

The Common Problems Facing the Building Maintenance Departments

Ayman Alshehri, Ibrahim Motawa, and Stephen Ogunlana

Abstract—Building maintenance has consistently been treated as the ‘poor relation’ of the construction and building industry. In term of Saudi Arabia, it is said that the management procedures used by maintenance contractors is poor and not based on scientific background. In addition, the Saudi Arabian Government spent SR3172 (£529) billion during 2005 to 2009 on construction projects. Despite the growth in demand, the building maintenance in the Kingdom faces several difficulties. Therefore, the purpose of this paper is to find out the common problems facing the operation and maintenance departments. In order to explore the current status of the building maintenance in Saudi public sector, twelve interviews with professionals who are working in operation and maintenance departments were conducted. Data collection from these interviews were analyzed to identify the common problems which categorized into three grouped, management problems, human resource problems and technical problems. The interviews also revealed that there are fourteen obstacles that facing the operation and maintenance industry.

Index Terms—Building maintenance, public sector, Saudi Arabia.

I. INTRODUCTION

Saudi Arabia is having a diverse set of infrastructural facilities. Elements of this infrastructure need be continually maintained to ensure its optimal value over its lifecycle. Maintenance and operation services for public building is not a core service or business activity in Saudi Arabia. As rustle, maintenance services are usually outsourced to specialty contractors [1]. The size and number of construction projects financed by the government directly affects the building and construction industry of Saudi Arabia. In 2008, the value of capital assets of the building and construction sector was SR154.5 billion [2]. As more and more facilities and infrastructure is being constructed in Saudi Arabia, more maintenance work is becoming necessary to ensure the serviceability and safety of the constructed facilities [3]. Therefore, The Kingdom of Saudi Arabia is a living challenge when it comes to fulfilling the operations and maintenance needs. In order to improve the current state of building maintenance, it is essential to address the current problems in this industry. Hence, this paper focuses on identify of such problems that have been faced in the operations and maintenance industry. The scope of the research is focused on building maintenance departments

working within public organizations in Saudi Arabia.

II. BUILDING MAINTENANCE

Building management is considered as a matter of the larger unit the Facilities Management [4]. Building maintenance is a collection of a lot of activities. In order to carry out the maintenance job we may require some approvals for the work arrangement, which may vary according to size, characteristics of the project, management style, work environment and the cooperation of all parties involved. Due to the dependence of these factors some of the work orders may not be completed. In an ideal maintenance operation, the important parties involved in the execution of the work are the owner or the client, the contractor and the user. The relationship between the key partners and their attitudes towards each other is the main factor which promotes the speed at which the work is completed and also estimated the efficiency of the execution and the maintenance operations [5].

In the country of Saudi Arabia the management procedures currently used by the maintenance contractors do not support the present building scenario as they do not have a scientific back ground. In general there is an absence of understanding of the need for maintenance work. There is mention in the literature of maintenance issues in Saudi Arabia. [6] pointed out the importance of maintenance in the Kingdom. [7] attempted to create a standardized maintenance contract by collecting essential information from a number of government offices around the kingdom after studying the present public building maintenance contract. Further, [8] and [9] have discussed the obstacles faced by the maintenance industry and also the effect it has on the development in Saudi Arabia. [3] identified the main key factor affecting the importance given to building maintenance in projects. Other papers have discussed the experience accumulated on maintenance practice and management in several fields. For example, [8], [10], and [11] summarized such factors, the most important of which are: 1. Lack of building by laws and regulation; 2. Both imported and locally produced materials have been used without any restriction or tests; 3. Various foreign standard, rules of thumb and personal judgment were employed without reference; 4. Unavailable or poorly written operational maintenance manuals; lack of coordination between construction and maintenance group; 6. Method of classification of maintenance contractors; and 7. Lack of uniform maintenance. In addition, [12] discussed the manpower requirement for operations and maintenance in Saudi Arabia. [13] discussed the Method of classifying

Manuscript received February 3, 2015; revised April 16, 2015.

A. R. Alshehri is with Heriot Watt University, UK (e-mail: ara22@hw.ac.uk).

I. Motawa and S. Ogunlana are with the School of Built Environment, Heriot Watt University, UK (e-mail: I.Motawa@hw.ac.uk, S.Ogunlana@hw.ac.uk).

maintenance contractors.

In Saudi Arabia, there is Lack of community awareness about the importance of maintenance. And no uniform maintenance standards and uniform standard specifications for maintenance activities. This would result in difficulty in encountering the problems during the performed maintenance works. Hence it is even more evident how necessary this research is to improve the building maintenance in the public sector of Saudi Arabia.

In order to achieve the paper aim, it was decided that the strategy of semi-structured recorded interviews (in-depth recorded interview) face to face with professional practitioners who are working in public sector would be used to obtain information. Semi-structured interviewing can provide much needed flexibility. The sample approach for this objective is the snowballing and purposive approach. This involves input in the form of descriptions and modifications from several of the participating experts. Therefore, some level of flexibility in interviews in terms of following up questions was needed during identifying the common obstacles in building maintenance departments.

To conduct structured interviews, it was first necessary to decide the sample of participants to be interviewed, and the number of organization for interviews. The criteria for selecting the participants was based on the level of seniority Interviewees with a high level of seniority are more likely to know much more information for the research requirements, furthermore, participants enthusiasm toward the research, if interviewees are willing to participate in the research, it is much easier to obtain much information required for the research. After the criteria for structured interviews were determined, the next step was to decide how many interviews would be selected. The number of interviews was twelve interviews were regarded as sufficient for this stage, each interview between 30 minutes and two hour. Furthermore, the results will be obtained from the semi-structured interviews would give the author a better understanding of building maintenance process, problems and related issues.

III. PROBLEMS IN BUILDING MAINTENANCE

The interviewees were asked what are the common problems would happen in the operation and maintenance processes. These human problems will be categorized into three grouped, management issues, human resource problems and technical problems.

A. *The Top Management Problems*

There are problems with the management in building maintenance projects. These problems are related to maintenance group management, performance and execution of management during maintenance. They can be classified as follows:

B. *Poor Management of Maintenance Team*

Maintenance management is an effective tool for achieving a high standard of maintenance work. In the absence of such management and leadership of people, it will lead to time consuming and most likely failed maintenance works. The top management in maintenance departments are

very much influenced by the organization president. Hence, the background, experience and education of the president play an important role in the management style. It is difficult for the management to be committed toward any issue without the president's commitment and support. Most government organizations do not have a tool to measure their performance. The top management live in democracy environment so this main reason that effect on delay maintenance processes.

C. *Procurement Management*

According to the government procurement system the contractor is required to provide three quotations from three different suppliers. The offer which conforms with the specification and is lowest in price will be accepted. One of the interviewees believed that the situation of the relationship between the contractor and the suppliers. According to him, the contractors have two different strategies depending on the type of contract. If the contract is a lump sum, the contractor surveys the market for the best price. However, if the material is not part of the contract, the contractor recommends certain suppliers to the client where the client can benefit from such recommendation such as favorable prices when the contractor has a lump sum contract or even a special commission. It was clear from the interviews that the major concern of the contractors is cost and they have little consideration for other issues such the quality and time of delivery.

D. *Unqualified Maintenance Contractor*

In Saudi Arabia, public maintenance contracts are awarded based on competitive bidding to secure the lowest price for performing maintenance operations. The project is normally awarded to the lowest bidder provided. The least bidder will try to complete the work with the lowest possible cost in order to generate a profit from the project [14]. Normally, the maintenance department of the owner supervises the work flow in the maintenance operation, and requires the contractor to submit a monthly report on work progress. The diversity of contractual methods and work types involved makes the maintenance contracting system a very complex one.

Most of maintenance contractors operate and maintain the public building through foreign worker ranged from the highly skilled to unskilled. However, the unskilled worker represented the majority. They were paid low wages and came from high- unemployment countries such as Pakistan and India. As a result, local nationals abandoned working in the operation and maintenance industry and the industry became dominated by foreign worker. Governmental maintenance contracts is for three years periods. Almost six months before the end of the contract period, the government announce the contract for a new maintenance contractor if the old contractor's bidding cost was not the lowest. This process implies two major problems:

First, the old contractor having known that a new contractor will take over. So he tends not perform as he should and leaves much of the work to the new contractor to save money. These six months at the end of the contract is considered a loss to the client. Second, at the start of the new

contractor period, the new contractor starts mobilization of his staff and equipment. The new staff mostly are unfamiliar with the new facility and procedures. It is estimated that the new contractor need a few months to get fully acquainted and familiarized with the new contracts and start with maintenance works effectively. As result, the six months at the end and beginning of the contracts is one year's loss contract period, considered a massive loss to the facilities.

Sometimes the contractors do not provide excellent team and skilled technicians so they are rejected and replaced with another contractor, this also cause waste time and effort. The problem is that in order to take the project from a contractor and give it to another contractor, this needs another six months in fact that the contract period is three years.

E. Government Regulations and Rules

The government policy of awarding the contract to the lowest bidder, on condition that the value of the new contract should not exceed that of the previous contract, has had adverse consequences. It did not take into consideration fluctuations of prices and ageing of buildings. Buildings need more maintenance as they get older. The price of spare parts and labor will rise along with rises in the standard of living and inflation.

The method adopted in Saudi Arabia in classifying the maintenance contractors depend on the total amount of project capital. Therefore, the classification method adopted is to look into the capital only. Therefore, all type of maintenance companies (small, Medium and large) are allowed to participate in any maintenance tender. Regardless, the company profile, resources and quality policy, the company with the lowest price is the winner. Further, the method of classification should look into many factors, such as: capital, manpower, experience, equipment available, list of completed projects, quality certificates, etc. Incorrect classification of a maintenance contractor could cause serious problems in the ability to execute and complete a project.

F. Stakeholders Communications

Maintenance departments have poor communication. Workers and even engineers are not informed about the department's goals, objectives and plans. A number of the interviewees indicated that one of the reasons for not keeping the contractor's engineers informed about the company is that the relationship between them is temporary.

G. Financial Issues

Maintenance budget is frequently based on the previous year's allocation plus a percentage. And there are often technical difficulties in assessing the quantity, as well as problems in execution of accurate cost of maintenance works, which results in overruns and underestimates. It is also noted that many facility client consider the maintenance cost a minor portion of the total cost, which they will not allocate enough money for. Thus, budgeting for maintaining a facility is considered a secondary obligation and not enough allocation is considered. It is most important that government budgets include enough financial allocation for maintenance works as it is a critical and needed function. There are budget constraints from the Ministry of Finance; the budget is

reduced based on their evaluation

H. The Human Resource Problem

These are problems caused by human factors such as experience of manpower, their attitude to understand the maintenance work. The can be classified as follows:

I. Lack of Supervision from Maintenance Team

Some participants consider that the role of supervision is the most critical of all roles in maintenance department. Most supervisors are appointed one day and are expected to perform all the complex tasks of management the next day without any form of training or preparation. This is not fair to the individual nor is it an effective strategy for management. Unfortunately, the client maintenance team depend on the contractor for all maintenance duties. The client maintenance team in the public sector are working as supervisors only and do not know anything technical and they just receive the maintenance report from the contractor for signature only. The government sector does not have efficient maintenance staff.

J. Lack of Engineers and Specialist

Maintenance work requirement for manpower is different when compared with construction, due to the type of work and services to an existing facility which need special and keen skilled engineers. Availability of maintenance work force is important factor in the process of maintenance work. In the case that little or no manpower is available locally, as is the case in Saudi Arabia, the need for manpower will be dependent on other countries because it is boring environment and the range of resignation is high. These foreign workers might leave the country at any time, which will be a loss for the company and eventually for the whole country. It is of extreme important to establish a work that will always be around when needed. There is expansion in buildings construction and there is no expansion in the number of man power.

K. Training and Motivation

There is a need to increase the number of institutions and training course that related to the maintenance in general. There is a lack of encouragement for the engineers to enter into maintenance and operation field. The employees can be divided into professionals, administrators and labors. Professionals are engineers, accountants etc., who are assumed to be experts in their fields, since they are hired with in-depth experience and higher level qualifications. Most of these professionals are Saudi. Furthermore, the uncertainty and instability of the operation and maintenance industry created more difficulty in investing in training employees. It was rare to find a maintenance department manager who allocates a reasonable training budget.

L. Unclear Job Description and Department Structure

It has been noted throughout the interviews that maintenance departments do not have structured approaches for improving processes. The Structures of maintenance departments are unclear in the government sector. They have different names, such as service management and support services and facilities. It should be organized under one name

and should have a clear supported structure in every public organization.

M. Lack of Awareness

Understanding the important of maintenance to facility clients and to the public in general is vital. Facility clients must be aware of the necessity of maintenance works, so they can plan, budget and finance the work of maintenance in order to keep their facilities in acceptable condition and to avoid future break down and failures in which will result loss of money and time. Facility clients should realize that they should maintain their facilities periodically and not leave their equipment at the stage of emergency of break down maintenance which will cost them much more than if they use planned maintenance.

N. The Technical Problem

There are problems related to the technical aspects of maintenance. These problems can be divided as follows:

O. Lack of Maintenance Software Tool

The maintenance departments need an effective software system that includes operation, maintenance and modification for the purpose of making decision. This system helps in determining how the client's budget is distributed and used during the total life period of the system. It is mentioned that there is no renewing or upgrading for the old system available which will require more maintenance.

P. Shortage of Spare parts

The absence of suitable spare parts in the local market will complicate the process of maintenance works. Recommended a spare part are costly solution to the facility or client, as the client is required to spend a large amount of money to procure the recommended spare parts. The problem would be minimized if required spare parts were available in the local market, thus it would be cheaper and easier to perform the maintenance works if spare parts were available in local market. Unavailability of spare parts in the local market causes serious problems to the function of maintenance as it will delay repair works, increase the cost of parts which need to be ordered by air from outside market. Unavailability of spare parts in the local market could stopped the whole process of maintenance and operation of a facility.

Q. Failure of Preventive Maintenance

It is believed that it does not exist that all maintenance department in Saudi Arabia do the preventive maintenance correctly, because the corrective maintenance is due every day and the client team are busy with action maintenance.

IV. CONCLUSION

The maintenance works is becoming necessary to ensure the serviceability and safety of the constructed facilities. The first step for improvement and development of maintenance is identifying and evaluating the current practice. Therefore, the purpose of this paper is to find out the common problems facing the operation and maintenance public industry. In order to explore the current status of the building

maintenance in Saudi public sector, twelve interviews with professionals who are working in operation and maintenance departments were conducted. Data collection from these interviews were analyzed to identify the common problems which categorized into three grouped, management problems, human resource problems and technical problems. The interviews also revealed that lack of financial support, lack of experienced manpower to conduct the required works in a quick and professional manner and maintenance contract regulation are key areas for improvement. In addition, it was clear that the maintenance departments do not get more support from top management and their efforts are considered secondary to the main work.

REFERENCES

- [1] S. Assaf, M. A. Hassanain, A.-M. Al-Hammad, and A. Al-Nehmi, "Factors affecting outsourcing decisions of maintenance services in Saudi Arabian universities," *Property Management*, vol. 29, issue 2, pp. 195-212, 2011.
- [2] MEP, *Achievements of the Development Plans: Facts and Figures*, 25th Ed., Riyadh: The Ministry of Economy and Planning, 2008.
- [3] T. Mahmoud, "Assessment of the problem facing the maintenance industry in Saudi Arabia," Master Thesis, KFUPM, Dhahran, Saudi Arabia, 1994.
- [4] A. Al-Hammad and S. Assaf, "Assessment of the work performance of maintenance contractors in Saudi Arabia," *Journal of Management in Engineering*, ASCE, vol. 12, no. 2, pp. 44-49, 1996.
- [5] A. H. Al-Arjani, "Impact of cultural issues on the scheduling of housing maintenance in a Saudi Arabian urban project," Mater Thesis, College of Architecture and Planning, King Saud University, Saudi Arabia, 1995.
- [6] L. Denis and M. Rodney, "An evaluative framework for TQM dynamics in organizations," *International Journal of Operations & Production Management*, vol. 23, no. 6, pp. 652-677, 2003.
- [7] K. S. Al-Sultan, "Maintenance in Saudi Arabia: Needs and recommendations for improvement," *Journal of Quality in Maintenance Engineering*, vol. 2, issue 4, pp. 5-16, 1996.
- [8] M. H. Al-Majed, "Priority-rating of public building maintenance work in Saudi Arabia," Masters thesis, King Fahd University of Petroleum and Minerals, Saudi Arabia, 1998.
- [9] A. A. M. A. Al-Zahrani, "Assessment of factors affecting building maintenance management auditing in Saudi Arabia," Master thesis, King Fahd University of Petroleum and Minerals. Saudi Arabia, 2001.
- [10] J. Hansson, F. Backlund, and L. Lycke, "Managing commitment: Increasing the odds for successful implementation of TQM, TPM or RCM," *International Journal of Quality & Reliability Management*, vol. 20, no. 9, pp. 993-1008, 2003.
- [11] M. Hassanain and S. Al-Saadi, "A framework model for outsourcing asset management services," *Facilities*, vol. 23, no. 1/2, pp. 73-81, 2005.
- [12] T. A. Al-Hazmi, "Toward standardization of public building maintenance contracts in Saudi Arabia," Masters thesis, King Fahd University of Petroleum and Minerals. Saudi Arabia, 1995.
- [13] R. Best, C. A. Langston, and G. de Valence, *Workplace Strategies and Facilities Management*, Butterworth-Heinemann, Elsevier Science Ltd, 2003.
- [14] W. Brian, "Towards innovative building maintenance," *Structural Survey*, vol. 23, no. 4, pp. 291-297, 2005.



A. R. Alshehri was born in Saudi Arabia on 6th April 1981. He is a mechanical engineer as a bachelor degree from king Saud University in Saudi Arabia and a master degree in project management (construction management) from heriot Watt University from United Kingdom. Currently he is a PhD student at Heriot Watt University in the field of construction management.

Mr. Alshehri has more than nine years of experience in field of construction and facilities management. He worked on Saudi National Guard with the project management department as a project manager assistant. He participated in OMAENITC conference in 2013 and 2014 as a note speaker and published scientific paper in ARCOM in 2014. Eng. Ayman Alshehri is a member in PMI, CIOB and RICS.