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DESIGNING OF ACADEMIC LIBRARY SPACES: A SURVEY OF SELECTED PUBLIC UNIVERSITY LIBRARIES IN GHANA

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ABSTRACT

Redesigning academic library spaces has become a contemporary issue of concern in tertiary institutions worldwide, especially in the present era, where the changing pattern of sophisticated information needs of library users is growing rapidly. Using a mixed sampling method, three hundred and three (303) postgraduate students and twenty (20) librarians were selected to participate in this study. This study used both structured and semi-structured questionnaires as the data collection instrument. The study's findings showed that students and staff generally had a positive attitude towards the functionality of the designed library space in both institutions. Accessibility and variability of the designed library space through the use of single study carrels, group study areas, seminar rooms, and quiet study areas were all highly patronised by students. An increase in noise pollution, especially during examination periods and high demand for information, has been shown as the challenges associated with the newly designed library spaces. Some recommendations, such as reducing noise levels in the libraries, providing more study areas, sufficient power, and adequate funding, were made to improve the services in the redesigned library space.

Keywords: Library space, academic libraries, library users, postgraduate students

INTRODUCTION

A library is a well-established organisation or entity set up within an academic institution and its different departments to serve the information needs of students, lecturers, researchers, and other scholars (Sobalaje & Ogunmodede, 2015). Libraries are also viewed as places and institutions of significance and champions for promoting information access (Rahman, 2007; Vrana, 2010). Driven by the introduction of new technologies and a rapid change in information and communication technology, modern libraries had to change and adjust in multiple aspects to be accepted by their users. The shift in library purpose to the needs of the library user of today has caused library planners to consider more frequent and radical changes to library space. According to Gstalder (2017), the needs of library users have changed more quickly and unpredictably than the needs of books, and library directors will need to push beyond the traditional incremental approach to redesigning library spaces to respond to changing needs. Academic libraries provide learning spaces for their users to do their independent studies, use the library's resources and provide professional assistance for scholarly work (Agyen-Gyasi, 2011). Therefore, redesigning a library's physical space is crucial, especially in this present age and time, as many people spend lengthy periods studying and doing their research in the library (Applegate, 2009; Bryant *et al*., 2009; Suarez, 2007).

Several studies have been conducted on the topic of redesigning space in the library. These studies explored areas such as planning a new library, renovation, remodeling an old library building, or major renovation to create additional spaces or enhanced atmosphere for producing quality services to promote learning and study and to improve user efficiency (Shaw, 2013; Andrews, Wright & Raskin, 2016; Stewart, 2016; Mehtonen, 2016; Adeyemi, 2017). All these studies were however, conducted in places other than Ghana. There is limited literature on redesigning academic library spaces in Ghana. The few studies in Ghana include the one undertaken by Alu (2023), Owusu-Ansah (2024), and Donkor *et al*. (2024). The study, therefore, adds to existing literature in the area, especially in the Ghanaian context, where there is limited literature on the topic. Since the libraries in this study were redesigned, no study has been done to assess the usage and usefulness of the redesigned spaces. This study, therefore, seeks to investigate how two public academic libraries in Ghana have redesigned their library spaces to meet the needs of their users.

The context

The settings of this study involve two public universities in Ghana and their libraries. These universities are the University of Ghana, Legon (UG), founded in 1948, and the Kwame University of Science and Technology (KNUST), established in 1951. These academic libraries were selected because some level of library space redesign has taken place in these libraries.

Objectives

This paper aims to investigate the redesigning of academic library spaces in Ghana. Specifically, the paper seeks to:

1. Find out how functional the academic library spaces are to users,
2. Examine the accessibility and variability of the academic library spaces,
3. Investigate how conducive public academic libraries motivate and inspire studies,
4. Explore how the spaces in the academic libraries promote interactivity between users and providers, and

5. Find out the challenges public academic libraries face in redesigning library spaces in Ghana.

Literature review

Academic libraries have significantly transformed their spaces over recent decades to better support and appeal to modern students (Gayton, 2008). This evolution has included the concepts of "library-as-place" and integrated learning commons, which have led to current discussions on space assessment (Freeman, 2005). The motivations behind these changes vary. It may be shedding stereotyped views of libraries as book-centred, old-fashioned places or facilitating modern social interaction, learning, and study styles (Khoo *et al*.,, 2016) Somerville & Brar, 2010). These evolving discussions focus on the ongoing pursuit of service improvements and the need for libraries to remain relevant to their patrons (Freeman, 2005).

Several studies have been conducted on library spaces (Somerville & Harlan, 2008). Some studies have generally focused on student use (Antell & Engel, 2006). However, it can be challenging to determine a single preference among the many studies that have been published. Reasons for coming to the library vary widely, making it difficult to prioritize a specific user experience around which to centre designs (Harrop & Turpin, 2013). Cha and Kim (2015) and Neal (2009) intimate that designing user-centred spaces is complex, as the views of different types of users are expansive and often contradictory. According to Nitecki (2011), spaces for learning and spaces for innovation are not synonymous. This dichotomy can confuse students as they navigate the need for assistance alongside independent and group learning. User-centeredness and customer support are important drivers of space redesigns. Users drive the missions of libraries in the context of information resources, delivering those resources and supporting information skills (Pritchard, 2008). However, seeking information in the library is only part of what patrons do when they look for space (Cha & Kim, 2015).

Many studies begin by understanding what students generally seek in library spaces. Student self-assessments reveal a preference for study spaces that include surrounding activities, even when working independently (Montgomery, 2014). Students often prioritise socialising and relaxing when offered choices of what spaces to visit (Waxman *et al*., 2007). According to McKay (2011) libraries benefit when they address the full range of student study needs. Libraries must, therefore support those who want to study in groups and those who wish to study alone but in a social atmosphere (Montgomery & Miller, 2011). Many libraries have reported a desire for active, communal social spaces in libraries (Montgomery & Miller, 2011). Conversely, other campus surveys indicate a strong preference for quiet study spaces (Hall & Kapa, 2015). Individual study remains a common activity in library traffic (Opperman & Jamison, 2008). Despite their contradictory nature, solitary, individual yet social, and group activities are all essential areas to support library design (Khoo *et al*., 2016).

Visual engagement and the library's "feel" are crucial, as first impressions matter. The look and feel upon entering the library must be welcoming and immediately student-friendly to encourage traffic (Starkweather & Marks, 2005). However, traditional lines and facades evoke more scholarly emotions and a sense of connection to the academic mission (Jackson & Hahn, 2011). Younger scholars have a stronger emotional attachment to the library as a scholarly place, valuing how it encourages study, writing, and contemplation (Antell & Engel, 2006).

Variety of library spaces

Campus planners have recognised the need to develop library social study space since the publication of "Libraries Designed for Learning" by Somerville and Brown-Sica (2011). Therefore, space is allotted for group study, food services, and informal socialising. Some libraries have also included campus teaching and learning activities, such as academic computing services, faculty development centres, and student tutoring offices, in their redesign strategies. This collaboration is becoming a common practice, whereby the library becomes the central point to service student and staff needs. Rizzo (2002) Some useful guidance has been provided by Rizzo (2002) for exploring the expectations of academic library uses. Things highlighted include the need for highly active and engaging communal, collaborative, and interactive places for individual research and group work, study and reading rooms, and private areas for reflection and deep thought.

According to Cowgill *et. al.* (2001), at universities with students without computers and internet access, setting up Information or Learning Commons near the reference desk, group study rooms, and reference desks staffed by expert support staff in academic libraries has become increasingly popular. The commons should have comfortable seating and computers loaded with a variety of software packages popular with students for information searching and academic assessment tasks (Waxman *et al.*,, 2007). New buildings or spaces within buildings should encourage creativity. An academic library must offer staff and students an area to interact.

Qualities of a Good Library Space

Ensuring a good library experience should be the central pillar of any library space development initiative. Users' experience of the library depends on the quality of the space, how it is organised, and the types of services provided. Schmidt and Cribb (2011) advised that pleasing everyone in design might be challenging, but academic library spaces must align with university students' focus areas and the primary need for a comfortable, quiet workspace that inspires learning. Although creating a variety of spaces is needed for 21st-century libraries, these spaces must interrelate so that there is a flow from one space to another, and refurbishment complements different spaces. Over the last decade, developments have produced principles and guidelines for redesigning library spaces (Glugston 2013). The following ten qualities of a good library space should be considered to enhance the creative planning of new library spaces to meet users' evolving needs and ensure that all roleplaying factors are considered before implementation. Any library redesign should be functional (McDonald, 2007; Dowlin, 1997), adaptable (McDonald, 2007; Jones, 1999), accessible (Shobha, 2015; McDonald, 2007; Schmidt & Cribb, 2011), varied (McDonald, 2007; Watson, 2007), interactive (McDonald, 2007; Shobha, 2015), conducive (Shobha, 2015; McDonald, 2007) and environmentally suitable (McDonald, 2007; Watson & Howden, 2013; Watson & Anderson, 2008; Quinsee & McDonald, 1991; McDonald, 2007). Additionally, to meet the needs of users, library space redesign must be effective and suitable for Information Technology (McDonald, 2007), efficient (McDonald, 2007; Shobha, 2015; Hisham & Neda, 2011:), open (Sinclair, 2007; Yuanliang, 2001), multifunctional (Yuanliang, 2001) and flexible (Lang, 2001; Yuanliang, 2001; Sinclair, 2007). By considering these qualities, libraries can create spaces that not only meet current needs but also adapt to future demands.

METHODS

The study used a concurrent mixed method approach, which sought to collect and analyse quantitative and qualitative data simultaneously (Creswell, 2014) to elicit information from the participants about redesigning library space in Ghanaian public universities. A structured and semi-structured questionnaire with closed-ended and open-ended questions were used to collect data for this study. The closed-ended questions required one response from a list of possible answers, whereas the open-ended questions encouraged them to provide their answers. The target population for this study was postgraduate students who use the Research Commons daily and the Senior Members of the main libraries of the University of Ghana and Kwame Nkrumah University of Science and Technology (i.e., Balme Library and Prempeh II Library, respectively). The Research Commons was used as the data centre because that is where one can find most of the postgraduate students due to its services and facilities. Seven hundred and thirty-six (736) respondents comprising six hundred and ninety-eight (698) students and thirty-eight library staff were selected using systematic random and purposive sampling to respond to the questionnaire. The questionnaire contained a series of questions about designing academic library spaces. The questionnaire solicited demographic information, the functionality of academic libraries, accessibility, and variability of academic library spaces. The questionnaire also asked respondents about the conduciveness of academic library spaces, interactivity between users and librarians, and challenges encountered in designing academic library spaces from the respondents. The answers provided by the students and library staff were self-reported and were answered anonymously. The collected data contains three hundred and three (303) completed questionnaires for graduate students, representing a response rate of 43.4%, and twenty (20) librarians, representing a response rate of 52.6%. The Statistical Package for the Social Sciences (SPSS) was used to analyze the quantitative data. The quantitative data was analysed and summarised using descriptive statistics. The qualitative data provided by the respondents were analysed thematically.

RESULTS

Demographic Characteristics of Respondents

This first section of the survey deals with the demographic characteristics of the participants. This included gender, the age range of respondents, institutions of respondents, and the length of service of librarians. The study's respondents are males (no=183, 60.4%) and (no=120, 39.6%) females. The participants are within the age group of 30 (no=130, 42.9%), 30 to 39 (no=110, 36.3%), 40 to 49 (no=36, 11.9%), and above 50 years (no=27, 8.9%). The participants are affiliated with the following universities: the University of Ghana (no=158, 52.1%) and Kwame Nkrumah University of Science and Technology (no=145, 47.9%).

Functionality of Academic Library Spaces

The second section of the survey presents the functionality of academic library spaces. The transformation of a library's function and furniture's functionality has become necessary as it happens daily in a library setting. Therefore, it is imperative that library users' priorities are considered. The participants were, therefore, asked to select some options provided by the researchers (see Figure 1). The results on the issue of functionality of academic library spaces reveal a generally positive attitude towards

the choice of chairs (no=154, 50.8%) and (no=46, 15.2%) agreed and strongly agreed, respectively, the choice of hexagons (no=145, 47.9%) and (no=36, 11.9%) agreed and strongly agreed respectively, ottomans (no=118, 38.9%) agreed, and couches (no=101, 33.3%) and (no=45, 14.9%) agreed and strongly agreed respectively. Detailed results of the distribution of responses are shown in the Figure below.

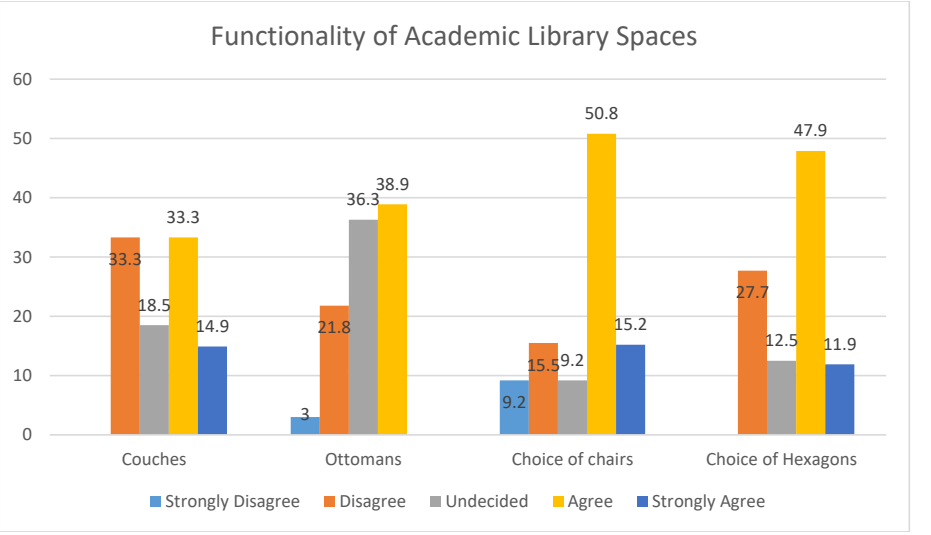

Figure 1: Functionality of academic library spaces

Accessibility and Viability of Academic Library Spaces

The third section of the survey sought participants' views about the accessibility and viability of academic library spaces (see Figure 2). Factors influencing users' choice behaviour and satisfaction towards a particular library are the spaces available and the level of satisfaction with the spaces. Respondents were generally indifferent toward the use of single-study carrels. The Figure below shows that the majority of respondents occasionally (no=119, 39.3%) use single study carrels, with similar proportions having never (no=15.2, 15.2%) or rarely (no=37, 12.2%) use the single study carrels and almost equal proportions also having frequently (no=46, 15.2%) or most frequently (no=55, 18.2%) use single study carrels. For group study areas, though the majority (no=139, 45.9%) occasionally patronized it, some (no=27, 8.9%) of the respondents never used it, and (no=100, 33%) rarely used it. Most students (no=137, 45.2%) used seminar rooms occasionally. A total of (no=130, 42.9%) either rarely used the seminar rooms or never did. About (no=36, 12%) of respondents said they used the service frequently. For quiet study areas, a majority (no=164, 54.1%) used it frequently and most frequently, while over (no=55, 18%) rarely and never used the space.

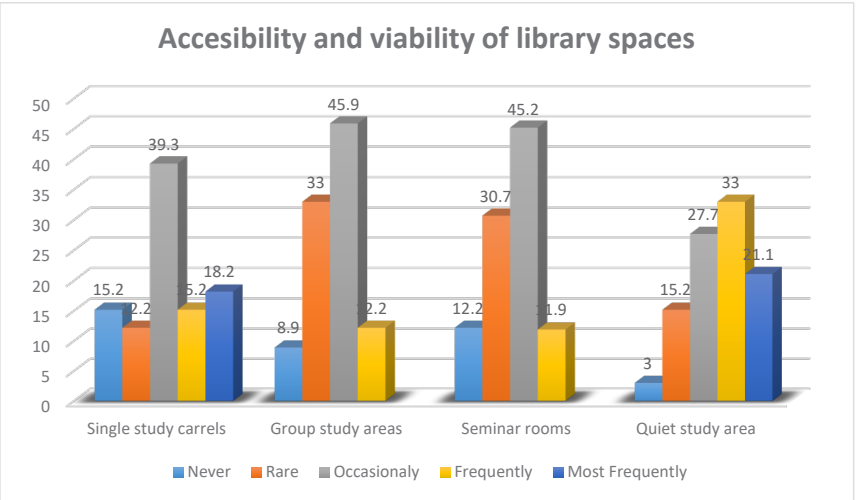

Figure 2: Accessibility and viability of library spaces

Conduciveness of Academic Library Spaces

The fourth part of the survey sought participants' views about the conduciveness of academic library spaces (see Figure 3). Most respondents (no=174, 57.4%) of the total surveyed students agreed that designing academic library spaces had made the libraries conducive for studying. Furthermore, (no=65, 21.5%) strongly agreed with the assertion, whereas (no=18, 5.9%) and (no=10, 3.3%) strongly disagreed and disagreed, respectively. Almost (no=36, 12%) were neutral on the subject matter. There was an emphatic response from all the librarians, who said the library had witnessed space design, resulting in a very conducive environment for users.

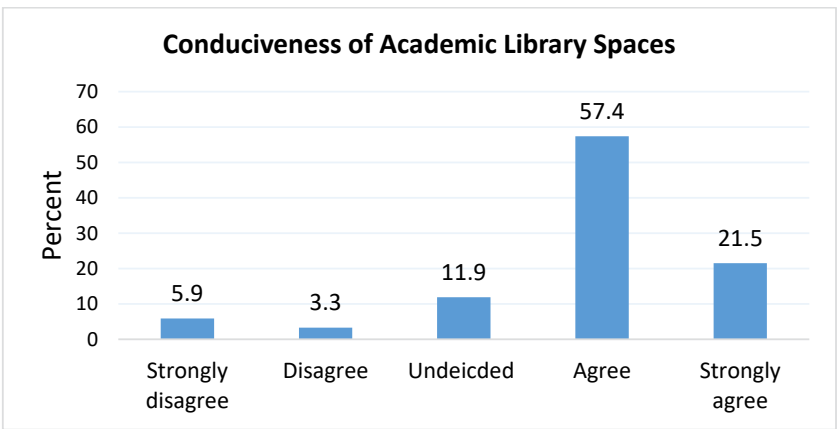

Figure 3: Conduciveness of academic library spaces

Interactivity in the Library

The fifth section of the survey sought to know the interactivity in the library from the participants (see Figure 4). Analysis of the extent of interactivity in the library revealed that (no=148, 48.5%) and (no=73, 24.1%) respondents agreed and strongly agreed to have access to faculty librarians. In this regard, (no=220, 72.6%) respondents generally think there is access to the faculty librarians even in the designed spaces of the library in both universities. Overall, (no=64, 21.1%) respondents had no access to the faculty librarians in the designed library space. Regarding the accessibility of the circulation desk, (no=229, 75.6%) and (no=19, 6.3%) agreed and strongly agreed to have access to the circulation desk. The circulation desks in both institutions were rated favourably by many (no=248, 81.9%) respondents. Many (no=285, 94%) library patrons also saw the information desk to be accessible.

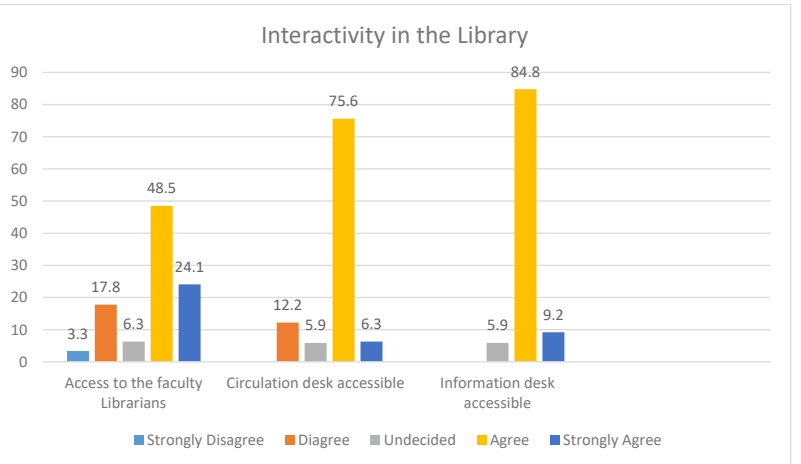

Figure 4: Interactivity in the Library

Challenges of Redesigning Academic Library Spaces

The final part of the survey sought the challenges the librarians who participated in the study faced in redesigning academic library spaces. Among the challenges mentioned by the librarians included increased users, lack of space, overload of services due to reduced service providers, noise pollution and littering, and high demand for information. According to the librarians, the increased number of users has caused an overload of the internet and electrical system. This situation causes slow internet speed and frequent power outages. For instance, a librarian at the University of Ghana asserted that.

"*As the patronage increases, space becomes limited because there are more users than the library can take, less electrical sockets to charge devices*". On the issue of lack of space as a result of the redesigning, a librarian at KNUST had this to say;

"*The space is quite small and cannot accommodate a lot of people at a time during working hours. Even at normal patronage periods, the library is filled up quickly, and the majority of users are turned away for lack of space*". Another challenge after redesigning

the library space is noise pollution and littering. According to a librarian at KNUST:

"*Some of the challenges we encounter include noise from the students in the library and littering of the place as students now bring food and drinks to the library*". The participating librarians also mentioned that the demand for information has increased. They believed this resulted from additional facilities made available to students through redesigning the library space. Captured in the comments by librarians of both universities, the demand for information has increased in all dimensions, from quality and quantity of information to quantity.

"*…demand for information has taken new forms, but the materials and services available do not meet this new demand. As a result, the library's provision of services according to students are inadequate. The library is trying to meet these demands immediately*".

DISCUSSION

This research was done mainly to investigate the designing of academic library spaces in Ghana and evaluate the level of satisfaction of stakeholders with these changes in the academic libraries of two major public universities in Ghana. The study findings suggest that students and staff had a positive attitude toward the functionality of the library space design in both institutions. As a result, the study revealed high levels of agreement with the functionality of couches, ottomans, and choices of chairs and hexagons. Two earlier studies by Careaga (2017) and Majal (2017) confirm this revelation. According to Watson and Howden (2013), the preference for couches, for instance, indicates the need for informal spaces in libraries. The respondents believed the couches were new and colourful, comfortable, conducive to studying, spacious, and placed where needed most.

Secondly, the study findings revealed that most respondents occasionally use study carrels, group study areas, seminar rooms, and quiet study areas. This finding conforms tothat of Majal (2017), who found occasional (somewhat frequent) patronage of study carrels, group study areas, seminar rooms, and quiet study areas. A study by Lippincott (2010) also corroborates this finding. In that study, the tendency for Generation Y to study in group and seminar rooms while socializing was reported.

Thirdly, many participants reported that the libraries in their respective institutions were conducive to studying after the design of the library spaces. This finding confirms an earlier study by Majal (2017). More than half of the participants in Majal's study also found the redesigned library space conducive to studying.

Fourthly, the majority of the participants were happy with the interactivity in the library. Many could access the faculty librarians and found the circulation and information desks accessible. This finding goes contrary to Majal's (2017) study. In that study, over half of the respondents indicated no access to faculty librarians. However, Majal's (2017) study corroborates the accessibility of the circulation and the information desk in this study. Most of the respondents in Majal's study also found the circulation and information desk accessible.

Finally, the study's findings revealed an increase in the number of users, which is causing an overload on the internet and electrical system, an increase in noise pollution, and an increase in the demand for information. All these challenges the respondent mentioned during the study were corroborated by Camille *et al*. (2016). In their study, what bothered people most were noise and visual distractions, lack of outlets, furniture's comfort level and ergonomic

qualities, insufficient space to work, level of privacy, temperature fluctuations, bad lighting, and some users sleeping. Zhu (2020) also corroborates the level of noise created by some students in the redesign space. Some users in this study were reported to be somewhat disturbed by the group study or social activities in the other four functional spaces due to the noise level created in these areas.

CONCLUSION

Designing academic library spaces with particular reference to KNUST and UG explored whether McDonald's qualities of good library spaces have been achieved by redesigning the libraries. From the findings, it can be concluded that the redesigning of the Balme library of UG and Prempeh II library of KNUST has been in line with good functionality of the designed space concerning couches, ottomans, choice of chairs, and the choice of hexagons because of their usability, quality, and design. The accessibility and variability of the academic library spaces, particularly with single study carrels, group study areas, seminar rooms, and quiet study areas, are all satisfactorily patronized by students. The libraries have been designed to allow for flexibility for students and librarians. The libraries were conducive to study, and according to the students, they motivated and inspired their studies because there was enough space for them to study and focus. Interactivity in the libraries was generally high as students had access to faculty librarians, circulation, and information desks in the two universities. Conclusively, the librarians asserted that the designed space had impacted demand for information, as an increase in the number of users and improvement in the provision of services had a cascading effect on demand for information. The challenges faced in the redesigned library space included overcrowding, which inadvertently led to high internet and electricity supply demand. As a result, there are also issues of slow internet and frequent outages in electricity supply, fewer materials to serve users with, and fast wear and tear of furniture. Noise pollution due to out-of-control study group discussions during peak hours and high demand for information within adequate personnel or service providers are other challenges revealed by the study. Based on the analysis and discussion above, the study recommends the following to help improve the services in the resigned spaces in the library.

Noise Reduction in the Libraries

The research findings revealed high noise pollution after redesigning the library spaces due to out-of-control study group discussions during peak hours. It is recommended that the management of the various libraries reduce groupings of furniture and their comfort levels, separate noise levels by floors, and close off mezzanine levels with double-paned glass around the perimeters. This will further enhance the conduciveness of the designed library space to create a library setting conducive to studies for students and faculty members.

Provision of sufficient power

The provision of sufficient power is a panacea for the effective provision of services in any academic institution. However, the demand is often too high to be met in many instances. Frequent machinery breakdowns, slow internet connectivity from continuous interruptions, lack of fuel to power them, and distribution issues are only some reasons for the power problems. Therefore, an adequate power supply should be provided to enable effective and efficient library services.

Provision of more study areas

The design of the library spaces has brought together information resources and technologies, and by providing new computing workstations and informal learning spaces, it supports the collaboration necessary for team projects and study groups. This has consequently increased the patronage of the library, causing unexpected overcrowding. Therefore, floor space and additional study areas are recommended to alleviate the overcrowding. Additionally, library personnel should be increased to meet the high library space and information demand. This will go a long way in making the library more useful to the students and faculty members of the universities studied.

Provision of Adequate Funding

Inadequate funding is always an underpinning factor when it comes to the provision of quality services in the library system. Management should, therefore, make a good budgetary allocation to the libraries when designing library spaces. This could be from internally generated funds or soliciting from agencies to enable the institutions to design their library spaces to provide a lasting solution to the problems.

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