UNIVERSITI TEKNOLOGI MARA

CONFERENCE PROCEEDING

ICITSBE 2012

1ST INTERNATIONAL CONFERENCE ON INNOVATION AND TECHNOLOGY FOR SUSTAINABLE BUILT ENVIRONMENT

16 -17 April 2012

Organized by:
Office of Research and Industrial
Community And Alumni Networking
Universiti Teknologi MARA (Perak) Malaysia
www.perak.uitm.edu.my

PAPER CODE: FM 19

CUSTOMERS SATISFACTION TOWARDS MAINTENANCE MANAGEMENT IN A GOVERNMENT HOSPITAL BUILDING IN MALAYSIA

Mirdeeliana Bt Amir
Faculty of the Built Environment
University of Malaya, Kuala Lumpur

Abstract
Hospital is a complex building that operates 24 hours a day and the most difficult largely public sector buildings to maintain. The effectiveness of government hospital is affected by several factors, including the hospital maintenance quality. This research is attempts to look into the customers' satisfactions towards the maintenance management performance for (3) three government hospital buildings that has been awarded to three (3) local service providers. Three (3) hospitals building that managed by three (3) different service providers, which is Faber Mediserve Sdn Bhd, Radicare (M) Sdn Bhd and Pantai Medivest Sdn Bhd involved in this study. Data were collected through questionnaire surveys due to the possible subjects move around the building during the course of their work. A total of 100 respondents from each hospital were selected as the respondents to fill up the End User's Satisfaction Questionnaire. The data collected are analyzed by mean index. The findings signify that the customers are almost satisfied with the maintenance of the government hospital buildings. In contrast, low satisfaction could be found from the items related to the quality of time i.e. 'whether requested work is completed by the time it is needed'. In general, the satisfaction level among the respondents from three (3) hospitals is 'average satisfied'.

Keywords: maintenance management, service provider, customer satisfaction, Malaysia,

1. Introduction

A hospital is a complex building. As a functional building, it must be able to accommodate and facilitate the diagnostic, healing, treatment, general care and comfort of the occupants, both those treating as well as those being treated. Commonly, the main cause of poor hospital building condition is lack of maintenance. Every hospital buildings should be manage and maintain efficiently and effectively so that the hospital is safe and always in a good condition. The maintenance practice in every hospital is very important in order to avoid any service disruption that can affect the operation in the hospital buildings. Barrie and Peter (2007) state that health care buildings are the most difficult, largely public sector buildings to maintain because of their complex engineering services and their heterogeneous nature. They also mentioned that due to safety and hygiene considerations, the condition of hospital buildings has become a particularly sensitive issue.

To manage a hospital means that the building is required to be well maintained and kept in excellent operational order in order to ensure its performance. A simple let-down in any area, indirectly will affect the organization activity, increase for maintenance cost and also affect the quality of service provided by the hospital itself. According to Loosemore and Hsin (2001), the goal for maintenance management in a hospital environment is to achieve "zero defects" in the hospital's physical operation, particularly in areas where small problems can create huge consequences and might be a matter of life and death. One of the main challenges of managing hospital in terms of facilities is the highly diverse network and range of functions which are needed to maintain operations and the complexity of services which are required to support them.

1.1 Problem Statement

Hospitals require the facilities that can fulfill human needs of all facilities provided. Every aspect of upkeep and maintenance need to be well maintained and should be in good operational order. Thru an observation, many

problems occur in government hospitals has causes a lot of trouble to the users due to the actions of underestimating the important of maintenance to the government hospitals. The following are examples related to government hospitals problems:

Government Hospitals	Problems Occur
Sultan Abdul Halim Hospital (HSAH), Sg Petani, Kedah	The waste water sewerage pipe is leaking and overflowing at the cafeteria (Utusan Malaysia, 12 Jun 2007). This is the third problems since launching on 14 Mac 2007. In 12 Mei 2007, five piece of ceiling collapse at 2nd floor of the main building.
Queen Elizabeth Hospital, Sabah	There are cracks on the building and also hole which contain water in (Utusan Malaysia, 6 Nov 2008).
Hospital Bersalin Pulau Pinang (HBPP)	14 December 2010, piece of plaster ceiling around 0.3 meter fall down and almost cause harm to 15 patients in the ward
Serdang Hospital	On 30th January 2011, three parts of ceiling collapse at the Serdang Hospital's main lobby (The Star, 31st January 2011).

Figure 1: Problems Occur in Government Hospitals

Failure of assets and facilities gives the negative perception to the performance of the government hospital in managing the asset and facility in the building. It shows that maintenance management in hospitals is still being practiced in an improper procedure by the maintenance department. With a proper maintenance program, such cases can be avoided. There is therefore a need to evaluate the implementation of maintenance management in government hospitals in order to control building performance and achieve clients and users satisfactions.

1.2 Research Aim & Objectives

Generally, this research seeks to have a better understanding and knowledge of maintenance management practice specifically in the context of government hospital buildings. The research aim is ***to analyze the current performance of the facilities maintenance management in hospital buildings***. More focused on the Malaysian government hospitals and to the three (3) service providers, those manage the hospital support services within the concession period. This research is only focused on Facilities Engineering Maintenance Services (FEMS) in government hospitals. Therefore to achieve this aim, three (3) research objectives have been outlined as follows:

a) To study on the concept of maintenance management system in Malaysia;
b) To identify the strategies of implement the concept of maintenance management systems in government hospital by three (3) concession companies;
c) *To assess the existing maintenance management processes and practice from end user's point of view* in order to evaluate the effectiveness of maintenance management.

This research seeks to answer the following questions by responding to the objective specified:

Question 1: *What is the concept of maintenance management?*
Question 2: *What are the concepts of maintenance management systems implement in government hospital by concession companies?*
Question 3: *By referring to the end users point of view, is the maintenance managements applied in the hospital effective?*

1.3 Scope And Limitation Of The Research

The scope of this study is focusing on FEM services in government hospitals practice by three (3) concession companies, Faber Mediserve Sdn Bhd, Radicare (M) Sdn Bhd and Pantai Medivest Sdn Bhd, which is privatized by Ministry of Health (MoH) since 1996. The study will explore and discuss only on the processes and practice of maintenance management system (Facility Engineering Maintenance) in selected government hospitals under the concession companies excludes Biomedical Engineering Maintenance, Linen & Laundry Services, Clinical Waste Management and Cleansing Services. The research is conducted on hospital end users – study on the satisfaction of hospital facilities.

2. Literature Review

The Malaysian government introduced outsourcing as a national policy for the past 26 years (Suliati el, 2008), and in 1996, while announcing the Seventh Malaysia Plan, the idea of outsourcing the healthcare of Ministry of Health (MOH), Malaysia was raised by the government. The government of Malaysia outsourced the hospitals support services after 10 years UK introducing outsourcing of healthcare support services in their country

(Suliati el, 2008). The main reason of outsourcing of healthcare support services is to leave hospitals to concentrate on their core function, beside to increase the efficiency of services and to retain its own qualified and experienced manpower (Economic Planning Unit, 1996). As mention by Suliati el, (2008), the only way the Government to meet health care demands is by sharing the workload with the private health care sector and sharing the cost with workers and employers.

In 1997, the Government of Malaysia introduced a new concept for hospital support services by outsourcing all government hospitals to the private sector. The project was undertaken with the intention to help in managing all government hospitals services to be more economically and efficiently. The aim of outsourcing is to improve efficiency. Suliati el, (2008); Maizan Baba, (2008); Chan C.K., (1996), state that the outsourcing of healthcare support services in government hospital is one of the biggest outsourcing projects implemented by the government and the most sophisticated in the world. On 28 October 1996, heralded the commencement of the 15 years concession to the private companies with the signing of the concession agreement between the government and the concession companies to provide hospital support services for all the zones. According to Azman (2007) as state by Pillay (2002) the outsourcing hospital support services was awarded to the three concession companies: Faber Mediserve (M) Sdn Bhd; Radicare (M) Sdn Bhd; and Pantai Medivest Sdn Bhd (previously known as Tongkah Medivest (M) Sdn Bhd), in joint venture with their foreign partners started on 1 January, 1997 involving US$2.8 billion/10 billion Malaysian Ringgit in yearly expenditure (Chan C.K, 2000). They were selected to initially take responsibility on a fixed price and period basis of 127 hospitals and 4 health institutions through the country (M. Ali el, 2008), currently 148 hospitals.

3. Research Methodology

The study begins with a review of the relevant literature on the issues of maintenance management implementation within Malaysian government hospital. The review is divided into two parts. The first part includes literature on the review of maintenance management. The second part of the literature review covers the context of hospital support services (HSS) in government hospital. Various means were used to develop the literature review which included books, academic journal articles and research paper, conference proceedings, magazine, etc. Objectives 1 can be achieved through a literature review.

In order to achieve objectives no 2 and 3, the triangulation method is adopted. Using a combination of data types – qualitative and quantitative approaches, increases validity and reliability of the data, since the strength of one approach can compensate for the weakness of another approach. (Patton, 2002). Since the objective of this study have two frames that identify the maintenance management system implemented in government hospitals and the effectiveness of maintenance management in the government hospitals, the process of preparing a questionnaire survey form is divided into two formats, namely:

- Structured interview format on an elements for implementation of maintenance management.
- A questionnaire study on the effectiveness of maintenance management in the government hospitals.

Samples for this study are the respondents that work as a maintenance manager/supervisory/officer of the building and also the end users of the hospital buildings. The end user respondent samples will be taken from the various categories of services and background of the respondents. The sampling technique for this research is using the 'random sample'. For the sampling techniques, end user had to respond accordingly to a Likert scale of 1 to 5, which expressed the respondents' satisfaction level. The range of the scale were:

Very Dissatisfied	Somewhat Dissatisfied	Neither Satisfied nor Dissatisfied	Somewhat Satisfied	Very Satisfied
1	2	3	4	5

Figure 2: Likert Scale

Data Collection Techniques: Quantitative: Questionnaire Design

In this study, the questionnaire method is used only to the end users of the hospital buildings as the number of data that required from this group is many. This method is not suitable for maintenance management manager/staff/officer because the information from them obtained by interview only, since only few respondents needed in this study. Form distribution was done by met with the respondents themselves in hospital building and explained the purpose of the survey further asked them to give their cooperation to fill the forms. Through this questionnaire, many data has been collected for analyzed.

Qualitative: Focused Interviews

Interview is conducted specifically to the maintenance staffs of the chosen government hospital buildings. The interview questions are prepared based on the open ended and semi-structured interview. Interview is used to clarify the data obtained from archives and questionnaires, also for further understanding the process of maintenance works in Government Hospitals. Interview after analyze the questionnaire is to study the root of the problem occurs. The interview was done with:

i. The Engineer of Selayang Hospital & RADICARE Selayang Hospital
ii. The Engineer of Melaka Hospital & PANTAI MEDIVEST Melaka Hospital
iii. The Engineer of Sultanah Bahiyah Hospital & FABER MEDISERVE Sultanah Bahiyah Hospital

4. Research Findings and Analysis

The data analyzed from surveys carried out to the hospital end users of the selected government hospitals respectively. The data analyzed are pertaining to the priorities set by end users, maintenance management systems applied, level of performance rated by end users and maintenance management performance level as rated by end users.

4.1.1 Distribution of Questionnaires

Table 1: Hospital Respondents

HOSPITALS	FREQUENCY	PERCENTAGE
Hospital Sultanah Bahiyah, Kedah	62	31.47%
Hospital Melaka, Melaka	71	36.04%
Hospital Selayang, Selangor	64	32.49%
Total	197	100%

Survey was conducted from April 2011 until August 2011. There are a total of 300 questionnaires being distributed equally to the three (3) chosen government hospitals (Refer Table 1), whereby 197 subjects completed and returned the questionnaires to be analysed, 62 (31.47%) subjects from Hospital Sultanah Bahiyah, another 71 (36.04%) subjects from Hospital Melaka and lastly 64 (32.49%) subjects from Hospital Selayang.

4.1.2 Background of Respondents

There are four variables of respondents background which has been analysed from questionnaires received, there are: Respondents' Gender, Respondents' Age, Work Categories and Working Period.

4.1.2.1 Respondents' Gender

Table 2: Proportion of Respondent's Genders

GENDERS	FREQUENCY	PERCENTAGE
Male	87	44.2%
Female	110	55.8%
Total	**197**	**100.0%**

Table 2 compares the participation of end users in the survey according to the different types of gender that is male and female. Overall trend shows there is a balance involvement of males and females in this survey. Female represents the largest group of gender with 55.8% slightly higher than the males with 44.2% or 23 respondents less the female group. The random distribution of questionnaires results in a balance proportion of subject gender for this study.

4.1.2.2 Age of Respondents

Table 3: Participation of respondents per age groups

AGE GROUPS	FREQUENCY	PERCENTAGE
25 and under	52	26.4%
26 to 35	76	38.6%
36 to 45	41	20.8%
46 to 55	19	9.6%
More than 55	9	4.6%
Total	**197**	**100.0%**

Table 3 depicts the age groups of respondents participated which starts from 25 years old and below up to more than 55 years old. The highest percentage (38.6%) of the respondents is from the age group of between 26 to 35 years old age group which is represented by 76 respondents while the second highest (26.4%) age group is 25 and under group. Following the figures is the 36 to 45 years old respondents which are represented by 41 respondents. 9.6% of the respondents from 46 to 55 years old age group and finally respondents that more than 55 years old with the lowest percentage of 4.6. The participation from all levels of ages balances the different diverse perceptions needed in this study.

4.1.2.3 Work Categories

Table 4: Work Categories

WORK DESCRIPTIONS	FREQUENCY	PERCENTAGE
Management & Professional	29	14.7%
Support Unit I	94	47.7%
Support Unit II	74	37.6%
Total	**197**	**100.0%**

The table (Table 4) shows the work descriptions of the respondents from three (3) different government hospitals. All respondents participated in the survey are the building occupants whose work categories vary from management & professional, support unit I and support unit II. Almost half (47.7%) of the respondents are from Support Unit I followed by 37.6% from Support Unit II group. Management & Professional workers on the other hand represent the least percentage (14.7%) from the total number of respondents which equals to 29 workers.

4.1.2.4 Working Period

Table 5: Participation of Respondents based on working period in the building

WORKING PERIODS	FREQUENCY	PERCENTAGE
Less than 1 year	33	16.8%
1 – 2 years	65	33.0%
3 -5 years	69	35.0%
More than 5 years	30	15.2%
Total	**197**	**100.0%**

From table 5, it can be seen that respondents from this survey are categorized based on the working period in the respective government hospital buildings. Most respondents (35.0%) are found have been working for 3 to 5 years in the hospital and slight decreased of 4 respondents from the group is represented by the building occupants who have been working there for 1 to 2 years. Next, building occupants who have been working there

for less than 1 years (16.8%) which is represented by 33 respondents. Finally building occupants who have been working there for more than 5 years with the lower percentage (15.2%) are counted as 30 respondents.

4.1.3 Level of Satisfaction for Maintenance at Government Hospitals

a. Performance on Safety Precautions During Maintenance Works As Rated By End Users

Table 6: End Users Satisfaction on Safety Precautions

Level of Satisfaction / Hospital		Very Dissatisfied	Somewhat Dissatisfied	Neither	Somewhat Satisfied	Very Satisfied	Average	Satisfaction Scale
Safety precautions during maintenance works	Hospital Sultanah Bahiyah	0	0	2	45	15	4.21	Good
		0%	0%	3.2%	72.6%	24.2%		
	Hospital Melaka	0	0	6	56	9	4.04	Good
		0%	0%	8.5%	78.9%	12.7%		
	Hospital Selayang	0	2	16	36	10	3.84	Average
		0%	3.1%	25.0%	56.3%	15.6%		

Level of satisfaction rated by end user towards the performance on safety during maintenance works in hospitals is show in the table above (Table 6). For Sultanah Bahiyah Hospital, 45 out of 62 respondents stated that their level of satisfaction is 'somewhat satisfied' (72.6%), while 15 (24.2%) respondents are very satisfied with the safety precaution level. Only 3.2% (2) respondents neither satisfied nor not satisfied with the performance. While for Melaka Hospital, 78.9% or 56 respondents somewhat satisfied with the performance, 12.7% (9) respondents are very satisfied and 8.5% (6) respondents neither satisfied nor not satisfied with the performance. From the table above, the satisfaction scales for Sultanah Bahiyah Hospital and Melaka Hospital are good, while for Selayang Hospital, the satisfaction is rated as average with only 56.3% or 36 respondents somewhat satisfied, 16 (25%) respondents neither satisfied nor not satisfied with the performance. 15.6% (10) respondents feels very satisfied while 3.1% (2) respondents are somewhat dissatisfied with the performance.

b. Performance On Time Taken During Maintenance Works As Rated By End Users

Table 7 shows the level of satisfaction rated by end users towards the time taken during maintenance works. According to the end users in Sultanah Bahiyah Hospital, 69.4% (43) respondents are somewhat satisfied with the performance, and 22.6% (14) respondents are very satisfied with it. While 4 (6.5%) respondents somewhat dissatisfied with the performance. With the highest average of satisfaction level compare to the other hospital performance, 57 respondents with 80.3% in Hospital Melaka are somewhat satisfied with the level of performance, 15.5% respondents are very satisfied, and 4.2% neither satisfied nor not satisfied with it. While for Selayang Hospital, only one (1) end user is very satisfied with the time taken to implement maintenance works and 18 (28.1%) respondents are satisfied. Most of the end users (31 respondents) think that the time taken to implement maintenance works in the building is average (48.4%). While another 14 respondents are dissatisfied with the performance level.

Table 7: End Users Satisfaction on Time Taken

Level of Satisfaction		Very Dissatisfied	Somewhat Dissatisfied	Neither	Somewhat Satisfied	Very Satisfied	Average	Satisfaction Scale
Time taken to implement	Hospital Sultanah Bahiyah	0	4	1	43	14	4.08	Good
		0%	6.5%	1.6%	69.4%	22.6%		

maintenance works	Hospital Melaka	0	0	3	57	11	**4.11**	**Good**
		0%	0%	4.2%	80.3%	15.5%		
	Hospital Selayang	1	13	31	18	1	**3.08**	**Average**
		1.6%	20.3%	48.4%	28.1%	1.6%		

c. The Quality of Maintenance Works As Rated By End Users

In term of the quality of maintenance works as rated by end users, 44 respondents from Sultanah Bahiyah Hospital are somewhat satisfied with the performance and only 14 respondents are very satisfied with it. The other 3 respondents are neither satisfied nor dissatisfied with the level of performance and only one respondent is very dissatisfied with it. While for Melaka Hospital, 78.9% respondents are somewhat satisfied with the quality of maintenance works, 11.3% are very satisfied and only 9.9% respondents rate the quality as neither satisfied nor dissatisfied with the performance level. For Selayang Hospital, 53.1% (34) respondents neither satisfied nor dissatisfied with the maintenance quality, only 4.7% respondents are very satisfied and 32.8% respondents are satisfied with the quality of maintenance. Another 34 respondents rate the performance level as average and 9.4% respondents somewhat dissatisfied with it (Table 8).

Table 8: End Users Satisfaction on Quality

Level of Satisfaction		Very Dissatisfied	Somewhat Dissatisfied	Neither	Somewhat Satisfied	Very Satisfied	**Average**	**Satisfaction Scale**
The quality of maintenance implemented by the hospital management	Hospital Sultanah Bahiyah	0	1	3	44	14	**4.15**	**Good**
		0%	1.6%	4.8%	71.0%	22.6%		
	Hospital Melaka	0	0	7	56	8	**4.01**	**Good**
		0%	0%	9.9%	78.9%	11.3%		
	Hospital Selayang	0	6	34	21	3	**3.33**	**Average**
		0%	9.4%	53.1%	32.8%	4.7%		

4.1.4 Level of Satisfaction for Building Elements

From the questionnaires, end users are requested to rate their satisfactions towards performance level of maintenance management systems based on the service elements for three (3) concession company which is Faber Mediserve Sdn Bhd, Radicare (M) Sdn Bhd and Pantai Medivest Sdn Bhd. Figure 2, shows the performance of eight (8) building elements services rated by 197 end users (71, 62 and 64) from three different hospitals, Sultanah Bahiyah Hospital, Melaka Hospital and Selayang Hospital, respectively. On the whole, Sultanah Bahiyah Hospital has been rated for having a good performance in all of the building services. While Melaka Hospital has been rated almost good in all of the building performance and Selayang Hospital has been rated for having an average performance in the building services. By comparing the service performance rated by end users from three (3) hospitals, it can be seen that generally, Sultanah Bahiyah Hospital is successfully provided a good quality in all building services provided while the quality for Selayang Hospital service performance is the lowest as rated by end users.

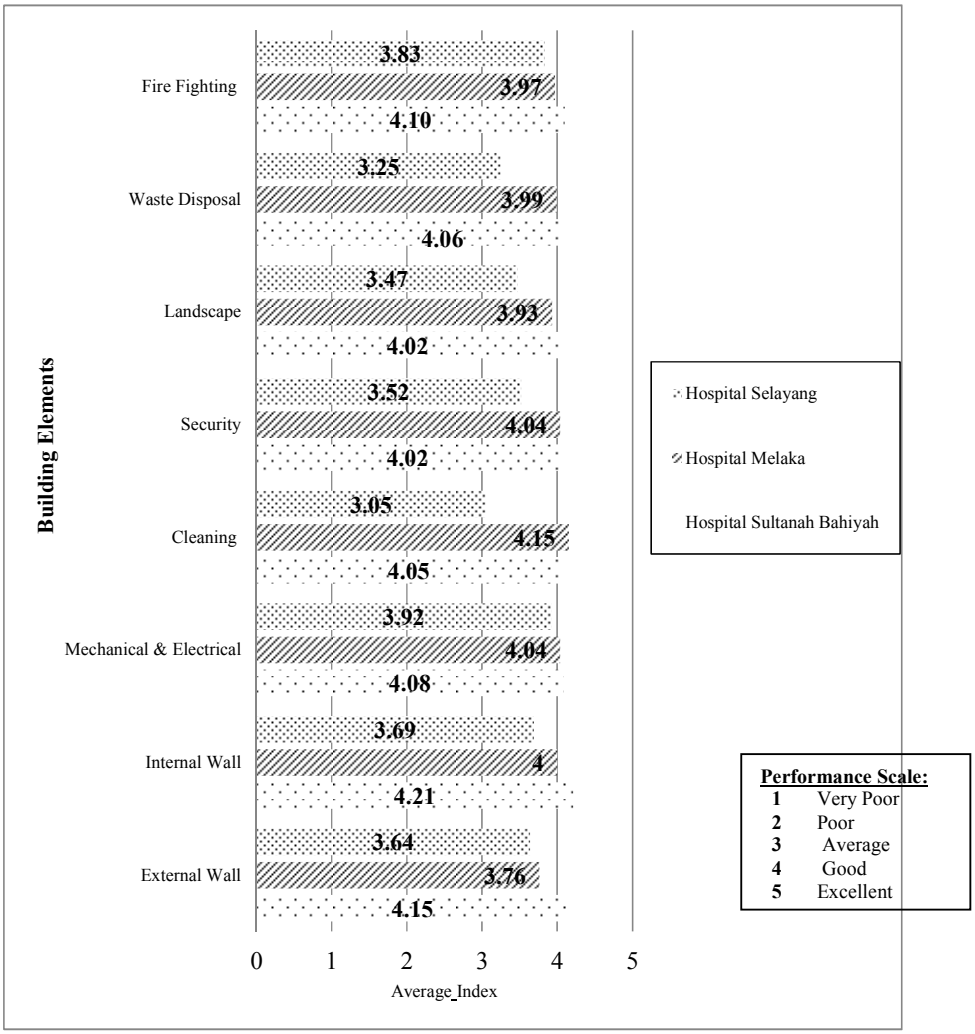

Figure 2: Building Elements Average Index

4.1.5 Overall Performance of Maintenance Management as Rated by End Users

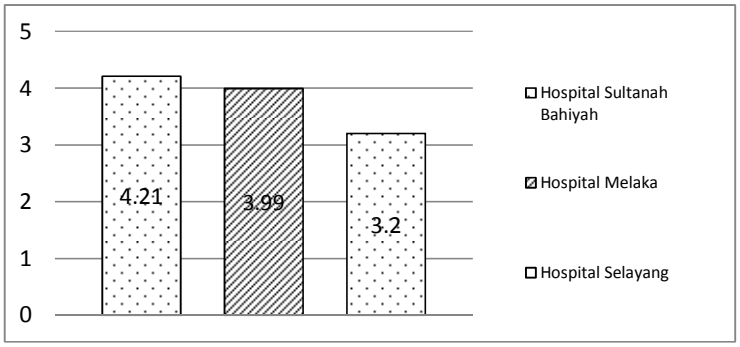

Figure 5.9: Overall Performance of Maintenance Management

The final element that the end users are requested to evaluate is on the overall performance of maintenance management system. It can see that the end users from two (2) hospitals namely Melaka Hospital and Selayang Hospital rated the overall performance of the maintenance services provided as average (Figure 5.9). While Sultanah Bahiyah Hospital achieved a better class of performance that is good by its end users.

5. Conclusion

The findings signify that the customers are almost satisfied with the maintenance of the government hospital buildings. In contrast, low satisfaction could be found from the items related to the quality of time i.e. 'whether requested work is completed by the time it is needed'. In general, the satisfaction level among the respondents from three (3) hospitals is 'average satisfied'.

References

Deris, M.S.B.M. (2007). Tahap Keberkesanan Pengurusan Penyenggaraan Fasiliti Bangunan Di Sektor Awam. Fakulti Kejuruteraan Dan Sains Geoinformasi. Johor, Universiti Teknologi Malaysia: 168

Hashim, A. R (2006) Maintenance Management And Services (Case Study: Perkeso Building's in Peninsular of Malaysia).

Isa, Z.M.(2002) *A Review on Performance Measurement Approaches in Property Management.* Proceedings of the International Real Estate Research Symposium.

Kumar, R. (2005). Research Methodology: A Step-by-step Guide for Beginners.

Mohamad, M.A.W. (2009). "Audit Assessment of the Facilities Maintenance Management in a Public Hospital in Malasia." Journal of Facilities Management 7(2):17

Piaw, C.Y. (2006). Kaedah dan Statistik Penyelidikan: Asas Statistik Penyelidikan McGraw-Hill (Malaysia) Sdn Bhd.

Piaw, C.Y. (2006). Kaedah dan Statistik Penyelidikan: Kaedah Penyelidikan McGraw-Hill (Malaysia) Sdn Bhd.

Sekaran, U. (2006) *Research Methods for Business: A Skill-Building Approach*, John Wiley & Sons, Inc.

Wordsworth, P. (2001*) Lee's building maintenance management: 4th Edition*. Oxford: Blackwell Science Ltd.

Loosemore, M., & Hsin, Y. Y., (2001). Customer-focused benchmarking for facilities management. Facilities, 19 (13/14), 465-475.

Carter, B & Swallow, P (2007) Building Maintenance Management: 2nd Edition. Wiley-Blackwell.

Economic Planning Unit, EPU Malaysia (1996)

Maizan Baba and Abdul Hakim Mohammed, "Contract Framework for Outsourcing of Facilities Management – An Industry Perspective, International Real Estate Research Symposium (IRERS), PWTC Kuala Lumpur, 28-30 April, 2008