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Towards Best Practice in Public Housing Maintenance Management¹Angela Horvath²Md Azree Othuman Mydin¹The University of Nottingham, United Kingdom

University Park, Nottingham, NG7 2RD

PhD Student

E-mail: angiehorvath82@hotmail.com

²Planning Universiti Sains Malaysia, Malaysia

11800, Penang

Dr. Education

E-mail: azree@usm.my

ABSTRACT. These days, the public housing maintenance management issue plays an important role in government planning. Every government necessitates an excellent maintenance management for public housing holistically. In this case, the focus of this paper is to consider findings of the best practice for public housing maintenance management and also through utilization of the Key Performance Indicator (KPI) to verify the practice in the public housing maintenance management. A commitment to employ the best practices is an assurance to draw on all the knowledge and technology at one's disposal to guarantee success. Best practice is considered by some as a business catchphrase, used to portray the process of developing and following a standard way of doing things that manifold organizations can bring into play. Best practices are used to uphold quality as an option to obligatory legislated standards and can be based on self-assessment or benchmarking.

Keywords: Best Practice; Maintenance Management; Public Housing; Key Performance Indicator.

1. INTRODUCTION

Best practice is a procedure or methodology that, through experience and research, has established to dependably guide to a desired result. A commitment to apply the best practices in any field is a pledge to utilize all the knowledge and technology at one's disposal to warrant success. In the whole, best practices are employed to retain quality as an alternative to compulsory legislated standards and can be based on self-assessment or benchmarking [1]. A best practice tends to extend throughout a field or industry after a success has been demonstrated. Housing maintenance and management refers to the procedure carried out by the property management company to do a good job in housing maintenance program, organization, control, coordination of collection. Public housing maintenance and management functions is the process of execution of housing maintenance, management, and guarantee quality and to accomplish a sensible duration on the basis of the whole housing repair process in a controlled state, the rational use of manpower, material and financial resources, and capitalize on savings maintenance costs, and attain better economic, social and environmental benefits [2].

From the management process, the public housing maintenance and management principally refers to the management objectives around housing maintenance plan, organize, control and coordination aspects. From the management level, the public housing maintenance management in general can be divided into maintenance management and construction project level maintenance management of the enterprise management level.

The so called enterprise management-level maintenance management is carried out by the corporate management of the property management company to accomplish the goal of housing

maintenance and management of the whole enterprise management, including the organization to perform the housing of the enterprise survey recognition, housing maintenance work around the total enterprise made program management, quality management, preparation of maintenance budget, organization of construction project bidding and management of technology, labour, materials, machinery and other production factors.

Key performance indicator (KPI) is an industry terminology for a type of performance measurement [3]. Quantitative measurement of key performance indicators, established in advance, reflecting the key factors of success of an organization. Any key performance indicators to choose, it must imitate the organization's goals, and should be measurable. The key performance indicators are frequently long-term considerations. The definition of what is, and how they measure do not change regularly. The goals for a particular KPI may change as the organization's goals change, or as it gets closer to achieving a goal. KPI is used as a performance management tool to verify the public housing maintenance management. KPI visualizes the organization a clear picture of what is important, of what they need to make it happen.

2. Best Practice for Public Housing Maintenance Management

2.1. Listening and responding to tenants in best practice

An effective housing maintenance services, will be a quick response to attain high levels of satisfaction among residents and tenants. This will be the access, and built to provide services, will continue to learn, so that the changing nature of requirements reflected in the change taken by local authorities. Tenants' views are a key aspect in the operation of public housing maintenance and the assessment of the service on the whole. Good practice in this part will take tenants views into account along with other considerations such as plans related to demolition and major refurbishment.

Deliberately manage the public housing portfolio for the local Government is responsible to diminish concentrations of disadvantage through public housing redevelopment; align the portfolio with changing social structures and tenant needs. All those need listening and responding to tenants. If PHA could maintenance management the public housing well, the government will save the money to build more public housing. Public Housing Administration (PHA) can employ different mode to connect with the tenants, in order for them to distinguish some common problems in public maintenance management. PHA needs to listen to the tenants' regularly in order for the government to offer the best practices for public housing maintenance management such as:

- i. The Housing and Neighbourhood Renewal Team is responsible for co-coordinating and responding to concerns relating to housing conditions and standards by ensuring the maintenance, management and improvement of housing through its various mechanisms.
- ii. Government must be strict in controlling the PHA department, make them efficient and good quality to finish maintenance management task.

Open information	Hearings, consulting
Bulletin Board	Surveys, interviews
The loose-leaf leaflet or regular communication	follow-up study Project to the focus groups
Government reports	Interactive community case briefings
Feedback the results of the research and consulting	Public meetings
Annual performance report	Civic Forum series and forum topics
Internet information and communication	Audio-visual mailbox

Table 1: Methods for listening and responding to tenants

2.2 Clear identification of overall need and effective forward planning in best practice

Effective maintenance program should be set in the overall housing needs assessment, and to consider the demand for housing. It should be underpinned by good information about the condition of the housing stock. This should be based on a comprehensive review of housing

conditions and energy efficiency and mechanisms to ensure that information is kept up to date. Information on the condition of housing stock should be a key element of the maintenance activities. For those tenants, there are living in public housing have some different parts with others. So, we need clear identification of overall need about them. The fees that pay for the maintenance is almost afford by government, they don't have more money to pay. The PHA need to compare practical situation to solve the problem. In maintenance management the effective forward planning used to be an important part. Through a proper planning and development, the maintenance management will lead to best practices.

KPI can clear tell us the practices done by the PHA can clear identification of overall need and effective forward planning. For use KPIs to check the practice is better or not. And also hope the government and tenants can use the the advice to clear identification of overall need and effective forward planning, those things will give local government some best practice for public housing maintenance management.

Judgments and decisions	The authorization, support, and policy makers
Poll on the action consistency	Neighbourhood Committee
Jury of the public	Urban real estate plan
Dialogue, consultation studio	Public housing tenant management organizations
Management of community affairs groups	Community Development Trust Company
Community Studio	Partnership contract with the community
Reach an agreement and recognition of meetings	Referendum: the creation and referendum

Table 2: Methods for clear identification of overall need and effective forward planning [4]

2.3 Making links with other housing management activities in Best Practice

In general, whether it is a specialized task difficulty may be affected by some factors related to the housing of physical assets. For example, residential units and the physical layout of the dispersion, structural design, condition, age of housing facilities other features a variety of planning and management activities, different management and cost control problems, and impact of the maintenance management. These features provide a direct and obvious relationship to the difficulties in housing management. In addition, the complexity of these features check the current conditions of housing management, auditing or business surveys, and the effects of a variety of consultative and advisory service activities complexity.

The company's state-owned real estate management results framework for the transformation of the government with the goal of the family, young and old ". In 2007, its asset management strategy, "the National Housing directly contribute to strengthening families by providing a strong and stable community, meet their needs" decent housing. Its mission statement, to support the Government's target, the company provides access to homes, helping New Zealanders manage their own situation and life of the community to contribute. The company's state-owned property formed a government is an important part of the social housing demand response. In our opinion, these repair properties is an integral part of management strategy of the company's overall assets, which is a framework, management, development, use the company's short-term and long-term housing assets.

2.4 Achieving the best balance between emergency repairs and planned maintenance in Best Practice

Repairs and planned maintenance are the important aspects of the effective management in public housing properties. They are also the most essential and the most challenging parts of the public housing services, at same time, they need the enough expenditure to make the effective process. The efficiency maintenance management and repairs service will be satisfied the tenants' need and enhance the quality of their lives. For local government, they should provide a fast and effective repair service to tenants. Meanwhile, they should use the limit budget to achieve the

maintenance. Repair is classified into three types which are emergency, routine and planned respectively. Emergency repairs should be solved as soon as possible and normally within 24 hours.

Examples of emergency repairs include: major planning leak, dangerous electrical fault, major storm damage, failure of entire electrical system and lack of water supply to dwelling. Obviously, the emergency repairs are unexpected and, naturally, it will spend more expenditure. Besides, planned maintenance also has two aspects. Programmed repairs which should solve the known problems and it should follow the specific contracts. Another one is planned cyclical maintenance which works primarily of a preventive nature and carry out common problems, like painting or lifts [5]. Importantly, the effective planned maintenance can reduce the amount of emergency repairs. Figure 1 below showed the percentage of revenue spent on planned work as well. Thirty-four inspected authorities are all from England and Wales.

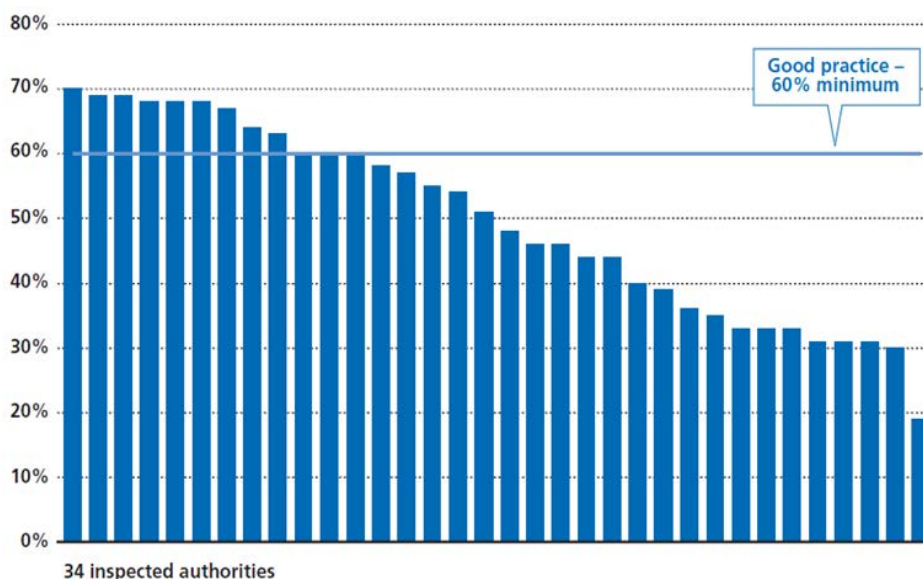


Figure 1: Percentage of revenue spent on planned work [3]

As can be seen from Figure 1, more than 60% of inspected authorities spent low cost on planned works. If local authorities spend the low cost on planned maintenance works, they will meet a vicious circle which other costs will increase. On the other hand, local authorities should control the response repair.

2.5 Monitoring maintenance performance in Best Practice

Local authorities should determine the indicators of performance which are the basic information and essential elements about assessing performance. At same time, the performance indicators are associated with the needs and requirements and let local authorities know the changing about conditions. Obviously, local authorities should get the information about these regularly which help them to monitor maintenance performance well.

The data and information of maintenance performance on response and planned work is changeable. If the local authorities do not collect a lot of data on their performance monitoring system, they will fail to list them to useful management information. Certainly, monitoring performance often lacked which will affect the ability of local authorities directly. Also, the satisfaction of tenants is so important that affects the performance monitor.

2.6 Reviewing repair costs and quality in Best Practice

Repair costs and quality plays the important role in achieving the best practice of maintenance management. Repair and maintenance works usually accounts for the largest part of local authorities housing management expenditure. The quality of repair is the important element about customer satisfaction. Best practice in public housing maintenance requires reviewing regularly and efficient which will be relate to cost and quality directly. The key elements in a systematic review process include:

- i. Records on completion repairs, the costs and time taken.
- ii. Inspections by local authority staff to check the quality of work completed.
- iii. Surveys of tenants or collection of information from tenants' unsolicited comments on repair works.

The local authorities collect this different information from different ways, after that, they can bring this information into the efficient system. The advantage of this system helps the local authorities to change the service and they will know the process of the service. It is important to compare with other authorities based on this information.

Key Performance Indicator	World Class Target Level
Percentage of Work Orders completed during the schedule period before the late finish or required date	Schedule compliance of 90 % + should be achieved
Percentage of maintenance work orders requiring rework	Rework should be less than 3 %
Percentage of work orders with all data fields completed over the specified time period	Should achieve 95%+ Expectation is that work orders are completed properly

Source: Weber, Thomas & Ivara Corporation, (2005)

Table 3: Key Performance Indicators for work execution

2.7 Managing and organising for improved maintenance for Best Practice

With the development of tendering procedures and the best value framework as applied to housing, local authorities generally distinguish between different functions in relation to housing maintenance which are, the client function which determines maintenance standards, sets out priorities for agreed work programmes and monitors overall performance, the technical function which provides the expertise in assessing the content of the workload and administers the programmes of work including quality control and the contractors function which provides the material and human resources to undertake the work ordered. There are two main system requirements which successful housing maintenance organisations must meet. These are, tenants are able to request repairs easily and the subsequent orders are discharged efficiently. Also, housing management is able to monitor performance against the agreed standards on an estate by estate and trade by trade basis.

A key principle of performance management is to measure what you can manage. In order to maintain and improve manufacturing performance each function in the organization must focus on the portion of the indicators that they influence. Maintenance performance contributes to manufacturing performance. The key performance indicators for maintenance are children of the manufacturing key performance indicators. Key performance indicators for maintenance are selected ensuring a direct correlation between the maintenance activity and the key performance indicator measuring it. It is a defining key performance indicators for the maintenance function, not the maintenance organization.

2.8 Clear targets and evaluation of performance in Best Practice

An effective maintenance system will set clear targets for the time within which responsive repairs will be completed. These will include repairs associated with changes of tenancy. It is usual for local authorities to distinguish between management and non-management voids and different targets and performance measurement will be appropriate in different cases. Non-management voids will often be linked to larger capital programmes and be managed within this context. In other cases the normal arrangement is to distinguish between, emergency repairs where there are threats to life, health or security (such as gas, electricity, water, sewage, heating) and be completed within 24 hours, urgent repairs which do not present immediate threats to tenants but require completion within a limited period (such as seven days) and other repairs which should be completed within a subsequent specified period.

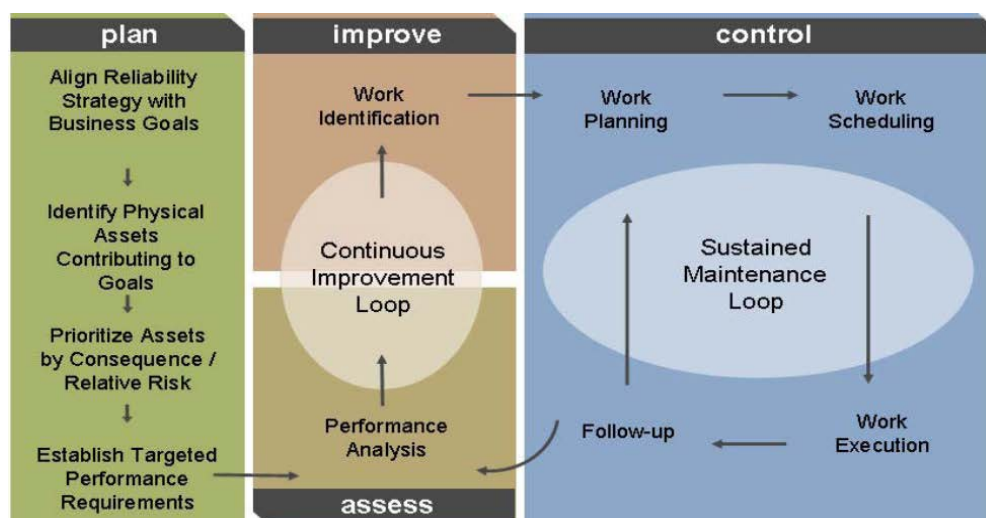


Figure 2: The Asset Reliability Process identifies what's required to manage the maintenance function (Weber, Thomas & Ivara Corporation, 2005).

From a maintenance process perspective it is important that these results are driving action. Therefore, there are two key performance indicator for performance analysis measure that is first, the number of reliability improvement actions initiated through performance analysis during the specified period. No absolute number is correct but no number suggests inaction. Second, is the number of asset reliability actions resolved over the last month. In other words, a measure of how successful the organization is in performance gap closure [6].

3. CONCLUSIONS

In sum, public housing is one of the important aspects in whole of the world, however, it is facing many problems. Poorly maintenance is one of the problems like elevators may remain for a long time, no lights in stairwells, lacking hot water, outdated fixture or broken applications. In fact, property maintenance can keep the housing in good condition. Importantly, it can keep housing safe and secure as well. Therefore, the maintenance management is the most challenge and important part in public housing sector. There are many ways that improve the performance through maintenance. Though, improving maintenance is the most complex process in maintenance service. Local authorities should know the best practice of maintenance management in public housing sector is the relationship between clients, tenants and contractors. Identifying and analysis key issues in the maintenance management are among these three parts which can develop an effective approach to maintenance. These nine key issues are the main points to achieve the best practice in public housing maintenance management. Along with that, Key Performance Indicators (KPI's) are also the important indexes which help local authorities to carry out the management better. Hence, selecting the right key performance indicators can improve the performance efficiently.

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Передовой опыт организации ремонта жилищного фонда

¹Ангела Хорват
²Мд Азри Отхуман Мудин

¹Университет Ноттингем, Соединенное Королевство
Университет парк, Ноттингем, NG7 2RD
аспирант
E-mail: angiehorvath82@hotmail.com

²Университет Малайзии, Малайзия
11800, Пенанг
Доктор образования
E-mail: azree@usm.my

Аннотация. В наши дни вопрос организации ремонта жилищного фонда играет важную роль в государственном планировании. Каждому правительству необходима организация обслуживания жилого фонда в целом. В этом случае, цель данной работы изучить данные передового опыта организации ремонта жилищного фонда, используя ключевой показатель эффективности для контроля организации ремонта жилищного фонда. Ориентация на использование передового опыта гарантирует применение знаний и технологий и обеспечивает успех. Передовой опыт считается бизнес-выражением, используемым для описания процесса развития и применения стандартного способа делать что-либо как следует, которым следуют многие организации. Передовой опыт используется для поддержания качества как опция обязательных законодательных норм, и может основываться на самопроверке и сравнении эффективности.

Ключевые слова: передовой опыт; организация обслуживания; жилищный фонд; ключевой показатель эффективности.