



SUSTAINABLE MANAGEMENT AND MAINTENANCE PRACTICES OF MULTIFAMILY-SHARED RESIDENTIAL BUILDINGS IN GHANA

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ABSTRACT

The development of more multifamily shared residential buildings (MFSRB) in Ghana demands the call for better management and maintenance of such facilities due to the fundamental challenges of the blend of individual and collective ownership. The Ghanaian culture of building maintenance has been poor and therefore, prudent management and maintenance of MFSRB is crucial. The study aims at answering the questions "To what extent do occupants adhere to the rules and regulations used in management and maintenance" and "What is the choice of maintenance strategies practiced by occupants". The Social Security and National Insurance Trust (SSNIT) MFSRB at Asuoyeboah in Kumasi was used as a case study. It is important to find out after about 30 years of operation, the management and maintenance challenges faced. The mixed method approach was adopted. Using simple random sampling in selecting the respondents, questionnaires were sent to 149 of the stakeholders: developer, management and occupants of the SSNIT MFSRB. 96 were returned and used for the analysis. This was supplemented by interviews with key informants purposively selected, coupled with site visits. The findings indicate that though most residents are not happy with the current management and maintenance practices, there is high hope for better collaboration among all stakeholders as it is the adoption of prudent management and maintenance practices that can help solve challenges. The results provide constructive information for SSNIT and other real estate developers who are ready to enter into the condominium market.

Keywords: *Maintenance, Management, Multifamily shared residential buildings (MFSRB), SSNIT, Ghana.*

1.0 INTRODUCTION

Multifamily shared housing living have a lot of advantages. However, its management is difficult as it involves a lot of planning, leading, organizing and controlling in order to achieve prudent management of the property. The entire management task can be carried out by a team of people or a property manager in the case of building managing companies. The ownership of the common elements is shared amongst the individual unit owners, as is the cost for their operation,



maintenance and ongoing replacement (Canada Mortgage and Housing Corporation - CMHC, 2009).

Though it is the ultimate dream of every developer to develop low maintenance buildings, maintenance free buildings have so far been an unattainable dream. Research by Yusif (1998) stated it has not yet been feasible to produce maintenance free buildings as all building elements deteriorate with time. For effective maintenance management, Kolawole (2002) advocated that maintenance should include the correct diagnosis of defects, current remedial measures, sound technical knowledge of material usage, management resources as well as the formulation and implementation of integrated plan and policies. Odediran et al., (2012) view maintenance as an essential variable in infrastructural wellbeing to preserve the value of an asset. This is even more so for multifamily shared residential buildings as according to Yip and Forrest (2002), the intrinsic contradictions embedded in the mix of individual and collective ownership of condominium units and its discouraging effect on participation of owners/residents in management; make the issue of management and maintenance very complex. However, effective building management and maintenance can minimise the operating and maintenance costs, while the building continues to function and operate efficiently (Ali et al., 2010).

2.0 Multifamily Shared Housing (Condominium)

As land becomes scarce due to urbanisation, the competitive use of land causes the land price to increase (Fisher and McPhail, 2014). This leads to the need for vertical growth instead of horizontal or sprawling growth. In Ghana, as the population increases through the years, the construction of medium rise multifamily shared residential buildings have also increased to meet the demand of increasing residents. Multifamily shared housing facilities include Condominiums, Housing Co-operatives and Undivided Co-ownership (Canada Mortgage and Housing Corporation - CMHC, 2009). However for the purpose of this research, Multifamily Shared Housing is limited to condominiums.

According to Fisher and McPhail (2014) the main characteristic of condominiums is individual ownership of an apartment along with shared responsibility for common property. The popularity of condominium living is a response to the need to increase densities and diversity, along with changing lifestyle requirements. A “condominium” refers to a form of legal ownership, as opposed to a style of construction. What defines a condominium is the form of ownership. It may be simply defined as an "apartment" that the resident owns as opposed to rents (CMHC, 2009). Dredge and Coiacetto (2011) indicated that, the popularity of condominiums is due to four major factors, namely, the need to increase densities through sustainable development, increasing demand for greater diversity in housing, urban renewal and regeneration in a climate of increasing land scarcity and lifestyle changes where condominiums provide a range of facilities. with today's need for housing of any kind, it takes no miracles to sell a condominium unit as condominiums seem to provide the perfect answer for the housing problems that face us today (Hanna, 2014; Jennings, 2014). Currently, the Social Security and National Insurance Trust MFSRB (SSNIT Flats) at Asuoyeboah in Kumasi are being operated as Condominiums.

2.1 Multifamily Shared Residential Buildings in Ghana

Multifamily shared residential buildings (condominiums) in the Ghanaian housing market is now being accepted as part of the measures to help reduce the national housing deficit due to the



patronage of many home owners. However, there is currently no condominium law in Ghana but different real estate developing companies come up with their own rules and regulations to provide for the management and maintenance of their multifamily shared residential buildings (Amankwah and Kootin-Sanwu, 2015). A multifamily shared residential building according to some critics is not the best option for every potential homeowner, since there could be noticeable lack of privacy in the common areas shared by owners. Those who would prefer to own all of their amenities may want to pursue single home ownership options (Boamah, 2012). Those who support the multifamily shared residential facilities system on the other hand argue that, the ownership style is most suitable for people who don't mind having close neighbours and persons who may not want to be bothered with maintenance, waste or other security issues. They also believe it can contribute to a more active lifestyle where residents are also each other's keeper (Tsikata, 2010).

There are various dimensions to the appropriateness of multifamily shared residential building to the Ghanaian housing market. Firstly, taking into account the income and poverty levels in the country, it can be a feasible option if mortgage systems are efficient, available and within the reach of the average Ghanaian. But this is relative as most real estate developers do not target the low income earners due to the high cost of construction (Boamah, 2012). Secondly, with the current economic situation, where most inhabitants stay out mostly for work, multifamily shared residential facilities will help ensure utmost security and peace of mind whilst away from home. In addition to these points, another crucial factor is the rift between landlords and tenants; hence, this ownership style could ensure more peace in homes and encourage more people to channel resources there (Tsikata, 2010). According to Hino and Liu (2011) in many countries, large populations, low availability of land and low affordability have led to condominium living being adopted

2.2 Housing delivery in Ghana and the role of Social Security and National Insurance Trust (SSNIT)

Though subsequent governments have been contributing their quota to solve the housing deficit problem, like many developing countries, Ghana has an inevitable housing problem (Ayeh-Solomon, 2003). Therefore, many Real Estate companies have been putting up buildings for sale to people who are ready to buy. Due to the problem of high cost of land especially in prime areas of our metropolis especially in Accra and Kumasi there is the need to develop proactive measures that will provide decent and affordable houses, thus the need to fully explore the multifamily shared residential facilities system (Boamah, 2012)..

The Social Security and National Insurance Trust (SSNIT) has been involved in the provision of real estate, both residential and commercial, for the population. It has developed estates in Dansoman, Adenta and Sakumono suburbs of Accra, Asuoeyebua in Kumasi, and in Takoradi, Sunyani and all regional capitals. The key aim of its housing programme were two; to provide a safe investment portfolio for workers' pensions and to provide rental accommodation to civil servants and other public sector workers at affordable rates(ssnit.org.gh). The Asuoeyeboah SSNIT multifamily shared residential facilities - Kumasi is a good example in Ghana of a multifamily shared residential facility and the fact that they have constructed more buildings over the years in many regional capitals in Ghana based on demand shows that the development



of multifamily shared residential facilities can be seen as a way of addressing the housing challenge.

The Asuyeboah SSNIT Flats in Kumasi consist of three storey and four storey structures which are rectangular in form. These individual structures are referred to as blocks. These blocks are further divided into apartments on each floor. In all, there are 554 flats in 23 blocks. Blocks 1-3, 8, 10 and 11 have 28 flats each. Blocks 14 - 23 have 16 flats each, whilst blocks 4-6, 9, 12 and 13 have a combination of 3 bedrooms, two bedrooms and bedsitters. The blocks which were built earlier have courtyards whereas those that were built later do not have the courtyard system. In the old blocks, there is also one balcony for each unit. The roof is made of corrugated aluminium sheets. The blocks also have parking spaces available which are more than adequate in size for the current population of the people in the flats with cars.



Plate 1: A view of one of the new blocks (Field Survey, 2014).



Plate 2: A view of some of the old blocks (Field Survey, 2014).

2.3 Maintenance of Multi Family Shared Residential Facilities

The maintenance of multifamily shared residential facilities is becoming an important issue in urban governance. Not only is it crucial to the wellbeing of urban development at the micro level, but it also helps home owners preserve the value of their asset. The problem of management and maintenance of multifamily shared residential facilities may be due to lack of funds, because some of the residents do not pay up their management fee. The residents may also be afraid that the money collected may not be well managed by the developers or property manager (CMHC, 2009). To achieve good maintenance, it is prudent to use Preventive maintenance (planned) which entails time-based maintenance requiring regular task of maintenance irrespective of the condition of the item and thirdly condition-based maintenance which also entails periodic inspection of equipment to check it and replace it when a faulty condition is observed before breakdown (Lind & Muyingo, 2009 and Aryee, 2011). Chan et. al. (2003) classified management of maintenance into four main categories: routine, corrective,



preventive, and emergency. Routine maintenance refers to the daily activities with repetitive nature, such as taking meter readings, lubricating, monitoring, start-up, and shut-down. Corrective maintenance works are scheduled or unscheduled activities to restore the equipment to as-built functions. Preventive maintenance includes scheduled activities of inspection, adjustment, replacement and overhaul to prevent system breakdown and extend its useful life. Emergency maintenance refers to immediate actions to avoid further equipment damage and adverse consequences, such as loss of business. According to Chanter and Swallow (1996) the different types of maintenance can be explained as: Unplanned maintenance, best described as Ad-hoc maintenance carried out to no predetermined plan. Planned maintenance; which is organised and carried out with forethought, control and the use of records to a predetermined plan. Corrective maintenance which is carried out after failure has occurred, and intended to restore an item to a state in which it can perform its required function. Preventive maintenance, that is, maintenance carried out at predetermined intervals, or corresponding to prescribed criteria, and intended to reduce the probability of failure, or the performance degradation of an item. Scheduled maintenance which is preventive maintenance carried out to a pre-determined interval of time, number of operations, mileage, etc. Condition-based maintenance, which is preventive maintenance initiated as a result of knowledge of the condition of an item from routine or continuous monitoring and Emergency maintenance which is conducted immediately there is a problem to avoid serious consequences.

3. RESEARCH METHODOLOGY

This study like other similar study on maintenance-related topics by Au-Yong et al. (2014), Nik Mat (2009) and Ali (2009) adopted mixed method approach. According to Yin (2009), the approach involves literature review, questionnaire survey, semi-structured interviews, and case study and it helps to address more complicated research questions and attain higher reliability and validity of the research. Simple random sampling was adopted to ensure the sample accuracy by selecting the respondents at random and by considering all elements in the population (Saris and Gallhofer, 2007).

Data gathering was limited to the key stakeholders namely, developer, management and occupants, as they are the target group whose activities will help in arriving at the right management and maintenance practices. In order to validate the questionnaire results, key informant interviews were conducted with two categories of informants (developer and the management) of the condominiums, in order to gain insight into the management and maintenance of the facility. Two Management members for SSNIT Multifamily shared facilities were selected through a non-probability, purposive sampling method. Face-to-face qualitative in-depth interviews were used especially in the case of the Estate Managers or officers of SSNIT and those who had purchased 3 blocks of flats from SSNIT the developer and are using it as official staff residence. As such, it was necessary to find out how these three bodies coordinate management and maintenance activities on site without overlapping or duplicating roles. Points that arose during the interview were noted. The outcome of the questionnaire survey was mapped against the findings of the site visits and interviews.



The case study used for the research was SSNIT multifamily shared buildings (Asuoyeboah). The total housing blocks were 23 with 554 individual units or flats. The sample size for the study was obtained by using the following formula (Yamane, 1967) as stated:

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

Where n = responses required, e = error limits (0.10) and N = sample population

The survey result was converted and analysed using Statistical Package for Social Science (SPSS) software. Reliability analysis was conducted for the various maintenance variables to enhance the reliability of the data. According to Leech et, al. (2011) the purpose of such an analysis is to help check the consistency of the scale of data. Cronbach's alpha test showed a coefficient of 0.872, making the results very reliable as a coefficient of more than 0.70 indicates good reliability.

4. RESULTS AND DISCUSSION

4.1 Demographic Variables

The respondents of the survey represented occupants of the SSNIT flats in 1 geographical location in Ghana, that is, Kumasi. 149 questionnaires were distributed and 96 were realised and used for the analysis. Figure 4.1 shows the respondents (stakeholders) breakdown.

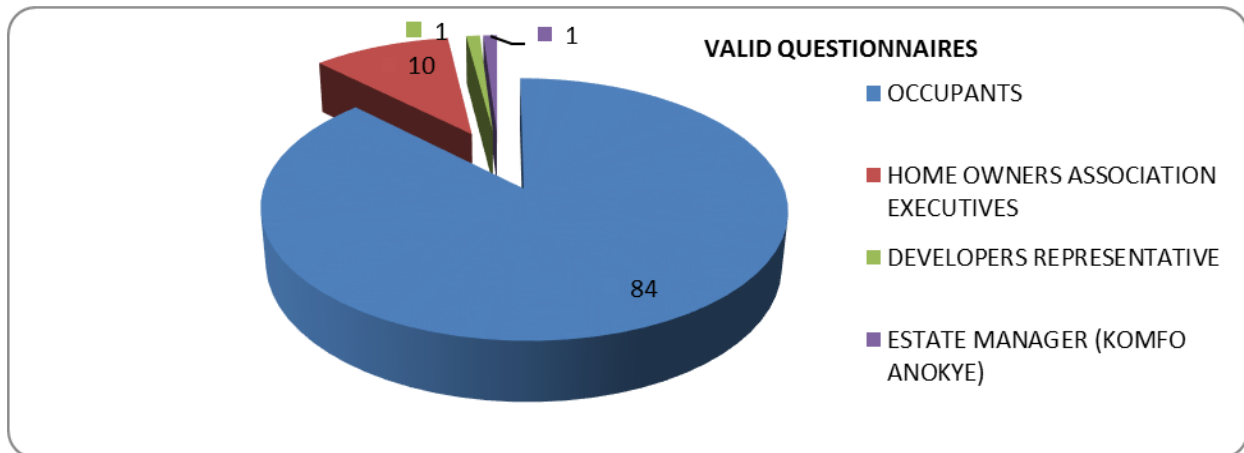


Figure 4.1 Breakdown of Respondents (Field Survey, 2014).

66 Out of the 96 respondents representing 68.8% were males whilst the remaining 30 were females. The job description of the respondents included; Educational sector (24%), Health sector (16.7%), Banking and finance sector (20.8%), Construction related jobs and Estate management (13.5%), Trading (5.2%) and Civil and Public servants (19.8%).

The years of stay of the various occupants ranged between 1-10 years and over. A total of 33.3% of respondents have been staying in the facility for between 2-5 years, 29 respondents for between 5-7 years, 12 respondents have been living there for between 7 - 10 years whilst only 4 respondents have stayed there for more than 10 years. An interview with the developer's representative indicated that all but 9 units out of the 554 units have been sold out. However, most of the homeowners have bought the units but are not living there themselves but have rather



rented it out to tenants. Of the 96 respondents, 63 representing 65.63% were tenants whilst 33 representing (34.37%) were home owners.

4.2 Extent of Occupants Adherence to the Rules and Regulations used in Management and Maintenance

Every multifamily shared housing unit is governed by its own unique rules, regulations and by-laws to ensure the good management and maintenance of the facility and to define the rights and obligations of the individual owners. With respect to rules regarding the individual owners, there may be restrictions regarding the number of occupants per unit, pets, noise, parking and when certain amenities may be used (Canada Mortgage and Housing Corporation - CMHC, 2009). *Therefore the first objective of the study was to find out if there are rules and regulations governing the management and maintenance of the facility and if so, to what extent do occupants adhere to these rules.* The study established that all the rules stated by CMHC (2009) pertain at the SSNIT Multifamily shared buildings with the exception of the restriction on the number of occupants per unit. The management style being practiced is a unique form of a combined Homeowners association and Developer joint management system with the developer having the higher say or authority. According to all the respondents, pets are not allowed whilst car parking is restricted to the block occupied by owners. Noise according to respondents is not tolerated. However, most respondents are not happy about the lack of recreational facilities especially for the children. 96% of respondents stated the occupants and home owners adhere to the rules regulating stay at the facility. All (100%) of the respondents admitted the developer or management does not have any insurance for the individual units and that individuals are expected to get their own insurance. Unfortunately no one checks if this is done and only about 6.25% of respondents admitted having insured their units. According to respondents, they cannot alter the appearance of their unit. Interviews with the Estate Manager of an organisation that has bought three of the blocks indicated that even though they have bought and are managing three of the blocks for their workers; they cannot on their own undertake any major maintenance work without the consent of the developer. However, minor maintenance works like repair of sinks, switches and pipe leakages do not need the clearance of the developer or management but can be tackled by homeowners or tenants. The developer's representative confirmed the assertion by Canada Mortgage and Housing Corporation - CMHC. (2009) that many of such facilities have strict rules concerning the alteration of the unit space or its appearance. For example, all the exterior doors of units are required to be of the same colour to keep the architectural and community aspect of the condominium intact. Additionally, there was the need for permission before a home owner can change exterior fixtures, especially as some changes may affect the aesthetics of the building.

The developer's representative stated that they do not tolerate changes that will affect the facade or the structural stability of the buildings. That aside, they allow changes to the interior spaces of the units but not the external views or common areas. The only thing that occupants have to do is to write and submit a drawing of intended alteration for careful study before permission is granted or declined. Permission is granted only if the said alteration involves walls that are not load bearing. Though about 65% of respondents stated the units are subject to ground rent, the developer's representative debunked this assertion by stating that (SSNIT) pays the ground rent but what home owners pay is rather the property rate. All residents agreed that they have to pay into a maintenance fund but further checks with the management indicated that the money



charged home owners are not enough to meet the maintenance obligations of management and in addition to that, people do not pay on time, or do not pay at all. When asked how management is able to fulfil all its management and maintenance obligations, management members stated when they exhaust the maintenance funds, "things are left undone." This attitude in the long run will compound issues because maintenance if left unattended to will lead to further deterioration and increased maintenance cost (Márquez, 2007).

The management (SSNIT and Homeowners Association) admitted they had a maintenance policy which is used to keep the buildings fit for use and preserve asset value. This they stated is enshrined in the rules and regulations guiding the use of the facilities in the Estate. Though the developer's representative stated they have a well-defined maintenance strategy in the form of curative maintenance activities, the Estate Manager of the organisation that has purchase three of the blocks indicated their maintenance strategy is through a formal reporting system by occupants. He stated they have a well-documented plan of the most cost effective way to maintain the value of their assets and that they undertake monitoring and evaluation of their asset through inventory taking and periodic inspection by their Estate team. He further stated they conducted periodic maintenance review. They also use a consultant when necessary to ensure continuous improvement and new technique utilisation in their maintenance management practices. He however admitted they do not take an asset life cycle analysis before new parts or components are installed to ensure asset optimization, or use of any computerised maintenance management system. They however rely on the organisation's in-house technical staff for their repairs. On how he rates the management and maintenance of the facilities, he stated it was expensive.

The management on the other hand indicated they do not have a well-documented plan of the most cost effective way to maintain the value of their assets, and that monitoring and evaluation by Homeowners Association is used to assess and control maintenance execution. They do not take any asset life cycle analysis before new parts or components are purchased and installed to ensure asset optimisation, neither do they make use of any computerised maintenance management system. The developer's representative admitted they no longer conduct periodic maintenance review of the facility as they have left that to the Homeowners Association. It further came to light that decisions of the Homeowners Association are used to ensure continuous improvement and new technique utilisation in the maintenance management practices. Apart from plumbing works which is a high weak point in the maintenance management for which reason they have in-house plumbers, all other maintenance works are out-sourced. When asked how they rated the management and maintenance of the facilities, the management team stated it is very expensive. The high weak point in the maintenance management of the facilities they all agreed is the roofing and plumbing systems.

4.3 Choice of Maintenance Types Practiced by Occupants

Maintenance cannot be avoided as there is no maintenance free building Yusif (1998). Thus the growing significance of building maintenance has generated an increasing interest in developing planned maintenance management procedures to improve building performance (Ahmad, 2006). This is because buildings deteriorate from the moment they are constructed (Canada Mortgage and Housing Corporation – CMHC, 2009). Therefore Ali et. al. (2010) indicated expenditure on



building maintenance should be optimised through a practical maintenance management system. The second objective of the study was to determine if the occupants and management were ensuring good maintenance management practices at the SSNIT Multifamily shared housing. Research shows that buildings that are not well maintained will cease to fulfil their intended functions, whereas regular maintenance can prolong the useful life-time of a building (Márquez, 2007). A cross tabulation of the variables were done to find out the effect of the years of stay at the facility and the level of education of respondents on choice of maintenance type to ascertain if these have an influence on the choice of maintenance type practiced. The results indicated that, all the type of maintenance works undertaken is significantly influenced by and highly dependent on both the years of stay and level of education of respondents, with $P < (0.005)$, that is at 5% confidence level. This indicates a strong relationship amongst them.

Table 4.2 Chi-square Tests of Level of Education and Years of Staying at the Facility on Type of Maintenance Practices

	Chi-Square Education Maintenance Practice	Tests and Practice	(Level of Type	of at the Facility and Type of Maintenance Practice	Chi-Square Tests (Years of Stay at the Facility and Type of Maintenance Practice	Tests (Years of Stay at the Facility and Type of Maintenance Practice
	Value	df	Asymp. Sig. (2- sided)	Value	df	Asymp. Sig. (2- sided)
Pearson Chi-Square	1.758E2 ^a	3	.000	92.649	36	.000
Likelihood Ratio	94.245	3	.000	84.712	36	.000
Linear-by-Linear Association	19.830	1	.000	4.392	1	.036
N of Valid Cases	96			96		

(Field Survey, May 2014).

Respondents were asked to tick the type or types of maintenance they are practicing. According to Figure 4.2, 38 respondents practiced unplanned, corrective and emergency maintenance. It is these substantial weaknesses in the procedures that have created problems with the existing and proposed building maintenance management procedure, causing their inability to improve the existing systems. Only 4% of respondents practiced planned maintenance. Preventive 3%, Conditioned Base 3%, Emergency 15%, Corrective maintenance 18%, Unplanned, Corrective and Emergency 40%, Preventive, Scheduled and Emergency 5%, Unplanned and Corrective 4%, Unplanned, Corrective, Condition Based and Emergency 4%, and Planned, Corrective, Scheduled and Emergency 4%. This indicates that the maintenance management system being practiced is reactive and not planned preventive maintenance to help prolong the life of building components as advocated by Ali et, al. (2010) and Marquez (2007). However, the findings supported the assertion by Syamilah (2006) and Mohd Zulakhmar (2006) that most often than not, maintenance practices are reactive and condition based. Due to poor maintenance practices, most of the respondent agreed the facility is performing below their expectations. Respondents stated they would like to be involved in the choice of maintenance decisions to ensure that their satisfaction is taken into account. Such a system will enhance the satisfaction, and efficiency of maintenance activities. The findings showed that the maintenance management system currently being practiced is piecemeal. According to respondents, this situation is due to failure to execute



maintenance at the right time. The management team however indicated that this has to do with the lack of funds to undertake maintenance at the right time as most occupants refuse to pay their maintenance fees on time or not at all. This supports the assertion by El-Haram and Honer (2002) and Ali et al. (2010), that the quality of maintenance activities is influenced by the amount of budget allocation in each task.

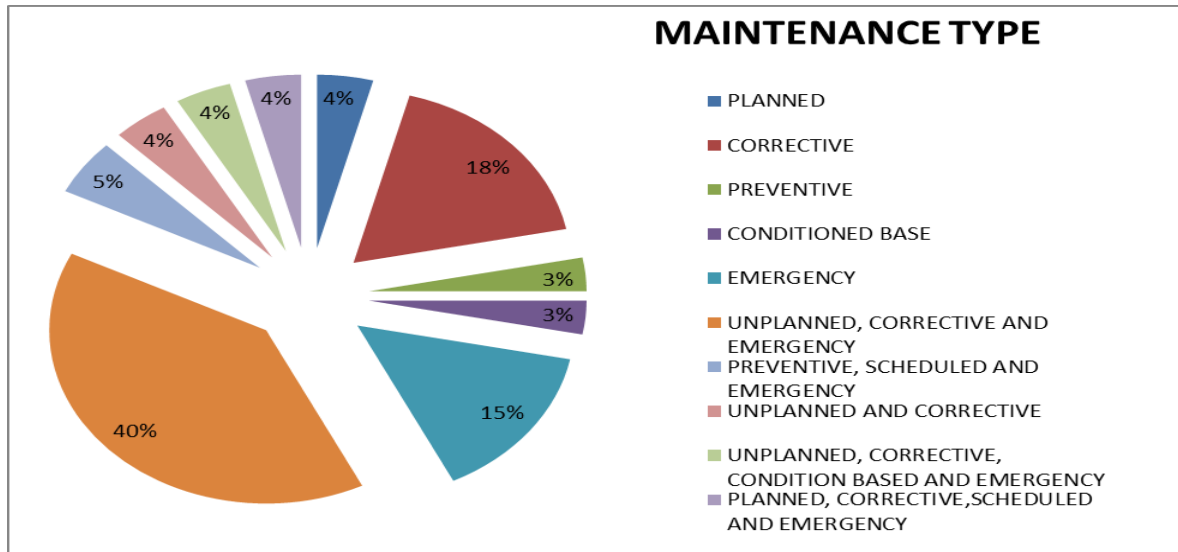


Fig 4.2 Choice of Maintenance Type Being Practiced by Occupants at the SSNIT Multifamily Shared Facilities (Field Survey, May 2014).

The Homeowners Association executives also believe in the need to increase the maintenance fees being charged in order to effectively address maintenance management challenges. But the sad thing on the ground is that, that which they deem low is not paid on time by the occupants. As such, this leads to failure to execute maintenance work on time. The correlation between the two factors is supported by El-Haram and Honer (2002) who stated most often than not, failure to execute maintenance is due to budgetary constraints. This in the long run leads to the situation where an additional cost is incurred later to address the same maintenance works.

CONCLUSION

Though it is best practice to have a well-planned and thought through management and maintenance system, the study established the SSNIT Multifamily shared buildings have a lot of deficiencies in the ways in which the management and maintenance activities are being addressed. Most of the respondents (63.5%) indicated they were not satisfied with the management and maintenance practices at the SSNIT Multifamily share residential buildings.

Secondly, though most tenants and owners may not find it convenient, for proper monitoring and evaluation, there is the need for an annual physical inspection of each dwelling unit. This must take into consideration; plaster defects, paint deterioration, roof deterioration, overloading of electric circuits, corrosion, defective plumbing and the deterioration of windows and doors among others. Processes should be in place to ensure that all required repairs and replacements have been carried out within a reasonable time.



Government: There is need for government to pass a Condominium Law to regulate the operation and management of multifamily shared residential properties to ease the anxieties of occupants of such buildings on the maintenance and management of such properties.

Developer: There must be sustainability in the way the multifamily residential buildings are designed, built and maintained to cut down on running cost. This will ensure occupants satisfaction and comfort by making it economical to operate while conserving resources in its design, construction, and operation.

Management: It is recommended that a third-party management system be put in place to manage and maintain the facilities. Secondly, for effective maintenance management, there is the need to adopt computerized maintenance systems or e-maintenance practices. Prudent management and maintenance can be achieved through the use of both active and passive solar power as well as natural ventilation to help reduce cooling cost and energy demand and add value to the property, the installation of water-efficient plumbing such as low-flush toilets, efficient showers and sinks to save significant amounts of water and through landscaping that reduces the heat island effect and low-energy windows. However, in the long term the success of the buildings depends largely on how the occupants will maintain and keep the place because the more the age of the building, the higher the probability of it requiring maintenance.

Occupants: Occupants should give their highest cooperation to the developer and management (Block Heads) in taking care of the facilities provided. This can be done if they pay the management and maintenance fees in a timely manner and comply with the rules and regulations provided by SSNIT (the developer) and any other rules as provided by the executives of the Homeowners Association. Secondly, occupants should respect and accept their neighbours' needs of privacy, comfort, and convenience.

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