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Client Satisfaction with Public Housing Maintenance Contractors: A Case Study of Nairobi City County

Muthoga, M. W.

Department of Landscape Architecture and Quantity Surveying BA ISAGO University, Gaborone, Botswana

Abstract
Coupled with the challenge of housing shortage in view of the growing urban population in Nairobi City County currently at 4.4 Million, the public housing sector is faced with deteriorating quality housing particularly for the low income residents and Public residential units, characterized by a poor state of maintenance. The foregoing points to an infringement of the right of access to adequate and decent housing as a basic right for every Kenyan as entrenched in the bill of rights in the constitution of Kenya, 2010. In an effort to transform the foregoing scenario, the County Government of Nairobi, through its Urban Renewal, Housing and Projects Management sector procures maintenance and other technical services from private sector contractors for renovation of old NCCG housing units and public housing amenities including water and sanitation, among other services. It however remains unexplored in the Kenyan body of knowledge, the extent to which NCCG is satisfied with the maintenance services by private contractors. Against this backdrop, the study set out to assess client satisfaction with public housing maintenance contractors with reference to Nairobi City County. The study adopted the descriptive study design, sampling 43 staff from NCCG's, Urban Renewal, Housing and Projects Management sector. data was collected by use of structured questionnaires and analyzed by descriptive and inferential statistics. Findings indicate that the maintenance strategy adopted has a significant effect (β=.332, P value=.050=.05) on client satisfaction with service delivery by public housing maintenance contractors. The study however found that the procurement method adopted does not have a significant effect (β=.078, P value=.639>.05) on client satisfaction with service delivery by public housing maintenance contractors. The study recommends a combination of preventive, predictive and condition-based maintenance as they assure the longevity of public houses and avoidance of longer term costly and frequent renovations.

Keywords: OOS, Client Satisfaction, Maintenance Strategy, Procurement Method.

1. Introduction

Provision of quality and affordable housing remains one of the most pressing and key most mandates by county governments in Kenya in general, and the Nairobi City County government in particular, owing to the growing demand for housing in the country's most populous city. The importance of housing in the country is particularly highlighted in the *'Big Four'* Agenda by the Office of the President (2017), which focuses on key basic needs that are critical in uplifting the standard of living of Kenyans on the path to becoming an upper middle-income country by 2030. These include: affordable and decent housing, affordable healthcare, food and nutritional security and employment creation through manufacturing.

Accordingly, the Nairobi City County government stipulates as part of their sectoral responsibilities under the Urban Renewal, Housing and Projects Management sector, affordable low cost housing provision through appropriate partnerships, innovative strategies, smart programming in line with Article 43 of the Constitution concerning economic and social rights as pertains to access to adequate housing and proper sanitation. More specifically, the sector is charged with the facilitation of development of decent and affordable housing units within Nairobi City County in support of Agenda 4 plan on provision of affordable housing; improvement of security of tenure and living conditions in informal settlements; improvement of habitability of County rental houses/estates; reversal and prevention of urban degeneration at the local

places; and revitalizing, redeveloping and regenerating declining/declined urban localities like old county government housing estates (Nairobi City County Government (NCCG), 2020).

Within the social context, a decent and adequate house accords dignity, protection from adverse weather conditions, security of persons and their property, comfort and privacy to the individual, family and the community as a whole (Government of Kenya (GoK), 2004). Adesoji (2011) particularly underscores the importance of condition and quality of public housing and buildings in portraying the pride, prosperity and uniqueness of a community as opposed to dilapidated buildings and decaying environments which contribute in depressing quality of life and enhancing anti-social behavior, thus justifying the importance of maintaining public houses and buildings to any economy. Accordingly, county laws by NCCG (2020) require under General Nuisance Section, that property owners within Nairobi City County to repair or maintain their premises after every two years to meet the prescribed health and quality standards.

Most governments in their quest to provide housing for their citizens have over concentrated in production of housing stock while maintaining the existing stock has not received much attention, resulting in dilapidated housing units and particularly those that are government owned (UN-Habitat, 2017). Consequently, most public housing projects in Africa, particularly in urban centers end up exhibiting informal settlements characteristics highlighted by poor or lack of access to water, sanitation, refuse collection and collapsing roofing among others. The challenge of housing shortage and constraint as well as the deplorable state of existing stock necessitates management, restoration and modernization of existing housing stock for use by future urban migrants in addition to production of additional stock (UN-Habitat, 2018).

In Kenya, most public housing projects have suffered lack of maintenance which is manifested in public housing in all major urban centers, confirming declining investments in the maintenance of public housing estates (Hope, 2012). This has resulted in deterioration of surrounding buildings and services due to lack of maintenance and unattended wear and tear caused by negligence by the responsible local authorities and government agencies responsible. As such, coupled with the challenge of housing shortage in view of the growing urban population in Nairobi City County which is currently at 4.4 million according to the recent population and housing census report (Kenya National Bureau of Statistics (KNBS), 2019), the public housing sector is faced with deteriorating quality housing particularly for the low income residents and Public residential units, characterized by a poor state of maintenance. The foregoing points to an infringement of the right of access to adequate housing as a basic right for every Kenyan as entrenched in the bill of rights in the current constitution of Kenya (GoK, 2010).

In an effort to transform the foregoing scenario, the County Government of Nairobi, through its Urban Renewal, Housing and Projects Management sector procures maintenance and other technical services from private sector contractors for renovation of old NCCG housing units and public housing amenities including water and sanitation, among other services. It however remains unexplored in the Kenyan body of knowledge, the extent to which NCCG is satisfied with the maintenance services by private contractors, warranting the present study. The study particularly sought to establish the housing maintenance strategies adopted by NCCG; to examine the procurement methods adopted by NCCG for housing maintenance contractors; to determine the effect of maintenance strategy on client satisfaction with service delivery by public housing maintenance contractors; and to assess the effect of procurement method on client satisfaction with service delivery by public housing maintenance contractors.

2. Literature Review

Different maintenance practices have been explored in published literature globally, regionally and in the Kenyan context with reference to public housing. Sharp and Jones (2012) observe in their desktop review on perceived inefficiency in public housing maintenance that maintenance personnel choose different maintenance strategies depending on allocation maintenance resources. The study argued that maintenance policies ought to integrate different strategic approaches, which include corrective, preventive and condition-based maintenance. On their part, Walker and Van der Zon (2016) found in their assessment of the performance of public housing organisations in England and the Netherlands that the main types of categories of maintenance consisted of reactive, preventive, predictive and proactive maintenance. However, Walker and Van der Zon (2016) argue in addition that the maintenance strategies should be based on the detailed design of the maintenance cycle for different types of organisations.

In an assessment of maintenance of government bungalows in Ghana with reference to the Kwame Nkrumah University of Science and Technology, Bennel-Yinteman (2018) split the maintenance strategy of public housing projects into five types, including time-based, performance-based, breakdown-based, renovation-based and integration-based. The time-based, performance-based, breakdown-based, renovation-based and integration-based are also developed from the three basic maintenance strategies that is preventive, corrective and condition-based maintenance. Furthermore, Tse (2014) observes that in Hong Kong, the public housing maintenance practices are failure-driven, time-based, condition-based, reliability-centered and predictive.

In Tanzania, Kanuti and Alananga (2017) assessed the occupiers' Maintenance Initiatives in Government Owned Housing Units in Dar es Salaam Tanzania. Findings indicate that occupiers' maintenance initiative significantly improves building condition but such improvement is biased towards structural defects rather than facilities. An occupier undertaking maintenance initiatives has 89 percent chance of improving the overall building condition above average than if she/he did not. Occupiers' initiatives are however biased in favour of accommodative rather than adaptive maintenance and there is limited creativity in occupier's maintenance strategies.

A review of empirical studies globally, regionally and in the Kenya context further point to an overall dissatisfaction with the maintenance services in public housing. According to Gahlot (2006), repair and maintenance of dwellings is one of the most challenging elements of the public housing service. Repair and maintenance usually accounts for the largest proportion of local authority housing management expenditure. In recent years, the local authority housing repairs and maintenance service has been subject of widespread criticism for high cost, inefficiency and slowness in carrying out repairs. Acknowledging that many governments are grappling with maintenance of buildings, and particularly public housing, Gahlot (2006) makes reference to a report published in 1986 by the Audit Commission on Managing the Crisis in Council Houses in India, which estimated that 85 per cent of the 5 million council houses were in need of repair and improvement. This confirms that the Government of India is faced with the challenge of maintaining public housing.

Also in India, Guha (2006) observes that the classification of housing estates into various types and groups of housing units also contributes to poor maintenance of housing units. For instance, those categorized under rental basis and developed by Government and semi-government institutions are characterized by economical rents that remain static for several years resulting in shrinking of the maintenance budget, amidst increasing price levels of maintenance materials resulting in increased maintenance costs. As a result, the houses suffer from inadequate maintenance creating conditions for early decay and damage. This situation is further complicated by grouping of housing units into heterogeneous groups based on incomes of the occupants. These groupings are common with government developed housing units, and contribute in making maintenance and servicing of these housing estate difficult due to varying tastes, standards of living, incomes and paying capacities.

In the United Kingdom, Cooper (2015) explores the viability of integrating the sustainability agenda with social housing maintenance decision making in order that the sustainability of existing social housing stock can be improved through planned maintenance and refurbishment. The study argues that the current single criterion, conditioned based approach to maintenance planning does not support the continuous improvement in sustainability of social housing. Furthermore, it argues that a new, multi-criteria approach to maintenance planning is needed based upon the performance of a home in-use rather than its condition.

In Sweden, Muyingo (2016) assessed property management and maintenance in the multifamily public housing sector in Sweden and found that models of maintenance planning in other industries can to some extent be applied to building maintenance. However, building characteristics call for a strategy that allows for the continuous adjustment of maintenance plans based on a well maintained decision support system in the company or tenant-owner cooperatives.

In Nigeria, Adesoji (2011) confirms that public housing conditions in Nigeria are unsatisfactory. The study attributed one of the major factors responsible for poor housing conditions and discontent among many public housing tenants to the low level of commitment by Housing Authority in ensuring housing

improvement. The study recommends for serious government intervention in collaboration with other stakeholders to develop appropriate housing maintenance and improvement strategies. It also recommends the use of an appropriate approach that involves the users and considers their inputs to enable both tenants and planners jointly determine and judge the performance of existing development and improvement.

In Ghana, Issahaku (2013) evaluated in a descriptive study, the maintenance management practices in Ghana with reference to Highway Authority's bungalows in greater Accra region. Findings reveal that the analysis revealed the operational state of bungalows in Accra as very bad. It was observed that there is no significant difference in the perception of the maintenance staff and users as to the operational state. However, the study found a significant difference in the operational state of the old and the new generation bungalows as the study revealed that the components and services of the buildings of the new generation bungalows are in better operational state than those of the old generation bungalows. Maintenance officers ranked attitude of users and misuse of facilities as the most significant factors affecting maintenance management of bungalows while users of the buildings ranked lack of discernable maintenance culture in the country as the most significant factor responsible for poor maintenance management practices of bungalows.

In Kenya, Matindi (2013) carried out in a descriptive study, an investigation on the influence of housing maintenance-culture in the management of public housing in Nairobi. Targeting staff at the Government Estate Department of the Ministry of Housing, the study found out that maintenance of public houses was not accorded the priority it deserved; the ministry of housing was characterized by bureaucratic structures, systems and processes which contributed to underperformance; organizational structure, governance culture, and employee culture highly influenced maintenance of public housing; and that lack of trained and qualified maintenance personnel would adversely affect proper housing maintenance. The study recommends the government should review its housing maintenance organizational policy to ensure that the bureaucratic elements are reduced; should review the housing maintenance legislative framework to ensure effective housing maintenance; and ensuring deployment of appropriate and adequate personnel within the maintenance docket.

3. Research Methodology

Grounded on the positivist philosophy, the study adopted the descriptive survey design. The target population comprised of the 48 staff at the NCCG's, Urban Renewal, Housing and Projects Management sector as presented in Table 3.1.

Table 3.1 Target Population

Position	**Population**	**% Proportion**
Senior Administrative Staff	6	12.5
Middle Level Administrative Staff	12	25
Action Officers	30	62.5
Total	**48**	**100**

The study employed the Yamane (2018) formula to obtain a representative sample size as follows:

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

Where;
N= population size
e= Tolerance at desired level of confidence, take 0.05 at 95% confidence level
n= sample size.
How the formula is used is shown below:
n=48/(1+(48*0.05*0.05))
n=43

The determined sample size was 43, who selected based on the proportionate stratified random sampling technique as demonstrated in Table 3.2.

Table 3.2 Sample Determination

Position	Population	Sample	% Proportion
Senior Administrative Staff	6	5	12.5
Middle Level Administrative Staff	12	11	25
Action Officers	30	27	62.5
Total	**48**	**43**	**100**

The study relied on primary quantitative data, collected by use of structured questionnaires. Reliability of the questionnaires was determined by Cronbach Alpha coefficients with the threshold set at 0.7. To this end, all scales were found reliable. The study further ensured content and construct validity by cross-checking the questionnaire items with previous related studies. Both descriptive and inferential statistics were employed in data analysis, aided by the Statistical Package for Social Sciences (SPSS), version 25. Descriptive statistics entailed the use of frequencies, percentages, means and standard deviations. Inferential statistics on the other hand involved both the Pearson product moment correlation and multiple regression analysis, employing the following model:

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \varepsilon$

Where:

Y = Client Satisfaction

β_0 = Constant Term;

$\beta_1 - \beta_2$ = Beta coefficients;

X_1= Maintenance strategy;

X_2 = Procurement method;

ε = Error term

4. Results

The study set out to assess client satisfaction with housing maintenance service providers with reference to Nairobi City County. More specifically, the study sought to establish the housing maintenance strategies adopted by NCCG; to examine the procurement methods adopted by NCCG for housing maintenance; to determine the effect of maintenance strategy on client satisfaction with service delivery by public housing maintenance contractors; and to assess the effect of procurement method on client satisfaction with service delivery by public housing maintenance contractors.

The study achieved an excellent response rate at 88.4% with 38 respondents reached out of the 43 targeted (Table 4.1). This is considered excellent by Creswell (2013) who postulates that a response rate of 50% is adequate for analysis and reporting; a rate of 60% is good and a response rate of 70% and over is excellent. This is consistent with Fowler (1984) who suggests that a response rate of 60% is representative of the population of the study.

Table 4.1: Response Rate

Questionnaires	Frequency	Percent (%)
Returned	38	88.4
Unreturned	5	11.6
Distributed	**43**	**100.0**

Source: Survey Data (2020)

4.1 Housing Maintenance Strategies Adopted by NCCG

The study sought to establish the housing maintenance strategies adopted by NCCG. To this end, respondents were asked to indicate the extent to which the institution adopted various maintenance strategies

posed, on a 5-Point Likert scale, where 1= Not at all; 2 = A Small Extent; 3 = Moderate Extent; 4 = Great Extent; 5 = Very Great Extent. Findings are as presented in Table 4.2.

Table 4.2: Maintenance Strategy

	Mean	**Std. Dev**
Corrective maintenance	4.2632	.64449
Preventive maintenance	2.4474	.89132
Condition-based maintenance	3.6053	.71809
Predictive maintenance	2.2368	.97077

Source: Survey Data (2020)

A majority of respondents indicated that the corrective (4.2632) and condition-based (3.6053) maintenance strategies are the most prevalently used in the institution. Both preventive (2.4474) and predictive (2.2368) maintenance strategies were found to be used only to a moderate extent. It can be deduced from the finding that the most prevalently used housing maintenance strategy by NCCG is both corrective and condition-based.

4.2 Procurement Methods Adopted by NCCG for Housing Maintenance

The study sought to examine the procurement methods adopted by NCCG for housing maintenance. To this end, respondents were asked to indicate the extent to which the institution adopted various procurement methods posed. This was also on a 5-Point Likert scale, where 1= Not at all; 2 = A Small Extent; 3 = Moderate Extent; 4 = Great Extent; 5 = Very Great Extent. Findings are as presented in Table 4.3.

Table 4.3: Procurement Method

	Mean	**Std. Deviation**
Preferred contractor list	2.8947	1.03426
Competitive bidding	3.7368	1.20100
Selective tendering	4.1316	.96341
Partnering	3.3421	.70811

Source: Survey Data (2020)

The study established that the most commonly used procurement method for housing maintenance contractors is selective tendering (4.1316) followed by competitive bidding (3.7368). Partnering (3.3421) and preferred contractor list (2.8947) is applied in the institution only to a moderate extent. The finding is of the implication that at NCCG, both selective tendering and competitive bidding are the most preferred procurement methods for housing maintenance contractors.

4.3 Client Satisfaction with Service Delivery by public housing maintenance contractors

The study further sought to assess client satisfaction with service delivery by public housing maintenance contractors. Respondents were therefore asked to indicate the respective levels of agreement with pertinent statements posed, on a 5-Point Likert scale, where 1= Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree. Findings are as presented in Table 4.4.

Table 4.4: Client Satisfaction

	Mean	**Std. Dev**
The number of tenant complaints have reduced as a result of maintenance contractors' services	2.9474	.95712
The rate of wear in public housing has reduced as a result of maintenance contractors' services	2.8684	.77707
The time span between maintenance has become longer as a result of maintenance contractors' services	2.7368	.68514
Aggregate Mean	**2.851**	

Source: Survey Data (2020)

A majority of respondents only moderately agreed to the pertinent statements posed to the effect of client satisfaction with service delivery by public housing maintenance contractors (2.851). More specifically, a majority of respondents moderately agreed that the number of tenant complaints have reduced as a result of maintenance contractors' services (2.9474); that the rate of wear in public housing has reduced as a result of maintenance contractors' services (2.8684); and that the time span between maintenance has become longer as a result of maintenance contractors' services (2.7368). It can therefore be deduced that there are moderate levels of satisfaction among staff at NCCG with regard to service delivery by public housing maintenance contractors.

4.4 Inferential Analysis

The study sought to determine the effect of maintenance strategy on client satisfaction with service delivery by public housing maintenance contractors; and to assess the effect of procurement method on client satisfaction with service delivery by public housing maintenance contractors. To this end, the study conducted inferential analysis, particularly the Pearson product moment correlation analysis and multiple regression analysis.

4.4.1 Pearson Correlation Analysis

Results presented in Table 4.5 reveal a positive and weak correlation between each predictor and the dependent variable. Whereas a significant correlation was established between Maintenance Strategy and Client Satisfaction ($r = .353^{*}$; p value = .030); the correlation between Procurement Method on Client Satisfaction was not statistically significant (r = .166; p value = .318).

Table 4.5: Pearson Correlation Analysis

		Client Satisfaction	**Maintenance Strategy**	**Procurement Method**
Client Satisfaction	r	1		
	Sig. (2-tailed)			
Maintenance Strategy	r	$.353^{*}$	1	
	Sig. (2-tailed)	.030		
Procurement Method	r	.166	.268	1
	Sig. (2-tailed)	.318	.104	

. Correlation is significant at the 0.05 level (2-tailed).

4.4.2 Multiple Regression Analysis

To establish the degree of influence of the independent and dépendent variables, regression analysis was conducted among the variables, with the assumption that: variables are normally distributed to avoid distortion of associations and significance tests, which was achieved as outliers were not identified; a linear relationship between the independent and dependent variables. The regression analysis produced the Model

Goodness of Fit, Analysis of Variance (ANOVA) and coefficients of determination as presented in Table 4.6 below.

Table 4.6: Multiple Regression Analysis

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.360[a]	.130	.080	1.61868

a. Predictors: (Constant), Procurement Method, Maintenance Strategy

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	13.691	2	6.845	2.613	.048[b]
	Residual	91.704	35	2.620		
	Total	105.395	37			

a. Dependent Variable: Client Satisfaction

b. Predictors: (Constant), Procurement Method, Maintenance Strategy

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	14.140	2.772		5.100	.000
	Maintenance Strategy	.356	.176	.332	2.028	.050
	Procurement Method	.079	.167	.078	.474	.639

a. Dependent Variable: Client Satisfaction

The model summary indicates a correlation value (R) of 0.360 which depicts a weak linear dependence between the independent and dependent variables. The study also established an adjusted R-squared value of .080, implying that maintenance strategy and procurement method adopted account for only 8.0% of the variance in client satisfaction with service delivery by public housing maintenance contractors while 92.0 percent is accounted for by other factors not included in the model. Regression analyses further produced ANOVA statistics with a P value of 0.048 implying a significant mean difference between groups with respect to their responses on both the independent variables at 95% confidence level. The finding also indicates that the regression model adopted in the study is significant and can thus be used to assess the association between the dependent and independent variables.

Results from the coefficients table further shows the significance of the effect of the independent variables on the dependent variable, keeping other factors constant.

Taking the regression model: $Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \epsilon$, the established regression equation was:

Client satisfaction = 14.140 + .332 (Maintenance Strategy) + .078 (Procurement Method) + 2.772

The findings further indicate that the maintenance strategy adopted has a significant effect (β=.332, P value=.050=.05) on client satisfaction with service delivery by public housing maintenance contractors. The study however found that the procurement method adopted does not have a significant effect (β=.078, P value=.639>.05) on client satisfaction with service delivery by public housing maintenance contractors. The finding implies that whereas the maintenance strategy adopted significantly influences the level of client

satisfaction with service delivery by public housing maintenance contractors, the procurement method used does not.

5. Conclusions and Recommendations

Based on the foregoing findings, the study concludes that the most prevalently used housing maintenance strategy by NCCG is both corrective and condition-based. Whereas these maintenance strategies are advantageous as they require minimal planning and the latter may be applied without interruption to tenancy and reduces the cost of intense renovation, the former may be extremely costly. The study therefore recommends a combination of preventive, predictive and condition-based maintenance as they assure the longevity of public houses and avoidance of longer term total overhaul. The likelihood of frequent repairs is also minimized.

The study also concludes that at NCCG, both selective tendering and competitive bidding are the most preferred procurement methods for housing maintenance contractors. whereas the former is advantageous as it ensures housing maintenance contractors are selected based on their performance track records therefore minimizing chances for failure and client dissatisfaction, the latter providers a wider pool of potential contractors to select from, following a defined set of protocols including open tendering and prequalification.

It can further be deduced that overall, NCCG is only moderately satisfied with service delivery by public housing maintenance contractors. this can be attributed to the maintenance strategies adopted, which include corrective and condition-based. It is therefore imperative that NCCG reevaluate their housing maintenance strategies practice, and opt for preventing. predictive and condition-based maintenance strategies as they assure proper planning, minimization of maintenance costs and the housing projects' longevity.

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