

REDEFINING FUNCTIONS AND SPACES IN A DESIGN OF A MUSEUM

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DECEMBER, 2014

DECLARATION

I declare that the work in this thesis entitled '**REDEFINING FUNCTIONS AND SPACE IN A DESIGN OF A MUSEUM**' has been carried out by me in the Department of Architecture.

The information derived from the literature has been duly acknowledged in the text and a list of references provided. No part of this thesis was previously presented for another degree or diploma at this or any other institution.

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CERTIFICATION

This thesis entitled “REDEFINING FUNCTIONS AND SPACES IN A DESIGN OF A MUSEUM” by Abba Muhammad SHAN’UNA meets the regulations governing the award of the degree of Master of Science in Architecture of Ahmadu Bello University, Zaria and is approved for its contribution to knowledge and literary presentation.

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DEDICATION

To Almighty Allah. The beneficent, the merciful.

To my Mother, Hajiya Fatimah Ibrahim.

ABSTRACT

Traditionally, most museum have been designed as exhibition of artifact and learning environments that primarily focused on creating functional spaces that met basic educational needs. With the advent of the digital age however, approach to museum design is now based on the ways users access and make use of the museum environment, this has considerable design implications on the planning and design of museums, the building structure, space needs of users, social interaction and incorporation of recreational and commercial activities in the museum environment, all these factors were believed to boost patronage and encouraging learning and recreational activities in the public museum environment.

The qualitative research method was employed to carry out this thesis; Primary research method (case study) in order to assess and evaluate the current status of the public museum and the second method was questionnaire survey. The questionnaires are prepared on the basis of evaluating the views and attitudes of the respondents to the museum.

The research findings show that the design of exhibition of artifact and recreational spaces in the museum is based on new approaches to museum design that juxtapose commercial, recreational exhibition and museum activities to define space in the new museum design.

The study is indirectly adding new utility functions in public museum to bridge the gap and allow for continual use and rich Architecture of the museum as a piece of cultural and heritage of the community. This design proposal aiming to provide a conducive environment for lifelong learning, bringing members of the community together through the exchange of ideas, and the inclusion of outdoor spaces for recreational activities. All these changes are underscored by the necessity for a transition of the museum from just exhibition of artifact to providing an effective learning, commercial and recreational environment for museum users in the digital age.

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1.0 INTRODUCTION

1.1 Background of Study

An institution dedicated to preserving and interpreting the primary tangible evidence of humankind and the environment is conceived as a museum. In this preserving of primary evidence, the museum differs markedly from the library, with which it has often been compared, for the items housed in a museum are mainly unique and constitute the raw material of study and research. In the museum, the object, in many cases removed in time, place, and circumstance from its original context, communicates itself directly to the viewer in a way not possible through other media. As a matter of fact, museums with their peculiar ways of display, give new identities to the works, by focusing on their immanent and aesthetic qualities at the expense of the original purposes that they served in traditional communities.

Today, museums are no longer viewed as merely spaces that stack artifacts for the specialized few, with the accelerated development in architecture science and technology, museums have become more focused on people and learning processes than on just materials for display. As such, the environment where the museum user works has become a basic concern more than ever before.

Museums have been founded for a variety of purposes: to serve as recreational facilities, scholarly venues, or educational resources, to contribute to the quality of life of the areas where they are situated, to attract tourism to a region, to promote civic pride or nationalistic endeavor, or even to transmit overtly ideological concepts. Given such a variety of purposes, museums reveal remarkable diversity in form, content, and even function. Yet, despite such diversity, they are bound by a common goal the preservation and interpretation of some material aspect of society's cultural consciousness a Museum as a multifunctional place (Wastawy, 2006).

Museums offer many benefits to their visitors, their communities and society as a whole; also as educational institutions, they offer unparalleled opportunities for self-directed learning and

exploration by people of diverse ages, interests, backgrounds, and abilities. They are public gathering places where visitors can be entertained, inspired, and introduced to new ideas.

Since the time museums first emerged, their social roles retain the same and enduring behavioral structure, bringing visitors together with objects on display and allowing them to engage with the knowledge that these objects convey. Throughout the visitors' exploration of museum space and function, the architectural design plays a critical role in facilitating visitor's encounters with the locations and displays, because the museum experience cannot be separated from its physicality (Sirefman, 2009).

This research will study contemporary museum and conventional ones that are trying to keep pace with current developments and to find out the functions they serve in their communities and how they have succeeded in planning new layouts that respond to the demands of the modern museum environment.

1.2 Statement of the Problem

The conditions and usage of museum in Nigeria are a source of concern. Most museums are bare and uninteresting holding little or no appeal to even the most dogged museum visitors. Baseline surveys undertaken during this research found that museum visitors, who are mostly tourists, student and academics, visit the museum out of the sheer necessity of seeing artifact displayed. The survey shows how an important civic institution which should be playing a vital social and cultural role in the society has been underutilized and negated.

The poor recognition of the role of the public museum manifests itself not only in government action or inaction, but also in the perceptions and attitudes of individual members of the community for whom it is established. This is unlike the situation in many parts of the developed world, where the growth of the public museum is, to a large extent, due to the support and vocal expression and desire of the generality of the people to have such a facility.

The Kaduna Millennium City where the site is located is a 70,000-hectare site being developed by the Kaduna State Government as a result of increased population growth and public demand which in turn has increased the demand for a new city with modern, high-quality, contemporary, new homes and facilities that reflect the modern age. This has been recognized by developers and investors at home and abroad who are keen to become involved in new opportunities to provide for this demand.

The goal of a museum in the 21st century is to preserve the historical heritage for as long as possible. The challenge will be to provide opportunities for leisure and re-skilling for the population of working age and support literacy and recreational facilities for children living within the development. This is particularly significant in order to develop an intellectually sustainable and vibrant community, where literate and skilled persons will reside in the area.

With people coming from various backgrounds and living together for the first time as members of the same community, this is an opportunity to revive the status of the museum as the intellectual and cultural heart of the community of the new city. The mandate of the new city which supports new development and infrastructure therefore requires befitting civic structures that capture the spirit and essence of the Millennium. This is more so in terms of a world-class city which should have a world class public museum to cater to all classes of visitors from children to senior citizens, be it in the historical knowledge or recreational context.

This research intends to redefine the spaces and function of public museum environment by redesigning the museum space underscored by the changing information needs of users; it attempts to provide design innovation in terms of space use, social interaction and community expectations of a modern city; the research will also capture the expectations and requirements for the museum environment in the digital age.

1.3 Aims and Objectives of the Study

This study aimed at providing ways (in form of solution) of redefining space in the museum design, in millennium city of Kaduna.

Objective of Study

- i. To explore relevant literature and historic content of museum with a view to evolve new direction in design of museum.
- ii. To solve the problem of low patronage, through planning provision and redefinition of museum space that are more responsive in contemporary environment setting.
- iii. To propose a museum design that will capture the modern trend of design requirement and globalization.
- iv. To propose a design of the new Kaduna millennium city by way of definition of functional spaces.

1.4 Research Questions

The questions to be addressed while undertaking this research are:

- i. What is the current status of museums in Kaduna State?
- ii. Are museum designs changing in response to the needs of visitors or users?
- iii. Can a redefinition of the museum environment be captured through architectural design?

1.5 Scope and Limitation of Study

Studies on contemporary museum will be reviewed in an attempt to check for the redefining of space and function in a museum design and to examine existing planning problems of museums and how they can be solve by applying theories of place. Identified theories will be applied in the design proposal for the modern museum.

The scope of this study will cover a public museum which will be divided into parts; the physical museum building which will house displays of artifact, large-scale computer access throughout its various units, periodicals section, reference materials, a wide range of print and electronic learning media, a bookshop, group study rooms, multipurpose room, computer lab, let table spaces (offices, shop and eatery) storage and catalogue rooms; and add-ons to the modern museum which include a cafeteria, children's playground conference hall, cinema hall and an amphitheater for events and ceremonial functions.

Lack of sufficient information of the site such as detailed map and reliance on visual survey might be a constraint on the research.

1.6 Significance of the Study

The study shall provide new innovation in the design of a Contemporary museum which forms part of the intellectual and literacy basis of the community that the design was meant for. It also provides effective literature on architectural and historical education.

The study will wide range of literature of historical value and can contribute to information on museum for social benefits to individual and to the community. It will help to empower people in the enrichment and development of their lives and that of the community in which they live.

There is need to establish this kind of institution in the Kaduna millennium city; a modern museum which will serve a vital public function in a new community and enable perception in their interaction and community building.

1.7 Justification

Museum architecture in Nigeria has always been traditional; this can be seen in the different types all over the nation with one heritage or the other, an example is the national museum Kano Gidan Makama, the Jos Motna museum, the Kaduna national museum, Nigerian war museum Umuahia, and lots more. So far there is no museum that has given good consideration to the museum environment. The Nigerian national commissions for museums and monuments acts of 1990 states that, the commission is established to create and maintain museums and other outlets for or in connection with: science and technology, education and architecture. It is in this light that this museum has been adapted.

2.0 LITERATURE REVIEW.

2.1 The Concepts of Museums.

According to United Nation Educational, Scientific and Cultural Organization (UNESCO), a museum is a non-profit, permanent institution in the service of society and its development, open to the public, which acquires, conserves, researches, communicates and exhibits the tangible and intangible heritage of humanity and its environment for the purposes of education.

Conventional knowledge suggests that the boom in architecturally ambitious museum projects which enjoy unprecedented attention throughout the world was spurred by Guggenheim's decision to build Frank Gehry's Bilbao structure. This single project demonstrated the power of architecture to transform the image of a city, thus making the turn of the twenty-first century the unofficial age of museum architecture.

The architectural design of the new Museum expresses subtle metaphors in a modern, visually striking building. The main theme of the architecture is one of regeneration; at the same time, the building has a raw, fragmentary and unfinished quality to it, one that takes the visitor outside his or her comfort zone. The exhibition and interior design harmonizes with the architecture, enhancing and amplifying the resonance and meaning of the visitor's experience.

Museum defined as a building or institutions which houses and cares for a collection of artifacts and other objects of scientific, artistic, or historical importance and makes them available for public viewing through exhibits that may be permanent or temporary (Haley, 2006).

Edward and Mary (2007), defined museum as permanent institution in the service of society and of its development, open to the public, which acquires, conserves, researches, communicates and exhibits the tangible and intangible heritage of humanity and its environment, for the purposes of education, study, and enjoyment.

Museums offer many benefits to their visitors, their communities, and society as a whole. As educational institutions, they offer unparalleled opportunities for self-directed learning and

exploration by people of diverse ages, interests, backgrounds, and abilities. They are public gathering places where visitors can be entertained, inspired, and introduced to new ideas. Museums enrich local cultural life and make communities more appealing places to live and to visit. Museums collect and care for objects of scientific, artistic, or historical importance and make them available for public viewing through exhibits that may be permanent or temporary. Most large museums are located in major cities throughout the world and more local ones exist in smaller cities, towns and even the countryside (Basulto, 2009).



Plate 2.1: Inner Section of Metropolitan Museum of Art in New York City.

Source: Basulto (2009).

2.1.2 Brief history of museums.

Palace architecture – grand, classical, urban, and horizontal – was a principal influence when the first museums were designed. However, standard programmatic features like monumental stairs, courtyards, atriums, and naturally lit galleries – design elements that have carried over to the contemporary museum – all were born in this era of museum building.

There are three elements that control and define museum development: lighting, security and procession through space.

Museum gallery spaces are designed for endless possibilities, and a seasonal fleet of pre-packaged travelling, several projects such as the Contemporary Arts Centre (CAC) in Cincinnati

by Zaha Hadid, are freed from the burden of storing collections. No longer have repositories piling up gilt-framed paintings like sarcophagi; these museums faced a different programmatic challenge: flexibility. Cook and Fournier address these matters by creating large, un-partitioned exhibition halls under the biomorphic skin of the “Friendly Alien” architecture. The museum calls attention to itself as a happening event space light displays undulate the blue, curving surface, as at Bilbao, the architecture creates a dialogue between its form and the urban condition. At the CAC, Hadid addressed the anxiety of changeability with a whole “collection” of galleries dubbed the “Jigsaw Puzzle”: the short, wide, narrow, and tall galleries present a range of possibilities. In both cases, the museum must communicate its importance to the city at large as a cultural destination as well as its importance to the museum organization as the single-largest sculptural piece in the museum’s collection (Merkel, 2002).

Campbell (2012), noted that today museums are busier and more exciting and attractive, and he pointed out seven New Trends in Museum Design.

- a) Museum structure as artwork and attractor,
- b) Greater emphasis on retail space and restaurants,
- c) Grand halls for hosting events,
- d) Flexible gallery space for travelling exhibits,
- e) More outdoor art and landscaping,
- f) Hardwiring for technology,
- g) Parking becomes a top priority.

The points describe positive directions architecturally, socially, and economically in museum construction.

2.1.3 Types of museums.

The major types of museums are archaeology, art, history, natural history, and science museum. In certain museums, these disciplines may be combined. Within these categories there are also many specialized museums emphasizing particular topics or types of collections, such as museums of local history, music, the cultural heritage of native peoples, or maritime history.

In the United States, there are approximately 8,300 museums of all types, with history museums being the most common type. Canada has about 1,400 museums. In the late 1990s there were, annually, more than 800 million visits to U.S. museums and more than 25 million visits to Canadian museums (Basulto, 2009).

The following sections describe the different types of museums and highlight major museums of these types around the world:

a) Archaeology Museums;

Below Plate 2.2 Shows Archaeology Museums specialize in the display of archaeological artifacts. Many are in the open air, such as the Acropolis of Athens and the Roman Forum. Others display artifacts found in archaeological sites inside buildings (Basulto, 2009).

-Architect: Francisco José Mangado Beloqui **-Location:** *Vitoria, Spain* **-Total area:** *6.000 m²*
Construction: *2004-2009.*



Plate 2.2: Show's Approach view of Archeology Museum of Vitoria.

Source: Basulto (2009).

b) Art Museums.

The Denver Art Museum has nine curatorial departments: architecture design & graphics, Asian art, modern and contemporary native arts, New World painting and sculpture, photography, Western art and textile art. As shown in plate 2.3 the design uses many extended angular planes to be reminiscent of the natural landscape. Similar to the peaked roof of the Denver International Airport, the oblique sharp angles reflect the nearby Rocky Mountains, as well as the geometric crystals found at the mountains base near Denver. Daniel Libeskind, architect of the building, said “I was inspired by the light and geology of the Rockies, but most of all by the wide-open faces of the people of Denver. The titanium panels also reflect the light of the Colorado sunshine (Basulto, 2009).

- **Architect:** Daniel Libeskind - **Location:** Vitoria, Spain -**Total area:** 6.000 m2
Construction: 2004-2009.



Plate 2.3: View of Denver Art Museum.

Source: Basulto (2009).

c) History Museum.

Shaanxi History Museum, which is located to the northwest of the Giant Wild Goose Pagoda in the ancient city Xi'an, in the Shaanxi province of China, is one of the first huge state museums with modern facilities in China. The museum houses over 370,000 items, including murals, paintings, pottery, coins, as well as bronze, gold, and silver objects and a garden for recreational activities. As is shown in plate 2.4 the museum is architecturally in the Tang style, with a hall in center, storied buildings in corners. It is elegant and dignified, on a large scale, with a combination of traditional architecture and modern technology, which embodies folk tradition and local features. Since the opening of the museum, it has followed the policy of collecting, conservation, publicizing, education, and scientific research, using its many historical relics, and conducted various types of display (Basulto, 2009).

Architect: Francisco José Mangado Beloqui.

Location: X'ian, Shaanxi. China.

Total area: 65.000 m2.

Established – June 20, 1991.

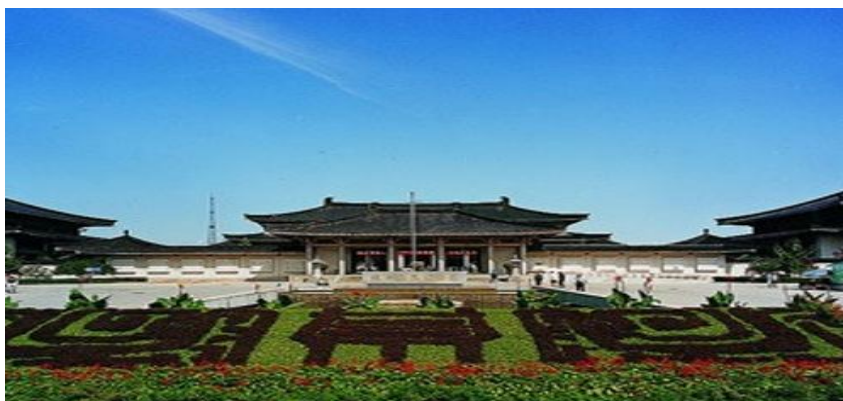


Plate 2.4: Approach View of Shaanxi Provincial History Museum.

Source: Basulto(2009).

d) Science museums.

The science museum and technology in Japan as shown in plate 2.6 Its mission is to deepen the public appreciation of the earth, life, science and technology, and to encourage people to think about how humankind, the natural world, science and technology should best relate to each other. Its mission is to elucidate the history of life, science and technology through evidentiary research, using specimens and other resources and collect the systematically organize vast collection of specimens, providing a national collection that supports all manners of scientific research. The museum has strong roots in the community, is supported by the community it serves and responds to the needs of society, it is situated in a large area that cover with outdoor activities for the community around (Basulto, 2009).

Architects - Kiyoo Matsushita, Takashi Hirayama, Nobuaki Akaike, Shoji Kurakata, Nobuya Suzuki.

Location: Tokyo, Japan. **Established:** 1964-1988. **Total Area:** 6,814 sqm.



Plate 2.5: Science Museum Japan.

Source: Basulto (2009).

2.1.4 Museum Planning.

The design of museums has evolved throughout history. Interpretive museums, as opposed to art museums, have missions reflecting curatorial guidance through the subject matter which now include content in the form of images, audio and visual effects, and interactive exhibits.

Museum creation begins with a museum plan, created through a museum planning process:

The process involves identifying the museum's vision and the resources, organization and experiences needed to realize this vision. A feasibility study, analysis of comparable facilities and an interpretive plan are all developed as part of the museum planning process (Merkel, 2002).

2.1.5 Museums in Nigeria.

Collection of cultural objects existed in different places in Nigeria before the British colonial control; there were family and village shrines that contained objects of religious significance.

Traditional rulers also had “royal collections” which comprised hereditary and ceremonial objects, and war booty. Assembled collections became the nucleus of the National museum, Lagos in its early years (Sani, 1999).

In 2001, there were 35 National Museums located, either in the state capitals or in historic places or towns and in many smaller communities as well; and, in addition, there are local community museums and private galleries.

The National Museum in Lagos contains many specimens of Nigerian art, mostly pieces of statuary and carvings, remarkable for their variety and quality. It also has archaeological and ethnographic exhibits. Other museums represent more specialized interests: the museum at Ife opened in 1955, it contains world-renowned bronze and terra cotta heads; the decorative arts museum at Benin City has a collection of bronzes; The museum at Jos, opened in 1952 originally as the National Museum, is a center of research into the prehistoric culture of Nigeria. The Esie Museum, at Ilorin in Kwara State, has stone antiquities, and the National museum at Kaduna has archaeological and ethnographic exhibits, including a "craft village.” The one in

Kano Gidan Makama, has traditional war material. There other at Argungu, and Oshogbo. Lagos also houses the Centre for Black and African Art and Civilization.

Mohammed (2010), during the International Museum Day 2010 themed: Museums for Social Harmony, noted that the celebration served as a catalyst in promoting cultural presentation and integration in the economic life of the society through patronage of traditional and contemporary art forms, tourism exchange and mass publicity of the creative genius of Nigerians. “The concept of harmony is meaningful for mankind as a whole. The main features of social harmony are dialogue, tolerance, peaceful co-existence and development. These features are the instruments needed for resolving social issues peculiar to diverse and pluralistic societies as found all over the world.

Therefore the philosophy behind museums for social harmony is geared towards finding a common ground in which different societies could get on together whilst accepting the differences that make individuals, peoples and nations unique.

Museums today were tasked to play the role of rallying point of support to communities all over the world; He said “the museums therefore, need the support of their communities for the realization of these set goals and objectives in the service of humanity and social harmonious co-existence (Yusuf, 2012).

2.1.6 Museums Today.

Museums today are not merely places where knowledge is transmitted but also a place where social relationships are shaped and take place, civic functions, of which exhibitions are the most rarified. The work of communication, through architecture as well as through education and entertainment, takes place up front and in the public realm (Huang, 2001).

Yutaka (2004), noted art museum today is twofold: to have an economic impact on the city where it is located by gathering people in the broad sense, and to become a symbol of spiritual repose for them also by enchanting the space and bringing it to life. He added that Museum is

designed as a park where people can gather and meet with one another, through which visitors can sense each other's presence.

Hooper (2003), noted that the conceptual change from education to learning was an important development in the ways museums need to think about their visitors and provide services for them.

The change of identity and mission in museums can be understood in terms of a socio-political awareness. He also argued that museums need to move from being suppliers of information to providing accessible knowledge and tools for visitors to investigate their own interests and to contribute to the meanings of exhibits. In her investigation of the impact of social media across museums, she concludes that visitors demand a possibility to collaborate with museums and to share their own ideas with other visitors.

2.1.7 The Role of the Museum.

According to Sirefman (2009), said up to the middle of the 20th century a museum was a place of learning, in which notions of cultural dominance were reinforced visually through an imposing and often severe approach in the design of the building. Museums now has to represent a much more welcoming, all-embracing image, as it can no longer afford to present a single establishment view of society and must reflect a diversity of cultures and expectations. She added that the most important task of the contemporary museum is to communicate to the widest possible audience the breadth of collections and accessibility of learning facilities.

David (2004), added that museums today are complex buildings housing different activities for people with diverse interests, containing collections and accommodating general and specialist staff dedicated to providing a service to the public as well as caring for their collections. They have to be designed for both client and local community, and to connect people of all types with museum objects.

2.2 Redefining Functions and Spaces in Museum.

Museums look after the world's cultural property and interpret it to the public. This is not ordinary property, it has a special status in international legislation and there are normally national laws to protect it. It is part of the world's natural and cultural heritage and may be of a tangible or intangible character. Cultural property also often provides the primary evidence in a number of subject disciplines, such as archaeology and the natural sciences, and therefore represents an important contribution to knowledge. It is also a significant component in defining cultural identity, nationally and internationally (Lewis, 2004).

The requirements of architecture are such that one must go beyond what the client understands, there must be surprise, mystery, beauty and delight, elements that make architecture rewarding to its users for a lifetime. This is one of the primary differences between architecture and building. It is the architect's responsibility to go beyond the mere program and into the realm of what is called the spiritual.

However, the declining usage of public museum in Nigeria has tended to relegate this important civic institution to the background. For many potential users, the outmoded design and poor location of some museum buildings is a deterrent in itself; innovative solutions are needed to make them relevant again.

As we go forward, we must recognize the meaningful contribution that the museum can provide if spaces were design to serve other potential functions different from what they were meant for and planned correctly. The goal of effective planning is to make the experience and services of the museum transparent to the user. Rather than hide resources, the museum should bring them to the user, focusing on the needs of the stakeholders, especially those of the students/users/patrons/business associates. Whether users access the spaces for visitation, business or socio cultural values, the museum should be the place to enable them to advance their learning and socio cultural experiences.

2.2.1 Redefining the Functions and Spaces of a Museum.

The Museum as a Forum;

The shorter Oxford English Dictionary on historical principles defines "forum" as "the public or market place of a city". The chamber's twentieth century dictionary (revised edition) also defines "forum" as "a market place especially that in Rome where public business was transacted and justice dispensed; the courts of law as opposed to Parliament". An examination of these definitions reveals that a forum is a public place. It is a place where public business including dispensation of justice, not necessarily in the legal sense suggested by the chamber's dictionary but rather, in terms of equal opportunity and access of culture experience.

Concern for the public, both at the levels at which it has been articulated and in the forms in which it has been expressed is perhaps the greatest concern shown by museums since French Revolution, which the more for the democratization of museums can be said to have for its past, the International Council of Museums (ICOM) since its foundation in 1947 has provided the expected lead in this concern for the public as reflected in the search for an acceptable definition to be adopted by this highest international professional body.

In 1974, the International Council of Museums refers museum as an institution which conserves and displays for purposes of study, education and enjoyment collections of objects of cultural or scientific significance.

By 2004, the word "museum" had been redefined to read as: A profit making, permanent institution in the service of society and its development and open to the public, which acquires, conserves, researches, communicates and exhibits, for purpose of study, education and enjoyment, material evidence of man and his environment.

These definitions and re-definitions, cited above, apart from showing museums as complex institutions, reveal a progressive concern, on the part of museums, for the general public.

Well as public forums museums have been trying to woo members of the public through a variety of ways. Some view their museums as centre of activities and therefore provide facilities as lectures, films, dance drama and other activities based on their collections. Where resources permit, outreach or mobile services have been provided either specifically for the schools or adult population. Some museums deliberately invite members of the public to "please touch" objects (as a reaction to the prevailing practice of don't touch).

Apart from providing opportunities for visitor's participation in different forms, museums which see their role as public forum have assumed on-traditional museum roles. Museum's involvement in this big task is justified on the basis that

it "moulds the consciousness of the communities it serves". Presents contemporary problems, links together past and present and identifies itself with indispensable structural changes.

The Museum As A Learning Environment; What Kind Of Environment Is The Modern Museum Designed To Provide?

Throughout their lives, people require education. According to Gill (2001), learning does not end with the completion of formal education, but is for most people, a lifelong activity. In an increasingly complex society, people will need to acquire new skills at various stages of their lives.

The new century finds museums in yet another life cycle transition issues of varying new media for high speed access to information, evolving roles and programs of civic institutions within society and changing styles of teaching and learning including the long term cognitive effects of new media information technologies have had an unexpected impact on the role of museums in their immediate communities and in the world. Interestingly, they have only become more popular. This is due to a myriad of factors, including an increase in the appeal of social environments for learning and the growing distrust of other public sources of information. Obviously, this combination of conditions represents a double edged opportunity for museums. They have the perfect chance to experiment with new ways of interpreting information for an ever growing audience and a greater risk of being held accountable if they don't get it right (MacLeod, 2005).

The challenge for architects and other museum professionals is to collaborate in leading the way towards new methods of conceiving and executing visitor experiences that take into account constantly shifting and progressing modes of thought and understanding. It is also incumbent upon us to find new strategies that serve to render those experiences fresh and invigorating, while realizing that certain aspects of visitor behavior and comfort are in fact more predictable and fixed (MacLeod, 2005).

2.2.2 Design Concepts of Redefining Function and Space in a Museum.

Design Approach.

Design, as various scholars have suggested, is a contingent practice whose techniques, goals, and objectives are continually changing. What is fixed about design is that it is an art of conception and planning whose end result is a product, whether that product is a material object or an immaterial service or system. Design is also an integrative activity that, in its broadest sense, draws together knowledge from multiple fields and disciplines to achieve particular results. It has both a semantic dimension and a technical or operative one. Design approaches are determined in terms of design activities, which concern design stages within multi-disciplinary project participants in the exhibition design process (Margolin, 2000).

2.2.3 Design Approach in Museums.

A museum is created by its contents and the activities relating to them. These contents may be historical artifacts, such as a steam engine, or exhibits of natural phenomena, scientific ideas or technological inventions. A museum is an educational county fair, a serious and exciting learning environment where the relationships between one exhibit and the other and among the exhibits, the visitors and the space as a whole are important. This location-and-object specific attribute sets museums apart from other communications media such as television, books and periodicals. The requirements of architecture are such that one must go beyond what the client understands. There must be surprise, mystery, beauty and delight, elements that make architecture rewarding to its users for a lifetime. This is one of the primary differences between architecture and building. It is the architect's responsibility to go beyond the mere program and into the realm of what is called the spiritual Science museums so far has used different design methods to achieve its goal of service to the community, and one way or the other, it has created a place for itself in the modern world. In other to achieve this, science museums use one or multiple design approaches such as:

- a. Traditional design approach
- b. Form design approach
- c. Multifunctional design approach, this will be discussed extensively

Form design approach.

The Use of Forms in architecture primarily deals with communicating and understanding through symbols. Symbols allow people to develop complex thoughts and to exchange those thoughts with others. Language and other forms of symbolic communication through architectural expression enables people to create, explain, and record new ideas and information on the built environment as this evokes the heritage of the people (Gardner, 2007).

The hypothesis is that architectural forms within the same formal tradition tend towards more complex configurations with the passage of time. Relationships between the elements of architectural forms at an early stage in the development of stylistic traditions are simple. They get more complex with the applications of methods such as superimposition and deformation of elements and by more abundant use of curving forms. Two stylistic traditions are used:

- a. The classical (baroque and Romanesque) and
- b. Modern (natural, scientific, abstract)

Traditional design approach;

An architect is an artist, creator, logician of evolving aesthetic structures, a designer of not only the visual but the internal space. Some see architecture as a synthesis of logic and emotion, exploring and fulfilling the dreams, fantasies and realities of their clients, whether they are individuals, corporate, or community identities.

Oshatz (2001), believe that a traditional design expert, except for the basic elements of design composition, dominance, transition, and identity stay away from design theories. They seem to

be too transitory and irrelevant to design theories tend to outshine their author's performance, becoming limiting concepts, prejudicing the mind while tying one's hands behind one's back. They are roadblocks to new ideas. While subscribing to a particular theory of design an architect must solve problems within the parameters of that theory; this is limiting at best.” Without architectural theories the process of designing a structure remains in its purest form, simply solving a given problem. Design becomes a process of integrating its key ingredients program and environment.

The program (problem to be solved) is what makes a project unique, and the seed of a solution is found within the problem itself. An opportunity exists within every design to develop a unique solution. The environment is the source of a projects poetic sense. Every site has its own character; the challenge to the architect is to capture that character and translate its spirit into architectural poetry.

Concept.

The starting point of the work is the clients program, so the first step is to divide the program into its functional and spiritual components. The program is more than just a set of functional requirements, technical space allocations and relationships. It should embody the emotional needs of the client/user. The graphic tools used to express the traditional design approach are:

- a. Plan, It is the expression of the client's functional program, a beautiful translation of an idea. The plan is a simple picture of a program organized into a rhythm of usages
- b. Section, The section is the expression of the client's spiritual program. It brings the plan to life. It is the realization of space. The section is a complex ordering of three-dimensional space, a play of light and shadow, solid and voids.

- c. Elevation, The elevation is only a skin enclosing the internal space created by the plan and section.

Architecture is a synthesis of logic and emotion. When carried to its logical conclusion, a traditional design approach produces very imaginative structures. It is only a question of how much of an artist we architects choose to be (Oshatz, 2001).

2.2.4 Multifunctional Design Approach.

Multifunctional integration is remedy for architecture, ecosystems Hensel and Menges (2007), stated that a remedy to the problems with homogenized structures 'can be found in an understanding of architecture as ecology, involving dynamic and varied relations and mutual modulation between material systems, macro- and micro-environmental conditions, and individual and collective inhabitation.' They point out that 'most biological systems are articulated through higher-level multifunctional integration across at least eight scales of magnitude. This allows scale-dependent and scale interdependent hierarchical and multiple functionality.

Great public spaces make good business sense if they are creatively used and managed, design approach differs irrespective of their similarities or linkage. Each and every design has its unique and problem solving approach even though not 100%. The multifunctional design approach is based on identifying the most critical requirement which is having different functions housed in one unit, and each individual facility or function having a different design approach, in addition to its iconic nature which attracts more people to it. As stated earlier, while education seen as the transmission of knowledge and information has been the function most emphasized and evaluated, science museums have a number of equally important guiding principles (Gould, 2007).

This are:

- a. The educational function

- b. The restorative function
- c. The symbolic or ritual function
- d. The ludic function
- e. The social function

The Educational Function;

Today there is a growing appreciation in the museum world that museums do not exist primarily to service their collections of material heritage, but rather to serve society by helping provide the knowledge and facilities its members need to survive and progress. Contemporary concerns, changes and challenges plaguing society on all fronts sculptural, technological, environmental- make it more important than ever that museums be responsive and relevant to the information needs of society. If museums fail to keep pace with a changing society, they may be perceived as redundant and be abandoned in favor of other types of information providing institutions which have better adapted to the Information Society (Macdonald and Alford, 2008).

In other to do so, the museum facility will have educational facilities such as:

- a. Global access to the wealth of information in all formats.
- b. Adopt advanced technologies such as the 3d IMAX, in delivering information and services.
- c. Include learning and teaching spaces that are adaptable to different learning styles.
- d. Provide the necessary tools for interactive learning of the Arts and Sciences (Edward, and Mary, 2007).

Restorative Function;

Provide a therapeutic detachment from the stress of everyday life in a turbulent world (Fischer and Glennon, 2010). In other to do so, the public museum should cater for:

- a. Recreational facilities, for both adults and children.
- b. Stress free circulation environment for visitors.

Symbolic or Ritual Function;

Offer opportunities for visitors to experience and appreciate significant traditions and contents (McDonald and Alford, 2008). Symbols depicted on objects allow us to decode some of the meanings behind them and understand better the cultures that made and used them. On some occasions, the object itself, such as an item of clothing a piece of regalia or a culture's trade mark, becomes the symbol. The motivation behind the use of symbolism is varied:

- a. To impose power.
- b. To assert position.
- c. To protect the user or
- d. As identification with a family or community.
- e. Where not all members of a society are literate, symbolism is crucial in communicating ideas or affinities.
- f. They can be representational or abstract, individual or repeated.

Ludic Function.

Present opportunities for playful exploration (Zavala and Jeans, 2003). In other to do so; the public museum has to be able to provide an environment that accommodates.

- a. Hands on interactive environment where the visitors can express their abilities in an informal way.
- b. A playful environment where the visitors especially children can interact with one another.

Social Function;

Provide frames for the building of social relationships among visitors and users (Silverman, 2010).

This will enable visitors understand and appreciate each other's abilities and as such be either challenged or motivated to be creative as well.

Museums may position themselves among competing leisure activity institutions depending on the way they place varying degrees of emphasis on these functions. Within the museum itself, different zones may highlight different functions, giving visitors a chance to encounter a variety of contrasting experiences or to seek out different environments on different occasions or depending on their mood, their companions, and so on various facilities in a science museum:

- i. Exhibition Spaces.
- ii. Interactive Classes.
- iii. Planetarium.
- iv. Library/gallery.
- v. Restaurant/shops.
- vi. Indoor and Outdoor Recreation.
- vii. Cinema/3dimax Theatre.

3.0 RESEARCH METHODOLOGY

The method of study for this thesis is based on qualitative research method.

3.1 Research Design

The primary research method used in this study is case study; in order to assess and evaluate the current status of the public museum is being re-thought to support the needs of the modern day museum user.

This qualitative research method is used to assess the selected cases based on the Evaluative Case Studies model. Evaluative case studies are used in testing the effectiveness of policies or programs in order to suggest modifications or alternatives.

The second research method employed is questionnaire survey. The questionnaires are prepared on the basis of evaluating the views and attitudes of the respondents to the museum.

3.1.1 Selection of Research Method.

These chapters investigate cases of selected National public museums which reflect the changes through the integration of new services and facilities into a modern museum, also seek to answer the question of why those museums were designed differently and whether or not they serve as models for accommodating the changes in modern museum.

In view of the comparatively poor performance of the museums in Nigeria, the study shall investigate the implementation of services, programming, administration, and management strategies of three museums in the country.

This method of research will provide information and inspiration on the best practices in museum design and planning while learning from the successes and failures of each case.

Following the analysis of primary data collected through questionnaires administered on members of the general public, through subsequent data analysis and responses from this survey, the results obtained will be applied to the design of the proposed museums.

3.1.3 Population of the Questionnaire Survey.

The respondents to the questionnaire are amongst the museum visitors in studied cases area and they constitute the population under study. The information required are from them which also reflect their views. The population comprises of a sixty (60) respondents.

3.1.4 Instrument for Data Collection.

The main instrument used for gathering the required data is the questionnaires. The questionnaire is divided into three sections; Section A which comprises of bio-data (personal data) of the respondents, that is sex and age ranges, Section B which asks about the respondents' interaction with the museum and Section C which is concerned with the respondents preferences to museum services. The questions have four options each and the respondents are required to tick one or more answers that appeal to their judgments. Personal observations were also made by the researcher on how respondents reacted to the questions.

The additional collection of data was done through various ways including participant observations, checklists and interviews.

3.2 Procedure for Administration of the Research Instrument

The researcher personally administered 60 questionnaires randomly for 5 days to the respondents. The questionnaires were collected by the researcher immediately after they have been filled by the respondents.

3.2.1 Case Study Selection Criteria.

Variables: Comparative analysis using the following independent variables: museum

Dependent variables shall discuss the research area the use of space and sense of place. Here the variables that will be used to assess the case studies are based on the five point of critical regionalism:

- i. Architectural Form.
- ii. Scope of project.
- iii. Construction technology and Building Materials.
- iv. Integration with the site.
- v. Relationship with environmental conditions (climatic, physical and historical).

In order to achieve appropriate results, the dependent variables will be integrated to the independent variables which are a museum as follows:

- i. Architectural Form- this makes up the entire envelope of the building in which redefining the space and function of a museum will be depicted.
- ii. Scope of project- a modern museum should consist of various facilities which include business, leaning environment and entertainment as well as administrative and multipurpose halls to contain a large number of users.
- iii. Construction Technology and - load carrying columns and beams for the long spanning conference halls will be used along with an appropriate roof system for the building.

- iv. Integration with the site- contemporary museum architecture will be studied in relation to the location so as to bond theories of place and space.
- v. Relationship with environmental conditions- this dependent variable will be exhibited on the building redefining space and function of a modern museum, thus an approach to fuse different activity in a museum environment.
- vi. Building Materials- the use of contemporary building materials that ensure minimum maintenance and maximum durability is required for construction.

3.2.2 Data Collection.

The collection of data was done through various ways which include:

Literature and Documentation.

Literatures on the selected case studies were consulted so as to get relevant information, history and data concerning the projects in question. This was in the form of online media, digital documents and journals.

Visual Survey.

The indigenous museums studied have detailed information from the researchers' visits through observation of the facilities, survey of the site layout, and interviews with the staff.

In-Depth Interview with Existing Museum operators.

The selected museum users/visitors, operators / managers were interviewed to get more information on each of the existing museum facilities.

3.2.3 Data Analysis and Presentation.

Data collected on each case study was analyzed and represented in different forms which include:

Photographs.

Photographs of the structures of the case studies were studied and documented (See the case study chapter).

Tables.

Data collected on this research were documented and presented on the traditional architecture case study assessment tables. Refer to tables under case studies (chapter four).

Figures.

Data collected on the case studies were also documented in form of drawings. Such as museum plans. Refer to figures under case studies (chapter five).

4.0 RESULT ANALYSIS AND DISCUSSION OF STUDIED CASES

4.1 Case Study 1: National Museum Kaduna, Nigeria.

Architect: unknown.

Date of case study: 11/02/2013

Date of opened: 1975

Location: The museum is located along Ali Akilu Road opposite Unguwar Sarki musulmi. The Museum building was once the Northern People Congress (NPC) Party's secretariat during the time of Sardauna of Sokoto, Sir Ahmadu Bello.

Building Type: Art and craft Museum.

Construction Materials: Concrete, Stone, Steel and Glass.

Climate location: Tropical climate.

Annual Visitor Figures: 8520 in 2010, 6870 in 2011, and 6265 in 2012.



Plate 4.1: Satellite Image of National Museum Kaduna.

Source: <http://www.googleearth.com>(2013).

Building materials and planning.

The building was converted into a museum in 1975. The Museum contains a substantial collection of archaeological, ethnographic and crafts exhibits and has a live crafts centre in which traditional craftsmen and women can be observed making crafts. Also Ethnographic materials ranging from Terracotta Figure urines of human and animals from the famous Nok culture area dated to about 2,500 years ago, as well as arts works and crafts of both prehistoric and contemporary societies.



Plate 4.2: Approach view of the main gallery.

Source: Author's Field survey (2013).



Plate 4.3: Approach view of the administrative block.

Source: Author's Field survey (2013).



Plate 4.4: View of cultural centre (Dandalin ziyara).

Source: Author's Field survey (2013).



Plate 4.5: View of a museum shopping complex.

Source: Author's Field survey (2013).

The main gallery building is a two storey structure with a well defined entrance of stone work.

The ground floor comprises of the exhibition galleries, stores, a telephone exchange room and senior staff toilets. The upper floor contains offices, the photography unit the labrotory and library.

A new building has been constructed adjoining the Gallery building on its right side and it is being used for offices and exhibition halls.



Plate 4.6: Open air Museum (court yard).

Source: Author's Field survey (2013).



Plate 4.7: Kitchen museum.

Source: Author's Field survey (2013).



Plate 4.8: View of tie, dye, gold smith and craft village.

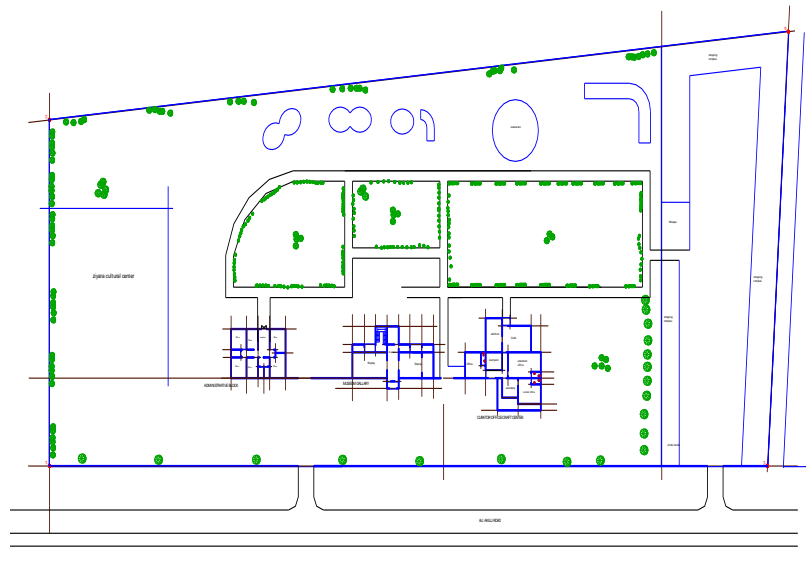
Source: Author's Field survey (2013).

These buildings was constructed using modern materials of sandcrete block for walls, long span aluminum roofing sheets and terrazzo floor finishing. The interior of the building is lighted with fluorescent lamps an artificial source of lighting. Conservation of special artifacts is done by the use of tungsten lamps while ventilation is provided by unit air-conditioners. Circulation is generally random and glass show cases are used for display. The craft village which is detached from the main building was constructed employing the use of local building materials. Mud was used for the walls while long span aluminum roofing sheets with a layer of thatch on top were used for the roofs. Craft works such as weaving, mat making, pottery, hair weaving, bronze and metal works are carried out.

Facilities: Facilities at the site include:

- Administrative block. Exhibition gallery. Offices
- Craft shops. Restaurant Stores. Conservatory.
- Tie and dye centre Hausa cultural centre, Library and Shopping complex.

Figure 4.1: Showing the site plan of the Kaduna museum complex.



Source: Author's Field survey (2013).

4.1.4 Pattern of Patronage.

Table 4.1: The table below shows annual visitors patronage for the year 2012.

MONTH	NIGERIA VISITORS	FOREIGN VISITORS	MALE	FEMALE	ADULT	CHILDREN	TOTAL
JANUARY	717	2	512	207	621	98	719
FEBRUARY	961	2	749	214	648	315	963
MARCH	521	4	462	63	374	151	525
APRIL	313	0	217	96	214	99	313
MAY	1242	2	898	346	1,191	53	1,244
JUNE	601	0	412	189	478	123	601
JULY	25	0	18	7	14	11	25
AUGUST	21	0	16	5	19	2	21
SEPTEMBER	52	0	38	14	46	6	52
OCTOMBER	36	0	25	11	29	7	36
NOVEMBER	128	2	102	2	126	4	130
DECEMBER	216	2	118	100	201	17	218
GRAND TOTAL	4,833	14	3,597	1,254	3,961	886	4,847

Source: Author's Field Survey (2013).

Table 4.2: The table below shows annual visitors of total school group visit for the year 2012.

S/NO	MONTH	NO. OF SCHOOL	NO. IN THE GROUP
1	January	3	82
2	February	4	212
3	March	2	116
4	April	3	78
5	May	1	29
6	June	3	87
7	July	0	0
8	August	0	0
9	September	0	0
10	October	0	0
11	November	0	0
12	December	0	0
total		16	604

Source: Author's Field Survey (2013).

4.1.5 Summary of Findings.

Table 4.3: The table below shows summary of case study finding.

Variable	Remark
Architectural Form	- Expressionist form with modern building techniques.
Scope of project	The facilities in the museum are Administrative block, Exhibition gallery, Offices, Craft shops, Stores , Conservatory. Tie and dye center, Library Switchboard room and exhibition space.
Construction Technology/	- The use of sustainable design elements. - Wooden struts and steel framework.
Integration with the site	The museum was converted from an office to a museum it was not originally design as a museum
Relationship with Environment	- Building exhibits features of the surrounding area manly the trees.
Building Materials	Earth, Thatch

Source: Author's Field survey (2013).

4.2. Case Study 2: Gidan Makama Museum, Kano

Architect: unknown.

Date: it built in 15century A.D and it became a museum in 1953.

Location: it is located in the heart of Kano Old City, opposite the Emir's Palace.
Kano, Nigeria.

Building Type: Art and culture Museum.

Materials: Mud, Concrete and natural stones.

Climate: Tropical climate.

Annual Visitor Figures: 9231 in 2010, 6118 in 2011, and 10271 in 2012.

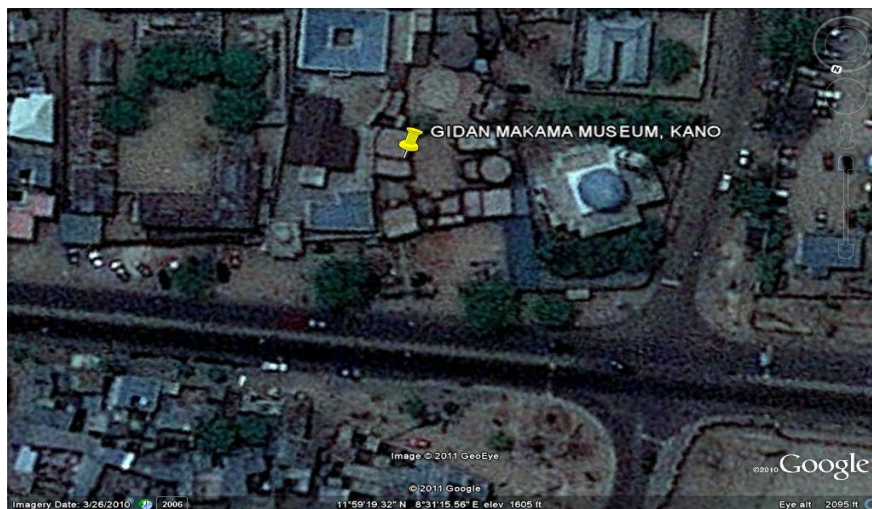


Plate 4.2.1: Satellite image of Gidan Makama Museum, Kano.

Source: <http://www.googleearth.com>(2013).

Building materials and planning.

The museum is one of the oldest buildings of Kano parts of it date to around 1750. Erected as the city mansion of Makama, one of the highest dignitaries of the emirate,

It is situated in the south-east corner of the large square in front of the Emir's palace and at the western end, south side, of the Nassarawa road. The Western rooms, adapted for the Kano Museum in 1958 are entered from the western gate. It is circle 5.3 metres high and roughly square in plan with sides measuring approximately 9 metres. It strongly tapering, earthen work walls vary in thickness.



Plate4.2.2: View of Entrance porch at Gidan Makama Museum in Kano.

Source: Author's Field survey (2013).

The outer wall in which the door facing the road is set, is a mass of masonry over two metres thick. The flat roof of the gate house is surrounded by a continuous parapet with thick set finals on the corners. The ceiling of the zaure is supported by two heavy rectangular pillars, tapering towards the top and headed with capitals that are wider than the pillars and trapezoidal in outline.



Plate4.2.3: View of the internal court yard (Tsakar gida).

Source: Author's Field survey (2013).



Plate 4.2.4: View of the internal exhibition area.

Source: Author's Field survey (2013).

The museum is divided into twelve galleries, each with their own centre of focus. Galleries include the zaure in the main entrance with displays of traditional materials, city walls and maps of Kano.

Kano city 17th century gate, Islamic pillars, marital cultural, the history of statehood, Kano in the 19th century, the civil war, economy, industry and music, all explicitly explaining the principles, life of the people, architecture and culture of North Nigeria.



Plate 4.2.5: View of the internal pavilion.

Source: Author's Field survey (2013).



Plate 4.2.6: Rib structural beams joint.

Source: Author's Field survey (2013).

Variables:

Architectural Expression: Traditional earthen work structure.

Composition of Form: Thick mass of masonry to give an impression of strength and opulence.

Building Technology: Heavy rectangular pillars tapering towards the top with trapezoidal capitals.

And Building Materials: Earth, Thatch.

4.2.1 Pattern of Patronage.

Table 4.4: The table below shows annual visitors patronage for the year 2012.

MONTH	NIGERIA VISITORS	FOREIGN VISITORS	MALE	FEMALE	ADULT	CHILDREN	TOTAL
JANUARY	806	0	601	205	575	231	806
FEBRUARY	1,465	2	773	692	985	480	1,465
MARCH	1,244	0	802	442	754	490	1,244
APRIL	3,405	0	2,604	801	2,382	1,023	3,405
MAY	2,607	3	1,542	1,068	1,762	848	2,610
JUNE	602	0	402	200	361	241	602
JULY	65	0	43	22	38	27	65
AUGUST	106	0	75	31	58	48	106
SEPTEMBER	204	0	97	107	84	120	204
OCTOMBER	219	0	102	117	136	83	219
NOVEMBER	714	3	522	195	437	280	717
DECEMBER	908	2	477	433	396	514	910
GRAND TOTAL	1,2345	10	8,040	4,313	7,968	4,385	12,353

Source: Author's Field survey (2013).

Table 4.5: The table below shows annual visitors total school group visit for the year 2012.

S/NO	MONTH	NO. OF SCHOOL	NO. IN THE GROUP
1	January	3	148
2	February	10	1,106
3	March	8	986
4	April	13	2,685
5	May	9	1,455
6	June	2	105
7	July	1	20
8	August	1	36
9	September	2	84
10	October	1	66
11	November	5	179
12	December	4	262
Total		59	7,132

Source: Author's Field survey (2013).

4.2.2 Summary of Findings.

Table 4.6: The table shows summary of case study finding.

Variable	Remark
Architectural Form	- Expressionist form with traditional building techniques.
Scope of project	The facilities in the centre are library, performance centre, conference centre, open-air amphitheater, auditorium, exhibition space.
Construction Technology/	<ul style="list-style-type: none"> - The use of sustainable design elements. - Wooden reinforcement and mud block work.
Integration with the site	The museum was built in a circular traditional hut with mud walls and thatch roofing
Relationship with Environment	- Building exhibits features of the surrounding area manly the trees.
Building Materials	Earth, Thatch

Source: Author's field survey (2013).

4.3 Case Study 3: The Jos Museum. Jos, Nigeria

Architect: Unknown

Location: Jos, Nigeria.

Building Type: Art and culture Museum.

Materials: Mud, Concrete and Natural stones.

Climate: Tropical climate.

Annual Visitor Figures: 4569 in 2010, 7865 in 2011, and 12674 in 2012.

Date: 1950.



Plate 4.3.1: Satellite image of National Museum Jos, Nigeria.

Source: <http://www.googleearth.com>(2013).



Plate 4.3.2: Approach view of the main gallery.

Source: Author's fieldwork (2013).



Plate 4.3.3: Aerial view of art and craft centre.

Source: Author's fieldwork (2013).

Background.

The Jos museum officially opened in 1952, it is sited in Jos town and occupies a large chinch of land. It is served by two access roads, one off the Ahmadu Bello way to the north and the other links up with the legal avenue to the south. The museum is set against a completely natural background that is characteristic of the Plateau with a sloping landscape of rock outcrops.

Features:

The museum consists of the institute of archaeology and museum studies, the bindery and auditorium, the library, and offices and exhibition galleries.

Variables:

Architectural Expression: Reflection of Nigerian traditional architecture.

Composition of Form: Sculptured mud and concrete forms.

Technology: Rectangular pillars, arches, horizontal beams, domes and monolithic structures.

Materials: Mud, thatch, sandcrete blocks, reinforced concrete frames, bamboo rods, raffia trunks and fronds and grass.



Plate 4.3.4: View of Amphitheatre at Motna village.

Source: Author's Field survey (2013).

Features:

The museum consists of the institute of archaeology and museum studies, the bindery,

Auditorium, library, offices and exhibition galleries.

Variables:

Architectural Expression: Reflection of Nigerian traditional architecture.

Composition of Form: Sculptured mud and concrete forms.
 Technology: Rectangular pillars, arches, horizontal beams, domes and monolithic structures.

Materials: Mud, thatch, sandcrete blocks, reinforced concrete frames, bamboo rods, raffia trunks and fronds and grass.



Plate 4.3.5: View of stage at Motna village.

Source: Author's Field survey (2013).

4.3.1 Pattern of Patronage.

Table 4.7: The table below shows annual visitors patronage for the year 2012.

MONTH	NIGERIA VISITORS	FOREIGN VISITORS	MALE	FEMALE	ADULT	CHILDREN	TOTAL

JANUARY	1,526	54	1,055	525	1,002	578	1,580
FEBRUARY	4,905	109	2,376	2,638	2,504	2,510	5,017
MARCH	5,675	171	3,106	2,740	2,969	2,877	5,846
APRIL	11,355	292	10,284	1,363	2,367	9,280	11,647
MAY	28,445	465	27,136	1,774	15,086	13,824	28,910
JUNE	7,914	1,177	4,518	4,573	3,912	5,179	9,091
JULY	3,723	449	1,920	1,676	2,071	2,121	4,192
AUGUST	31,298	187	168,654	302,741	164,756	42,255	313,142
SEPTEMBER	12,803	3,271	946	1,018	1,670	1,217	2,987
OCTOMBER	5,497	202	3,040	2,607	2,909	2,745	5,647
NOVEMBER	2,824	162	1,494	1,542	1,254	1,666	3,020
DECEMBER	85,299	330	63,334	55,437	28,544	96,528	125,072
TOTAL	201,264	6,869	287,863	378,634	229,044	180,780	516,151

Source: Author's Field survey (2013).

Table4.8: The table below shows annual visitors total school group visit for the year 2012.

S/NO	MONTH	NO. OF SCHOOL	NO. IN THE GROUP
1	January	1	13
2	February	14	1,021
3	March	22	1,278
4	April	3	47
5	May	9	370
6	June	21	1,818
7	July	-	-
8	August	1	34
9	September	2	64
10	October	1	311
11	November	1	44
12	December	2	135
total		85	5,135

Source: Author's Field survey (2013).

4.3.2 Summary of Findings.

Table4.9: The table above shows summary of case study finding.

Variable	Remark
Architectural Form	- Expressionist form with modern architecture techniques despite the building was design as a museum from the unset there was any touch of Nigeria traditional architecture on the building
Scope of project	The facilities in the center are library, performance center, conference center, open-air amphitheater, auditorium, exhibition space.
Construction Technology/	- There is no use of sustainable design elements. - mostly concrete with steel reinforcement
Integration with the site	The museum was built traditional modern style of architecture with excessive use of concrete and steel.
Relationship with Environment	- Building exhibits features of the surrounding area manly the trees.
Building Materials	Concrete, steel, glass.

Source: Author's Field survey (2013).

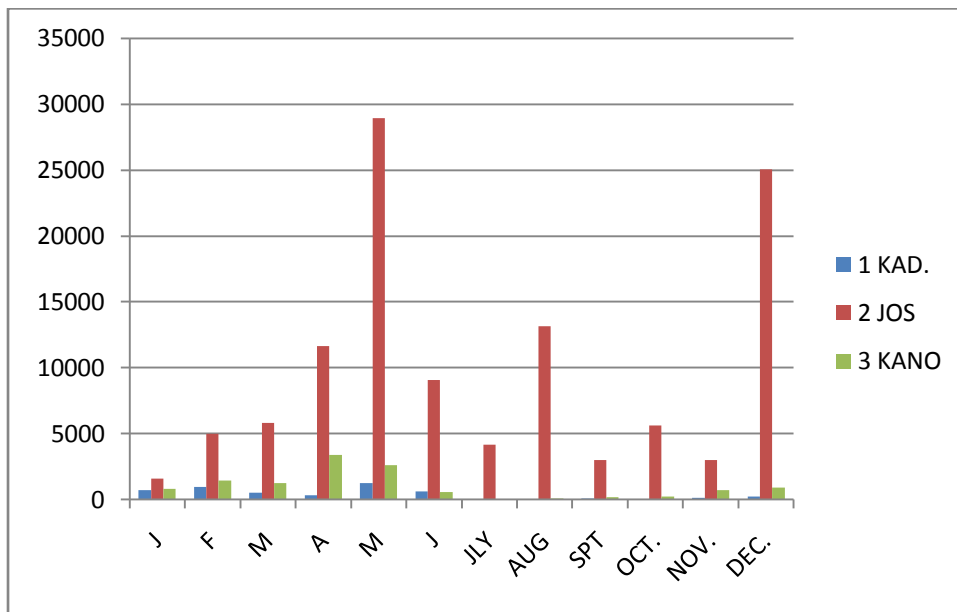
4.4 Comparative Analysis for Pattern of Patronage.

Table 4.10: The table below shows annual comparative visitors patronage for the year 2012.

S/N	STATE	J	F	M	A	M	J	JLY	AUG	SPT	OCT	NOV	DEC	TOTAL
1	KAD.	719	963	525	313	1,244	601	25	21	52	36	130	218	4,847
2	JOS	1,580	5,017	5,846	11,647	28,910	9,091	4,192	13,142	2,987	5,647	3,020	25,072	516,151
3	KAN	806	1,465	1,244	3,405	2,610	602	65	106	204	219	717	910	12,353

Source: Author's Field survey (2013).

Figure 4.2: The graph shows annual comparative visitors patronage for the year 2012.



Source: Author's Field survey (2013).

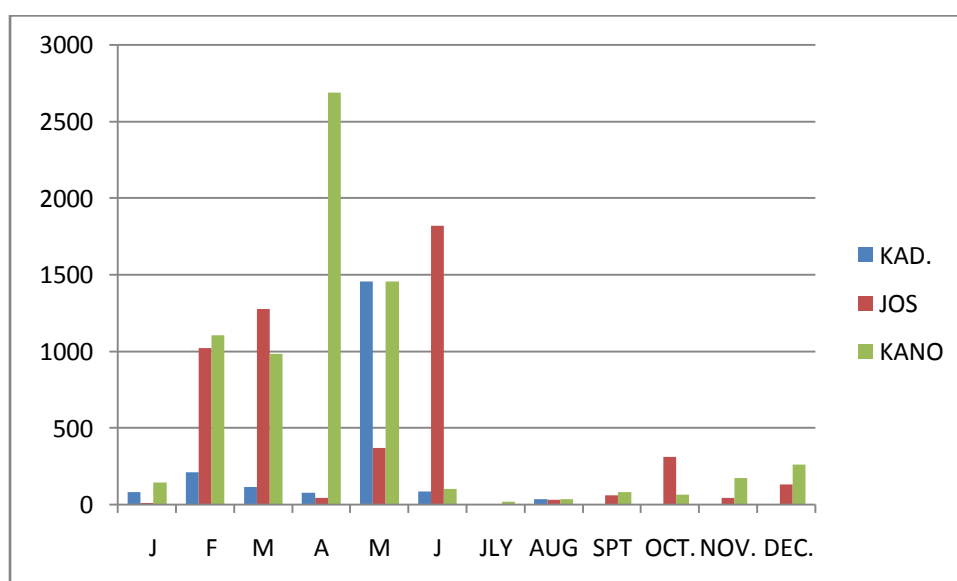
4.4.1 Comparative Analysis for Pattern of School Group.

Table 4.11: The table below shows annual comparative visitors for total school group visit for the year 2012.

S/ N	STAT E	J	F	M	A	M	J	JLY	AUG	SPT	OCT	NOV	DEC	TOT AL
1	KAD.	82	212	116	78	1455	87	0	36	0	0	0	0	604
2	JOS	13	1021	127 8	47	370	1818	0	34	64	311	44	135	5135
3	KAN.	148	1106	986	2685	1455	105	20	36	84	66	176	262	7132

Source: Author's Field survey (2013).

Figure 4.3: The graph shows annual comparative visitors for total school group visit for the year 2012.



Source: Author's Field survey (2013).

5.0 DESIGN REPORT

5.1 Brief

As part of Kaduna State development, the State Government seeks to boost its tourism sector by improving its tourism facilities and events in all local government across the state and also use the sector as a means of generating revenue and providing employment for the people of the state.

In light of this, the governments in conjunction with UNESCO are willing to make an investment in the hospitality industry to construct a museum in the state. The museum will cater for both tourist and commuters on business. While meeting design requirements for a modern museum, the building should also reflect the concept of cultural expression and heritage in its design.

Area of Study.

The study area is in Kaduna State, north central of Nigeria. The state was created on 27th May 1967 as one of the six states of the northern region of Nigeria. The state capital is Kaduna with 23 local government areas. Kaduna covers a total area of about 46,053 km².

Geography of Kaduna.

Kaduna state is located on latitude +10.52 (10⁰ 32' 12" N); longitude +7.44(7⁰ 26' 24" E) and altitude -600m. "The entire land structure consists of an undulating Plateau with major rivers in the State including River Kaduna, River Wonderful in Kafanchan, River Kagom, River Gurara and Galma (Kaduna State Land Survey, 2006).



Figure 5.1: Map of Nigeria.

Source: www.wikipedia.com. (2012).



Figure 5.2: Map of Kaduna State.

Source: www.wikipedia.com. (2012).

5.1.1 Brief History.

The British In 1913 set up a colony in Northern Nigeria and they selected Kaduna as its capital. Kaduna was developed as an industrial and administrative center thereby, attracting migrants from all over Nigeria making it one of the country's most ethnically diverse cities. The state was a major rail and road junction and it was a centre for trade in cotton, livestock, durra, sorghum, corn, shea nuts, and ginger.

It was the major military centre of northern Nigeria, with large army and air bases and the Nigerian Defense Academy, in 1968 the Kaduna Polytechnic was established and in 1951 the Nigerian Institute for Trypanosomiasis Research. Today Kaduna is the centre for academics in

northern Nigeria as it is home to the prestigious Ahmadu Bello University, Kaduna state polytechnic and many other academic institutions. (Kaduna State Land Survey, 2008).

Population of Kaduna State.

The ethnic population of Kaduna is majorly the Hausa, Gbagyi, Katab and Bajjuu tribes. Others include; Ham, Gbagyi, Koro, Kaninkon, Gure, Kurama, Atyap, Ikulu, Agorok, Atakad, Adara, Chawai, Kagoma, Kahugu, Ninzo and Numana. It should be noted however, that other ethnic groups like Yoruba, Ibo, Igala Nupe, Tiv, Ijaw, Isekiri, Idoma etc, who co-exist with the indigenous groups mentioned above.

Kaduna Millennium City.

Strategically located between the Federal Capital of Abuja and the dynamic northern city of Kano, Kaduna represents a significant potential for future growth and this is apparent from an increased demand for new development and infrastructure within the city.

This has been recognized by Kaduna State Government and a strategy for the city's future expansion has been developed based upon a series of proposed satellite communities around the existing city centre.

The area formally known as Makarfi New City, now called the 'Millennium City' has been selected as a development site within the proposed Eastern Sector of Kaduna City and along-side the River Kaduna. The site area has been calculated as 700 hectares, with a potential population of up to 90,000 persons. Within close proximity to the central Kaduna, this provides a unique development opportunity, which is enhanced by good connectivity to the proposed Eastern Bypass through a new link road that is presently under construction. The Millennium City design is aimed at achieving a sustainable environment which makes the city a good site for the proposed new museum.

5.1.2 Site Selection Criteria.

The proposed site is located between the old and the proposed new Kaduna City in Chikun local government, Kaduna state. The site is located close to the bridge linking the new city and Ungwan Rimi Kaduna.

The site has been selected due to its accordance with zoning regulations of the masterplan of the Millennium City Kaduna. The site allocated for the construction of a Entertainment centres and other recreational facility. The plot is adjacent to the main river Kaduna and the city's main high street. The site satisfies several of the conditions for Museum location which have been mentioned above:

- i Scenic view.
- ii Convenience of traffic to tourism scenic spot.
- iii Proximity to tourism scenic spot.
- iv Distance to airport.
- v Site characteristics.
- vi Distance to town area and proximity to commercial facility.
- vii Natural resources characteristics.

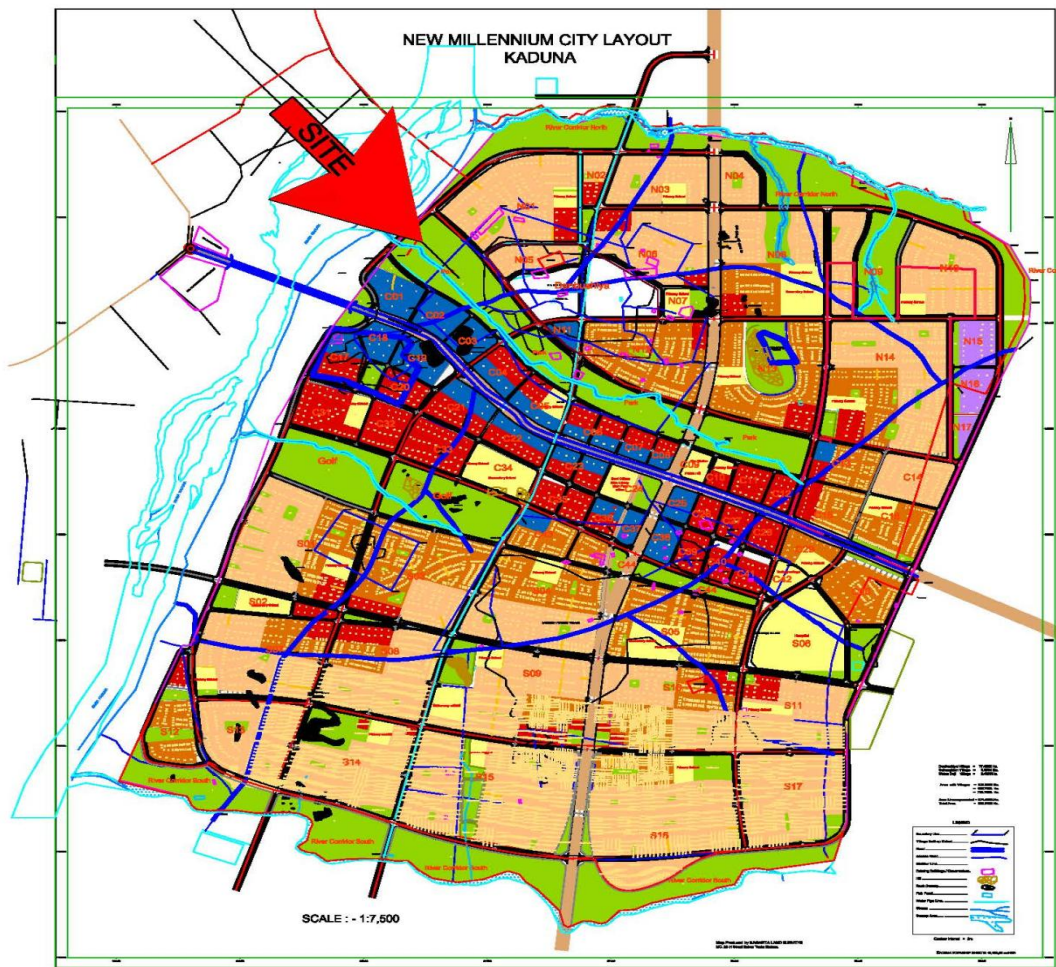


Figure 5 .3: Map of the proposed Kaduna Millennium City showing proposed site.

Source: Kaduna state Land Survey (2006).

5.1.2 Site Analysis.

Climatic Data of Kaduna:

Micro- climate.

The site is located in a tropical climatic zone with abundant sunshine and dryness during the dry season and rain during the rainy period. The site has climatic characteristics the same as that of Kaduna state, with no unique micro-climate.

The climatic data of Kaduna state can be summarized in the table below:

Table 5.1 Kaduna Solar energy and surface meteorology.

Sunshine.

Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Insolation, kWh/m ² /day	5.66	6.49	6.72	6.63	6.41	6.03	5.44	5.03	5.47	5.76	5.80	5.40
Clearness, 0 – 1	0.65	0.69	0.66	0.63	0.61	0.58	0.53	0.48	0.54	0.60	0.66	0.64
Temperature, °C	23.31	25.17	27.67	27.36	26.11	24.61	23.63	23.56	24.22	24.95	25.65	23.87
Wind speed, m/s	3.99	3.86	4.30	4.31	4.21	3.60	3.43	3.24	2.96	3.17	3.69	4.17
Precipitation, mm	0	1	7	56	120	160	218	275	243	71	2	0
Wet days, d	0.1	0.1	0.7	3.6	8.2	11.8	15.3	16.8	13.8	4.6	0.0	0.0

Source: NASA (2012).

The sunshine in Kaduna State is a source of natural lighting; it rises from the east and sets on the west.

The table below summarizes the characteristics of sunrise in Kaduna State.

Table 5.2: Kaduna Sunrise and Sunset.

Date	Sunrise	Sunset	Length	Change	Dawn	Dusk	Length	Change
22/11/08	06:21	18.41	12.20		05:59	19:03	13:04	
+1day	06:21	18.41	12.20	00:00	05:59	19:02	13:03	00:01
				equal				shorter
				length				
+1 week	06:21	18.37	12.16	00:04	05:59	18:58	12:59	00:05
				shorter				shorter
+2 week	06:20	18.33	12.13	00:07	05:59	18:54	12:55	00:09
				shorter				shorter
+1 month	06:19	18.22	12.03	00:17	05:58	18:43	12:45	00:19
				shorter				shorter
+2 month	06:21	18.07	11.46	00:34	05:59	18:29	12:30	00:34
				shorter				shorter
+3 month	06:31	18.05	11.34	00:46	06:08	18:28	12:20	00:44
				shorter				shorter
+3 month	06:46	18.40	11.54	00:26	06:25	19:03	12:36	00:28
				shorter				shorter

Source: NASA (2012).

Trade Winds.

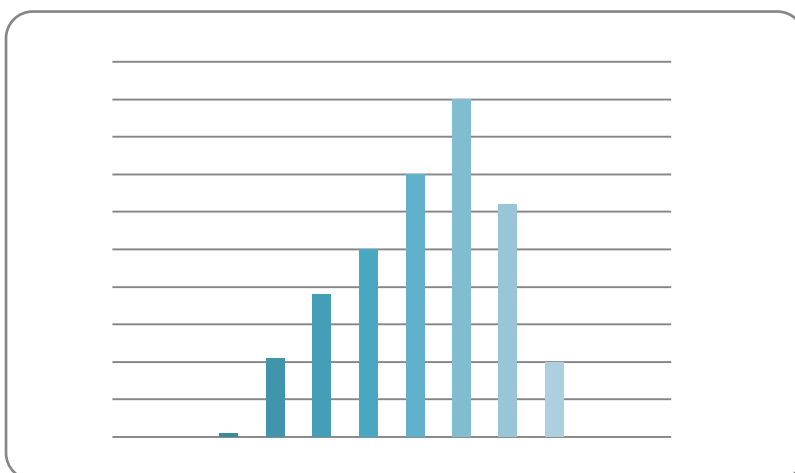
The prevailing winds in Kaduna State are the southwestern and northeastern trade wind patterns. The former originates from the Atlantic Ocean and it brings moist cool breeze and rainfall; and the latter originates from the Sahara desert and it brings dusty breeze and harmattan. The wind speed ranges from 2.96 to 4.31 meters per second, varying from month to month as shown in the table; to this effect barriers should be used and also the building shall be oriented so as to achieve the south western wind and wind breakers shall be introduced to reduce the effect of the harmattan wind.

Rainfall.

There exists two seasons in Kaduna State the rainy and the dry season. The rainy season lasts for about six months from April to October see (Figure 5.4). There is heavy rainfall in the southern and the northern parts of the state. The rainfall ranges from 0 to 825 millimetres per month.

The design proposal has to adopt a proper system of surface drainage to take away this amount of rain away from the site. Thunder strikes are also prevalent during the rainy seasons therefore thunder deflectors are also a necessary consideration.

Figure 5.4: Annual Rainfall data in Kaduna state.

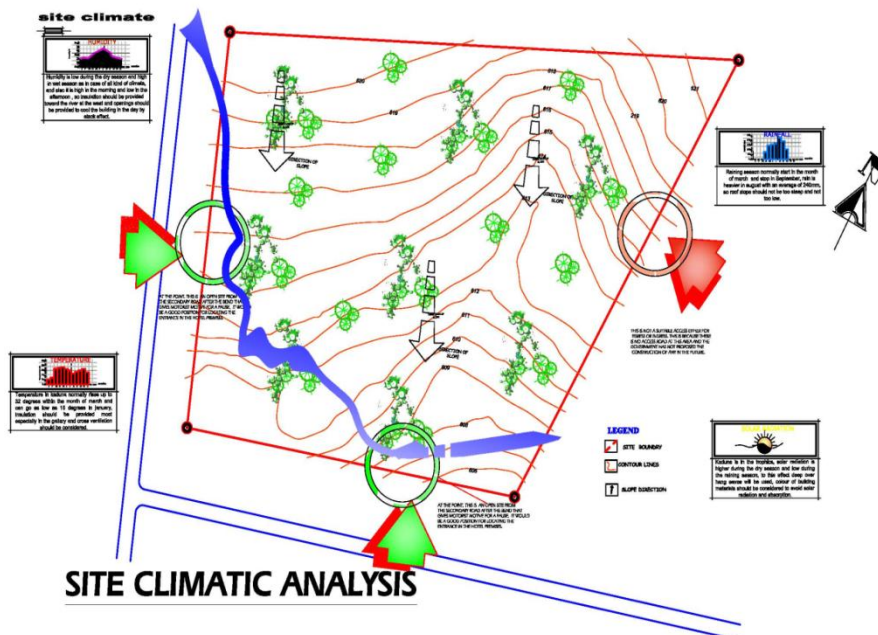


Source: New et al. (2012).

Temperature and Humidity.

Temperature in Kaduna State ranges between 15.9⁰ to 30.35⁰ Celsius. The table below shows a chart of the temperature changes that occur in Kaduna State. At the start of the dry season, relative humidity falls from 68% in October to 36% in November with the stabilization of the easterly winds. It further falls to 35% in January and 20% in February. Mean relative humidity reaches its maximum value of 80% in the month of August. Consideration has to be made to minimize the amount of solar radiation that gets into the building.

Figure 5.5: Site Climatic Analysis.

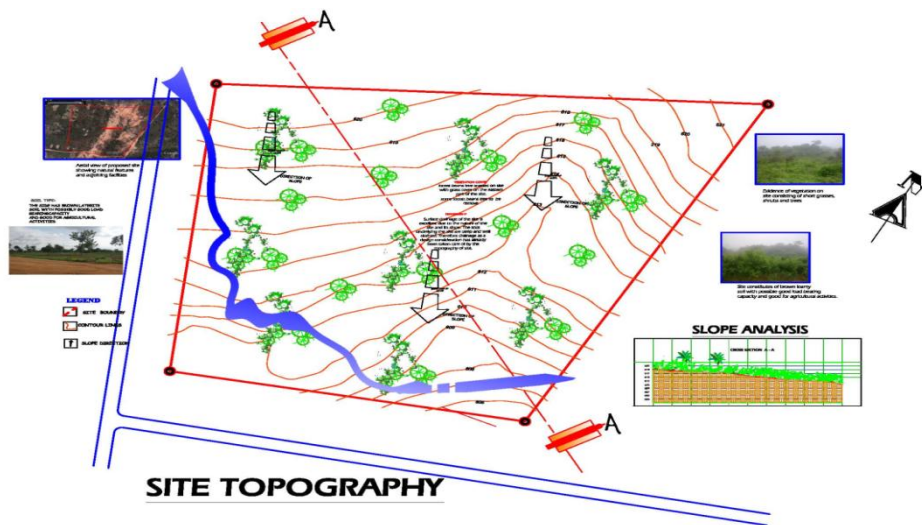


Source: Author's field survey (2013).

Vegetation.

The site vegetation is primarily composed of *Parkia Clappertonia* (locust bean) and *Mangifera Indica* (mango) trees; the rest of the vegetation on site is generally green, the site being covered by trees, shrubs, and grasses. Some of these features, especially the trees, should be retained to enhance landscaping purposes.

Figure 5.6: Site Topography.



Source: Author's field survey (2013).

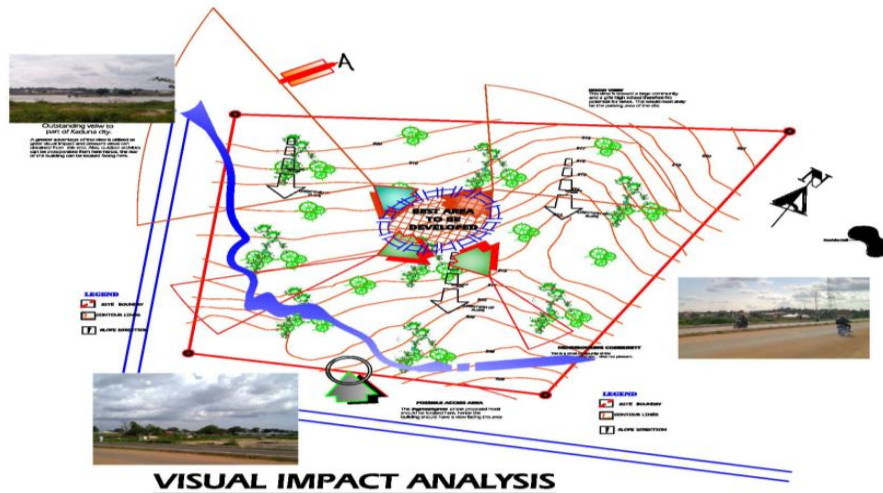
Topography.

The site is slightly inclined, it slopes gently towards the northern direction of the site; the direction of this slope should be used for drainage because it is easier due to the natural force of gravity.

Sources of Noise.

The major sources of noise to the site are from the vehicles moving along the roads around the site. Another source of noise is from the neighboring commercial activities taking place around the site. These noises can be buffered by the use of trees.

Figure 5.7: Visual Impact Analysis.

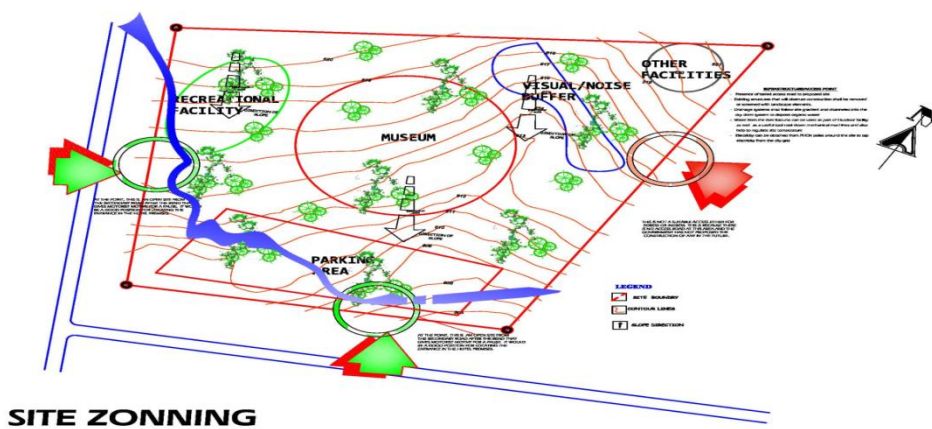


Source: Author's field survey (2013).

Site Zoning.

This is based on analysis of facts obtained from the site inventory which have been diagnosed and synthesized to formulate an optimum solution for the initial site planning scheme. The site has been zoned into six areas, each with a particular group of functions. The spatial relationships between these areas are represented in the form of a bubble diagram.

Figure 5.8: Site Zoning.



Source: Author's field survey (2013).

5.1.5 Concept Development.

This thesis is principally aimed at promoting communal identity and integration and one way this could be achieved is by laying design emphasis on the cultural identity of the indigene of Kaduna state. The culture and tradition of the people basically revolve around their religious believe which require several festivals. This thesis form concept is derived from the African calabash and a broom as a symbol of unity between all ethnic and religious group in kaduna state

The African calabash is a product of a gourd plant. Normally, this gourd fruit has to be allowed to mature before it is plucked hollowed out to remove the content mainly seeds. Calabash is widely used by many communities in African today. It is originally use as food holder popularly known as plate or dish also use as musical instrument.in a modern African setting calabashes are use as home decor. Some traditional eating places entertain tourist by serving them native recipes in calabash. They are also bought for home use or for home decoration, experts also agree that calabashes are environmental friendly and will be a better idea than plastic. The history of African calabashes has ascertained that this is a valued product and it will always be in use across multiple cultures.

Broom is symbol for collective unity in African context with a popular saying " together we stand and divided we fall". Therefore the juxtaposing of a calabash and a broom help in creating an identity as shown in the figure.

Figure 5.3.1: Concept Formulation.



CONCEPT FORMULATION

The African calabash is a product of a gourd plant.

Normally, this gourd fruit has to be allowed to mature

before it is plucked hollowed out to remove the content

mainly seeds. calabash is widely used by many communities

in African today, it is originally use as food holder popularly

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Broom is symbol for collective unity in African context with a

popukar saying " together we stand and divided we fall"

Source: Author's field survey (2013).

Figure 5.3.2: Concept Formulation.



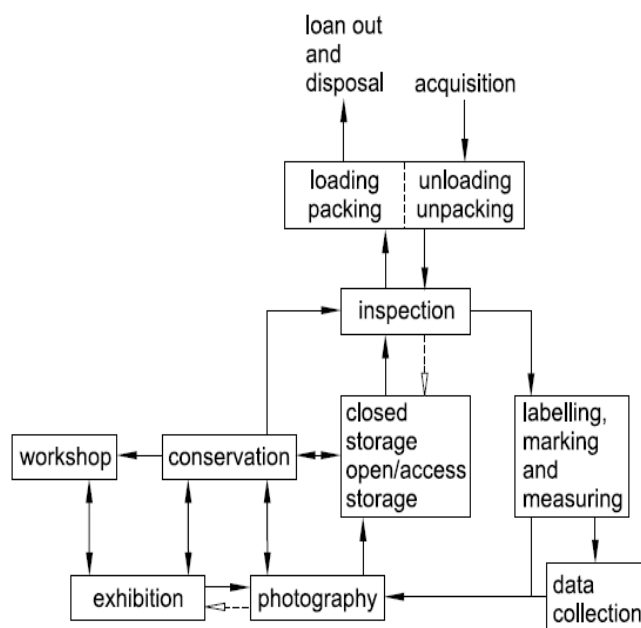
Source: **Author's field survey (2013).**

5.2 Design Requirement.

A museum is an institution which collects, documents, preserves exhibits and interprets material evidence and associated information for the public benefit, it also shows works of art and objects of scientific interest, the museum should protect against damage, theft, damp, aridity, sunlight, dust and also show the works in the best light (Edward, and Mary, 2007).

The design of museums, involves the housing of a wide range of functions broadly indicated in the common definitions of a museum. Museums, however, vary considerably in size, organization and purpose. It is important therefore to consider the particular context and features that characterize a museum in the process of developing concepts. This is normally achieved by dividing the collections into objects for study and objects for display. Exhibits should be displayed in a way which allows the public to view them without effort. This calls for a variety of carefully selected, spacious arrangements in a room of suitable shape in an interesting and logical sequence.

Figure 5.9: Flow diagram of collection



Source: Littlefield (2008).

5.2.1 Site Planning Concept.

The museum site is located in a partially noisy area where it is bounded by a national memorial park to the west, a picnic area to the east, and a passive recreational park to the north. It has a major dual carriage road that from the southern part that can be linked into the museum as a major entrance; this is because the area has lesser traffic as shown in the analysis. Due to these surrounding features the site concept was developed as such: The parking area will be situated at the south east part of the site, the north east part will bear the recreational outdoor activities, the northwest will be left for further expansion, and the central will house the museum building structure. This means that the museum will be bounded by all four noisy areas with other museum facilities or infrastructure.

5.2.2 Building Form.

The building form is abstract, it is a projection of the organizational concept, but a great emphasis is been laid on the materials to achieve a science museum that depicts the multifunctional design approach principle of symbolism. Modern building materials such as the ethyl tetra fluoro ethyl are used as an envelope to the building exterior it has the following properties:

- Ethylene-Tetra-Fluoro-Ethylene (ETFE) is a kind of plastic designed to have high corrosion resistance and strength over a wide temperature range.
- ETFE has a very high melting temperature, excellent chemical, electrical and high energy radiation resistance properties.
- Compared to glass, ETFE film is 1% the weight, transmits more light and costs 24% to 70% less to install.
- It is also resilient (able to bear 400 times its own weight, self-cleaning (due to its non-stick surface) and recyclable.
- In sheet form as commonly employed for architecture, it is able to stretch to three times its length without loss of elasticity.

- Employing heat welding, tears can be repaired with a patch or multiple sheets assembled into larger panels.

- ETFE has an approximate tensile strength of 6100 psi, with a working temperature range of -300 °F to 300 °F (-185°C to 159°C)

The other material is the self-compacting concrete (SCC) it is used to achieve any shape as long as it has been mixed properly.

SCC has a number of properties:

a) It is a homogenous substance and does not require vibration it settles and compacts due to the presence of, plasticizers.

b) It is able to flow under its own weight; completing full form work and achieving full compact.

Self-compacting concrete has:

- Improved efficiency
- It is used closely to mesh reinforcement, so as to allow it settle well
- It is used for complex geometric shapes
- Used for slender components,
- Used generally where compact is difficult
- Fast installation rate
- Reduced damage to health

Summarily the design concept harnesses the following aspects of multifunctional design approach principles:

a) Building materials in regards to the creating an educational as well as a restorative and symbolic design.

b) The exploration of the curvilinear, typified by the dominance of curved lines over the straight.

The design becomes incomplete without considering the social function of

multifunctional design approach – an architecture with the users in perspective, hence the design incorporates a Well-defined and organized flow of movement in such a way it creates ease for

the visitors as well as a way of interacting with each other. Thus an attempt has been made to develop a multifunctional design by incorporating elements of:

Education: design with advanced modern technology in terms of form, materials and spaces.

Symbolic: Design should communicate ideas, services materials and technology.

Restorative: Design with site and use of natural landscape elements: Conscious design.

Social: Use of facilities to enhance interaction between visitors.

5.2.3 Design Considerations.

The design considerations employed on the museum design is described in relation to the different elements employed in the design in order to achieve and reflect the cultural identities of the Kaduna state people in the design. This will explain the reasons why the elements were employed.

5.2.4 Use of Renewable Energy.

The use of renewable energy sources was explored in the design of the museum. The main renewable energy sources considered for the design is the sun. The sun is used as a means to generate electricity using an array of photovoltaic glass on the façade of the building and photovoltaic shingles at the roof of the building. The photovoltaic shingles placed at the roof of the building will also used for passive solar water heating.

5.2.5 Cooling and Ventilation.

Openings were provided at each floor of the building starting from the ground floor to the fourth floor in order to cool the structure using stack effect in which during the heat season, the warmer indoor air rises up through the building and escapes at the top either through open windows, openings and the dome. The rising warm air reduces the pressure in the base of the

building, drawing cold air in through the large inlet. During the cooling season, the stack effect is reversed.

5.2.6 Rainwater Collection.

Sewage wastes collected by small ducts on upper floors are being channeled to form fewer groups of larger ducts at the service floor. The wastes are taken to the ground floor where they are being pumped to an onsite sewage treatment plant. The service floor is located between the tower and the podium.

5.2.7 Services on Site.

A network of electricity, water supply, and sewage disposal coupled with waste disposal on site exist. Gutters and pipes have been used to connect waste and soil waters to the proposed service grid with care ensuring that problems of maintenance are minimized.

5.2.8 Structure.

The building structure is a framed structure which mainly consists of beams and columns. Curtain walls supported by reinforced concrete slab at ground level, The use of vertical elements are evident in the elevations. These elements are high performance concrete fins which are used to achieve the expressive form of an African calabash and brooms. The roofing of all the structures are made of photovoltaic shingle and the atrium of the main building is partially covered with a dome.

5.3 Data Collection and Analysis from Questionnaire Survey.

The researcher administered 60 questionnaires to various respondents, in three location were case was studied. And the questionnaires were collected by the researcher immediately after they had been filled by the respondents. Only 56 questionnaires were analyzed at the time of

compiling this research. The questionnaire is divided into three sections; Section A which comprises of bio-data (personal data) of the respondents that is sex and age ranges, Section B which asks about the respondents' interaction with the museum and Section C which is concerned with the respondents preferences to museum services.

5.3.1 Discussion of Results.

Responses show that the museum is one of the mostly patronized by students in Nigeria who are there for study. This shows lapses in the museum system due to lack of consideration of other potential museum patrons such as youngsters and elderly persons who should be attracted to use the museum facilities and services through the provisions of museum service that cater to their needs.

Responses indicate that incorporation of social facilities will brought about more patronage of the museum from mostly newcomers to the area where it is located. Most of the people coming to the Kaduna Millennium City will be educated citizens who will need the facility to support their education and leisure-time activities.

Responses also show that 72% of respondents live within 3-5 kilometres of a museum while about 28% of respondents have a Museum within 6- 10 kilometres of their homes.

Table 5.7.1 Distance between Residences to the Museum.

Responses	Frequency	Percentage %
Within 3-5 kilometers	40	72
Within 6-8 kilometers	16	28
Total	56	100

Sources: Author's Field survey (2012).

For section B. 60% of users visit the museum often from their school and majority of them hardly visits the facility due to the distance and functions, 40% of them also said they access the internet regularly. So, most people (who answered this questionnaire) are conversant with social facilities though not those in the museum.

Table 5.7.2 Group of people that mostly make use of the museum facilities.

Responses	Frequency	Percentage %
Children	13	24
Student	32	39
Academics	8	14
Middle-Age people	8	14
Retirees'/Senior citizen	4	8
Total	56	100

Source: Author's Field survey (2012).

Table 5.7.3 Shows that 43% of the respondents make use of the museum purposely for recreational purposes and improvement of their knowledge , 28% indicated their main purpose of visit is purely for research, while 3% indicates the least responses which present strong disagreement with respect to their main purpose of visit for meeting people and fact finding. These results show an overall reluctance in the patronage of the museum (See below table).

Table 5.7.3 Main reason for visiting a museum.

Responses	SA		A		U		D		SD		Total	
	No	%	No	%	No	%	No	%	No	%	No	%
For Private/solitary fact Finding.	14	25	16	28	8	14	16	28	2	3	56	100
A place goes to study with other people.	16	28	14	25	16	28	8	14	2	3	56	100
To meet people for recreational purpose	20	36	24	43	6	11	4	7	2	3	56	100
When have research to do	18	32	18	32	12	21	8	14	0	0	56	100
To improve my knowledge.	19	34	23	41	14	25	0	0	0	0	56	100

Source: Author's field survey (2012).

Table 5.7.4 Experience in the museum you visiting.

Responses	SA		A		U		D		SD		Total	
	No	%	No	%	No	%	No	%	No	%	No	%
The artifact display spaces are very conducive	7	7	16	29	18	32	8	14	10	18	56	100
Always successful in accessing information I need.	3	5	12	21	21	38	8	14	12	21	56	100
Very satisfied with the facilities in the museum.	2	3	16	29	8	14	16	29	14	25	56	100

Source: Author's field survey (2012).

The above table shows 38% of the user's are undecided on the accessibility of information find the museum while, 29% satisfied with the facilities and display space in the museum the visit. 18% are strongly disagreeing on the area and facilities in the museum.

Table 5.7.5 Shows 39% of the museum strongly agree that noise does not matter as long as they comfortable most especially if the outdoor facilities are in use.28% say they prefer visiting the museum in a group with classmate and friend, while the lowest 18% are strongly disagree to visit museum in quiet environment.

Table 5.7.5 Kind of environment the visitor enjoy.

Responses	SA		A		U		D		SD		Total	
	No	%	No	%	No	%	No	%	No	%	No	%
A very quiet environment	12	21%	12	18	7	13	14	25	12	18	56	100
Visiting in groups with classmates/friends	16	28%	24	42	6	11	8	14	2	3	56	100
Noise doesn't matter, as long as I'm comfortable.	22	39%	12	18	6	11	9	16	9	16	56	100

Source: Author's field survey (2012).

In table 5.7.6 below 39% of the respondents want museum facilities that improve social interaction and more information material to learn from. While 42% agree to get computer for easily accessibility to information through the internet.

Table 5.7.6 Visitor opinion on additional experience in using the museum.

Responses	SA		A		U		D		SD		Total	
	No	%	No	%	No	%	No	%	No	%	No	%
More information material learn from.	20	21%	24	18	2	13	0	0	0	0	56	100
Computer to access information through the internet.	32	28%	24	42	0	0	0	0	0	0	56	100
Provision of museum facilities that improve social interaction between the users.	28	39%	28	18	0	0	0	0	0	0	56	100
Easier access to information materials in the museum	30	28%	26	42		0	0	0	0	0	56	100
The option of leaning through artifacts like in the mortner.	30	39%	23	18	3	11	2	16	0	16	56	100

Source: Author's field survey (2012).

Table 5.7.7 Shows 63% of the respondent say they prefer space that cater to the need of their age group and place to share information and ideas, 38% need individual study space to be added.

Table 5.7.7 Additional space/facility should be providing in a museum.

Responses	No	%	No	%	No	%	No	%	No	%	No	%
Individual study space historical research	20	38%	30	54	6	10	0	0	0	0	56	100
A place to share information and ideas.	28	50%	26	46	2	3	0	0	0	0	56	100
A space that caters to the needs of your age group	35	63%	18	32	3	5	0	0	0	0	56	

Source: Author's field survey (2012).

Below table 5.7.8 Shows 57% want museum services to be incorporated with social facilities (Shopping complex, outdoor service) and to optimizing the present museum services.

Table 5.7.8 Visitor opinions on possible ways to improve the services offered in the museum.

Responses	SA		A		U		D		SD		Total	
	No	%	No	%	No	%	No	%	No	%	No	%
By integrating social facilities to museum services	32	57%	24	43	6	11	0	0	0	0	56	100
By providing the internet services	24	43%	22	39	6	11	2	3	0	0	56	100
By optimizing the usage of present museum services	20	36%	28	50	6	11	2	3	0	0	56	100

Source: Author's field survey (2012).

Below table 5.7.9 asks the respondent what will increase their interest in patronizing a museum, 64% indicated that, they want modern building and relaxed inviting atmosphere. 55% want a lot of current materials to be available for research. 54% they prefer a facility stocked with modern, state of art technology.

Table 5.7.9 Way that will increase the interest in patronizing a museum.

Responses	SA		A		U		D		Total	
	No	%	No	%	No	%	No	%	No	%
A new, modern building.	36	64%	18	32	2	4	0	0	56	100
A facilities stocked with modern state of the art technology	30	54%	26	39	0	0	0	0	56	100
Lots of current materials available for research	31	55%	25	44	0	0	0	0	56	100
A relaxation and inviting atmosphere	36	64%	20	36	0	0	0	0	56	100

Source: Author's field survey (2012).

Information obtained from these results forms the basis of allocating in the museum.

6.0 CONCLUSION

6.1 Summary and Observations

This research seeks to explore the harmony between museum and recreational activities and integrating it into contemporary architecture in creating a sense of place in a logical and comprehensive design of a modern museum in Kaduna State. In order to create awareness about designing buildings that showcase the character and identity of the site location, and also throw a challenge that will serve as a reference point for indigenous yet contemporary architecture.

The approach to achieving this objective has been through an analytical study of the concept, materials and technology which was done through case studies, literature reviews, journals, fashioned to suit our Nigerian context and at the same time, make an architectural statement that will be seen as an exhibition in itself and a unique landmark for Kaduna State and its environ. An example of what has been achieved architecturally and what could be achieved in the nearest future with place character, architectural schemes and creativity which when combined stands out as the pillars on which the concept of critical regionalism represents.

From this research, the following observations can be noted:

- i) The building shows a general tendency of expressionism in form inspired by distinct historical and physical features of the location.
- ii) Rich use of landmarks, natural features, and traditional architectural elements are evident on the buildings studied.
- iii) General use of indigenous and readily available materials such as glass, reinforced concrete, wood and steel.
- iv) The materials were used to achieve durability, maximum strength and prolonged use with low maintenance.

- v) The building also incorporates some principle of sustainable architecture in other to achieved thermal comfort of the users by the use of green roofs, open balcony, aeration.
- vi) Multiple facilities for hospitality, business and entertainment purposes were provided for administrative purposes, exhibition, banqueting, and recreation.

6.1.1 Conclusions.

There is need to relate and understand more of our history and present and how this knowledge is beneficiary and applied to our present day life. The introduction of indigenous building elements and cultural character into the contemporary museum design has led to a logical and honest conclusion.

A few problems were faced such as the site constrains the integration of cultural character with contemporary architecture and reflecting the identity of a place, with the research conducted this was done successfully.

The fact that this thesis research has focused in harmonizing museum activities and recreational activities and also seen as a symbol of unity in the state and northern Nigeria; it is a solution in attracting the general public and making them aware that a cultural institute exist in this place.

The prospect of this museum will continue to serve many purposes in the country as a whole. Reflecting the cultural identity of a place will protects and promotes the cultural heritage of the people. Recreational and entertainment facilities have being provided in as much as to increase patronage in the museum.

The museum is supposed to be a public facility that will accommodate the heterogeneous and complex material aspect of culture as different cultural elements are involved.

The museum from its reception shows that it is linked with a program of rural development and regeneration.

6.1.2 Recommendation.

For the successful execution and implementation of the design, the following recommendations have been proposed:

- i. Designs should incorporate the cultural identity of the place in which the building is to be located.
- ii. The conceptual use of cultural character of a place should go beyond abstracting artifact or artworks. There should be a sense of deeper meaning to architectural symbolism through the existing physical and historical features.
- iii. Museums should integrate facilities for a much wider spectrum of users. These bridge the gap and allow for continual use and sustainability of the museum.

6.1.3 Contribution to Knowledge.

- i. A unique experience is paramount in architecture, especially in a museum design which brings together the cultural character of a place and contemporary architecture. The character and identity of the locality depicted gives the sense of that place and redefining space effectively.
- ii. The culture of the Africans as symbol of unity was reflected in the design of a contemporary museum through expressive forms and application of different cultural characters ranging from planning, decorations, motives, special services and structural morphology. Their exploration reveals that there is a strong desire to create signature indigenous architecture to win patronage from the public despite the era and time.

APPENDICES

A: QUESTIONNAIRE FOR MUSEUM USERS

This questionnaire is designed to collect data to enable on the research of the actual museum needs of the proposed Kaduna Millennium City Public museum. All information offered will be strictly used for the purpose of this research.

INSTRUCTION: Please tick [] the appropriate option that best represents your opinion

Key: (SA) Strongly Agree (A) Agree (U) Undecided (D) Disagree (SD) Strongly Disagree

SECTION A: Personal Data

1. Place of Residence

.....
.....
.....

2. Age

- a) 6 - 10 years []
b) 10 - 15 years []
c) 16 – 21 years []
d) 22 – 27 years []
e) 28 - 33 years []
f) 34 – 45 years []
g) Above 45 []

3. Sex

- a) Male []
- b) Female []

4 Occupation

- a) Civil servant []
- b) Salaried worker (Private Sector) []
- c) Business person []
- d) Student []
- e) Others
- f) (specify)

5. If you are a student, what level are you in?

- a) Primary school []
- b) Secondary school []
- c) Tertiary institution []
- d) Not applicable []

6. For how long have you lived in the area?

- a) 1 – 5 years []
- b) 6– 11 years []
- c) 12 – 17 years []
- d) 18 years and above []

7. Do you have access to a library in your neighborhood/city? Yes [] No
[]

8. If yes, what is the distance from your residence to the library?

- a) Less than 2 kilometres []
- b) 3 – 5 kilometres []
- c) 6 – 8 kilometres []
- d) 9 – 11 kilometres []
- e) 12 – 13 kilometres []
- f) Above 13 kilometres []

SECTION B: User preferences.

9. How often do you visit the museum?

- a) Always []
- b) Sometimes []
- c) Rarely []

10. How often do you visit to a museum for leisure activities?

- a) Daily []
- b) Once in a week []
- c) Once in a month []
- d) In my leisure time []

e) During the holidays []

11. What group of people do you mostly see using the museum facilities?

a) Children []

b) Students []

c) Academics []

d) Middle-aged people []

e) Retirees and senior citizens []

12. Tick if any of the following spaces are provided in your museum and indicate the degree of usage. Do not respond if the facility is unavailable.

Facility	Availability (tick)	Degree of usage		
		Always	Rarely	Never
a) A children's playground				
b) Outdoor spaces for reading				
c) A café/coffee shop				
d) A cinema				
e) An indoor place where children learn how to develop their artistic talent				

f) Artifact display area.				
g) Multipurpose room				
h) A photo studio				
i) Segregated reading areas for various age groups example children, teens, adults, seniors				
j) A Motna				
k) A book shop				
l) An art gallery				

SECTION C: Interaction with the museum.

Key: **(SA)** Strongly Agree **(A)** Agree **(U)** Undecided **(D)** Disagree **(SD)** Strongly Disagree

13. What is your main reason for visiting a Museum?

	SA	A	U	D	SD
a) For private/solitary fact findings					
b) It's a place I go to study with other people					

c) I only go there to meet people for recreational purpose.					
d) When I have research to do					
e) When it festive period					
f) I visit the museum regularly to improve my knowledge					

14. What is your experience in the museum you visit?

	SA	A	U	D	SD
a) The artifact display spaces in the museum I visit are very conducive					
b) I'm always successful in accessing the information I need from the museum					
c) I'm very satisfied with the facilities in the museum					

15. What kind of museum environment do you enjoy?

	SA	A	U	D	SD
a) A very quiet environment					
b) visiting in groups with classmates/friends					
c) accessing outdoors facilities					
d) Noise doesn't matter, as long as I'm comfortable					

16. What form of information do you regularly access in the museum?

	SA	A	U	D	SD
a) Reference materials (special books)					
b) Historical artifact					
c) Audio-visual materials (CDs/CD-ROMs/DVDs)					
d) Motna					

17. What, in your opinion will you like to add to your experience in using the museum?

	SA	A	U	D	SD
a) More information materials to learn from					
b) Computers to access information through the internet					
c) Provision of museum facilities that improve social interaction between users					
d) Easier access to information materials in the museum					
e) The option of learning through artifacts like in the Motna					

20. What additional spaces/facilities do you think should be provided in a museum?

	SA	A	U	D	SD
a) Individual study space for historical research?					
b) A place to share information and ideas?					
c) A space that caters to the needs of your age group?					

21. What in your opinion are the possible ways to improve the services offered in the museum?

	SA	A	U	D	SD
a) By integrating social facilities in to museum services?					
b) By providing internet services?					
c) By optimizing the usage of present museum services?					

22. What will increase your interest in patronizing a museum?

	SA	A	U	D	SD
a) A new, modern building?					
b) A facility stocked with modern, state-of the art technology?					
c) Lots of current materials available for research?					
d) A relaxed and inviting atmosphere?					

Thank you.

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