

Performance of Housing Maintenance in Public Housing

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Abstract

The objective of this paper is to investigate the performance of housing maintenance in public housing. The performance of housing maintenance is conceptualised in reference to six items; providing good services, easy to contact, keeps residents informed, good value for money, good overall services, and sufficient resources and is measured base on the residents' perception. A survey was conducted face-to-face with the public housing residents in Penang, Malaysia and a response rate of 47.38 percent was received. The results reveal that in general, residents are satisfied with the performance of maintenance services, with resources of the management team being the most satisfactory of the overall maintenance services performance items.

Keywords: Housing maintenance, Performance, Maintenance team, Residents satisfaction, Public housing

1. Introduction

In a debate on how to address housing woes, scholars have argued that the housing agenda should focus not only on the production of new housing units but also to concentrate on ways to sustain the existing stock (Ozdemir 2002). Specifically, Ibem & Amole (2011) stress that to improve the quality of housing, sufficient effort should be geared towards the maintenance of the current housing stock. On a similar note, Wilhelmsson (2008) has empirically proven that a well maintained building deteriorates at a slower rate than the non-maintained building and the author goes on to emphasise that maintenance is the best option for building owners when seeking to reduce the possibility of their building deteriorating. In other words, housing agenda should include the measure of improving the existing stock to meet both the current and changing standards. It is therefore, not surprising if in many countries, maintenance management is one of the most worrying issues in urban housing. The challenge faced by many governments is on how to maintain and preserve the buildings and at the same time provide quality services which can satisfy the need of the people (Brackertz 2006). Over the years, most countries have reported an increasing amount of annual expenditure on the maintenance, repair and upgrading work. In the Ninth Malaysia Plan the budget for repair and maintenance has escalated to RM1079 million compared to only RM296 million in the previous Malaysia Plan (Malaysia 2006). In the case of housing, the maintenance cost can range from one third to one half of the total housing management cost (Ali *et al.* 2010). In Hong Kong, Hui (2005) further reports that the cost for 'repair and maintenance' is the second highest after staff salary. In Nigeria, like most governments in developing countries new housing policy and strategies have been implemented to improve the quality of housing stock which is important to ensure that the people are able to enjoy a decent living environment (Ibem & Amole 2011).

Despite the efforts and increase in the expenditure, the state of housing maintenance and repair is far from satisfactory. Li & Siu (2001) reveal that the majority of public housing residents in Hong Kong are dissatisfied with the maintenance services carried out in their buildings. More recently, Mohit *et al.* (2010) have discovered that Malaysian public housing residents are not satisfied with their housing features and only moderately satisfied with the public and neighbourhood services. Another study in one of the Malaysian states' institutional housing has found out that residents have low level of satisfaction with some of their housing components such as the dining space, kitchen, living areas, the third bedroom, the drying area and socket points and are also dissatisfied with the housing support service components such as the lift and its lobby, fire fighting facilities, the corridors, the cleanliness of drains and garbage and garbage collection services (Mohit & Nazyddah 2011). In Nigeria, Ibem & Amole (2011) establish a report that people in Nigeria are still living in poor and unhygienic housing conditions. A study by Oladapo (2006) has revealed that Nigerians who reside in the country's institutional housing complain on the unresponsiveness of maintenance department and the high number of maintenance backlog.

The scenario mentioned above points out that while most studies report increased effort and money have been invested to maintain the housing, most studies disclose the fact that low performance of public housing has persisted, either in terms of its physical conditions or quality of service. In the meantime, the measurement of the performance of housing maintenance services is not an easy task to do. The traditional performance measurement which is based on financial indicators such as capital expenditure (service and maintenance costs)

against the total revenue, has been criticised as only able to measure the building from the economics' point of view and is unsuitable to measure the public assets since it is not for profit venture (Brackertz 2006). Several methods have been adopted by previous studies to measure the performance of housing services which can serve as a guide to measure the performance of housing maintenance services. Some measure the conditions of the physical building, its facilities, services and environment against a set of predetermined codes, standard or by-laws while the more subjective approaches are based on residents' or owners' perceptions and measure their satisfaction of their living environment (Brackertz 2006; Ho *et al.* 2008; Ibem & Amole 2011; Jibayo (2011). For instance, Brackertz (2006) attempts to relate physical performance and service performance of public buildings in Melbourne, Australia and finds that there is no proof that an improvement in building performance will lead towards similar improvement in the building service performance. Ho *et al.* (2008) use the word 'healthy building', using five indicators namely architecture, building services, external environment, maintenance and management approaches. they focus on measuring how far the residents in the building are safe from physical injury and the risk of infectious diseases or chronic illnesses. Ibem & Amole (2011: 287) apply a subjective approach and introduce the term 'housing adequacy' which concentrate on measuring housing features that are vital to achieve the residents' 'physiological, psychological, health and security needs'. Another Nigerian study by Jibayo (2011) introduces the term 'quality housing' which is conceptualised by the author as the quality of the dwelling and quality of the neighbourhood. Recently, the growth of the service sector across the globe which strives to achieve client satisfaction and quality service delivery has resulted in a tendency to measure performance from the point of view of the users (Kelly, 2003; Perng, Hsia & Lu 2007). In adherence with this trend, there is an increasing number of studies that adopt residents' views as an indicator for measuring service performance so as to improve residents satisfaction. Examples of studies which rely on residents' perception as an indicator for the performance of maintenance services are Kangwa & Olubodun (2007)'s study of quality of maintenance work by contractors in Northwest England, Mossel & Jansen (2010)'s study of the priorities of maintenance services by housing associations in Netherland, Jiboye (2011)'s study of residents' perceptions about their houses in Nigeria, Mohit *et al.* (2010) who investigate residents' satisfaction with new public housing in Kuala Lumpur, Malaysia and more recently, Hashim *et al.* (2012)'s study on the residents' satisfaction towards their house physical conditions, the surrounding area and environment in Selangor, Malaysia. The discussion thus far, points out that even though scholars are not agreeable about which is the best method that can measure maintenance service performance, most recent studies rely on users' or residents' feedback as the indicator for performance. This raises the main question of the study, what is the performance of maintenance services of public housing in Penang, Malaysia from the perspective of the users, i.e residents?

The discussion of this article centers on the residents' perceptions about the performance of maintenance services on their dwellings. Assessing the performance of maintenance services will help them to increase their satisfaction. Specifically, the findings can serve as an indicator to the maintenance service provider to improve their services continuously. The findings are also important to the building managers because they can serve as guides to enhance the quality of the buildings that they manage. The findings also prove to be invaluable to the local authorities and policy makers because they point out which areas that should be focused on for the future development of public housing.

2. Maintenance Services in Public Housing

In general, maintenance is the kind of work needed to improve or restore a building so that the building reaches an acceptable standard and will be functioning well (Mossel & Jansen 2010). Apart from the tangibles such as repair and refurbishment works of the physical building, maintenance services include the intangible activities, simultaneously related to production and consumption phenomena, and are perishable (Siu *et al.* 2001; Hui 2005). For public housing which is of high density and has multiple residents, its understandably heavy usage contributes to fast deterioration because of the wear and tear (Hui 2005). A question then emerges: what are the maintenance services in public housing? According to Mossel & Straub (2009), maintenance services are a housing service component provided by the management to residents inside or outside the dwellings, communal facilities, as well as surrounding infrastructure, in an attempt to increase the quality of the housing and fostering positive feelings on their housing. Ali *et al.* (2010) have argued that maintenance service is about carrying out technical and management actions so that the building is at acceptable standard to carry out its function. Maintenance services involve activities that can prevent building decay, diminish breakdowns, and eliminate safety hazards (Lai & Pang 2010). Maintenance services aim to ensure that the property value is constantly maintained and the living environment in the building is always kept high (Ali *et al.* 2010). Furthermore, Lam (2008) professes that maintenance is different in every building. Maintenance work, either in terms of emergency, urgent or routine is dictated by the users' requirements, complexity, causes of failure and

age of the building (Donnelly & Shiu 1999). For most maintenance service providers, the targets are to achieve operational efficiency and customer satisfaction (Siu *et al.* 2001). As such, it is vital to have a well-functioning maintenance system, together with commitment from all the key players to ensure that the building is functioning well and it is able to meet the expectation of the residents (Mossel & Jassen 2010; Lujanen 2010).

How is maintenance service performance measured? In general, maintenance service performance considers the effectiveness, efficiency or productivity of certain operations or planning in a given period (Pintelon & Puyvelde 1997). However, as mentioned above, the current trend of maintenance service performance evaluation, considers the quality of the maintenance outcome and the quality of how the maintenance is carried out, based on the experiences of the residents (Yasamis, Arditi & Mohammadi 2002; Lai & Pang 2010). Achieving residents' satisfaction is considered as an indicator of good service performance (Siu *et al.* 2001). Therefore, the integral part of performance measurement is the inter-relationships between the management team who provides the services and the residents who experience the way that the service is delivered and the outcome of such services (Lai *et al.* 2010). Several indicators have been considered in the literature as demonstrating the performance of maintenance services. The subsequent discussion provides detailed explanation of those indicators.

Firstly, the maintenance team should provide good services, either in terms of how the maintenance services are carried out and delivered to the residents or the overall attitude of the maintenance staff. Good services include providing multiple categories of maintenance services according to the nature and extent of defects and residents' needs (Donnelly & Shiu 1999). The maintenance service category can range from simple to complex tasks with total maintenance work serving as the highest form of service category (Straub 2009). At the same time, the ability of the maintenance service delivery in providing prompt services and meeting residents' demands are vital to increase residents' satisfaction and subsequently, good maintenance service performance (Mossel 2008; Lai & Pang 2010). In a reactive maintenance service, although urgent repairs are expected to be carried out in 24 hours, individual resident's demands can be met by providing several options on the service delivery to avoid disturbance and guarantee resident's privacy, while at the same time ensure safety (Donnelly & Shiu 1999; Mossel 2008). Providing good services is also related to the professionalism of the maintenance team who is committed and is willing to spend time and effort to serve the residents (Hui 2005). This professionalism can be observed through timely service and ability to meet the deadlines such as proposing reasonable waiting time for maintenance work to start and to finish (Stewart *et al.* 2006; Straub 2009; Lai & Pang 2010). For example, in the case of emergencies, the response time is within 3 hours and the actual work is expected to be completed within 24 hours (Donnelly & Shiu 1999).

Secondly, the maintenance team should be easy to contact. In high density housing, receiving various complaints about the conditions of the building and quality of the services is something that cannot be avoided. Appropriate work structure, which allows easy contact either for defectreporting or receiving and acting on residents' complaints is vital for better maintenance performance (Lam 2008). Failure or even delay in reporting defects would worsen the situation and increase maintenance costs (El-Haram & Horner, 2002). However, as correctly argued by Hui (2005), informal contact among the key stakeholders is equally important, in order to identify residents' needs and perform prompt actions. It points to the importance of effective communication, either formal or informal between the residents, building management and maintenance team (Clapham *et al.* 2000). Therefore, a well organised and systematic organisational structure must be in place to allow for effective information flow, so that appropriate actions can be taken according to the request made by the residents (Stewart *et al.* 2006; Hamzah *et al.* 2011).

Thirdly, the maintenance team should keep the residents informed. According to Graham (2003), in general, clients need to be assured that the outcome of the service fulfills their expectation, that the correct process has been followed and the management team can be trusted and is able to perform their work professionally. In the case of maintenance services, it is necessary to assure the residents about the quality of the delivery maintenance services in an effort to maximize their satisfaction (Mossel & Jansen 2010). Muller & Turner (2005) find that regular informal communication and increased involvement of the owner would lead towards increased performance. Similarly, a study by Holm (2000) indicates that good communication between building owners and residents would instil positive owners' image and residents' loyalty. In addition, the effort to include the residents in carrying out some of the maintenance tasks or involving residents to participate in the drafting of the maintenance policy will also heighten the satisfaction of the residents (Mossel 2008).

Fourth, residents would expect good value for money, or in the simplest term as defined by Md Darus *et al.* (2009) as the quality of service that the residents receive is reasonable as compared to the fees they pay. In this regard, Che-Ani *et al.* (2010) explain that as a returned favour of paying the maintenance fees, residents expect that the service and outcome of the maintenance work delivered can provide them with safety, security and

comfort. Therefore, 'value for money' means the notion of balancing between the money paid and the agreed work quality (Che-Ani *et al.* 2010). In this regards, Hui (2005) suggests hiring professional services who possess the required technical, legal and management skills through outsourcing maintenance work as a way to achieve good 'value for money'. In many residential housing, the outsourcing of maintenance work is a better alternative because most residents' management team does not have sufficient knowledge and capability to maintain the building (Hui 2005; Che-Ani *et al.* 2010). Nevertheless, for small-scale and low-cost repair works, it is difficult to find reliable contractors (Steward *et al.* 2006). In most cases, small-scale contractors would insist for an advanced payment for maintenance and repair works which worsens the situation, as the residents would have this raising suspicion as a result of their previous experience of being conned (Steward *et al.* 2006). One way of dealing with this problem is by opting for a performance-based maintenance contract, which is aimed towards meeting performance criteria set by clients (Straub 2009). If compared to the conventional competitive tendering, the performance-based contract proves to be a cost-saving act, as it eases both indirect and direct costs (Straub 2009). In this arrangement, the maintenance service provider is involved at the initial building stage and it offers advice on maintenance policy and plan, performance standard and maintenance budget (Straub 2009).

Fifth, the overall services of a maintenance team should be of good quality. Generally, the maintenance of building components which is considered as crucial to the well being of the residents such as heating and water systems must at least meet the minimum standard set by the authorities (Mossel 2008). According to Mossel (2008), maintenance services on the building components which can easily be visualized such as paintwork, lobby, corridors and stairs have significant influence on residents' level of satisfaction.

Last but not least, the management team must have the necessary resources. The general assumption is that buildings which are in good conditions usually have better service delivery (Brackertz 2006). Because of this reason, it is important for the building management to have adequate resources in terms of manpower, money, equipment and technology (Kangwa & Olubodun 2007; Ali 2009; Lee & Scott 2009). However for most housing the main financial resources derives from the maintenance fees and sinking fund collected from the residents (Md Darus *et al.* 2009). The challenge for many management teams is to ensure all residents do not fail to pay the maintenance fees so that there is always sufficient fund available to maintain the building and to ensure that it is always in good condition (Md Darus *et al.* 2009). Adequate resources will guarantee quality maintenance work and allow the management to perform tasks beyond the normal requirements set by the authorities (Lee & Scott 2009). Financial resources have been proven to influence the performance of maintenance work (Md Darus *et al.* 2009). In addition, providing additional facilities such as the automated security system will also improve performance (Brackertz 2006).

From the above discussion, we can conceptualise maintenance service performance as maintenance team who seeks to provide, or provides, good services, easy contact, constant update to the residents, good value for money, good overall services and the relevant resources to do a good job.

3. Methodology

A questionnaire survey was carried out in order to evaluate the residents' satisfaction with the maintenance service performance provided by the management teams in public housing. The targeted respondents are the residents of the public housing in two local authorities in the state of Penang. The respondents were selected through a simple random sampling. Out of 840 questionnaires distributed personally to the heads of the households, 398 useable answers were received, giving a response rate of 47.38 percent. The questionnaire includes questions on the residents' profile and the performance of maintenance services by the management corporation (6 items). A four-point scale was used, ranging from 1=very unsatisfied to 4=very satisfied. Before performing the analysis, the reliability test was conducted to all items in the 'performance of maintenance services' construct, to check the internal consistency of the items used. The result shows that the Cronbach's α for that construct was 0.708, which was above acceptable minimum value of 0.5 as suggested by Hair *et al.* (2006), altogether enabling us to retain all items for subsequent analysis. We then performed the descriptive analysis to analyze the data so that the residents' satisfaction score could be determined.

4. Results and Discussion

Table 1 has shown the residents' mean satisfaction perception with the performance of maintenance services delivered to their dwellings. The results have presented an indication that the residents are generally satisfied with the performance of the maintenance services, with all mean scores of the performance maintenance services

items are higher than the mid-point of 2.0 and very low standard deviation (between 0.332 and 0.475). In particular, the residents are satisfied that the “maintenance team has the resources to do a good job” (M=3.02, SD=0.333), “maintenance team provides good services” (M=2.87, SD=0.332), “overall, services by the maintenance team are of good quality” (M=2.84, SD=0.417), and “the maintenance team is easy to contact” (M=2.82, SD=0.475).

These results are in agreement with Kangwa & Olubodun (2004a), Lam (2008), and Mossel & Straub (2009) who postulate that the efficiency and the effectiveness of services of the maintenance contractors can ensure higher satisfaction among the residents. In addition, the residents are also happy that the “maintenance team keeps residents informed” (M=2.76, SD=0.470) and “maintenance team provides good value for money” (M=2.71, SD=0.455). This is helpful to enhance the maintenance team’s reputation and image, as well as strengthening the residents’ reliability and loyalty with their services in the future.

Table 1: Residents’ satisfaction with the performance of maintenance services

Provided Maintenance Services	Mean	Std. Deviation
Management team has the resources to do a good job	3.02	0.333
Maintenance team provides good services	2.87	0.332
Overall services by maintenance team are of good quality	2.84	0.417
Maintenance team is easy to contact	2.82	0.475
Maintenance team keeps residents informed	2.76	0.470
Maintenance team provides good value for money	2.71	0.455

5. Conclusion and Implications

This paper investigates the performance of maintenance services delivered by the maintenance team in public housing, as seen from the residents’ viewpoints. The results have revealed that in general, residents are satisfied with the performance of the maintenance services, with resources of the management team being the most satisfactory of the maintenance services performance items. Nevertheless, none of the maintenance services performance item was rated by the residents as being very satisfactory.

The results obtained from the study serve as the feedback that can be of use in the near future and can be forwarded to the management corporations for service improvement. It appears that the housing management has been able to satisfy the residents with regards to the maintenance services they provide. However, there is still room for improvement in all these areas (resources, good services, communication, work quality and value for money) so that the residents will be more satisfied than before. Several actions can be carried out to ensure that the residents are kept informed about the performance of the maintenance services, among others, effective formal and informal communications between the residents and maintenance team and increase residents’ participations in decision-making with regards to maintenance work (Holm 2000; Muller & Turner 2005; Mossel 2008). To increase maintenance performance, where this is to ensure that the residents are getting value for money, the management team can outsource maintenance work to a performance-based maintenance contractor whom Straub (2009) asserts to be a cost-saving alternative. In addition, to ensure that the management team has sufficient resources, apart from maintenance fees and the sinking fund collected from the residents, the management team should seek other measures to optimise the existing resources. The management team can follow Lee & Scott (2009)’s suggestion on engaging with outsourcing strategies to minimise operation costs and further reduce the expenditure.

There are some limitations in the present study which provide a guide for future research. The study was conducted in a specific area – a public housing in Penang, Malaysia; indicating that any generalization of the results must be made with care. This limitation can be addressed if studies as such are done nationwide, either in Malaysia or in other developing countries. Secondly, this article only focuses on the performance of maintenance services. Future research should explore on the consequences that may arise out of the manner in which the housing management team is run, whether it will influence the performance as suggested by Mossel & Jansen (2010). In addition, as highlighted by Ali *et al.* (2010), a study on factors which significantly determine the performance of maintenance services will give valuable insights on areas to focus on, for performance improvement. Such studies will contribute some worthwhile findings for the betterment of public housing

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