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RE-INVENTING THE CONCEPT OF FLEXIBLE SPACES FOR SHOPPING MALLS IN KUGBO, ABUJA, NIGERIA

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ABSTRACT
The process of reinventing spaces within the mall would deliver a product, be it an office space or social space that would provide tenants with spaces which are valuable, needed and useful. This shows an appreciation of prevailing trends and the need for shopping mall spaces to be transformed to alternative uses that can breathe life into it. As a result of changes in human behaviour and technological advancement, the need for flexible space creation is on the increase. This change is most evident in commercial facilities where rigid and solid wall construction is the norm and poses a limitation for expansion as a result of the growth of commercial establishments. The aim of this paper is to make spaces within the mall flexible so that the spaces can be transformed to serve various purposes as the need arise. The methodology used in this research is the descriptive research method. This study involved literature review and case study of selected shopping malls in Abuja, Nigeria. Content analysis was utilized in analysing and reporting data collected from the literature review and case studies. The result from this show that some of the shopping malls visited are not flexible enough to be used for other purposes. It therefore concludes that the study will promote flexibility of mall spaces for multiple uses thereby making it easily marketable. It therefore recommends that Architects and designers should improve on their design to encourage flexibility of spaces for multiple use.

Keywords: *Commercial, Design, Flexible, Shopping Mall, Trends, Re-invent*

INTRODUCTION
The concept of shopping centre was conceived to meet the basic need of the suburban shopper in one place, that is, conveniently accessible, amply stocked shopping area with plentiful and free parking available. Shopping malls are basically known to be indoor shopping centers, though some have outdoor areas with the shops having their own indoor space. (Ihfasuziella, *et al.*, 2018). Shopping mall is also described as an urban shopping area limited to pedestrians, with stores and businesses facing a system of enclosed walkways exclusively constructed for pedestrians (American Heritage

Dictionary, 2011) Shopping as one of the driving pillars of any nation's economic growth has evolved over time in the manner in which it is conducted and Nigeria's economy has not been excluded from some of the benefits of the emergence of new shopping centres. With the more dynamic styled shopping malls which are being developed around the world, it can be said that the rigid design adopted for shopping malls in the country needs to be re-evaluated and reinvented to meet up with the new trends in shopping mall design which is as a result of changes in human behaviour and technological advancement. Therefore, the need for flexible space creation is on the increase.

Kugbo, Abuja was considered for the study area because of the increase in the region's population as well as the fact that there is no 21st century shopping mall in the said study area. This study has found a gap that exists in the design and construction of malls to achieve flexibility to meet evolving needs of all users. In order to find a standard that can adapt to time, function and still embody aesthetic that encourages the ultimate shopper experience, this study had to identify answers to the following questions:

- How can flexibility be achieved in a shopping mall
- How can spaces be designed to adapt to evolving needs

LITERATURE REVIEW

HISTORY AND DEVELOPMENT OF SHOPPING MALLS

The Agora in ancient Greece was an open "place of assembly" which the Romans improved on and came up with the Forum a more defined open area. It was the Romans that developed the magnificent Trajan's Market, which was the first defined shop collection in a shared-use building. This is how shopping was transferred into the interior of a building. Then, the Medieval Market Hall, the Eastern Bazaar, the Exchange, the Market Building and the Fair were all developed as shopping environments before the 19th century. Afterward, the Arcade was born with the influence of Roman and Greek arcaded streets, the Eastern Bazaar and the Exchange from the 16th century.

A catalyst in the evolution of shopping malls was the development of transportation. The increasing car ownership made it easy to reach far settlements for the urbanites. The supermarkets and later the chain stores, the strip malls and lastly the suburban malls were all rapidly developed by the opportunities of easy access (Ergun,2010). By the start of urbanization, Trade had started in ancient civilizations in Asia, Africa and Far East, and European cities began the introduction of many different formats of shopping places in medieval times to the 19th century.

After all, the pioneer of the contemporary shopping malls today was an American invention by an European architect who got inspired by the arcades concept. Eventually, the shopping place became a fully enclosed and environmentally controlled space with the suburban mall, which was initiated as an urban centre but remained detached in application in many examples before its developed contemporary followers (Ergun,2010).

CONCEPT OF FLEXIBLE SPACE CONSTRUCTION

The basic concept of flexible design was defined by researchers in housing support systems, the open building movement, and adaptive architecture as the adaptability of buildings' features to the needs of its users (Sadafi, *et al.,* 2014)

There are three major type of change which are: function, capacity and flow and the interactions among these systems provide a framework in which to analyse the capacity of the facility to meet the performance requirements with respect to the value-added activities performed within or through the facility. A function refers to intended uses and activities or components to achieve a specific objective (Omrania,2018). Functions can be performed by the facility itself or with respect to human activities. Capacity is defined as the ability of the facility to meet certain performance requirements, in either loads/conditions or volume. Flows are defined as the movements within and round a building relating to surroundings environment and its usage population. The systems within a building can interact through various mechanisms, and the nature of these interactions and the systems themselves influence the flexibility of the building to respond to the different type of changes. The system interactions can be grouped into three categories: physical, functional and spatial (Arto & Pekka, 2008).

Flexibility can be affected most effectively by controlling design and construction. When the building is finished, the possibility to have an impact on its flexibility is much more constrained since it is implemented through frame solutions, floor heights, building services ductwork, etc. which are expensive to change afterward

Flexibility in the Design of Buildings

Flexibility in the design of buildings is a concept where buildings can adapt to current and future needs ranging from economic concerns, to sustainability and the possibility of change and also allows the division of the space according to the needs of the user. Flexibility in buildings is designing for changing requirements and arrangements (Schneider & Till 2005). In order for a building design to be flexible, the following must be considered: Adaptability, Mobility and Transformability.

a. Adaptability

Every building should be designed to have the ability to be changed to fit current circumstances. In architecture, change is inevitable therefore having a building with elements that allow for change to happen is the major concern so that while a building has a distinct purpose, it can operate as multipurpose (Acharya, 2013). A space capable of meeting different requirements by simply changing of furniture, without any further modification can be seen as an adaptable space. The open building approach is considered the most formalized approach for adaptable architecture. The flexibility of the building design allows for users and occupants to choose their own pattern and have the freedom to create their own desired space.

b. Mobility

Mobility of buildings represent the physical movement of a building that changes places within a time range. Relocation according to specific needs is the basic idea behind

mobile structures all over the world. This was practiced by the nomadic communities who take their dwellings with them (Acharya, 2013). Mobile structures are usually demountable buildings that promote movement and flexibility of space, widely used in a number of fields such as in commerce, industry, military, education, health care, housing, where they fulfil their individual roles (Andrei, 2002). Flexibility in the design of buildings, using mobile design is related with the possibility of designing temporary accommodations in critical and emergency situations such as in war and conflict areas or in relation to natural disasters. Mobility of buildings gives rise to efficient use of materials and resources making it important for flexibility.

c. Transformability

Transformability in buildings enables a building to change its shape, space and appearance by the physical modification to its basic components, outer shell or internal surfaces. Transformable buildings also have the ability to interact with external environment removing the barrier between inside and outside and respond to climatic situations thereby contributing to sustainability. Components can be opened or closed depending on the purpose and desire of the user. This transformation enables a building to open, close, contract or expand, making it a critical aspect of flexibility in buildings (Kronenburg, 2007). The transformation operation can be done manually by disassembling and assembling of different building components, or mechanically using a button to control the movement of parts and change of form of a building (Acharya, 2013).

Flexibility of Design Features

The flexibility of the design components that form a structure is the basic factor that determines how flexible a structure can be. These design features can easily be identified and assembled to enable one realize, create or modify the change requirement. The breaking down of these components that can be disassembled non-destructively from the product as a unit is referred to as modules and each module can be attached, detached, modified, relocated, and replaced easily for upgrading, repair, recycling, or reuse. Demountable structures include modular design which serves as basis for adaptable, mobile and transformable design. The function-based modular design offers flexibility and allows maximum space utilization and functions to satisfy the needs of different groups of users.

Application of Flexible Walling in Shopping Malls

The application of flexible walling in shopping malls is achieved by three (3) methods namely:

a. **Division of Commercial Spaces**: 21st century shopping malls across Europe, North America and Asia have adopted a concept and ideology where large open spaces are provided for commercial functions and provided to retailers and entrepreneurs as they request. Plate I, shows foldable glass partition used in the

division of commercial spaces. This eliminates the use of solid walls within the building structure and allows the flexibility of space creation which could be aesthetically pleasing depending on its execution within the building.

Plate I : Foldable Glass Partition
Source: www.indiamart.com (2021)

b. Billing of Rentable Spaces per Meters-Square

The heterogeneous division of interior spaces in 21st century shopping centers resulted in the leasing of rental spaces on a square meter basis. Hence the retail spaces can take several shapes and still be billable to the owners of shopping facilities without difficulty. This is achieved by calculating the total area provided to the retailer and relating it to the cost of each square meter of space. Plate II, shows the use of foldable wood partition in the demarcation of spaces which means that spaces can be reused without the necessity of breaking down walls but demounting the partition neatly and reusing them when the need arises.

Plate II: Foldable Wood Partition
Source: www.indiamart.com (2021)

c. Flexible Space Modification

Saari and Heikkila (2008) stated that space flexibility management is governed by three principles:

i. Service Flexibility

Service flexibility refers to the ability of space to adapt to recurrent quick changes in loading. Changes in loading are the result of, for instance, changes in the number of people in a space, changes in the activity conducted in a space, etc. Service flexibility affects strongly the productivity of the activity in the space. Thus, it is

especially important for users. It can be improved by, for instance, movable partitions and adjustable ventilation. SOURCE?

ii. Modifiability

Modifiability of a building refers to its capacity to meet the changing needs of its users. Needs of a space changes as the users change or the business and activities carried out in that space changes. This type of flexibility is especially important feature for the property owner. It can be improved by "loose" dimensioning of building services and system walls. Plate III shows modification of a spaces using laser cut partition which further beautifies the space.

Plate III: Foldable Laser cut Partition

Source: www.lasercutscreens.co.uk (2021)

iii. Long Term Adaptability

Long-term adaptability of space refers to its adaptability to unknown activities and uses. Adaptability is an important feature for the property owner when buying or selling a building. It is also a major factor especially from the viewpoint of urban structure and the environment. The adaptability of such structures ensures that flexible walls will continue to be put to use for this structure until the point when the owner decides to eliminate the flexibility feature of the structure hence the introduction of solid walls.

Plate IV: Foldable Wood Partition

Source: www.indiamart.com (2021)

RESEARCH METHODOLOGY

Observation method of research was employed and it involves directly observing and studying a population sample. The survey was conducted on 5 shopping malls in Abuja which includes, Jabi lakefront Mall (Jabi), Grand Tower Mall (Apo), Capital Hub (Mabushi), Ceddi Plaza (Central Area) and Silver Bird Gallery (Central Area) and

attention was paid on the types of flexible partition materials and design approach used in these malls. The observation schedule was designed to reveal types of mall structures and spaces available, availability of flexible design elements, types of flexible design features and approach used. The 5 malls were selected purposefully based on their status as regional shopping centres. Data analysis took the form of simple descriptive statistics and content analysis represented in the form of percentages. Data collated was computed manually and tabulated in Microsoft Excel Spread Sheet Program.

RESULTS AND DISCUSSION

Availability of Outdoor and Indoor Recreational Spaces

Table 1 shows results obtained from the observation schedule of malls with outdoor recreational spaces and those without it. It was observed that all the malls visited had a single building for the mall, while only 60% made provisions for outdoor activities. Malls without spaces provided for outdoor activities are limited in activities that could be carried out in such malls and this is a minus economically. Therefore, malls should provide more outdoor relaxation and interaction spaces.

Table 1: Availability of Indoor and Outdoor Spaces

S/No	**Mall**	**Indoor**	**Outdoor**
1	Ceddi Plaza		X
2	Silverbird Entertainment		
3	Capital Hub		
4	Jabi Lakefront Mall		
5	Grand Tower Mall		X
	Total Available	5	3
	Percentage	100%	60%

Source: Author's Fieldwork (2022)

Assessment of Design features for flexibility

From Table 2 showing the 5 malls visited and their locations, it was observed that all of them utilized frame structure construction approach in the construction of the mall. The walls are constructed externally mainly with concrete, blocks and glass. The interior wall demarcation was constructed mainly with gypsum board, glass and wood.

Table 2: Mall and Location

S/No	**Name Of Mall**	**Location**
1	Ceddi Plaza	CBD
2	Silverbird Entertainment	CBD
3	Capital Hub	Mabushi
4	Jabi Lakefront Mall	Jabi
5	Grand Tower Mall	Apo

Source: Author's Fieldwork (2022)

Availability of Flexible Design Elements

Table 3 shows the presence of flexible design elements in the malls visited. 80% of the malls visited have flexible partitions available but these partitions would be partially damaged if they were to be removed because of the method of installation. The remaining 20% of the malls don't have the presence of flexible partition as the partitions are mainly solid blocks.

Table 3: Availability of Flexible Design Elements

S/No	Name Of Mall	Available	Unavailable
1	Ceddi Plaza		X
2	Silverbird Entertainment		X
3	Capital Hub	X	
4	Jabi Lakefront Mall		X
5	Grand Tower Mall		X
	Total Available	4	1
	Percentage	80%	20%

Source: Author's Fieldwork (2022)

Design Approach Adopted

Table 4 shows the design approach adopted in the malls visited. All the malls visited adopted the adaptable design approach in the design of the mall while only 20% of the interior of the malls can be transformed to an extent.

Table 4: Type Of Design Approach Adopted

s/no	Name of Mall	Adaptability	Mobility	Transformability
1	Ceddi Plaza		X	X
2	Silverbird Entertainment		X	X
3	Capital Hub		X	X
4	Jabi Lakefront Mall		X	
5	Grand Tower Mall		X	X
	Total Available	5	0	1
	Percentage	100%	0%	20%

Source: Author's Fieldwork (2022)

Flexible Materials Used

Table 5 shows the types of flexible materials used in the malls visited. 100% of the malls visited used glass as their major partitioning material while 80% used gypsum board in addition to glass. 40% of the malls used wood in addition to glass and gypsum board as their partitioning material. None of the malls used polystyrene, metal and strawboard as their partitioning material.

Table 5: Types Of Flexible Materials Used

S/No	Name Of Mall	Glass	Wood	Polystyrene	Gypsum Board	Metal	Strawboard
1	Ceddi Plaza		X	X		X	X

2	Silverbird Entertainment			X		X	X
3	Capital Hub		X	X	X	X	X
4	Jabi Lakefront Mall			X		X	X
5	Grand Tower Mall		X	X		X	X
	Total Available	5	2	0	5	0	0
	Percentage	100 %	40%	0%	80%	0%	0%

Source: Author's Fieldwork (2022)

Design Approach Adopted

Table 6 shows the presence of reusable flexible partition materials in the malls visited. All the malls visited have the presence of both reusable and non-reusable partition materials. The reusable partition material is Glass while the non-reusable material is gypsum board and wood.

Table 6: Presence Of Reuseable Flexible Partition Materials

S/No	**Name Of Mall**	**Reuseable**	**Non-Reuseable**
1	Ceddi Plaza		
2	Silverbird Entertainment		
3	Capital Hub		
4	Jabi Lakefront Mall		
5	Grand Tower Mall		
	Total Available	5	0
	Percentage	100%	100%

Source: Author's Fieldwork (2022)

CONCLUSION AND RECOMMENDATION

Conclusion

The study has clearly shown that the interior spaces of malls should be flexible enough to accommodate the needs of different users as the need arises. In Abuja, the study shows that malls should not restrict flexible materials used for interior demarcation to glass, wood and gypsum board alone, other materials can be adopted for interior demarcation purposes. The study also revealed that glass is the only reusable material present in all the malls visited. All other demarcation materials used in the malls are non-reusable and this is an economic waste that can be avoided using the right approach. 60% of the malls visited have both indoor and outdoor recreation spaces provided, 80% have the presence of flexible design elements and only 20% of the mall interiors can be transformed. Related literatures studied were able to proffer solutions to the flexibility of design features.

Recommendation

In the design of malls, designers need to recognise the fact that malls are public places occupied by people with varying spatial needs, therefore it is important to use design features to achieve an effective flexible design. Malls attract an unpredictable population so space flexibility should be considered at all times and adopting all the flexible design approach so that as the users' needs change, the building also changes to meet their needs.

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