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MAINTENANCE CULTURE OF RESIDENTS IN SOME SELECTED LOW COST HOUSING ESTATE IN LAGOS STATE

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Abstract: Building infrastructures is part of what provides people with shelter, protection and comfort in a country. It is one of the major factors for survival and wellbeing of people. It is therefore very important that the facilities of buildings be constantly preserved and maintained well to meet up with occupants satisfaction therefore meeting the purpose for which they were built and developed. for. The sample size is the total number of observations, population elements of sampling unit that are selected for investigation in the study. The sample size of this study was developed from 3 selected low cost housing estate within Lagos and a relatively 75 questionnaires was distributed to various residents for evaluation of maintenance practice. The following facts were discovered in the study that low grade materials are mostly used in construction of low cost building which leads to major deterioration in component of the building, poor contribution of professionals and stakeholders in the construction industry to training programs and strategies from the factors for the good maintenance practices were insignificant among others. The study further recommend the following facts: Training and retraining of artisans and craftsmen should be embraced an essential strategy, construction firms should invest in the training and retraining of their craftsmen to promote optimum performance while construction professionals and stakeholders should contribute to the skills acquisition programmes both onsite and offsite

1. Introduction

Housing is widely recognised as a human right. When it comes to finding adequate shelter that does not lead to financial difficulty low cost housing is adopted. Most low cost housing schemes and public residential housing in Lagos lack good maintenance culture in preserving the amenities in the buildings. [7-8] submitted that the decreasing maintenance practices in Lagos and its impact on low cost buildings and all other public properties have become a major problem to the government at various levels. The lack of maintenance in low cost housing has become a source of concern, such that realising that these buildings were developed with taxes paid to the government but after construction, they are less maintained and left to deteriorate and dilapidate. This proves that there is no agenda or plan to preserve and maintain the quality of the structures. According to Agbo [2] public residential properties rarely perform as well as desired because of neglect from the government [4-5].

The causes of maintenance problems also emanates from deficiencies in design, construction, bad contractors and use of low grade materials; many researchers have also observed that the generators of maintenance problems could be observed during the design stage and construction stage or they may be introduced while being used or as a result of the user's carefree attitude the usage stage or the user's carefree attitudes (i.e. bad maintenance culture) which eventually deteriorates the condition of the property [3,11-12]. According to [1]), housing is a unit of the environment of man that has a profound influence on health, social and economic values of a society; it is the best physical and historical evidence of civilisation in a country. A large percentage of a country's wealth is evident in the value of its public residential properties, it is also an important factor for the development of buildings to be highly maintained in the country.

The aim of this study is to evaluate the maintenance culture of residents in low cost housing estate in Lagos with a view to improving the efficiency of building maintenance in the public housing sector in Lagos State.

Stemming from the research questions and problems the study intends to meet the following objectives:

i. To identify factors leading to maintenance problems in low cost housing estates in Lagos state.

ii. To examine the state of condition of low cost housing buildings in Lagos state.

iii. To determine the strategy in improving the quality of low cost housing estate through improved maintenance practice

2. Materials And Methods

This study of the research comprises of the research design used in the study, it also outlines the study area and the study population used in arriving at the results, sample frame, sample size, sample technique and the method of data collection used during the research.

This chapter determines the processes for the evaluation of maintenance culture of residents in low cost housing estate, the results will determine the estimates that will determine the effectiveness of maintenance culture

The study area of this research is located in some selected low cost housing estates in Lagos state owned by the government. Lagos state was selected because of numerous low cost housing estates that were constructed for the creation to accommodation of public servants and the masses; it is meant to be maintained and managed by residents and the government.

The research study was be conducted in Lagos state which has a great number of government ministries with various organisations managing maintenance policies in low cost buildings. The design selected for this research study was determined by using various methods which include description method, explanatory exploratory survey method and survey design method to gather necessary data. Survey design will be used as the main research design to analyse the data collection, statistical tools such as tables, charts, and more were also employed.

According to [2]), population is the set of all units in which conclusion are to be drawn from an estimate. This is the study of a group of individuals taken from general population who share common characteristics such as age, sex, or occupation. The population for this study was be obtained from some selected low cost housing estates within Lagos state which has an estimate of over 1000 occupants reside in this low cost housing schemes which can be used to evaluate the level of maintenance culture on various buildings [1].

The sample size is the total number of observations and population elements of sampling unit that are selected for investigation in the study. The sample size of this study was obtained from 3

selected low cost housing estates within Lagos and 75 questionnaires were distributed to various residents for evaluation of their maintenance practices.

Sampling is a method of choosing sample units from an overall population for the purpose of its research study the random sampling technique would be used. Questionnaires would be distributed to residents of the selected low cost housing estates. The questionnaires comprises of 4 sections. Which identifies the objectives of the project?

There are various forms of data used in carrying out this study are the primary and secondary data, the primary data was gathered through questionnaires administered to various residents in low cost housing estate as they provide a degree of reliable responses towards the maintenance culture of the inhabitants. These questionnaires will be designed for the residents of these estates, they are structured in a simple way by addressing the objectives and demanding answers to the study questions. The secondary data is sourced from a review of relevant literatures, journals, thesis and related works from the internet for developing related information for the study.

The data and responses gathered through questionnaires and various forms of data collection schemes, were analysed through the use of statistical package for social science (SPSS) and statistical tables, charts. The Data analysis will focus primarily on the relative responses of occupants by percentages of respondents for each parameter and then reflected with clarity on charts to support the outcomes

3. Data Analysis, Presentation And Interpretation

This chapter presents an analysis, presentation and interpretation of the research findings obtained from the analysis of the study data. It is important for the accomplishment of the aim and objectives of this research study. This chapter focuses essentially on the primary data collected through the administration of a prepared questionnaire. This chapter is devoted to an analysis of data gathered with various techniques. The method of data presentation was done through effective data analysis using the SPSS software. The data was then presented in frequency distribution tables, and charts. In order to rank the highest and lowest factors, the relative agreement index (R.A.I). This is done to further analyse the collected data to see the relationships between variables of this research.

A total of seventy five (75) questionnaires were administered and exactly 62 responses were returned, this response rate translated to 82% of the sample size. Such response was very good according to Mugenda (2003), who showed that a response rate above 69% is very good and can lead to obtaining a favourable result in studies of this kind.

Table 1: Respondents Gender

Gender of respondent	Frequency	Percent (%)
Male	39	62.90%
Female	23	37.10%
Total	62	100

Source: Author's Field Survey 2018

The respondents indicated the genders in the questionnaires and the results obtained are recorded in Table 1. From these results, 62.90% of the responses were males as 37.10% were females.

The analysis showed some disparity among males and females on maintenance practices in residential buildings.

Table 2: Age Bracket

Age Bracket	Frequency	Percent (%)
18-25 years	10	16.12
26-35 years	11	17.74
36-45 years	21	33.87
46-55 years	15	24.19
56 years and above	5	8.06
Total	62	100

Source: Author's Field Survey 2018

The age bracket of the respondents was presented in Table 2. It shows that 33.87% of the total response are of the age group of 36 to 45 years of age. They were followed by those of the age bracket of 46 to 55 years, who formed 24.19%of the total respondents, those of age bracket 26 to 35 formed 17.74%, respondents from the age bracket of 18 to 25 formed 16.12% while only 8.06% were between the age bracket of 56 years and above. This implies that the age bracket spreads among various residents in low cost housing estate with majority of the residents being in the middle class age bracket and few in the over 55 years age bracket. This is a very good indicator that most of the residents are of mature and experienced minds.

Table 3: Type of Building

Type of Building	Frequency	Percent (%)
2-Bedroom bungalow	29	46.77
3-Bedroom bungalow	23	37.09
4-Bedroom bungalow	10	16.12
Total	62	100

Source: Author's Field Survey 2018

The result in table 3 shows the type of building of the respondents. It is obvious that the most of the residents reside in the 2-Bedroom bungalow with 46.77% followed by those who reside in the 3-Bedroom bungalow who formed (37.09%) while 16.12% of the residents occupy the 4-Bedroom bungalows. Most of the residents went for the 2-Bedroom bungalow because of the cost of these buildings.

Table 4: How long have you lived in the estate (in years)

How long have you lived in the estate (years)	Frequency	Percent (%)
1-2	4	6.45
3-4	13	20.96

5-6	20	32.25
Above 7	25	40.32
Total	62	100

Source: Author's Field Survey 2018

The result in table 4 identifies how long the respondents have lived in the estate. The results shows that most of the respondents have lived in the estate for at least above 7 years which formed 40.32% while some have resided in their buildings for about 5-6 years which covered 32.25% of the respondents while few of the respondents have lived for 1-2 years which forms 6.45% of the respondents.

Table 5: How often do you carry out maintenance works in your Building?

How often do you carry out maintenance works in your building	Frequency	Percent (%)
Regularly	3	4.83
Monthly	10	16.12
Quarterly	5	8.06
Yearly	13	20.96
Whenever there is fault	31	50.00
Total	62	100

Source: Author's Field Survey 2018

The table shows how often maintenance work is been carried out in the low cost buildings. This includes the following categories, regularly, maintenance, quarterly maintenance, monthly maintenance, yearly maintenance and whenever there is fault. Table 5 states that thirty one (31) 50% of the respondent selected whenever there is fault maintenance takes place in the building while thirteen (13) 20.96% responded to yearly maintenance is carried out in their building. Ten (10) 16.12% are the respondents of monthly maintenance. Ten (10) while 5 respondents indicated quarterly maintenance in their buildings and lastly three (3) 4.83% of the respondents went for regularly.

TABLE 6: Nature of Inspection of buildings in the Estates

Table 6 shows the frequency of regular inspection carried out. This ensures that the building doesn't deteriorate due to lack of maintenance. This shows the result of respondents for regular inspection in the buildings.

Regular inspection	Frequency	Valid Percent	Cumulative Percent
Yes	15	24.2	24.2
No	47	75.8	100.0
Total	62	100	

Source: Author's Field Survey 2018

Table 6 shows that 62 respondents responded to the question of regular inspection in their building. The table states that fifteen (15) 24.2% of the respondents are practicing building are practicing regular maintenance and forty seven (47) 75.8% of respondents do not practice regular inspection on their building.

TABLE 7: Tenure status

Tenure status	Frequency	Valid Percent	Cumulative Percent
Inherited	8	12.9	12.9
Rented	20	32.3	45.2
Mortgage	5	8.1	53.2
Owner occupied	29	46.8	100.0
Total	62	100.0	

Source: Author's Field Survey 2018

Table 7 shows that 62 respondents responded to the question of their tenure status in the estate. The table states that twenty (29) 46.8% of the respondents building are owner occupied while 20 of the respondents selected rented which is about 32.3% of the respondents, 8 of the respondents selected inherited as their tenure for tenure status which is about 12.9% of the respondents to the questionnaire and lastly five (5) 8.1% of the respondent selected mortgage.

TABLE 8: How much do you think you spend on the maintenance of your apartment on annual basis?

Amount spent on maintenance	Frequency	Valid Percent	Cumulative Percent
N0-N20000	28	45.2	45.2
N25000-N50000	19	30.6	75.8
N55000 -N100000	10	16.1	91.9
Above N100000	5	8.1	100.0
Total	62	100.0	

Source: Author's Field Survey 2018

Table 8 shows that 62 respondents responded to this question of amount spent in their building on maintenance. The table states that twenty eight (28) 45.2% of the respondents spend N0-N20000, 19 (30.6%) of the respondent spend 25000-50000 naira while 16.1% of the respondents spend 55000-10000 naira on maintenance of their apartments, lastly, 8.1% of the respondents selected above 100000 naira.

Table 9: Who is Responsible for the maintenance in the building?

Maintenance Responsibility	Frequency	Valid Percent	Cumulative Percent
Self	27	43.5	43.5
maintenance department	17	27.4	71.0
Total	62	100.0	

Source: Author's Field Survey 2018

Table 9 shows that 43.5% of the respondents carry out maintenance by themselves while 27.4% call on the maintenance department to carry out maintenance works. This shows that most maintenance works are mainly done by self and not the maintenance department.

Table 10 In your opinion is your building well maintained

Opinion	Frequency	Valid Percent	Cumulative Percent
Yes	17	27.4	27.4
No	45	72.6	100.0
Total	62	100.0	

Source: Author's Field Survey

Table 10 shows that 67.2% of the respondents selected "no" for their building not well maintained while 25.4% of the respondents selected "yes" indicating that their buildings are being well maintained. This shows that most of low cost housing estate are not well maintained

Factors Leading To Maintenance Problems In Low Cost Housing Estates

The result for means by the respondents is presented using the Relative Agreement Index (RAI) method, making use of the following formula: SA= Strongly Agree (5) A= Agree (4) N= Neutral (3) D= Disagree (2) Strongly Disagree (1)

From getting the Relative Agreement Index RAI factor, from the respondents are ranked accordingly into strongly agree, agree, strongly disagree and neutral.

Table 11: Factors Leading To Maintenance Problems

S/N	FACTORS LEADING TO MAINTENANCE PROBLEM	N	MEAN INDEX	RAI	RANK

1	The use of a low grade materials can cause damage to the building and its facilities	62	4.56	0.91	1st
2	Lack of skilled personnel in maintenance department in the estate	62	4.52	0.90	2nd
3	Insufficient funds	62	4.50	0.90	2nd
4	Lack of understanding and importance of maintenance in the building of maintenance work	62	4.47	0.89	3rd
5	Lack of successful maintenance programme by maintenance department	62	4.45	0.89	3rd
6	Lack of understanding and importance of maintenance in the building of maintenance work	62	4.45	0.89	3rd
7	Misuse by occupants of the building	62	4.39	0.88	4th
8	Technological change and fashion of building	62	4.32	0.86	5th
9	Poor or non-response of maintenance request of the building	62	4.32	0.86	5th
10	Technological change and fashion of building	62	4.32	0.86	5th
11	Non availability of replacement of elements and components	62	4.32	0.86	5th
12	Environmental/ climatic factors cause defect in the building	62	4.27	0.85	6th

Source: Author's Field Survey

Table 11 shows the factors leading to maintenance problems in the buildings. This table identifies the views of residents in low cost buildings on the factors leading maintenance problems. It can be seen that the use of low grade materials can cause damage to the building and the facilities were highly selected as the factor causing maintenance problems in the building since it gives the largest RAI value of (0.91). Lack of skilled personnel in the maintenance department in the estate is also required as a factor causing maintenance problem, thus coming second in the RAI marking with a value of (0.90). This is also followed by insufficient funds to solve maintenance problems, ranking second in the RAI value of (0.90). This is closely followed by Lack of understanding and importance of maintenance and this has a RAI of (0.89). This is also followed by the misuse by occupants of the building with corresponding RAI value of

(0.89). Lack of understanding and importance of maintenance in the building of maintenance work with RAI value of (0.89). This is followed by misuse by occupants of the building with RAI value of (0.88) ranking in as fourth (4th) while Poor or non-response of maintenance request of the building, Technological change and fashion of building and Non availability of replacement of elements and components rank fifth (5th) with RAI of (0.86) while in the lowest ranking is the Lack of successful maintenance programme by maintenance department with an RAI of 0.85. From the ranking it shows low grade Materials are mostly used in construction of low cost buildings which leads to major deterioration in components of the building.

Strategies For Improving Quality Low Cost Housing Estate

This section of the study assesses the strategies for improving maintenance management practices on low cost housing estates. The residents were given 10 strategies to choose between Not Significant and Very Significant concerning the states of the buildings. The significance of the variables used was tested with the aid of statistical tool. The variables were also ranked with the aid of the mean responses of the interviewed respondents. The result is presented below.

Table 12: Condition of Low Cost Building

S/N	STRATEGIES FOR IMPROVING MAINTENANCE MANAGEMENT	N	MEAN SCORE	RAI	RANK
1	Prompt response to reported defect in a building	62	1.63	0.33	1st
2	Adequate/appropriate maintenance of facility plant and equipment for maintenance operations	62	1.62	0.32	2nd
3	Performing inventory of all building components and assessing the conditions of buildings in the estate to help improve life span of structures	62	1.53	0.31	3rd
4	Involving appropriate maintenance personnel in decision making and in communicating buildings' needs in enhancing the quality of a building	62	1.50	0.30	4th
5	Planning strategically of preventive maintenance in the long- and short-term of buildings in the estate	62	1.50	0.30	4th
6	Systematically identify maintenance needs deficiencies and capital improvement needs at housing estate	62	1.50	0.30	4th
7	Availability of adequate maintenance funding for continuous improvement of the building	62	1.50	0.30	4th
8	Involvement of maintenance experts at the design stage	62	1.44	0.28	5th

9	Innovate support services	62	1.37	0.27	6th
10	Planned maintenance programmes	62	1.27	0.25	7th

From Table 12, based on the statistical analysis conducted on strategies for improving low cost housing estate maintenance management was the administering of questionnaires to the to the residents of the buildings. The t-test, the mean responses of 1.63, 1.62 and 1.53, indicate that the major three strategies for good maintenance practices on the buildings of the residents interviewed were Prompt response to reported defect in a building, Adequate/appropriate maintenance of facility plant and equipment for maintenance operations, Performing inventory of all building components and assessing the conditions of buildings in the estate to help improve life span of structures ranked 1st, 2nd and 3rd respectively. However, the least ranked strategy for good maintenance practices on the buildings were appropriate maintenance of facility plant and equipment for maintenance operations, long term innovative support services. However, considering the mean responses of the interviewed resident, from the t-test, all the other strategies from the mentioned two major factors for the good maintenance practices were insignificant. Afuye Funso (2016).

State Of Condition Of Low Cost Building

The table describes the state of condition of the buildings. The analysis of the result of this table was carried out using the relative agreement index (RAI) method with formula:

$$\frac{5VP+P+3VG+2G+1A}{5(VP+P+VG+G+A)}$$

Table 13 Condition of Low Cost Building

S/N	STATE OF CONDITION OF LOW COST BUILDING	N	MEAN	RAI	RANK
1	Water services	62	3.63	0.73	1st
2	Doors internal	62	3.47	0.69	2nd
3	Doors external	62	3.47	0.69	2nd
4	Stairs	62	3.35	0.67	3rd
5	Finishes	62	3.35	0.67	3rd
6	Beams	62	3.34	0.66	4th

7	Columns	62	3.34	0.66	4th
8	Windows	62	3.29	0.64	5th
9	Wailings	62	3.35	0.67	6th
10	Slabs	62	2.61	0.52	7th
11	Roofs	62	1.94	0.38	8th
12	Electrical installation	62	1.89	0.37	9th

RANKING Scale: Bad= 1; Very bad =2; Average=3; Good = 4; Very Good= 5

Source: Field Survey, 2018

Table 13 shows the state of components in the study area. The commonest defect was from the water services with RAI value of 0.73 as corroborated by the respondents. Door internals and door externals were ranked 2nd with RAI value of 0.69 while stairs and finishes were ranked 3rd with RAI value of 0.67, beams and columns were ranked 4th with RAI value of 0.66, windows was ranked 5th with RAI value of 0.64, while railings was ranked 6th with RAI value of 0.52, Slabs was ranked 7th with an RAI value of 0.52, roofs was ranked at 8th with RAI value of 0.38, while electrical installation was ranked 9th with RAI value of 0.37. This study reveals that the components and services of the buildings are of low grade materials which tend to deteriorate faster due to low maintenance.

4. Conclusion

The objectives initially set out at the beginning of the study has been achieved. The study found out that the following strategies could be adopted to promote performance they include the aim and objectives of the study have been achieved and the following conclusions were drawn;

i. The poor contribution of professionals and stakeholders in the construction industry to training programs has not being helpful to quality of skill acquired by artisans and craftsmen.

ii. The major critical success factors that influence productivity and incite performance in artisans and craftsmen are dependent on their financial satisfaction. Furthermore provision of incentives and motivation are very highly influential.

iii. Training in the construction industry is categorised under formal and informal, and in recent times, their efficiency is questionable due to the poor performance and failure of indigenous artisans and craftsmen to deliver.

Any method or strategy that is to be used or adopted to promote artisan and craftsmen performance has to be aimed at satisfying them

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