

An Investigation of the Effects of Obsolescence on the Rental Values of Residential Properties: A Case Study of Students' Off-Campus Hostels, Ifite, Awka. Anambra State, Nigeria

OKORO ANTHONY CHINEMENMA¹, NWOSU CHIEMEZIE CHISOM², CHUKWUNONSO ARINZE OKPALA³

^{1, 2, 3} Department of Estate Management, Nnamdi Azikiwe University, Awka Anambra State, Nigeria.

Abstract- The relationship between obsolescence and the rental value of residential properties in Nigeria cannot be overemphasized. The aim of this study is to analyze the effects of obsolescence on the rental values of students' off-campus hostels, in Ifite, Awka. This study investigated the effects of obsolescence on the rental values of students' off-campus hostels in Ifite, Awka Metropolis. The population of study was four hundred and thirty-three (433) comprising one hundred and thirty-three (133) registered Estate Surveyors and Valuers and three hundred caretakers responsible for managing the students' off-campus hostels in Ifite, Awka. A sample size of eighty-one (81) comprising twenty-five (25) registered Estate Surveyors and Valuers and fifty-six (56) caretakers was used and data was collected primarily through a well-structured questionnaire. The study was guided by four research questions and descriptive research design was used. Sample mean analysis was used to analyze the gathered data. The study showed that physical wear and tear, wrong building designs, technological advancements and changes in the economic conditions are the main causes of Obsolescence in Students' Off-Campus Hostels in Ifite, Awka. It also concluded that there is a strong relationship between obsolescence and residential property values and that that rental value is directly related to and affected by the degree of obsolescence seen or observed in a building. The study advocated for improved and efficient maintenance culture and strategies, building designs with flexibility of use to mitigate the rate and effects of obsolescence on buildings.

Indexed Terms- Assessment, Effects, Obsolescence, Rental Values, Residential Properties

I. INTRODUCTION

• Background to the Study

In recent years, Nigeria and her economy has experienced a significant increase in property investments mostly to cater to the ever-growing demands for residential, commercial and industrial spaces for shelter, businesses and manufacturing respectively due to the rising population. The demand for residential properties, which is a basic necessity for survival, comes from the need for shelter, comfort, easy accessibility, up to date facilities, amenities, designs and services. As such, any property lacking in any of the above qualities is less desirable, thus plunging its rental value significantly. Such properties are deemed to be obsolete and this obsolescence is often caused by poor/complete absence of maintenance culture, physical wear and tear, in-utility, advancement in technology and economic conditions. These in turn affect the rental value of the property in due course. We live in a fast-moving world where housing styles are driven by design-adept consumers, hungry for the latest looks and trends both in construction and aesthetics. According to Ogumba (2013), The degree of physical, functional and economic obsolescence of a building affects the level of demand for it and ultimately affects its value.

Obsolescence is defined as the process of becoming outdated, old fashioned or antiquated. The adjective 'obsolete' according to the oxford dictionary, is defined as no longer in use or practice or worn away,

dilapidated, worn out, eroded, effaced and atrophied. Consumer goods and machineries become obsolete due to changes in demand and technological advancement. Obsolescence is a major factor in generating risk and may require write off value of the obsolete.

The concept of obsolescence is often interchanged with depreciation by many professionals and scholars of the built environment. However, the two concepts are different. According to the Accounting Standard Committee (1987) cited in Cheong (2010), Depreciation is the measure of the wearing out, consumption, or other reduction in the useful economic life of a fixed asset whether arising from use, passage of time or obsolescence through technological or market changes. This definition clearly states what depreciation is in a way that it can be differentiated from obsolescence. Based on this definition, it can be understood that depreciation is a loss in the existing use value of the property and it occurs as a result of the property becoming obsolete. This implies that obsolescence is the loss of utility of the building and depreciation is the effect of the obsolescence.

Quite a number of older housing blocks have been knocked down and demolished due to obsolescence. There is a general knowledge that the lifespan of buildings, like machinery and consumer goods, is determined by becoming obsolete, with demolition as a necessary end (Taylor, 2011). But this is not always true, not for monuments and other structures with heritage, historic or other inherent values and not for obsolete, worn down property as long as the owners and users love it and it does no harm to its environment. Although obsolescence is defined as a ground for demolition, there are other options to be considered such as renovation, reuse and transformation to extend the useful/service life of buildings and still maintain its rental value. On the other hand, obsolescence is not a necessary condition for demolition, and pretended obsolescence is not necessarily always the true reason for pulling down existing buildings (Thomas and Van der Fleur, 2009). Considering its immobile, long lasting, obvious and capital significance, obsolescence is a serious threat to properties all over. Therefore, minimizing obsolescence is important for the presentation of the

change in physical, economical and societal investment involved, also retaining the value of properties especially residential properties where occupiers are in need of comfort, latest designs and facilities. Obsolescence is not a natural phenomenon, but a function of human action. Buildings are complex man-made artifacts and can only survive by means of regular re-investments such as proper maintenance and renovations during its service life.

An observation of building structures in selected areas of Awka city will expose an array of physically aging and dilapidated structures. Many of the structures are being used for purposes they are not originally designed for. Such is the situation around Temporary site, Aroma, Ifite, etc., where residential buildings have been converted to commercial. Moreover, the rate at which structures within these areas are being refurbished or renovated is high. This is encouraged by the high demand for new buildings and modern fittings or fixtures. The above illustration lends credence to the fact that the old buildings have become obsolete or that their utility (usefulness) is low and at times, non-existent. Hence, the need for rehabilitation or refurbishment, to give way to the highest and best use of the property.

The effects of obsolescence on a property, be it physical, functional or economical, cannot be overemphasized. For instance, in Awka property market, a 3-bedroom flat is in more demand than a 2 or 1-bedroom flat, also all en-suite bedrooms in flats are in higher demand than a flat with one toilet, and such accommodations have had a reduction in rental value compared to those with en-suite bedrooms.

In Nigeria, the factors that affect the value of residential buildings include obsolescence, location, accessibility, demand and supply, institutional and economic factors, among others. However, since there is still a shortage in the supply of residential properties in the market, which leads to an increase in rent and capital values, properties affected by obsolescence would not increase at the same rate as other properties not affected by obsolescence within the same vicinity would increase.

Professionals and practitioners of Real Estate, financiers and investors in residential properties are

faced with a deficit of data on the effects of obsolescence on the value of residential properties and what level of rental income a development project could reasonably be expected to realize in a transaction involving willing and able parties. Thus, this study has been prompted by the need to analyze and determine the effects of obsolescence on the rental value of residential properties in Awka with a close up on students' off-campus hostels, Ifite, Awka, Nigeria. Several enquiries into previous studies show that obsolescence is not being given enough attention as an essential factor of residential property value determinants. Nonetheless, there are studies dwelling on causes of economic obsolescence and their impacts on housing values.

Obsolescence can be said to be a major problem faced by moat buildings, especially residential buildings as it affects the building, making it worn out and out of fashion. When this happens, it can be said that the building is becoming obsolete, caused by defects of differing physical deterioration of various components of the building, leading in turn to lack of demand for such property and ultimately affects the rental value. One of the problems this study seeks to solve relates to properties affected by obsolescence, which are not commanding the same rental value as other comparable properties within the same neighborhood. There is also the problem of lack of timely maintenance, renovation, replacement of building components that most times lead to obsolescence. Another problem this study is meant to address is identifying how the different forms of obsolescence affects the purpose for which the hostels were erected and how it affects the comfort of the occupants.

II. LITERATURE REVIEW

- Concept of Obsolescence

A lot of prominent scholars have tried to define the term obsolescence.

Thomsen and Flier (2011) describes obsolescence as a process of the growing divergence between the declining performance of buildings and the rising expectation of users and proprietors. Cowman (1970) defines obsolescence as the significant decline in the

competitive usefulness or value of an article or property.

Obsolescence however was defined differently by many studies in North America and the United Kingdom. In the United Kingdom, Baxter (1982) defined obsolescence as “a decline in utility not directly related to physical usage or the passage of time. This definition is not quite correct because the author does not consider physical deterioration as part of obsolescence.

In accounting work, obsolescence is separated from physical deterioration. However, based on the original definition given by the Oxford dictionary, obsolescence includes physical deterioration. The term “obsolete” is derived from the word Latin “obsoleo” which was in use from the middle of the sixteenth century with the following meaning, “which is no longer practiced or used; discarded; worn out; effaced through; wearing down; atrophy; degeneration.

The other aspect that can cause confusion is whether obsolescence is defined as “a decline in the utility of the building as defined by Baxter (1982) or “a loss of utility introduced by Flanagan (1989). Both the definitions are correct because both decline and loss of utility are affecting the rental value of a building and therefore, shall be included in the definition. To clarify, obsolescence is the process of becoming antiquated, old fashioned, outmoded, or out-of-date. It describes a decline in utility that not only results directly from physical usage, but also the action of the elements and the passage of time (Baum, 1991). According to Nutt, Walkerm., Holiday, and Slars, (1976), buildings can only truly be defined as “obsolete” when they have become completely useless with respect to all possible uses that they have been called upon to support.

Utility in the sense of usefulness, desirability or satisfaction is therefore central to the concept of obsolescence; if something is not felt to be providing utility, it will be considered obsolete (Smith, Whitelegg, and Willians, 1998). However, because there is no single measure of utility it is difficult to produce a rational, consistent and objective measure of obsolescence (Raftery, 1991). To overcome this

problem, obsolescence in buildings is normally measured in terms of the real or nominal decrease in value (Salway, 1986).

Obsolescence is also related to decay of tangible and intangible things, that all products have an irresistible tendency to become old, but the speed of aging is different for different objects and circumstances. Obsolescence is much more difficult to control since it is concerned with the prediction of changes in fashion, technological development, innovation in the design and the use of buildings.

In Amsterdam, Netherlands, Thomsen, and Flier (2011) explore the characteristics and causes of obsolescence resulting in a conceptual model of causes of obsolescence and effects. The paper is mainly inventory and theoretical without empirical survey. The article describes obsolescence as a process as the growing divergence between the declining performance of buildings and the rising expectation of users and proprietors. The authors distinguished between physical and behavioral factors affecting obsolescence and showed the different relationship between the increase of complexity of types of obsolescence and the decrease of possibilities to manage it. The study regards obsolescence as a severe threat to built property and as the start of the end-of-life phase of buildings. It observed that obsolescence is not an inevitable natural phenomenon but a function of human action and decision making. It concluded that obsolescence does not necessarily lead to demolition as obsolescence does not always precede demolition. The authors advocated minimizing obsolescence to preserve the physical, economic and societal investments involved given that these investments are immobile, long lasting and capital intensive. This study like Mansfield and Pinder (2008) is without survey or case study and its findings and conclusions cannot be generalized but taken as the author's opinion

Obsolescence occurs due to physical deterioration, wear and tear, technological advances, changes in the economic conditions and user requirements. The design, appearance, taste, legal, and social needs will also have an impact on the building. The impact of

obsolescence on a building can be classified into curable obsolescence and incurable obsolescence.

Cheong (2010) studied building obsolescence in standard design terrace houses in Perale, Malaysia through a case study of double story terrace houses. The definition and differences between obsolescence and depreciation, as well as an explanation for all different types of obsolescence, are highlighted in the study. The author opined that depreciation occurs as the result of the building becoming obsolete. Hence, that depreciation should be considered as the effect of obsolescence and obsolescence is the cause of depreciation. The study found that not all types of obsolescence cause depreciation of rental on office buildings and that legal obsolescence will not affect the service life of the building. The paper identified types of obsolescence to include, economic, functional, aesthetic, environmental, legal, social, technological, locational and physical. The author classified the impact of obsolescence into curable and incurable, reasoning that incurable obsolescence is more crucial than curable obsolescence as it is more difficult to control. The study is based on a few case study of double terrace houses without any further survey of the tenants nor the professionals and as such its findings cannot be generalized

Curable obsolescence is one that can be controlled by the building owner through choice of construction materials, preserving high standards of maintenance and refurbishment, etc but it is only to a certain extent. The factors responsible for curable obsolescence includes:

- i. Construction faults
- ii. Level of deterioration
- iii. Poor level and standard of services

Normally, curable obsolescence can be easily counteracted by means of maintenance or repair.

Incurable obsolescence being the results of inappropriate changes is less easily controlled by the building owner. The most that can be done is to incorporate flexibility into the design of a building to make alterations and adaptations easier in the future. The treatment of the incurable impact of obsolescence requires the introduction of new

characteristics into a building, which may not be similar with the existing structure.

- Causes of Obsolescence

According to Barivole (2019), academic surveyors and building economists often make the point that, over time, a building can become less suited to its purposes for a variety of reasons and that this indicates that there are various types of obsolescence. By contrast, our argument is that, fundamentally, all obsolescence is “functional obsolescence”.

However, it is true that this dysfunction may have a variety of origins. In other words, a building’s inadequacies can stem from more than one source. Obsolescence is crucially concerned with the relationship between location, form and condition on the one hand and functions on the other.

- i. Building Design

The form that a building design assumes can greatly cause a distaste of such structure over time. Certain forms do not depict acceptance by the environment/surrounding over a certain time. In addition, certain building form does not allow for accessibility for maintenance therefore can cause obsolescence to occur in those areas where maintenance access is restrained.

- ii. Physical Wear and Tear

Obsolescence occurs due to the deterioration of the building’s physical fabric. This includes the wear and tear of the visible physical fabrics and other components such as mechanical and electrical services and equipment used in the building.

- iii. Technological Advancement

Obsolescence occurs when the building is no longer technologically superior to alternatives and replacement is undertaken because of lower operating costs or greater efficiency. Alternatives play a major role in obsolescence of buildings as technology advances over the years. The in-utility of buildings with lower versions of such technologies surfaces and gradually becomes obsolete.

- iv. Changes in the Economic Conditions

High demand for land can cause obsolescence in a property. If the demand for a particular building

becomes low, maybe due to lack of maintenance, it results in obsolescence and ultimately affects the value of such property.

The building value decreases over time due to obsolescence. The building can become obsolete if the land value exceeds the capital value of the building faster than its expected physical life. On this occasion, replacement of the existing building becomes economically attractive, as better return from the asset can be generated.

- v. Building Location/Environment

The environment in which a building is situated can be a serious limiting factor if not carefully analyzed before construction commences. In fact, if this is not carefully considered, such a project might end up being abandoned, therefore obsolescence can occur at the construction stage which in turn will not even allow the building the chance to commence its service more or less of completing the service life.

Also Changes in the character of an area may make a building unsuitable for its original intended use. Environmental change such as high pollution, road congestion and urban decay causes environmental obsolescence. For example, an office building may suddenly become obsolete when the adjacent site is used for industrial use. Disturbances from factory engines and air pollution will deter tenants from staying and the building revenue will start to decline.

- Categorization of Obsolescence

Previous studies categorized obsolescence into physical obsolescence, functional and locational obsolescence, environmental obsolescence, economic obsolescence, aesthetic, legal, and social obsolescence (Calus, 1986).

The above studies considered technological and functional obsolescence as one category. However, at a later stage, Calus (1986), suggested that technological and functional obsolescence should be separately categorized because of the differences in the impact on buildings. Suggestions from them are correct.

Technological obsolescence should be considered as one of the major causes of obsolescence because of

its importance. A building that is functionally obsolete does not have to be demolished to obtain a better return from the site. However, it does not necessarily apply to a building that is technologically obsolete. For example, a lift has become technologically obsolete, but it does not render the function of the building obsolete. Therefore, the building will still be retained but the lift might be replaced.

Also Reed and Myers (2010) in an exploratory study, examined whether sustainable obsolescence is a new form of obsolescence. The authors submitted that while there have been many forms of obsolescence, there are three core forms of obsolescence that affect all buildings. These include physical, functional and economic obsolescence. Other types of obsolescence identified by the paper include technological, locational, social, market, legal, building, historical and professional. The authors argued that the concept of sustainability has evolved from a basic sector (green), to being acceptable to all segments of the society. The authors submitted that there had been distinct lack of market evidence to allow a detailed analysis of obsolescence and depreciation over time. They concluded that the relationship between obsolescence and property values need to be carefully monitored and then further examined when more data become available. The study found that sustainability cannot be considered as the new form of obsolescence until more studies are conducted, since the sample size of sustainable buildings is too small to draw a meaningful inference. The study is without location and needs further investigations into this emerging area as suggested by the authors.

Bokhari and Geltner (2014) examined empirical evidence on the nature and magnitude of real depreciation in commercial and multi-family investment properties in the United States. The authors argued that depreciation is measured as a fraction of total property value, not just structure value, and it is oriented towards cash flow and market valuation metrics of investment performance such as IRR, and it includes physical, functional, and economic obsolescence of the building structure. The study is based on an analysis of 107,805 transaction prices. It found an overall average depreciation rate of 1.5% per year for all the transactions, 1.82% per

year for properties with new buildings and 1.12% per year for properties with 50-year-old buildings. It also found that apartment properties depreciate slightly faster than non-residential commercial properties and that depreciation rates vary considerably across metropolitan areas, with areas characterized by space market supply constraints exhibiting notably less depreciation. The study area is too broad as it tries to cover the whole of the United States which can lead to unlimited generalization.

- Economic Obsolescence

Economic obsolescence is seen where the demand for buildings stops and this seems to control the durability of real estate whether residential, commercial or industrial. Calus (1986) suggested that a building might become economically obsolete following a change in the “highest and best use for the land”. This might be as a result of either a change in the market condition or in planning policies.

Rand (1986) came out with another suggestion saying that besides changes in market condition and planning policies, a change in the national economy can also cause the land to appreciate over and above the normal increase in cost.

According to Salway (1986), Economic Obsolescence is considered to be the result of a change in the “highest and best use for the land”. Such a change could be related to a specific site or more generally to the surrounding area.

In another UK study, Mansfield and Pinder (2002) examined the characteristics and impact of economic and functional obsolescence on valuation practice. The study highlighted the practical difficulties in pricing obsolescence using inflexible methodologies in a marketplace that is subject to evolving criteria. The authors adopted an exploratory approach in the design without any empirical analysis but based the study on a review of literature and advice from international professional bodies. The authors concluded that despite the need to be more explicit in valuations, current methods are unable to address such detail. They advocated for a thorough revision of the guidance and advice offered by professional bodies in the valuation approach and hoped that the progress being made in methodology will be

incorporated in directed guidance to practitioners. The study findings and conclusions are without any empirical survey or case study; therefore its conclusion should be considered as the authors' opinion.

Economic obsolescence is a function of appreciation rather than depreciation: a building becomes economically obsolete not as a result of the existing structure, but through enhancement of the development potential of the underlying land. The building value decreases over time due to obsolescence. The building can become obsolete if the land value exceeds the capital value of the building faster than its expected physical life. On this occasion, replacement of the existing building becomes economically attractive, as better return from the asset can be generated.

For instance, the land value in a particular area drops due to relocation of the central business zone to another area. New development having advantage of cheaper land cost will be more competitive and attractive to the tenants and will cause the rental for the existing buildings to decline.

Economic obsolescence is incurable and difficult to predict due to lack of information on the future development and confidentiality of government policies.

- **Functional Obsolescence**

Functional obsolescence is a product of technological progress resulting either in change in the occupiers' requirements or in the introduction of new building products:

- i. A building may be considered functionally obsolete due to its defective layout (e.g., inadequate floor to ceiling heights and close-spaced structural columns);
- ii. A building may become functionally inefficient because of its inflexibility and inability to accommodate new information technology (e.g., no raised floor for distribution of cables).

Calus (1986) suggests that functional obsolescence is the loss of value of the subject facility resulting from a deficiency (other than physical deterioration) that impairs the subject when compared to a replacement facility. Functional obsolescence is mainly incurable,

which can shorten the economic life of a building (Rand, 1986).

- **Aesthetic Obsolescence**

Buildings may be deemed unacceptable by occupiers if the appearance is outdated and incompatible with their personal lives. Either fashion in architectural style may have changed or alternatively the building may simply look old and fail to satisfy the aspiration to be associated with up-to-date products. The improved appearance of a building could result in more satisfied employees and the higher standing of the firm and its services or products.

Calus (1986) suggested that fashion permeates all facets of life including architectural experience. Whatever the long-term view of posterity about a particular architectural style, it will invariably fall out of favor in the medium term. The changes in fashion will provide an adverse reaction against styles which characterized the immediately preceding era.

Architectural style cannot be defined precisely. It is best described as "State of the Art" of the building design, which is characterized by fashion, vogue, available technology, and personal taste. The introduction of a new architectural style can, in some cases, cause buildings with an old design to appear old fashioned and less attractive to potential purchasers or lessees. Buildings with a distinctive design appeal are more likely to have lasting appeal and to be less affected by changes in architectural style.

The effect of aesthetic obsolescence is greater in commercial buildings because the buildings with new architectural styles can fetch higher rental values. The decline in the revenue of old buildings requires the buildings to be refurbished to make them attractive and competitive again.

- **Environmental Obsolescence**

Medhurst (1969) suggested that environmental obsolescence of a whole neighborhood may occur when the conditions in a neighborhood render it increasingly unfit for its current use. Changes in the character of an area may make a building unsuitable for its original intended use. Environmental obsolescence will normally be of greater relevance to

depreciation of land than to the depreciation of buildings.

Environmental change such as high pollution, road congestion and urban decay causes environmental obsolescence. For example, an office building may suddenly become obsolete when the adjacent site is used for industrial use. Disturbances from factory engines and air pollution will deter tenants from staying and the building revenue will start to decline. The need for a change in the infrastructure of an area can also cause a building to be environmentally obsolete. For example, the area needs more car parking, pedestrian areas, efficient public transport and roads.

This type of obsolescence is not directly related to building design and is difficult to forecast.

- Legal and Social Obsolescence

Legal obsolescence stems from the introduction of new legislation or new standards controlling matters such as health, safety and fire control which in extreme cases may render a building obsolete. Calus (1986) and Baum (1989) suggested that changes in social needs might result in occupiers demanding for high and compatible image, good neighborhood and amenities. Many buildings become socially obsolete although suitable for the purpose envisaged, because it is situated in the wrong location and therefore of only limited practical use.

Legal Obsolescence occurs where a building fails to meet current legislation requirements and the costs involved in bringing the building up to the required standard are prohibitive. In this case, legislation will advance demolition or renovation beyond the building's physical life.

- Technological Obsolescence

Technological Obsolescence occurs when the building is no longer technologically superior to alternatives and replacement is undertaken because of lower operating costs or greater efficiency.

A building may become technologically obsolete before half of its physical life passes. The speed of change in current society suggests that in the future, this life will be reduced even faster.

Calus (1986) suggested that this form of obsolescence occurs as a result of technological innovation. For example, some of the existing electrical and mechanical services are no longer technologically suitable or superior in terms of performance or efficiency. Consider for example, improvement in the lighting efficiency of a new lamp, which may make an existing lighting system no longer economically or technologically effective. In some situations, as with building management systems, it may be possible to install these innovations, without replacing the existing asset.

- Locational Obsolescence

A building can become locally obsolete when the economic activities in the area change (Medhurst, 1969). A change in the city planning, such as relocation of the commercial area and construction of new roads and motorways can change the economic activities of the affected areas.

Locational obsolescence occurs when an area – and the property located in it suffers from devaluation because it is considered less fashionable or attractive by occupiers (Bryson, 1997).

- Physical Obsolescence

Physical obsolescence occurs solely due to the deterioration of the building's physical fabric of a building. This suggestion has been criticized by other scholars because he stressed that only deterioration of a building's physical fabric causes physical obsolescence.

Therefore, Winfrey (1985) said that physical obsolescence is not only due to the deterioration of the physical fabric but also the other components such as mechanical and electrical services and equipment used in the building. However, both the definitions have not mentioned what are the factors that cause deterioration of a building's physical fabric, materials or components.

Then, Calus (1986) came out with the suggestion saying that an asset may remain as good as ever in itself, but be rendered obsolete by external factors such as physical deterioration. Physical deterioration is defined as “deterioration of the physical fabric of a

building as a function of use and the effect of the passage of time.

Flanagan, (1989) came out with the statement stating that physical obsolescence is determined by environmental and non-environmental factors. Any material or component will deteriorate because of environmental factors such as radiation (solar and thermal), temperature ranges, water (rain, condensation, snow, ice), air contamination, biological factors (micro-organisms, fungi, bacteria) and stress factors (physical action of wind, hail). The non-environmental factors are generally the stresses that are imposed by humans in their various activities of living, working and playing. Examples are permanent loading, fatigue loading, impact, abrasion, chemical attack, normal wear and tear, and abuse by the user.

Physical deterioration occurs more slowly than other forms of obsolescence, but it is predictable and curable provided the building is well maintained. Baum's (1989) showed that physical obsolescence is not as significant as functional and aesthetic obsolescence.

The rapid deterioration of buildings and their components can be attributed to many different causes:

- i. Inappropriate design and detailing of buildings and their components.
- ii. Use of substandard materials and components that have insufficient data concerning their longevity.
- iii. Constructional practices on site that were poorly managed, supervised and inspected.
- iv. Insufficient attention given to the maintenance of the building stock.
- v. Inappropriate use by owners and occupiers.

Whereas the rate of physical deterioration can be controlled by the designer through the correct choice of material, methods of construction and appropriate standards of maintenance, other than through the ability to provide a flexible and adaptable design solution to facilitate easier adaptation and renewal at the same later date.

• The Effects and Influence of Obsolescence on Rental Values

Studies have shown that there is a correlation between obsolescence and residential property values, most of the studies did not evaluate directly the impact of obsolescence on residential property value; rather, the symptoms or causes of obsolescence were studied. These include: pollution, Physical deterioration, technological advancement, building location/environment, industrial plants, highway traffic, obstruction of views and the likes. They all however influence the rental values of residential property in a way of low values or reduced rental value of properties in the neighborhood. As. Ogumba O.A (2013) opined that the Degree of physical, functional and economic obsolescence of a building affects the level of demand for it and ultimately affects its value.

Ridker and Henning (1967) conducted a study on the determinants of residential property values with special reference to air pollution. Using air pollution as the key value determinant, the study found that air pollution variables turned out to be a relatively significant variable in explaining residential property values. The result of this study is in tandem with the study where the result showed that land rents would vary inversely with air pollutant dosages and that pollution is a source of disunity especially where it negatively modulates the utility obtained from other goods.

Smith and Deyak (1975) in measuring the impact of air pollution on property values posited the need to provide information on the benefits associated with improvements in air quality for rational environmental planning which has generated considerable interest in the analysis of air pollution's effects on property values. From the foregoing, it can be summarized that air pollution, a symptom or cause of environmental obsolescence is capable of impacting negatively on residential property values. From another perspective, Bateman, Day, Lake, Lovett. (2001) examined the effect of road traffic on residential property values which dwelled on hedonic pricing, submitted that due to the negative effect of road traffic on residential neighborhoods which by extension reflects in the property values, that the provision of the law should be followed by paying

adequate compensation to households where the physical factors associated with a new road led to a reduction in property price. Past studies have also shown that social and legal obsolescence (development control) is capable of influencing residential property values. The literature has it that government regulations are capable of either impacting positively or negatively on residential property values.

This was emphasized in Jaeger (2006) where in the context of laws like Oregon's Measure, requiring that landowners be compensated if regulations reduce property values, the economic effects of land use regulations on property values were being widely misinterpreted because two very different economic concepts were being confused and used interchangeably. The first concept according to the study is "the effect of a land use regulation on property values" which measures the change in value when a regulation is added to many parcels. The study identified the second concept as "the effect of an individual exemption, or variance, to an existing land use regulation," which measures the change in value when a regulation is removed from only one parcel. The effect of a land-use regulation on property values can be positive or negative, whereas removing a land-use regulation from one property can be expected to have a positive effect. Indeed, many land-use regulations actually increase property values by creating positive "amenity effects" and "scarcity effects." As a result of these differences, a positive estimate for removing a land-use regulation cannot be interpreted as proof that the other concept was negative. Despite this, a positive value for an individual exemption to a land-use regulation continues to be interpreted as proof that compensation is due under Oregon's Measure. Indeed, the study believes that this mistaken interpretation may be partly responsible for public sentiment that land-use regulations, according to the study, tend to reduce property values.

Over time, properties affected by obsolescence would not be commanding the same rental value as other comparable properties within the same neighborhood, due to lack of demand caused by the degree of its effects and ultimately affects its value.

The summary of this study also showed that a good reflection or treatment of obsolescence in the valuation process could as well be beneficial to the land owner and financial institution (in the case of granting mortgage facility) which means that an omission of it in valuation might spell doom for the entire process. Finally, the review revealed that obsolescence could be managed or/and treated; hence, the need for a concerted effort by property owners, professionals and policy makers for its efficient management in order to minimize its lethal effect on property values.

- **Obsolescence Mitigation Strategies**

The solution to obsolescence has been looked at by several authors but it still prevails. Therefore, mitigating the subject matter is the suggested way of handling it sustainably.

According to the work of Barivole. (2019), the strategies towards reducing the effect are highlighted below but are subjected to further research.

- i. **The Conceptual Design Stage**

The conceptual stage of a thing can be corrected easily. At the Design stage of every Design, it is expedient that the factors of maintenance are put in place. Design should be conceived such that it can complete its life cycle without much effort, maintenance though cannot be neglected. Designs should be conceptualized not just based on the trend things but with sustainability in mind. The types of design that should be imbibed should be such that it can be competitive with future structures with little or no touch. The design should be such that during its periodic maintenance it can still stand out with other buildings. Extreme aesthetical component that are not iconic should be minimized

- ii. **Flexibility of Use**

Buildings are designed for the user (human) majorly. In addition, it is actualized in an environment that is prone to daily change. Interior spaces of buildings should be designed in such a way that allows for easy and interchangeable usage by users as their activities tend to change from time to time. Therefore, rigidity in building design should be carefully reconsidered in this present time. Human activities change daily as every human. Each space allocated should be

designed such that changes can occur and still keep the building functional if need be.

iii. Unconstrained Interior Space

Constraints on interior space expansion may be imposed by structural or service (e.g., mechanical, electrical, and/or telecommunications) subsystems or by site characteristics. Provision of large, column-free areas gives maximum flexibility in moving partitions and 24-to 30-foot column spacing continues to provide such areas without excessive increases in structural costs.

iv. Adapting for Reuse

When the "fit" between facility and user deteriorates, changing the facility's use often is a reasonable strategy for dealing with this type of obsolescence. This "adaptive reuse" of obsolete structures has become increasingly popular in the United States, particularly where facilities have some historic value.

v. Separable Building Components

As earlier said, obsolescence does not occur immediately in the whole, it begins in parts and certain building components before it spreads to the other components and then spreads to the whole. Therefore, after each component's service life has been carefully examined and known, it should be designed such that maintenance can be carried out on each of them where need be. Building Maintainability: Causes of Obsolescence and its Possible Solution in Nigeria Buildings.

vi. The Construction Stage

This is the stage where everything can go wrong if not properly executed. At the construction stage, contractors should adhere to specification given, ensure that every component is installed in quality professionally, and try as much as possible to be void of construction errors as this can cause issues that can give way to obsolescence.

Defaced, cracked, and linking roofs in a building can shorten the service life of building components thus leading to the unavoidable end of the obsolete building (Demolition).

vii. Maintenance

This is seen as a life cycle sustainer. According to (Boussabaine and Kirkham 2004), maintenance is required to maintain a building's initial performance capacity. Without maintenance the performance will not meet the demand and eventually drop below the limit of acceptance of users or residents and the expected service life will not be reached, resulting in serious loss of efficacy. In practice, both the demand and the limit of acceptance will gradually rise over time as a result of improved technology, rising standards and growing prosperity. Improvement and renewal are required to answer the accordingly rising expectations. By adding performance capacity, the period of highest efficacy can be considerably extended and the service life prolonged. Assessment of the loss and benefits of alternative interventions in this way is part of nowadays-professional property and facility management

III. METHODOLOGY

Research design is an approach used for conducting a scientific enquiry, a plan or blue print that specifies how data relating to a particular problem should be collated and analyzed.

In this study, a research survey was carried out to supplement data from other sources which includes textbooks, journals and other printed materials. Survey research studies both large and small populations to discover the relative incidence, distribution and interrelation of sociological and psychological variables. Survey research is more suitable for this study because it enables samples to be selected from the entire population in order to analyze data, which would allow the researcher to make references on observed characteristics of the identified population.

Thus, a well-constructed questionnaire was used to pose relevant questions to the respondents. The study area adopted to be used to carry out this research is Students' off-campus Hostels, IfiteAwka, Nigeria.

Ifite is located in the city of Awka, Anambra State in Nigeria. It was primarily occupied by local indigenes and their farmlands before the establishment of an

educational institution in the neighborhood opened it up to an influx of development and modernization.

Ifite is the location of Nnamdi Azikiwe University, Nnamdi Azikiwe University High School, Nnamdi Azikiwe University Nursery and Primary School, Anambra state Commissioners’ quarters and most importantly residential buildings which is 90 percent Students’ off-campus lodgings amongst other notable mentions.

Population is the aggregate of all cases conformed to some designated set of specifications. The population of study in this research which is on the effect of obsolescence on the rental values of Ifite Students’ off-campus hostels, includes Estate Surveyors and Valuers who are registered with the Anambra state Nigerian institution of Estate Surveyors and Valuers (NIESV) branch, Landlords and Caretakers managing different hostels situated at IfiteAwka and some students’ occupants that have little knowledge about the research topic.

According to the Anambra State NIESV branch directory (2020), the total number of Estate surveyors and valuers currently registered with the branch and practicing in Awka and its environs are 133 members and 26 registered Estate Firms. Also, there are approximately 1000 Students’ off-campus hostels in Ifite-Awka and about 300 caretakers managing them as one caretaker managing multiple hostels is a common occurrence. Due to the large number of persons involved in the population, a sample size would be selected to work with.

The sample size was selected for the study from IfiteAwka using the Taro Yamane Formula.

The Taro Yamane Formula:

$$n = \frac{N}{1 + N(e)^2}$$

Where (n)

n = Sample Size

N = Population Size (133+300)

e = Level of significance (here set at 10%)

$$n = \frac{433}{1 + 433(0.1)^2}$$

$$n = \frac{433}{1 + 4.33}$$

$$n = \frac{433}{5.33}$$

$$n = 81$$

The data collected was presented and analyzed using sample mean analysis. The reason for using this method is that it is simple and straightforward. Simple mean analysis was used basically to analyze the data, finding out statements that are acceptable, using the mean as the benchmark.

Formula for Sample Mean Analysis

$$\bar{X} = \frac{\sum Fx}{N}$$

Formula for mean is given as

Where \bar{X} = Mean

= Summation

\mathcal{F} = Frequency of respondents

Nominal values were assigned to different scaling items as follows:

Strongly Agree (SA) = 5points

Agree (A) = 4points

Undecided (U) = 3points

Disagree (D) = 2points

Strongly Disagree (SD) = 1point

The cut-off point was determined by summing the nominal values and dividing by the total number of scaling items.

$$\frac{5+4+3+2+1}{5} = 3$$

Therefore, items with mean of 3 and above are regarded as accepted while items with less than 3 as mean are regarded as unaccepted.

IV. DATA PRESENTATION AND ANALYSIS

Table 4.1: The causes of obsolescence in Students’ Off-Campus Hostels in Ifite, Awka.

S/N	Statement	SA	A	U	D	SD	Mean	Decision
1	Physical wear and tear is a major cause of Obsolescence in Students’ Off-Campus Hostels in Ifite, Awka.	40	20	5	3	2	4.33	Accepted
2	Wrong Building Designs are the causes of Obsolescence in Students’ Off-Campus Hostels in Ifite, Awka.	25	15	1	24	5	3.45	Accepted
3	Technological Advancements are the causes of Obsolescence in Students’ Off-Campus Hostels in Ifite, Awka.	25	27	5	10	3	3.87	Accepted
4	Changes in the Economic Conditions are the causes of Obsolescence in Students’ Off-Campus Hostels in Ifite, Awka.	10	23	6	30	7	3.24	Accepted
5	Building Location/Neighborhood features are the causes of Obsolescence in Students’ Off-Campus Hostels in Ifite, Awka.	10	15	5	25	15	2.71	Rejected

The Table 4.1 above shows that most of the items in the questionnaire are accepted with a mean score above 3.0 which indicates that physical wear and tear, wrong building designs, technological advancements and changes in the economic conditions are the causes of Obsolescence in Students’ Off-Campus Hostels in Ifite, Awka.

Whereas, building Location/ Neighborhood features are not the causes of Obsolescence in Students’ Off-Campus Hostels in Ifite, Awka. It has a mean score below 3.0 which reflects the opinions of both registered professionals and caretakers.

Table 4.2: The influence and effects of obsolescence on rental values of Students’ Off-Campus Hostels in Ifite, Awka.

S/N	Statement	SA	A	U	D	SD	Mean	Decision
1	Obsolescence has a negative effect in rental values of Students’ Off-Campus Hostels in Ifite, Awka.	44	15	1	5	5	4.26	Accepted
2	Students’ Off-Campus Hostels in Ifite, Awka with evidenced obsolescence suffer loss of rent and do not command the full rental value.	30	25	5	5	5	4.00	Accepted
3	Students’ Off-Campus Hostels in Ifite, Awka with evidenced obsolescence suffer low demand for it in the form of voids.	24	30	0	10	6	3.80	Accepted

Table 4.2 above shows that most of the items in the questionnaire are accepted with a mean score above 3 which indicates that obsolescence has a negative effect in rental values of Students’ Off-Campus

Hostels in Ifite, Awka and they also suffer loss of rent and low demand.

Table 4.3: The predominant form of obsolescence present in Students’ Off-Campus Hostels in Ifite, Awka.

1	Economic Obsolescence is the major form of Obsolescence present in Students’ Off-Campus Hostels in Ifite, Awka.	5	30	6	24	5	3.10	Accepted
2	Functional Obsolescence is the major form of Obsolescence present in Students’ Off-Campus Hostels in Ifite, Awka.	18	25	4	21	2	3.51	Accepted
3	Aesthetic Obsolescence is the major form of Obsolescence present in Students’ Off-Campus Hostels in Ifite, Awka.	16	34	8	10	2	3.74	Accepted
4	Environmental Obsolescence is the major form of Obsolescence present in Students’ Off-Campus Hostels in Ifite, Awka.	5	25	2	33	5	2.90	Rejected
5	Legal And Social Obsolescence is the major form of Obsolescence present in Students’ Off-Campus Hostels in Ifite, Awka.	3	10	3	36	18	2.20	Rejected
6	Locational Obsolescence is the major form of Obsolescence present in Students’ Off-Campus Hostels in Ifite, Awka.	3	10	3	40	14	2.26	Rejected
7	Physical Obsolescence is the major form of Obsolescence present in Students’ Off-Campus Hostels in Ifite, Awka.	37	30	0	3	0	4.44	Accepted

The table 4.3 above shows that most of the items in the questionnaire are accepted with a mean score above 3 which indicates that the most predominant forms of obsolescence present in Students’ Off-Campus Hostels in Ifite, Awka are Physical

Obsolescence, Aesthetic Obsolescence, Functional Obsolescence and Economic Obsolescence respectively.

Table 4.4: The strategies for minimizing the rate of Obsolescence present in Students’ Off-Campus Hostels in Ifite, Awka.

S/N	Statement	SA	A	U	D	SD	Mean	Decision
1	The strategies for minimizing the rate of Obsolescence in Students’ Off-Campus Hostels in Ifite, Awka starts from the conceptual design stage	26	30	3	10	1	4.00	Accepted
2	Flexibility of use is a strategy for minimizing the rate of Obsolescence in Students’ Off-Campus Hostels in Ifite, Awka.	22	24	0	20	4	3.57	Accepted
3	Adapting property for another use in the form of historic value is a strategy for minimizing the rate of Obsolescence in Students’ Off-Campus Hostels in Ifite, Awka.	10	23	10	20	7	3.13	Accepted
4	The strategy for minimizing the rate of Obsolescence in Students’ Off-Campus Hostels in Ifite, Awka includes building separable components parts that can be replaced or maintained differently.	4	20	7	35	4	2.74	Rejected

5	Adhering to specification given and ensuring installation of quality components during the construction stage a strategy for minimizing the rate of Obsolescence in Students' Off-Campus Hostels in Ifite, Awka.	20	35	5	5	5	3.86	Accepted
6	Maintenance, repairs and Renovation are strategies for minimizing the rate of Obsolescence in Students' Off-Campus Hostels in Ifite, Awka.	51	19	0	0	0	4.73	Accepted

The Table 4.4 above shows that most of the items in the questionnaire are accepted with a mean score above 3 which indicates that Maintenance, repairs and renovation and conceptual design stage are the most effective ways of minimizing the effect of Obsolescence in Students' Off-Campus Hostels in Ifite, Awka.

- Summary of Findings

From the study, some major findings were made:

1. There are different causes of obsolescence in residential properties as well as factors that influence and affects its rental value, but physical wear and tear stands as the major cause of obsolescence in residential properties in students' off-campus hostels in Ifite, Awka and the major factor that influences its rental values. Based on the analysis of data gathered from the field, it can be seen that about 60 of the respondents agreed to the above findings and only just 5 of them disagreed with the statement.
2. That Obsolescence affects rental values of students' off-campus hostels in Ifite, Awka negatively in the form of loss of rent, also low demand in the form of void and properties not commanding the full rental value prevailing in the neighborhood.
3. That location is not the cause of obsolescence present in students' off-campus hostels in Ifite, Awka because Ifite is known for high valued properties and only a selected few are plagued with the other forms of obsolescence that affects its rental value.
4. The most effective strategies for minimizing the rate of Obsolescence in students' off-campus hostels in Ifite, Awka are Maintenance, repairs and Renovation and this has been noticed to be carried out recently by most property owners in the study area. Based on the analysis gathered

from the field, all 70 respondents agreed to the above findings.

CONCLUSION AND RECOMMENDATIONS

This research has shown that there is a strong relationship between obsolescence and residential property values and that that rental value is directly related to and affected by the degree of obsolescence seen or observed in a building. This study supplied significant data and information on the effect of obsolescence on rental value of students' off-campus hostels in Ifite, Awka. It concluded that physical wear and tear, wrong building design, technological advancement and changes in economic conditions significantly impacts obsolescence in buildings.

An equally important observation from this review is that most of the causes of obsolescence that may impact on residential property values fall under curable obsolescence, which can be mitigated by thoughtful and flexible designs as these will help to avoid functional obsolescence in the early life of the building. Also, efficient management and maintenance of the residential buildings by the property managers, if properly carried out can prolong both the physical and economic lives of the building. With that this study has been able to achieve its aim by solving the problem of loss of rent from students' off-campus hostels in Ifite, Awka.

Given that Obsolescence affects negatively the rental values of students' off-campus hostels in Ifite, Awka, the following steps should be adopted to solve problems of loss of rent:

1. It is recommended that maintenance culture and strategies should be improved upon. If maintenance is considered from the conceptual stage of building design, certain modalities will be put in place to elongate the service life of a structure. As it can be seen that loss of rent is one

of the many issues caused by obsolescence. Property managers and owners should ensure that there is periodic maintenance of properties in the study area, this will boost the maintenance culture and mitigate the effects of obsolescence.

2. Another recommendation is that proper feasibility and viability studies be carried out to help in decision making so as not to develop building(s) that are already oversupplied in the study area.
3. It is further recommended that owners/caretakers make plans and provisions for complete renovations and upgrade of facilities/utilities in the hostels every 3-5 years because it has been noticed that students have a poor culture of utilizing these hostels properly. This renovation will give the hostels an aesthetic and physical face-lift that will give them a chance to compete with newer hostels in terms of rental value.
4. It is also recommended that students' off-campus hostels in Ifite, Awka should be developed with flexibility of use. Properties that are flexible in use are not adversely affected with obsolescence because it can be remodeled to the current fashion in use or state of art.

REFERENCES

- [1] Barivole, D. I. (2019). Building maintainability: Causes Of Obsolescence and Its Possible Solution in Nigeria Buildings. *Journal of Environmental Sciences and Resources Management*. 11(3), Pp.7-10.
- [2] Bateman I, Day B, Lake I, Lovett A. (2001):*The effect of road traffic on residential property values: a literature review and hedonic pricing study* (Vol. 207). Scottish Executive.
- [3] Baum A. E. (1989): *An Examination of Property Investment Depreciation and Obsolescence*, university of Reading.
- [4] Baum A. E. (1991). Property Investment depreciation and Obsolescence.*Routledge, London*.
- [5] Baxter, P. A. (1982). Depreciation. *London: Nice and Maxwell*.
- [6] Bokhari, S., Geltner, D. (2014). Characteristics of Depreciation in Commercial and Multi-family Properties: An Investment Perspective. Available at <http://mitcre.edu/wp-content/uploads/2014/BGDepreciation-11302014.pdf>. Retrieved on 21/01/2022.
- [7] Boussabaine, A. H., and Kirkham, R. J. (2004). "Whole life-cycle costing: risk and riskresponses." Blackwell Publishing Ltd., Oxford.
- [8] Bryson, J. R. (1997): *Obsolescence and the procedure of Creative Reconstruction*, Urban Studies, 34(9), 1439 1458.
- [9] CALUS (1986). Depreciation of Commercial Property. *CALUS College or university of House Management, Reading, England*. in Standard Design Terrace Houses in Perale. Available at <http://www.ukessays.com/essays/property/a-study-of-building-obsolescence.php> retrieved on 21/01/2022.
- [10] Cheong, E.S. (2010): *A study of Building Obsolescence in Standard Design Terrace Houses in Perale*. Available at <http://www.ukessays.com/essays/property/a-studyof-building-obsolescence.php> retrieved on 28/09/2017.
- [11] Cowan, P. (1970). Obsolescence in the Built Environment: Some Ideas of Obsolescence. *Joint Unit for Planning research, London*. Report No. 2.
- [12] Flanagan, E.(1989). Obsolescence: Its Effect on property. *Saxon House and Lexington Catalogs, Farnborough*.
- [13] Jaeger W.K. (2006). The Effects Of Land-Use Regulations On Property Values
- [14] Mansfeild, J. R., Pinder, J. A. (2008). Economic and Functional Obsolescence: Their Characteristics and Impacts on Valuation Practice. *Property Management*, 26(3): 191-206
- [15] Medhurst (1969),: *Overcoming the Obsolescence, The Financial Times, 30th October*.
- [16] Nutt, B., Walkerm, B., Holiday, S. and Slars, D.(1976). Obsolescence in housing. *Saxon house, Farnborough*.
- [17] Ogumba, O. A.(2013). Principles and practice of property valuation in Nigeria. *Atlantis Books Ibadan*.
- [18] Raftery, J. (1991). Concepts of Building Economics: A Launch. *BSP Professional Literature, Oxford*.

- [20] Rand (1986): *Building Obsolescence and the Assessor*, The Journal of land and Open public Energy Economics, vol. 9.
- [21] Reed, R., Myers, G. W. (2010). Is Sustainability the 4th Form of Obsolescence? In: *Proceeding of 16th Pacific Rim Real Estate Society Conference, New Zealand*, January 24-27.
- [22] Ridker RG, Henning JA.(1967): *The determinants of residential property values with special reference to air pollution*. The Review of Economics and Statistics, 246257
- [23] Salway, F. (1986), *Depreciation of Commercial Property*, College or university of House Management, Reading.
- [24] Smith VK, Deyak TA. (1975): *Measuring the impact of air pollution on property values*. Journal of Regional Science. 1975; 15(3):277-288.
- [25] Smith, M.,Whitelegg, J., Willians, N. (1998). Materials Depth in the Built Environment. In *Greening the Built Environment, Earths can Magazines Ltd, London*.
- [26] Solution In Nigeria Buildings. *Journal of Environmental Sciences and Resources Management*. Page 7-10
- [27] Taylor, M. (2011). Obsolescence in buildings. *Research institute, England*.
- [28] Thomsen, A., Van der Flier, K. (2011). Understanding obsolescence: a conceptual model for buildings. *Building Research & Information*.39(4):352-362.
- [29] Thomsen, A., and Van der Flier, K. (2009). Replacement or renovation of dwellings: the relevance of a more sustainable approach. *Building Research & Information* 37(5-6), 649-659.
- [30] Winfrey, Robley (1985): *Statistical Analysis of Industrial Property Retirements* (Ames, Iowa: Engineering Experiment Station Bulletin 125, December).