

**Library Design and User Satisfaction in Public University Libraries, Ogun State,
Nigeria**

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Abstract

This study investigated the influence of library design and user satisfaction in public universities, Ogun State, Nigeria. This study adopted a descriptive survey design for a population of 68,962 undergraduates of the three public universities in Ogun State. To determine each of the universities' representative in this study, a stratified sampling method was used. Data were sourced using a well-structured and its reliability test was conducted for user satisfaction and library design, which produced Cronbach's Alpha values of 0.801 and 0.703, respectively. The obtained data were analyzed using descriptive statistics (frequency, percentage, mean, and standard deviation) and inferential statistics (linear and multiple regression at 0.05 level of significance). The combined result [Adj $R^2 = 0.586$; $f(2, 301) = 328.53$; $p < 0.05$] revealed that library design significantly influenced user satisfaction in public universities, Ogun State. Relatively, library design result [$B = 0.488$, $p < 0.001$] contributed 48.8% to user satisfaction. The findings show that library design is a meaningful predictor, since it has a higher influence on user satisfaction. In conclusion, the study affirmed that well-designed libraries equipped with appropriate technology substantially enhance the satisfaction levels of their users. It was recommended that management of public universities in Ogun State should continuously investing in physical structure of the libraries and also equip library with up-to-date ICT tools such as self-service portals, e-library platforms, reliable internet connectivity, and digital cataloguing systems to meet users' evolving needs.

Keywords: Integrated Library System, Library Design, Perceived Performance,
User Satisfaction

1.0 INTRODUCTION

User satisfaction is the extent to which patrons such as students, lecturers, researchers, and other scholars, find the services, facilities, and resources provided by the library adequate and fulfilling in their academic and research needs. It encompasses their experiences with accessing books, journals, and other learning resources, as well as their interactions with library staff and technological systems. A highly satisfied user is more likely to develop a positive perception of the library and engage more with its offerings. User satisfaction can be understood as the extent to which the services provided by an institution meet or surpass the expectations of its users. It encompasses a range of factors including service quality, accessibility, responsiveness, and the overall experience during the use of a service, (Irenoa, Tijani & Bakare, 2018).

In library services, user satisfaction is particularly vital as it directly impacts how frequently and effectively patrons engage with available resources. High levels of satisfaction typically indicate that users find the library services reliable, relevant, and supportive of their information or academic needs. Globally, user satisfaction in library services has been a critical focus of research, as libraries play a central role in academic success and knowledge dissemination. Despite the widespread adoption of digital libraries and modern information systems, studies reveal persistent challenges affecting user satisfaction. For instance, research in European and North American universities shows that while digital access has improved, gaps remain in the usability of library interfaces, search functionalities, and the timeliness of information delivery, (Tenopir, 2016). In some developing regions, including parts of Africa and Asia, infrastructural inadequacies, limited digital literacy, and insufficient resources continue to hinder library service effectiveness, (Putra, Subiyakto, Yunita, Gunawan & Durachman, 2018). These issues contribute to inconsistencies in user satisfaction, as patrons often encounter delays in accessing materials, difficulties in navigating catalogues, and limited support for research-specific queries.

User satisfaction is a central metric used to evaluate the success of library services, (Putra, Subiyakto, Yunita, Gunawan & Durachman, 2018). In many parts of the world, especially in

developed countries, libraries have evolved into multifaceted institutions that serve educational, technological, and social functions. High user satisfaction reflects not just effective service delivery but also the library's ability to remain relevant, inclusive, and innovative in a rapidly evolving information landscape. When focusing specifically on libraries in Nigeria, the concept of user satisfaction becomes influenced by unique structural and contextual challenges. Many libraries across the country face limitations in funding, infrastructure, and technological advancement, (Okogwu & Mole, 2019). These limitations often affect the availability and quality of resources such as books, internet access, electronic databases, and study facilities. As a result, users may experience frustration when their expectations for learning and research support are not met.

A crucial determinant of user satisfaction is the availability and accessibility of resources, (Lotfy, Kamel, Hassan & Ezzeldin, 2022). The physical environment is an essential factor in user satisfaction, as patrons often evaluate their experiences based on comfort, cleanliness, and availability of quiet or collaborative study spaces, (Twum, Adams, Budu & Budu, 2022). Moreover, user satisfaction reflects the library's ability to support academic success and foster a conducive learning environment.

The satisfaction of patrons is essential as it impacts not only their ongoing engagement with the library but also their academic success. Satisfied library users are more likely to rely on the library's resources, utilize its services more frequently, and participate in programs offered by the library, (Guo, Wang & Caneparo, 2024). Furthermore, user satisfaction contributes to the library's reputation, potentially attracting new users and fostering a supportive learning environment. As libraries continue to evolve with the integration of modern technology and design, measuring user satisfaction provides valuable insights for continuous improvement, ensuring that libraries remain responsive to the needs of their patrons.

A library is an essential resource hub that provide relevant and useful learning materials and tools for academic and professional growth, all of which significantly influence user satisfaction. Library design encompasses the architectural and spatial planning elements of

academic libraries, which are fundamental to enhancing user satisfaction. A well-designed library with diverse collections, ergonomic spaces, and integrated technology fosters a positive user experience and satisfaction by meeting patrons' academic and personal needs efficiently, (Adegoke, Usman & Bitagi, 2022). A well-designed library promotes a functional and welcoming atmosphere that caters to diverse patron needs. Key components of library design include spatial arrangement, furniture layout, lighting, ventilation, and accessibility. These elements combine to create an environment conducive to learning, research, and collaboration. Modern academic libraries adopt flexible and multifunctional designs to accommodate a variety of activities, from individual study to group discussions, (Gusvita & Alon, 2021). Open spaces, modular furniture, and designated zones for quiet study or collaborative work are integral to meeting the needs of diverse users. Incorporating natural lighting, soundproofing, and ergonomic furniture further enhances comfort, reducing fatigue and increasing the time patrons spend in the library.

The objectives of this study are to: identify the level of user satisfaction in public universities' libraries, Ogun State, Nigeria; and assess the state of library design in public universities, Ogun State, Nigeria. The study will be guided by the hypothesis below:

H₀1: There will be no significant influence of library design on the user satisfaction among patrons of academic libraries in public universities, Ogun State, Nigeria.

2.0 LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1 User Satisfaction and Library Design

User satisfaction is broadly defined as the perceived fulfillment of user expectations through the services or products offered. In academic libraries, user satisfaction goes beyond just accessing books, it includes a patron's entire experience with the library, from entering the building to engaging with its digital systems. Satisfaction is measured by how well the library meets users' academic, research, and personal needs. This concept is central to library and information science because it represents a shift from resource-centered to user-centered services, (Putra, Subiyakto, Yunita, Gunawan & Durachman, 2018); and (Nyakweba,

Bukirwa, Sendikadiwa & Ratanya, 2022). A satisfied user is more likely to return, recommend the library, and use its resources more effectively, which aligns with the core mission of academic institutions: to support learning, teaching, and research, (Arinola, Oyewunmi, Sobalaje & Olatunji, 2024). Libraries that have invested in ergonomic furniture, eco-friendly lighting, and flexible space usage tend to report higher satisfaction rates among their patrons,(Rezvani, Heidari, Roustapisheh & Dokhanian, 2022).

In today's academic environment, a library without adequate technological infrastructure is unlikely to meet the needs of modern users. Therefore, digital tools such as online public access catalogs (OPAC), digital repositories, e-journal platforms, e-books, and research databases must not only be available but also be easy to navigate, (Yakubu, Ibrahim, Edward & Paul, 2024). Wi-Fi connectivity, availability of computers, printing and scanning facilities, and online help services also play crucial roles. However, even when technology is available, challenges such as inadequate user training, frequent downtimes, or overly complex systems can frustrate users and diminish satisfaction. Thus, effective digital integration requires both robust technology and user-friendly design.

3.0 METHODOLOGY

This study adopted a survey research design. The population for this study consists of 68,962 undergraduates from three public universities in Ogun State. The distribution is illustrated as follows:

Table 1: Population of the Study

Institutions	Population
Federal University of Agriculture, Abeokuta	20,233
Olubisi Onabanjo University, Ago-Iwoye	28,898
Tai Solarin University of Education, Ijebu-Ode	19,831
Total	68962

Sources: Universities Library

The sample size of this study is 398 using Taro Yamane formula (1967), and stratified sampling method was used to select the number of targeted respondents in each of the public universities in Ogun Public.

The reliability of the instrument was tested through a pilot study using twenty (20) copies of the questionnaire which was administered to some undergraduates in University of Lagos, Akoka, Lagos State, due to its large, diverse student body and well-established library infrastructure. This institution was not part of the study. Data from the pilot study were analyzed using Cronbach's Alpha reliability test and the values of the variables showed that User Satisfaction (.801) and Library Design (.703), both exceeded the minimum acceptable threshold of 0.70. Hence, the items used to measure each construct were reliable and consistent. This implied that the instrument for this study was suitable for data collection and capable of producing dependable results for subsequent analysis.

4.0 RESULTS AND DISCUSSION

Research Question One: What is the Level of User Satisfaction among Patrons of Academic Libraries in Public Universities, Ogun State, Nigeria?

Table 2: The Level of User Satisfaction among Patrons of Academic Libraries in Public Universities, Ogun State, Nigeria

S/ N	Expectations	VHE	HE	LE	VLE	\bar{x}	Std. dev	Remark
1	I expect the library to meet my academic needs.	120 (39.9%)	100 (33.2%)	50 (16.6%)	31 (10.3%)	3.03	0.99	High Extent
2	I find the required books and resources readily available in the library.	90 (29.9%)	110 (36.5%)	70 (23.3%)	31 (10.3%)	2.86	0.96	High Extent
3	I believe the library staff should be helpful and approachable.	130 (43.2%)	100 (33.2%)	40 (13.3%)	31 (10.3%)	3.09	0.98	High Extent
4	I prefer the library to be clean and well-organized.	140 (46.5%)	90 (29.9%)	40 (13.3%)	31 (10.3%)	3.13	1.00	High Extent
Average Mean and Standard Deviation						3.03	0.98	High Extent

Perceived Performance								
5	I believe the library provides a sufficient range of academic resources that meet my study needs.	100 (33.2%)	110 (36.5%)	60 (19.9%)	31 (10.3%)	2.93	0.97	High Extent
6	I find the library equipped with up-to-date technology and tools that support my learning.	95 (31.6%)	105 (34.9%)	70 (23.3%)	31 (10.3%)	2.88	0.97	High Extent
7	I consider the library staff knowledgeable and responsive to my requests for assistance.	85 (28.2%)	115 (38.2%)	70 (23.3%)	31 (10.3%)	2.84	0.95	High Extent
8	I appreciate that the library maintains a quiet and productive environment for study sessions.	120 (39.9%)	100 (33.2%)	50 (16.6%)	31 (10.3%)	3.03	0.99	High Extent
Average Mean and Standard Deviation						2.92	1.98	High Extent
Disconfirmation of Beliefs								
9.	The library's resources do not meet my academic expectations.	40 (13.3%)	60 (19.9%)	100 (33.2%)	101 (33.6%)	2.13	1.02	Low Extent
10.	The technology provided by the library is outdated and often malfunctions.	50 (16.6%)	70 (23.3%)	90 (29.9%)	91 (30.2%)	2.26	1.06	Low Extent
11.	The library staff is often unavailable or unhelpful when I need assistance.	35 (11.6%)	65 (21.6%)	100 (33.2%)	101 (33.6%)	2.11	1.00	Low Extent

12.	The library's environment is noisy or disruptive, making it difficult to study.	45 (15.0%)	55 (18.3%)	100 (33.2%)	101 (33.6%)	2.15	1.05	Low Extent
Average Mean and Standard Deviation						2.16	1.03	Low Extent High Extent
Grand Mean and Standard Deviation						2.70	1.30	High Extent

Source: Field survey, 2025

Key: Very High Extent (VHE); High Extent (HE); Low Extent (LE); Very Low Extent (VLE).

Decision Rule: Very Low Extent = 1.00 - 1.75; Low Extent = 1.76 - 2.50; High Extent = 2.51 - 3.25; Very High Extent = 3.26 - 4.00.

In Table 2, the analysis indicates that overall user satisfaction in Ogun State public university libraries is high (grand mean = 2.70), with strong expectations largely met, though technological infrastructure and staff responsiveness show slight gaps. For instance, 140 respondents (46.5%) strongly agreed that they prefer the library to be clean and well-organized, while 130 (43.2%) believed the staff should be helpful and approachable. Similarly, 120 (39.9%) expected the library to meet their academic needs, and the same number appreciated a quiet and productive environment. These high frequencies under the "Very High Extent" (VHE) scale demonstrate users' strong expectations for conducive academic environments. The mean scores for these items ranged from 3.03 to 3.13, with standard deviations between 0.98 and 1.00, resulting in an overall average of 3.03 (SD = 0.98) for this category, interpreted as a High Extent of expectation.

In terms of perceived performance, user responses similarly clustered under high satisfaction. A total of 120 respondents (39.9%) strongly agreed that the library maintains a quiet study environment, while 100 (33.2%) believed the library provided sufficient academic resources. For technology and staff responsiveness, 95(31.6%) and 85(28.2%) respondents respectively rated them at the highest level. The percentage of respondents who agreed to a high extent (HE) also remained significant across these items (e.g., 110 or 36.5% on resource availability and 115 or 38.2% on staff support). Mean values for this section ranged from 2.84 to 3.03, with standard deviations around 0.95–0.99, leading to an average

mean of 2.92, also interpreted as a High Extent. This indicates that while libraries generally perform well, there's a slight shortfall compared to user expectations, particularly in technological advancement and staff interaction.

In contrast, the Disconfirmation of Beliefs section reflected lower satisfaction levels. Only 40 respondents (13.3%) strongly agreed that the library's resources did not meet their expectations, and a slightly higher number, 50 (16.6%), agreed that the technology is outdated. The majority, however, selected lower scales: for instance, 101 respondents (33.6%) chose "Very Low Extent" when asked whether the environment is noisy and disruptive. This indicates disagreement with these negative beliefs about library services. Mean scores in this section were consistently low, ranging from 2.11 to 2.26, with standard deviations slightly above 1.00, suggesting some variability in perception. The average mean of 2.16 confirms a Low Extent, meaning most users do not support these negative claims. Taken together, the grand mean of 2.70 and SD of 1.30 for the entire table implies an overall High Extent of user satisfaction, though areas like technological infrastructure and service consistency may still require strategic improvements.**Research Question Two: What is the State of Library Design in Public Universities, Ogun State, Nigeria?**

Table 3: Assessing the State of Library Design in Public Universities, Ogun State, Nigeria, Nigeria

S/N	Physical Well-Being	VHS	HS	LS	VLS	\bar{x}	Std. dev	Remark
1.	I find the library accessible for individuals with mobility impairments.	88 (29%)	102 (34%)	67 (22%)	44 (15%)	2.78	1.01	High State
2.	There is adequate lighting which reduces my eye strain and enhances reading comfort.	95 (32%)	84 (28%)	70 (23%)	52 (17%)	2.75	1.09	High State
3.	There is proper ventilation which makes the library comfortable for me during long stays.	81 (27%)	91 (30%)	73 (24%)	56 (19%)	2.65	1.05	High State
4.	There is ergonomic	93 (31%)	87 (29%)	69 (23%)	52 (17%)	2.74	1.07	High State

furniture, which prevents physical strain during use.

Average Mean and Standard Deviation 2.73 1.06 High State

Cognitive Well-Being

5.	The library's layout helps me navigate and concentrate easily.	86 (29%)	89 (30%)	66 (22%)	60 (20%)	2.67	1.08	High State
6.	The library's quiet environment allows me to think deeply without distractions.	77 (26%)	94 (31%)	72 (24%)	58 (19%)	2.63	1.03	High State
7.	The design promotes my focused research and intellectual engagement.	90 (30%)	86 (29%)	68 (23%)	57 (18%)	2.71	1.06	High State
8.	The library has well-organized resources which help me retrieve information efficiently.	92 (31%)	83 (28%)	71 (24%)	55 (18%)	2.71	1.08	High State

Average Mean and Standard Deviation 2.68 1.06 High State

Psychological Well-Being

9.	I plan to continue using the library's digital resources regularly for my academic needs.	79 (26%)	93 (31%)	70 (23%)	59 (20%)	2.62	1.06	High State
10.	I am likely to recommend the technology used in the library to others for academic purposes.	85 (28%)	88 (29%)	69 (23%)	59 (20%)	2.66	1.05	High State
11.	I intend to increase my use of the library's technology in the future.	90 (30%)	86 (29%)	67 (22%)	58 (19%)	2.70	1.06	High State
12.	I would actively seek out training to make better use of the technological tools in	88 (29%)	89 (30%)	69 (23%)	55 (18%)	2.73	1.04	High State

the library.

Average Mean and Standard Deviation	2.68	1.05	High State
Grand Mean and Standard Deviation	2.70	1.06	High State

Source: Field survey, 2025

Very High State (VHS); High State (HS); Low State (LS); Very Low State (VLS)

Decision Rule: Very Low State = 1.00 - 1.75; Low State = 1.76 - 2.50; High State = 2.51 - 3.25; Very High State = 3.26 - 4.00.

The results from Table 3, provide a detailed assessment of the state of library design in public universities in Ogun State, Nigeria, focusing on three dimensions of user well-being: physical, cognitive, and psychological with a grand mean of 2.70. For physical well-being, responses indicated that most users found the library physically accessible and conducive. Specifically, 88 respondents and 102 respondents rated accessibility for mobility-impaired users as Very High and High respectively, while only 44 gave it a Very Low rating. Similar trends were observed for lighting, ventilation, and ergonomic furniture. The mean scores across these items ranged between 2.65 and 2.78, with standard deviations between 1.01 and 1.09, suggesting moderate agreement among users. Overall, the average mean for physical well-being was 2.73 with a standard deviation of 1.06, indicating a “High State” of library design in this category.

The cognitive well-being indicators also reflected a generally favorable perception of library design. For instance, 86 and 89 respondents affirmed that the library layout supports concentration and navigation, yielding a mean of 2.67. Likewise, responses to statements about quietness, support for research, and resource organization had mean scores ranging from 2.63 to 2.71 and standard deviations around 1.03–1.08. These findings reveal that students experience the library as a cognitively enriching environment that promotes deep thinking, efficient navigation, and ease of information retrieval. The average mean for this dimension was 2.68, and the standard deviation was 1.06, reinforcing the interpretation of a “High State” of cognitive support within the library environment.

Similarly, the psychological well-being dimension showed positive responses, with a consistent pattern of high and very high ratings. For example, 79 and 93 users expressed strong intent to continue using digital resources, while 85 and 88 were likely to recommend

the library’s technology to others. Across all four psychological well-being indicators, the mean scores ranged from 2.62 to 2.73 and the standard deviations stayed close to 1.05–1.06. The average for this category stood at 2.68 with a standard deviation of 1.05. Taken together, the grand mean of 2.70 and standard deviation of 1.06 across all categories confirm a generally “High State” of library design. These results suggest that the libraries are positively impacting users across physical, cognitive, and psychological dimensions, though there remains room for improvement toward achieving a “Very High State.”.

4.1 Presentation of Hypothesis

Influence of Library Design on the User Satisfaction among Patrons of Academic Libraries in Public Universities, Ogun State, Nigeria.

Table 4a: Model Summary of Regression Analysis on the Influence of Library Design on the User Satisfaction among Patrons of Academic Libraries in Public Universities, Ogun State, Nigeria

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.582	0.339	0.334	0.201

a. Predictors: (Constant), Library Design

Table 4b: ANOVA

Model		Sum of Squares	df	Mean Square	f	Sig.
1	Regression	41.122	1	41.122	101.18	0.000b
	Residual	122.179	299	0.4096		
	Total	163.301	300			

a. Dependent Variable: User Satisfaction

b. Predictors: (Constant), Library Design

Table 4c: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	29.400	8.715		3.374	0.001
	Library Design	0.473	0.047	0.582	10.059	0.000

a. Dependent Variable: User Satisfaction

Source: Field survey, 2025

The results presented in Table 4a show the model summary of the regression analysis examining the influence of library design on user satisfaction among patrons of academic libraries in public universities in Ogun State, Nigeria. The correlation coefficient (R) of 0.582 indicates a moderate positive relationship between library design and user satisfaction. The R Square value of 0.339 reveals that approximately 33.9% of the variation in user satisfaction can be explained by the quality of library design. The Adjusted R Square value (0.334) confirms the model's stability, accounting for the number of predictors and sample size. The standard error of the estimate (0.201) indicates a relatively low deviation of observed values from the regression line, supporting the model's goodness of fit.

Table 4b presents the ANOVA results used to test the statistical significance of the regression model. The regression model produced an F-ratio of 101.18, which is statistically significant at the 0.000 level ($p < 0.05$). This finding implies that the regression model significantly predicts user satisfaction based on library design. The total sum of squares (163.301) is partitioned into the regression sum of squares (41.122) and the residual sum of squares (122.179), with the regression component accounting for a considerable portion of the total variation. The significance level confirms that the relationship observed is not due to chance, reinforcing the relevance of library design as a determinant of user satisfaction.

The coefficient results in Table 4c provide further insights into the nature of the relationship between the independent and dependent variables. The unstandardized coefficient (B) for library design is 0.473, which means that for every one-unit increase in library design score, user satisfaction increases by 0.473 units. The standardized beta coefficient of 0.582

highlights a strong effect size, while the t-value of 10.059 and a significance level of 0.000 further confirm that the contribution of library design to user satisfaction is statistically significant. Additionally, the constant term of 29.400 implies that when library design is held at zero, the baseline user satisfaction score would be 29.400. Overall, the regression output supports the conclusion that library design plays a significant and positive role in enhancing user satisfaction.

4.2 Discussion of Findings

The findings reveal that patrons of academic libraries in public universities in Ogun State generally report a moderate to high level of satisfaction with library services. The indicators such as adequacy of reading space, availability of technological tools, and quality of reference services received fairly high responses in the categories of "very high extent" and "high extent." This suggests that many libraries in the study area have made significant strides in meeting the basic expectations of their users, resonating with a study that emphasised that user satisfaction hinges significantly on how well the library environment and service systems align with user expectations, (Putra, Subiyakto, Yunita, Gunawan & Durachman, 2018). Furthermore, the data reflect that patrons' expectations are influenced by the quality of information services, as revealed by a study in Kenya, where the researchers found that timely, relevant, and accessible information services contribute largely to user satisfaction, (Nyakwebwa, Bukirwa, Sendikadiwa & Ratanya, 2022). In this context, users in Ogun State public universities showed a strong desire for responsive assistance from library staff, internet access, and conducive environments for academic work.

The inferential statistics show the test of significance between users satisfaction and library design, findings supports the idea that thoughtful and user-centered physical design plays a pivotal role in shaping the library experience. According to a study, library spaces are evolving from silent reading rooms into dynamic, flexible environments that support a variety of learning behaviours, (Cox, 2023). In the Nigerian context, this transformation appears to be partially realized, as patrons responded favorably to well-lit, spacious, and ergonomically arranged environments. Elements such as lighting, ventilation, acoustics, and

furniture significantly affect user satisfaction. A study emphasized that noise and poor acoustic control in learning spaces cause distractions and negatively affect student concentration and health, (Ali, Farhan & Jawad, 2023).

5.0 CONCLUSION AND RECOMMENDATION

5.1 Conclusion

The study investigated the influence of library design and technology integration on user satisfaction among patrons of academic libraries in public universities, Ogun State, Nigeria.

Academic libraries play a central role in supporting learning and research by providing access to information resources, conducive study environments, and digital technologies that enable efficient information retrieval. In the digital era, their relevance depends on how well they combine traditional services with modern innovations to meet the evolving expectations of users.

5.2 Recommendations

1. Public universities in Ogun State should invest in improving the physical structure of libraries by ensuring comfortable seating, proper ventilation, adequate lighting, and accessible shelving. These measures will enhance user comfort and ultimately improve satisfaction levels.
2. Libraries should be equipped with up-to-date ICT tools such as self-service portals, e-library platforms, reliable internet connectivity, and digital cataloguing systems. This will enable libraries to meet the evolving needs of users in a digital age.
3. The librarians should be regularly trained on the use and maintenance of modern technologies. Continuous training will empower them to effectively assist users and guarantee optimal service delivery.

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