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ORIGINAL RESEARCH ARTICLE

Aesthetics and Functionality of University Libraries in Southwest Nigeria

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ABSTRACT

While the function of university libraries is central to teaching, learning and research, they are often hindered in their function by a lack of integration of aesthetic quality and functional efficiency. Several papers have researched aesthetics and functionality separately but rarely together; hence the need for this research. This paper looks at the connection between aesthetics and functionality in some University libraries in Southwest Nigeria. The mixed-methods approach used was a combination of a structured questionnaire that was completed by 644 library users (students and staff) from six universities, direct observation and semi-structured interviews. Descriptive statistics, a composite perception index and inferential analysis (correlation, independent-samples t-test, one-way ANOVA and regression analysis) were used for data analysis. The Cronbach's Alpha value of the perception scale (0.902) was used to validate the reliability of the scale. The regression analysis showed that academic achievement, well-being, and library learning engagement were significantly predicted by the perception of the library ($p < 0.01$), and there was a strong relationship between the library features and academic achievement, well-being, and learning engagement ($\beta = 0.684$, $R^2 = 0.468$, $p < 0.01$). The study concludes that a university library in Southwest Nigeria is functional but has been underutilised in terms of its aesthetic and experiential potentials and suggests design considerations such as flexible spatial planning, ergonomic furniture, better lighting, good ICT infrastructure, and culturally responsive detailing towards designing comparable library projects.

Keywords: *University Libraries, Architectural Aesthetics, Functionality, User Experience; Academic Performance*

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1. INTRODUCTION

University libraries have always been considered the intellectual centre of every university, not only because they are filled with books, but also because they are places where minds meet, and ideas circulate. The library is no longer a secluded place filled with books but has now become a lively learning space, embodying the culture and creativity of the educational institution (Applegate, 2021; Bennett, 2015). Libraries are becoming more of an interactive environment that integrates physical structure with digital technology to foster cooperation, reflection and innovation. The learning experiences of students and staff are influenced by the spatial organisation, lighting, materials and ambience (Oblinger, 2006)

Nowadays, universities are reinventing learning environments, making them more than a place for learning just for the students. Universities around the world are transforming their learning environments, from "background" to "participant" in learning (Dabbagh, 2024). This change has led to the development of the “learning commons” concept, which encourages open plans, flexible seating, natural light and biophilic features that foster concentration and creativity within the library environment (Lau & Yuen, 2014). The mood created by the space affects the user's experience of “sitting there, moving around it, or simply being there and visually unappealing spaces, especially those poorly designed, can inhibit use, even if the collection is good (Cho & Kim, 2017).

However, a balance between aesthetics and functionality is hard to achieve in developing countries. Funding pressure, dated designs, poor environmental control systems, and limited interest in digitalisation are still challenges that are being faced by Nigerian university libraries (Olubiyo & Olubiyo, 2022). Many of these were established during the era of colonisation, and the design legacy that resulted from this is characterised by an emphasis on grandness and structure rather than comfort and adaptability (Olatunji, 2022). This imbalance has further widened in the context of the rapid growth of the Nigerian higher education system to over 170 universities (National Universities Commission [NUC], 2025), with little or no change in library infrastructure since the mid-twentieth century.

Although academics have been drawn to the role of the library with respect to academic life, few studies have examined the role of aesthetics and functionality on user satisfaction and behaviour in Nigeria in an empirical way (Ameen & Adeniji, 2020; Ogunmodede & Adio, 2015). Current assessments of libraries emphasise the extent of the collection and the level of technological infrastructure, but don't capture the impact of the architectural design, in terms of its sensory and spatial appeal, on cognitive and affective involvement. If this is not understood, design interventions may be superficial or misguided. This study focuses on that, while in some aspect looks at how some selected University libraries in southwest Nigeria are performing aesthetically and functionally.

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1.1: Objectives of the Study

The study aims to examine the aesthetics and functionality of selected Nigerian University libraries. Specifically, the study seeks to:

i. Evaluate the socio-economic characteristics of the selected university libraries
ii. Assess the aesthetic qualities of the selected university libraries;
iii. Evaluate the functional performance of these libraries;
iv. Analyse the relationship between aesthetic qualities and functionality

2. LITERATURE REVIEW

The design of university libraries has been a subject of increased academic engagement considering changing learning styles, technological transformation and increased enrolment. The library is perceived in the current literature as a dynamic learning space where spatial quality, aesthetics and functional efficiency all play a part in the users' experience and their academic engagement (Bennett, 2015). The aesthetics of the built environment provide perceptual, emotional and behavioural experiences via visual, sensory and emotive stimuli, such as form, interior design, lighting, colour, materiality and ambience, which affect comfort and longer use of the library and space (Pallasmaa, 2012). Functionality is related to the effectiveness of library spaces in facilitating reading, research, collaboration and digital interaction, achieved through spatial organisation, library furniture, accessibility and technological infrastructure (Elewode, et al., 2025). But neither of these dimensions is enough; the combination of these two is what makes library environments effective, according to the literature (Norman, 2013).

Aesthetic Dimensions of Library Design

Form, light, materials, colour and ambience are most common of the elements used in aesthetic discussions regarding library architecture. Form and massing provide the visual identity and symbolic presence of the library on campus, while lighting design, either natural or artificial, is identified consistently as a key area for visual comfort, mood and cognitive performance. Colour palettes, use of materials and ambience (which is defined as the "combined sensory character of a space") influence the emotional response and the perceived warmth and formality of a space, and therefore the comfort and invitingness it offers to its users (Bautista & Balsamo, 2020). In the Nigerian context, however, the studies point out that many of the library buildings are designed with an external monumentality and an internal quality of senses that is poor due to the design heritage it got from the colonial institutional architecture (Ezeokoli & Adetoro, 2020; Olatunji, 2022).

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Functional Dimensions of Library Design

Functionality is usually evaluated by the spatial organisation and layout, usability, technological integration, ergonomics and adaptability. Spatial planning partitions individual study and group activity areas from social interaction areas, without conflict of functions, while accessibility, physical and digital, clarifies the ease with which various users can move around and use the library (Ani, et al., 2015). The impact on the length and quality of study sessions, with the use of ergonomic furniture and comfortable seating, and technological integration, such as reliable Wi-Fi, computer access, and digital collaboration spaces, is not an extra features, but an essential part of the contemporary academic library (Dul & Weerdmeester, 2008; IFLA, 2020). Flexibility and adaptability of space enable libraries to develop and grow with changing pedagogy and student needs.

The Relationship between Aesthetics and Functionality

Increasingly, it is being suggested that aesthetics and functionality are not mutually exclusive and are not competing design goals. According Wang & Zhou (2026), they asserted that a beautiful environment fosters cognitive restoration and sustained attention. They further stressed that two factors are directly related to academic achievement; these include a coherent visual environment and the comfort offered by the building. Yanksari, et al., (2026) positions this relationship under the notion of functional comfort, where the environmental performance is dependent on the relationship between the needs of the user and the physical conditions. In terms of libraries, this theory indicates that beauty is not limited to simple decoration, but can be a vital tool in making the library more usable, motivating, and satisfying (Carnegie, 2019; Appiah & Adzido, 2020).

2.1.1 Theoretical Framework

The present study is based on three complementary theoretical approaches. Environmental psychology theory asserts that there is a relationship between the physical environment and behaviour and psychological state, following Heft (2022) proposition that behaviour is dependent on the person and the environment. The concept of user-centred design theory is that the design space is created around the needs, preferences, and behaviours of its users, with emphasis on comfort, accessibility and usability (Strange & Banning, 2015). Gestalt theory of perception also addresses how people view things holistically rather than examining each design element, which helps to understand the context of the experience of form, light, and layout. These frameworks collectively help to view the aesthetics and the functionality not as opposing, but as simultaneously shaping the user experience, wellbeing and academic achievement (Haron et al, 2026).

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Gaps in the Literature

While there is a solid theoretical basis for the integration of aesthetics and functionality around the world, empirical studies in Nigeria are still limited, and studies that statistically relate user-perceived aesthetic and functional quality to measurable academic outcomes are even scarcer (Abubakar & Haruna, 2019; Ossai-Ubah, 2018). The problem was tackled by this study, which adopts a mixed-methods approach to the evaluation of the six University libraries in Southwest Nigeria with a view to directly informing the design of a new library building.

3. METHODOLOGY

The research design used a mixed-methods research design, combining quantitative and qualitative approaches. Structured questionnaires, direct observation of library spaces, and informal semi-structured interviews with library personnel were used to collect primary data, while academic textbooks, peer-reviewed journal articles, and library design guidelines were used for secondary data (Creswell, 2014).
The table 1, represents the percentage distribution for the studied university libraries. This comprises of students and staff of six university libraries in Southwest Nigeria: two federal universities (University of Ibadan, University of Lagos), one state university (Ladoke Akintola University of Technology), and three private universities (Redeemer's University, Adeleke University, Lead City University). These institutions were selected to capture meaningful variation in the architecture and operational features of their libraries, and their combined estimated student population was 134,029. In addition, the selected case studies were chosen because they belong to the set of first generation public and private universities in Southwest Nigeria.

Table 1: Percentage distribution of responses from the selected universities

Selected universities	No of response	Percentage of response (%)
University of Ibadan	128	19.9
University of Lagos	30	4.70
Ladoke Akintola University	136	21.1
Redeemer's University	120	18.6
Adeleke university	99	15.4
Lead City University	131	20.3
Total	644	100

With a margin of error of 0.05 at a 95% confidence interval, the minimum sample size was calculated using the Yamane formula to be 399. A final sample of 644 responses from students and staff was used, comfortably exceeding this minimum and providing additional statistical power for the subgroup comparisons reported in Section 4.

A purposive sampling technique was used to select the six universities, on the reasoning that architectural and operational variation across institutional types; federal, state, and private mattered more to the study's aims than strict statistical representativeness. Within each

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institution, questionnaires were administered to library users encountered on-site, giving a purposive-cum-convenience sample of students and staff who were actively using the library space at the point of data collection.

Both qualitative and quantitative ratings were collected using a five-point Likert scale with open-ended items, covering aesthetic attributes and functional. Seating arrangements, movement patterns, noise levels, lighting, and occupancy of reading zones, group study areas, circulation areas, and service points were noted during direct observation, creating a check for consistency between perceived and actual space utilisation. Informal semi-structured interviews with library personnel supplemented these two instruments, offering an operational perspective on recurring maintenance and usage issues that the questionnaire and observation checklist alone would not surface.

IBM SPSS 29 (Rahman & Muktadir, 2021) was used to analyse the data. The demographics of the respondents and item-level ratings were summarised using descriptive statistics, such as means, frequencies, and percentages. Six items regarding concentration, comfort and motivation, group learning, social interaction, overall satisfaction, and academic influence were combined to form a composite Library Perception Index, which was then subjected to an internal consistency test using Cronbach's alpha. Independent-samples t-tests (gender differences), one-way ANOVA (academic-level differences), Pearson correlation, and linear regression were used for inferential analyses to examine the relationships between library features, perception, and outcome variables (academic performance, well-being, and learning engagement). Data collection was done voluntarily and anonymously, and institutional approvals were secured prior to fieldwork.

4. RESULTS AND DISCUSSION

Respondent Profile

Table 2: Showing sociodemographic information of respondents

Variable	Category	Frequency	Percentage (%)
Gender	Male	396	61.5
	Female	240	37.3
	Prefer not to say	8	1.2
Age Group	18–25 years	293	45.5
	26–35 years	253	39.3
	36–45 years	73	11.3
	46–55 years	18	2.8
	56 years and above	7	1.1
Status / Category	Student	520	80.7
	Academic Staff	60	9.3
	Administrative Staff	39	6.1

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	Visitor / Other	25	3.9
Educational Qualification	ND / Diploma	26	4.0
	Bachelor's Degree	352	54.7
	Master's Degree	168	26.1
	PhD	90	14.0
	Other	8	1.2
Frequency of Library Use	Daily	176	27.3
	Weekly	271	42.1
	Monthly	103	16.0
	Occasionally	73	11.3
	Rarely	21	3.3

Table 2 shows the gender, age, status, and education distributions of the respondents. The results revealed that students constitute the majority of the sample, accounting for 80.7% (520 respondents) out of the total 644 respondents. This is followed by academic staff, who represent 9.3% (60 respondents), administrative staff at 6.1% (39 respondents), and visitors or other categories, comprising 3.9% (25 respondents). This distribution clearly highlights the student-centred nature of the university library and reflects its primary role as an academic support environment for teaching, learning, and research activities. This is in tandem with Lateef et al., (2016) and Ojo et al., (2015) that students constituted the largest proportion of the major user group of university libraries.

Similarly, the findings also show that, 61.5% were male and 37.3% female (1.2% preferred not to disclose gender). Respondents were predominantly young adults, with 45.5% aged 18–25 and 39.3% aged 26–35. Students constituted 80.7% of the sample, followed by academic staff (9.3%) and administrative staff (6.1%). Most respondents held a bachelor's degree (54.7%) or master's degree (26.1%), and 69.4% used the library at least weekly (27.3% daily; 42.1% weekly).

Aesthetics of the Library

Table 3: Showing ratings of respondents on library aesthetics

Aesthetic Indicator	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Rank
The library is visually attractive and pleasant to look at	67	177	219	130	51	2.88	4th
The colours used in the library make the place feel comfortable for studying	62	212	201	120	49	2.82	6th
The lighting in the library is bright enough and comfortable for studying	61	198	195	136	54	2.88	3rd
The arrangement of furniture and spaces makes studying easy and comfortable	60	193	198	140	53	2.89	2nd

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Decorations such as plants or artwork improve my mood	62	196	196	137	53	2.88	5th
Cultural or local design features make me feel welcomed and connected	59	177	233	128	47	2.89	1st

Table 3 shows that in general, students' ratings are moderate and, for the most part, lower than the neutral benchmark (3.00), indicating that the libraries are effective, but the aesthetic attributes of the libraries are unlikely to greatly facilitate students' emotions and learning experiences. The results support the assertion by Barton G. & Le AH (2023) that aesthetic quality is an important element of learning environments, which affects psychological comfort as well as academic productivity.

The hypothesis that aesthetics is a valid dimension of learning environments, as it can affect psychological comfort and academic productivity, and the responses that were largely neutral suggest that the learning environment is not entirely conducive to optimal learning outcomes.

Cultural or local design features have a relatively high average (2.89) across the indicators. This indicates that culturally expressive features have the potential to contribute to students' feelings of belonging and environmental identity, but maybe not very substantially. The furniture and internal space arrangement also have a value of 2.89, meaning it is moderately functional, but not very stimulating. The result is consistent with the idea of place identity, according to which the environment that reflects the cultural background of users gives rise to emotional attachment and psychological comfort (Landström, 2022). Similarly, culturally responsive architecture design has been demonstrated to improve the sense of inclusion and wellbeing of students in learning institutions (Strange and Banning, 2015). The furniture and internal space arrangement also has a value of 2.89, meaning it is moderately functional, but not very stimulating. This neutrality also means that the interior spaces might be simply functional, but lack flexibility or ergonomic optimisation. The needs of the students are better served by a flexible layout and ergonomic furniture, which improves the interests of the students in various learning activities such as individual study and group work (Latiar et al., 2026).

The mean of lighting condition is 2.88, indicating students' perception that light conditions are not optimal. Lighting may be usable, but may not have some of the features which can enhance the aesthetic and functional quality, such as continuous lighting, adequate daylight penetration, or modern lighting design. Likewise, overall visual attraction (mean 2.88) suggests that libraries are satisfactory, but the lack of distinctive and interesting architecture does not encourage or inspire students to study. This aligns with Fanpu et al. (2024), who determined that the lighting quality in university library reading areas significantly impacts students' visual perception and cognitive performance, emphasising visual clarity and discomfort as critical factors in lighting design. Moreover, natural lighting has been linked with enhanced student wellbeing, productivity and satisfaction (Akinbami, 2024)

The other decorative and biophilic features, such as plants and artwork, are rated neutrally (mean value 2.88), meaning that they seem to be either unimportant or not well enough integrated to yield a quantifiable benefit. Notably, colour use for comfort has the lowest mean (2.82), suggesting that the colour scheme is not effective in supporting students' psychological

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and cognitive needs. The low rating indicates a deficiency in the planning of colour for interior spaces in learning environments in terms of colour. This is in variance with Emaikwu & Omale (2026) suggestion that proper choice of colour can be used to increase concentration and minimise fatigue at the workplace and in educational settings. Similarly, Jonauskaite, & Mohr (2025) established that colour affects emotional reactions and performance.

Functionality of the Library

Table 4 highlights the respondents' perceptions of the functionality for the studied libraries.

Table 4. Showing respondents' perceived functionality rating of library

S/N	Statement	SD	D	N	A	SA	MWV	TMWV	SD
1	Library spaces and arrangement make it easy to find resources	77	170	200	155	42	2.87	1847	1.108
2	Library provides accessible facilities for users with different needs	79	199	199	120	47	2.78	1789	1.109
3	Computers are available	68	176	191	161	48	2.91	1877	1.113
4	Computers are accessible for use	81	187	187	148	41	2.82	1813	1.116
5	Wi-Fi is readily available and accessible	76	206	188	138	36	2.77	1784	1.086
6	Seats are comfortable	68	194	196	143	43	2.84	1831	1.091
7	Seats are suitable for long study sessions	77	210	197	110	50	2.76	1778	1.109
8	Tables are comfortable	58	199	194	152	41	2.87	1851	1.070
9	Tables are suitable for long study sessions	58	225	202	118	41	2.78	1791	1.049
10	Library space is flexible for individual and group study	73	216	199	103	53	2.76	1779	1.106

The current study suggests moderate perceived functionality on all dimensions measured. The Mean Weighted Values (MWV) in this study range from 2.76 to 2.91, which are slightly below the neutral value of 3.00, indicating that university libraries provide basic functional support for academic tasks, but do not cater for students' expectations in learning environments of the 21st century. This discovery is in line with the architectural doctrine that form should follow function because the performance of the space has an impact on learning performance. The moderate ratings thus indicate a difference between the existing design requirements and the increasing academic and technological requirements.

Computer accessibility (MWV = 2.91) has the highest functionality rating, indicating that libraries are trying to make ICT a part of learning areas. Although the MWV is still lower than the neutral, its ICT performance can be under-quantifiable, under-accessible, or underperforming. This observation aligns with how libraries have been transformed into hybrid physical-digital learning environments that facilitate electronic research, online databases, and digital scholarship (Aabo & Audunson, 2012). Spatial organisation and ease of locating resources also gets moderate support (MWV = 2.87), and it means that the spatial organisation is usable, but not clear, in terms of spatial intelligibility, which means that in larger or more complex library layouts, zoning, signage and internal organisation might not be intuitive enough, thus making operations less efficient and users less satisfied. This is in tandem with Draouil & Karaman (2026) report that clear spatial legibility is fundamental to the idea of

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functional efficiency, as users should be able to perceive the environment and navigate in it with ease.

The performance of the functional furniture is also moderate, with generally good scores for the tables and seats and lower scores for suitability for long-duration study. This implies that the furniture might not be suitable for the length of time that the students would stay in the library while studying, which may decrease the efficiency of the library. As for the usability of ICTs, the MWV for accessibility is relatively low (2.82), while for the usability of ICT resources, such as computers and Wi-Fi, it is also low (2.77). The low scores indicate technological challenges which can affect research capacity and/or the utility of the library space. Specifically, computer accessibility is 2.82, which is less than computer availability, suggesting that practical barriers (e.g., waiting time, restricted access, power supply problems, or computer usability issues) may reduce the use of the computer. Similarly, Wi-Fi accessibility (MWV = 2.77) reflects continued issues of reliability, speed, and coverage that can seriously affect the effectiveness of the library context. This agreed with Dul & Weerdmeester, (2008) submission that ill-constructed seating and working surfaces may cause physical discomfort, exhaustion, and lack of concentration. Likewise, a study conducted by Hedge (2016) revealed that ergonomic furniture contributes greatly to the comfort, posture, and productivity of a user in a learning environment.

There is limited implementation of universal design principles, with a moderate rating (MWV = 2.78) for users with different needs. This implies that the architecture of the library is not fully accommodating users with special needs, and therefore the need for universal design principles during the development process. Ramps, adaptable furniture, accessible work areas, and assistive technologies are crucial elements of inclusive design in academic libraries, as they facilitate the elimination of physical and technological obstacles and foster equal access for individuals with disabilities (Steele & Hunt, 2025).

The lowest indicator is spatial flexibility of individual and group studies (MWV = 2.76), suggesting that current layouts might be inflexible and less able to meet diverse academic needs. This constraint decreases the flexibility and sustainability of the library environment.

Standard deviations reported are comparatively large (1.05–1.12), suggesting that there are variations in the user experiences as well as inconsistencies in functional performance across the different areas. This may reflect differences in the quality of furniture, the availability of ICT, space conditions, etc., and result in inequities in access to optimal study conditions. The results therefore suggest specific areas for improvement, particularly in furniture ergonomics, ICT infrastructure, and flexible spatial planning, to boost user satisfaction and academic performance.

Relationship between Library Aesthetic and Functionality

Table 5: Correlation between library features and performance variables

Variables	Mean	Std. Deviation	R	Sig. (p)
Library Features	3.71	0.62		
Performance Variables	3.89	0.58	**0.684**	**0.000**

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Table 5 show the relationship between the library aesthetic and functionality. The result show that there is a strong positive correlation between library features and performance variables ($r = 0.684$, $p < 0.01$). This indicates that improvements in library aesthetics and functionality are strongly associated with enhanced student concentration, motivation, satisfaction, and perceived academic performance. The statistically significant p-value ($p = 0.000$) suggests that the relationship observed is not due to chance. This implies that as the quality of library design, comfort, accessibility, and resources improves, students are more likely to experience better academic engagement and performance outcomes

This finding aligns with existing literature which emphasizes that well-designed learning environments play a critical role in supporting effective study habits and academic productivity. Recent empirical findings suggest that the environmental factors in university library settings might affect students' learning habits and effectiveness, illustrating that the physical library environment serves as an active component of academic pursuits (Zhang et al., 2026). Research on the utilisation of academic libraries indicates that students link library environments to their educational achievements, especially when the setting fosters conducive study and interaction (Scoulas & De Groote, 2022). The result provides empirical support for the argument that library environments are not merely supportive spaces but active contributors to academic success.

Architectural and Aesthetic Design

Libraries should be designed using a coherent and legible building design. This may be accomplished by providing users with clear directional cues that enhance wayfinding and accessibility and reinforce the institution's identity. Colour schemes, materials, and finishes within libraries should be predictive of enhancing visual comfort, concentration, and emotional well-being. Natural daylight can be maximised by orienting the building's location to the sun, providing window openings that allow natural light to reach all spaces within the library, and incorporating adequate shading devices to protect against excessive heat gain and glare. These design features must be complemented by utilising energy-efficient artificial lighting within the library. Local cultural/heritage/contextual design elements should be incorporated into the library to express local identity within the library.

Functional planning and space may include designating separate areas/sections within the library to accommodate individual study, group project study, research-related activities, and social interaction without the interference of other uses. Library furniture should be arranged to allow users to intuitively access the area associated with their current learning mode or the learning mode that the library may support most effectively. While also supporting reconfiguration to accommodate different learning modes. Also, library planners must provide adequate seating capacity and study space within the library to reduce overcrowding and improve user comfort during peak utilisation periods.

Properly designed ergonomic chairs and tables can promote more productive and less physically uncomfortable study periods, promoting ergonomics and user comfort. Furniture dimensions should be appropriate for a variety of users (i.e., body size and shape). For accessibility and inclusivity, universal design principles should guide the library planning process to ensure that all users, including those with mobility impairments (e.g., wheelchair users), can access the space. Ramps, elevators, accessible restrooms, wide pathways, and adjustable furniture must be included in the design. Wayfinding systems should have tactile signs and visible indicators to help users with vision or cognitive difficulties navigate the library.

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While the library should include sufficient computers and dependable Wi-Fi and digital resources, library design should also accommodate future technological advances by providing flexible building systems and adaptable spaces. Designated areas should be designated to support the use of multimedia, digital collaboration, and online education.
The management of universities must focus on the routine maintenance of libraries, both structurally and functionally, to provide residents with a quality aesthetic and to perform the functions for which they were intended. By incorporating user input/feedback at set intervals between assessments, management can enhance libraries through increased responsiveness to changing academic requirements and expectations.

5. CONCLUSION AND RECOMMENDATIONS

The study This paper aimed to investigate the correlation between aesthetics and functionality of the university library in Southwest Nigeria. The study results indicate that the university libraries already established in this area have basic functionality, while they are not in line with the aesthetic and experiential standards of modern times. Furniture adequacy, study space capacity, and ICT provision were rated moderately, showing ongoing challenges with the furniture and the provision of space and equipment, but overall user experience, concentration, motivation, comfort, and satisfaction were rated largely more positively, suggesting that the spatial and environmental qualities of these libraries, beyond any single design feature, contribute to value.

The high statistical correlation between the library architecture and academic performance ($\beta = 0.684$) shows that the library is not just a space for learning but also a space that supports it. This translates to a strategic investment in library design, lighting, ergonomic furniture, spatial flexibility and technological infrastructure as a priority for education and not simply an aesthetic choice. Most importantly, the aesthetic components of a library, such as form, lighting, color, materials, ambience, and how well the library expresses the culture of the university, have a significant effect on users' emotional reactions to the environment, comfort levels in that space, and willingness to engage with it. The functional aspects of library design, such as how the library is organized, how ac-cessible and usable it is to anyone, how well the furniture is designed ergonomically, and how well the library incorporates contemporary technological solutions, also have a direct impact on ease of use, inclusion, and long-term academic engagement.

As this study has demonstrated, an individual's perception of a library's environment is not simply based on their subjective view of the environment but can also impact future academic success by measuring educational outcomes, engagement with learning materials, and overall well-being. The strong statistical correlation between library architecture and educational success indicates that library architecture is not just a facilitator of educational success but rather a contributor to the educational outcomes themselves.
A library that visually captures attention, respects the individuality of its users, facilitates change based on the ever-evolving needs of its users, and embraces the technological advances available in today's digital world will offer a comprehensive resource for the acquisition of knowledge in addition to being an evolving tool to assist users' academic development and intellectual advancement. Therefore, Libraries should be designed using a coherent and legible building design. This may be accomplished by providing users with clear directional cues that enhance wayfinding and accessibility and reinforce the institution's identity while also improving the student's overall library experience.

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