)

Table 5 shows the significant relationship between the users' behaviour and library mobile application services among undergraduate students in universities in Ekiti State, Nigeria. The mean score of users' behaviour is Mean = 4.03, SD = 0.228 while the mean score of library mobile application services (Mean = 4.03, SD = 0.234) of undergraduate students in universities in Ekiti State, Nigeria is found to be significant at $P < 0.05$. Thus, the Mean of users' behaviour ($r = 0.206^{**}$, $N = 418$, $P < 0.05$) has significant influence on library mobile application services. Therefore, the null hypothesis is rejected.

Discussion of the Findings

The findings of this study reveal that undergraduate students in Ekiti State generally perceive mobile library applications as easy to use, versatile, and user-friendly. This supports Adebayo and Adeyemi (2020), who emphasized the importance of accommodating diverse academic resources to enhance usability. It also aligns with Okiki (2019), who noted that offline and low-bandwidth features improve accessibility and engagement. However, the findings contradict Ogunmodede (2018), who highlighted the lack of indigenous

language support as a barrier to inclusivity. Similarly, Owolabi and Jimoh (2021) identified persistent technical issues such as app crashes and poor updates, which challenge system reliability. These findings are consistent with the Technology Acceptance Model (TAM), as explained by Kolawole and Enang (2025), which posits that perceived ease of use and usefulness influence technology adoption. However, challenges in locating information contradict Adekunle (2019), who attributed such inefficiencies to inadequate technical investment. While ease of installation and offline access support the findings of Eze and Uzochukwu (2020), usability challenges reported by students align with Ojo (2020), who observed weaknesses in interface design.

In terms of engagement, students actively use mobile library applications for academic purposes such as accessing materials and preparing for examinations, supporting Adeniran (2021). Nonetheless, issues of technical instability reported by Owolabi and Jimoh (2021) and infrastructural limitations highlighted by Adekunle (2019) remain concerns. Ojo (2020) also noted that underdeveloped interface designs contribute to user difficulties, which partly contrasts with the positive engagement observed. The study further indicates that behavioural factors such as integration with academic tools and access to technical support significantly influence usage. This agrees with Olatunji and Ogunyemi (2022), who emphasized ICT integration as essential for academic productivity. The importance of reliable internet connectivity also supports Okiki (2019), although Owolabi and Jimoh (2021) noted that uneven connectivity limits access. In contrast, Adekunle (2019) argued that inadequate ICT infrastructure continues to hinder effective service delivery. The findings highlight the importance of personalized content and multimedia resources, supporting Adebayo and Adeyemi (2020), who found that multimedia enhances engagement. However, this contradicts Ojo (2020), who argued that personalization systems are still underdeveloped. The issue of irregular updates, as noted in this study, aligns with Eze and Uzochukwu (2020), who stated that inconsistent updates reduce user confidence and long-term adoption.

Conclusion

This study investigated user behaviour towards the use of library mobile applications in universities in Ekiti State, Nigeria. Findings reveal that students exhibit a generally

positive attitude toward adopting mobile library technologies. Users are motivated by the convenience, accessibility, and immediacy of information that these applications provide. However, behavioral patterns indicate that factors such as digital literacy, internet connectivity, and the usability of the mobile applications significantly influence the frequency and effectiveness of usage. While a significant portion of users actively engages with the applications, a notable number still face challenges in navigation, system responsiveness, and integration with other library services. User behaviour is shaped by a combination of technological, personal, and institutional factors, highlighting both the potential and limitations of mobile applications in enhancing library service delivery

Recommendations

Based on the findings of the study, the following are recommended:

- i. **Enhance Digital Literacy Training:** Universities should organize workshops and tutorials to improve users' digital skills, ensuring they can effectively navigate and utilize mobile library applications.
- ii. **Improve Application Usability:** Developers and library IT teams should focus on user-friendly interfaces, responsive designs, and intuitive navigation to reduce barriers to usage.
- iii. **Increase Awareness and Promotion:** Libraries should actively promote mobile applications through orientations, social media, and campus campaigns to encourage broader adoption.
- iv. **Ensure Reliable Connectivity:** Universities should invest in stable Wi-Fi and mobile data solutions to facilitate uninterrupted access to library applications.
- v. **Feedback Mechanism:** A robust feedback system should be established to capture users' challenges and suggestions, allowing continuous improvement of the applications.

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