POLITEKNIK SULTAN SALAHUDDIN ABDUL AZIZ SHAH

The Impact of Involvement Facilities Management In Private Finance Initiative (PFI) For Educational Institution

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ABSTRACT

Facility management is an interdisciplinary feature of the coordinating company rooms, infrastructure, individuals and organizations. Application of facilities in higher education institutions still need to be thoroughly researched and that is why this research is being done began to evaluate the application of facility management practices in the University and today's competitive global environment has led governments around the world to find new ways to fund projects, build infrastructure and provide services. Private Finance Initiatives (PFI) are increasingly being used as a tool to bring together with the strengths of both sectors, public and private to facilitate the delivery of projects and services. However The new PFI scheme introduced by the Government of Malaysia through the Ninth Malaysia Plan in public delivery infrastructure is the target of criticism. The methodology of this study uses the questionnaire method. The study subject consists of 2 uitm where the construction of the educational institution is a PFI project, namely Uitm Tapah and Uitm Puncak Alam which involves technicians from the FM company of the institution and also the students. Instruments to conduct this study consisted of instruments using questionnaires .500 structured research questionnaires were distributed, 403 completed and returned. The data obtained were analyzed using Microsoft excel to produce data analysis from the respondents. The purpose of this study is to promote best practices on the involvement of management facilities in Private financial initiatives (PFI) for educational institutions. Good management should start from the initial stage which is design to ensure it runs well up to the operational stage.

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CHAPTER ONE

INTRODUCTION

1.1 RESEARCH BACKGROUND

Facilities Management is one of the fastest growing areas in several Asian countries. Among them are Hong Kong, Singapore, Japan and other developing countries including Malaysia. Given the country's major development has grown, demand for facilities management services has also increased. Regardless of the size and type of building available, this facility is very much needed today. And among the business objectives being emphasized, each building or facility provided needs to be managed efficiently and effectively. This is necessary to achieve the goals of the organization.

In addition, the convenience of obtaining good management can provide strong support to the organizational performance. It also has a good impact on ensuring effective construction, systems, services and workforce and achieving organizational objectives and strategies (Hamilton & Norizan Ahmad, 2011). This statement is also supported by Zuhairi Abd. Hamid (2004) stating that facility management is known as property management. And it also provides services to support the operation of an organization. Facility management can also be linked with the responsibility to coordinate all efforts related to building planning, design, and management, including systems, tools, and furniture to enhance the organization's ability to compete in a fast-paced world (Becker, 1990; Hinks et al 1999; Kelly et al 2005).

Generally, FM is responsible to offer services related to facility planning, real estate and building construction, building operations and maintenance as well as support. In these activities, specific FM processes such as formulating FM strategy, analysing requirements, developing solutions, implementing solutions and monitoring service provisions are conducted (Atkin & Björk, 2007). These processes are conducted through three levels of management known as strategic, tactical and

operational. Each level contains specific roles and goals. The strategic roles of FM include dealing with high level of decision making such as formulating facilities strategy, negotiating service level agreement, identifying business needs and user requirements (Alexander, 2003; Noor & Pitt, 2009). At tactical level, tactical plans are developed according to strategic demands (Robathan, 1996). Meanwhile, operational level of FM involves day to day activities in supporting the core business.

1.2 PROBLEM STATEMENT

In Malaysia, studies on student satisfaction levels have been conducted in various aspects including student satisfaction from both academic and non-academic aspects (Ibrahim, Rahman, & Yasin, 2014), studies on the factors of student satisfaction in facilities services (Maimunah Sapri, Kaka, & Finch, 2009), assessing the background and impact of student satisfaction on higher education in Malaysia (Lai, Lau, Yusof, & Chew, 2015) and managing quality in higher education institutions in Malaysia (Sadiq Sohail, Rajadurai, & Nor Azlin, 2003). Studies on factors affecting students' satisfaction with asset management and facilities have not been carried out

1.3 RESEARCH QUESTION

In this study, the question of this study has been stated to achieve the objectives which have been determined by the research title. The question of the study has been identified, namely what is the impact to concession and consumer when facilities management involved in private finance initiative (PFI) educational institutions.

1.3.1 Sub Research Question

RQ1: What is the important of Facility Manager role in private finance initiative (PFI) educational institutions?

RQ2: How to investigate the impact of facilities management in private finance initiative (PFI) educational institutions?

RQ3: What recommendation could we made to improve facilities management in private finance initiative (PFI) educational institutions?

1.4 AIM OF RESEARCH

To promote a best practise of involvement of facilities management in private finance initiative (PFI) educational institutions

1.4.1 Research Objectives

Thus, parallel to the research questions above, this study seeks to achieve the objectives stated below:

1. To identify the role of facilities manager in private finance initiative (PFI) educational institutions.
2. .To investigate the impact of Facilities Management in private finance initiative (PFI) educational institutions.
3. To promote a best practise of involvement Facilities Management in Private finance initiative (PFI) educational institutions.

1.5 SCOPE OF RESEARCH

This research involved the staff of the facility management company technicians and the students who are at Uitm Tapah and Uitm Puncak Alam. In addition, this study focuses on four main effects namely maintenance, communication, quality and security provided by the facility management company.

To conduct this study, several facility management companies were selected to obtain information on the effects that affect FM involvement in educational institutions. To obtain such information, a questionnaire will be sent via email to technicians from FM companies as well as selected students.

To conduct research, several areas have been determined such as:

1. Identify the role of facilities manager in private finance initiative (PFI) educational institutions.
2. Investigate the impact of Facilities Management in private finance initiative (PFI) educational institutions.
3. Best practise of involvement Facilities Management in Private finance initiative (PFI) educational institutions.

1.6 THE IMPORTANCE OF RESEARCH

This study is research that provides an overview and provides data on the effects that influence the early involvement of FM in PFI projects for educational institutions. This study is expected to provide useful information to the organization to evaluate the effects of early FM involvement that influences a more secure management.

This study also outlines the available approaches for procurement used in FM companies. In addition, this study can also be used as an additional reference for all facilities management companies and university students. Students can use the information in this study as a reference and produce quality research.

1.7 SUMMARY OF THE CHAPTER

Chapter one is an introduction to the study to be conducted and the direction of the study. Covering detail of the background study, problem statement, research problem, objective, terminology in research and constraint studies.

The findings of this study are very useful to those in need because it can help provide inputs for other studies related to the approach to procurement used in the company of facilities management in Malaysia.

In conclusion, this finding has good implication when viewed positively.

CHAPTER 2
LITERATURE REVIEW

2.1 INTRODUCTION OF FACILITY MANAGEMENT

Facility management (FM) are also known as an integrated approach to maintaining, improving and adapting the buildings of an organization in order to create an environment that strongly supports the primary objectives of that organization (Barret and Baldry, 2003). Organizations can work with the most effective levels by managing non-core business services. Chotipanich, (2004) states that FM is essentially a key function in managing facility resources, support services, and working environment to support the core business of the organization in both long term and short term. FM was described by an International Facility Management Association (IFMA, 2006) as a profession that encompasses various disciplines to ensure built-in environmental functions by integrating people, places, processes, and technologies. Alexander (1995) also states that FM is a process whereby the organization ensures the core, process and support operation of the building, system and support operations as well as contributes to achieving the objective of the strategy in changing circumstance.

The IFMA model of a triangle of „Ps" sums up facility management concerns in today"s work place: people, process and place. These three factors are interdependent and have direct reciprocal relationships. FM finds management solutions by positioning itself at the intersection of these three factors (figure 1). This strategy makes sense, since people, process and place are the three main factors of organisations, and FM involves the whole organisation. The position of FM at the centre implies enhanced cooperation among the key factors in any organisation. However, FM is most active with factors relating to place.

Figure 1: Triangle of ‘Ps’ and FM (Source: IFMA)

Nutt (2004) observed that the FM is the main source for the supply and management of infrastructure with a focus to support and maintain the operating strategy of the organization over time from the perspective of strategic management. Chotipanich (2004) also states that overall, FM is a key function in managing resource facilities, service support and work environment to support long-term and short-term business organizations.

In addition, Atkin and brooks (2009) state that the management of the facility can be formulated as creating a conducive environment to carry out major organizational operations, taking an integrated view of the service infrastructure, and using it to provide customer satisfaction and best value through the support and enhancement of business core.

Based on the above perspective, it shows that the definition and scope of the FM service are vast. Kelly, (2002) states that FM has different meanings to different parties and the scope of the service also varies between organizations or departments. However, Atkin and Brooks (2005) argue that the definition of FM should be emphasized on the integrity of the discipline that is integrative and interdependent with the overall purpose of maintaining the organization in managing its business and its purpose. This means the FM service should aim to achieve; supporting people in their jobs and other activities, enhancing individual well-being, enabling organizations to deliver efficient and responsive services, sweeping 'physical assets to make it very cost-effective, enabling future changes in space

utilization, providing competitive advantage to core businesses organization and to improve organizational organization and image. In conclusion, Spedding and Holmes (1994) emphasize the purpose of the facility management not only to optimize the cost of building operations, but to enhance the efficiency of space management and related assets for people and processes, so that the company's mission and goals can be achieved with the best combination of efficiency and cost.

From a professional institution "stand point, The International Facility Management Association (IFMA) recognised FM as "a profession that encompasses multiple disciplines to ensure functionality of the built environment by integrating people, place, process and technology ".This definition clearly illustrates the holistic nature of the discipline and the interdependence of multiple factors that is important to its success. Moreover, the British Institute of Facilities Management (BIFM), a leading body in the UK facilities management field, defines FM as: "The integration of multi disciplinary activities within the built environment and manages the impact upon people and the workplace" (BIFM, 2003).

Additionally, the British Standard Institution (2006),EN 15221-1:2006 defines facilities management as: "Integration of processes within an organisation to maintain and develop the agreed services which support and improve the effectiveness of its primary activities".

The different definitions above imply that facilities management is gradually and dynamically developing, especially regarding the broad range of aspects it deals with and changes in the built environment (Lavy and Shohet, 2007).Common to almost all of the definitions above is the idea that facilities management somehow concerns on provision of enabling working environment where the issues of people, place and processes are elements of the same problem seeking a common solution. Each of these three main provisions must be managed efficiently to ensure successful service delivery (Nutt, 2000).To ensure effective FM service delivery, proper planning and execution of services that combines both resources and activities is required (BIFM, 2003).

In describing the categories of facilities management, there are two (2) categories, namely soft and hard services. Hinks (2003) distinguishes the two categories by classifying FM services related to the management and

maintenance of property as hard FM while soft FM refers to support services. In healthcare public services context, Mustapa (2004) refers to soft services as activities that assure that a building or an area is properly cleaned while the hard services refer to the work carried out with respect to building maintenance.

Meanwhile, Olomolaiye et al., (2004) define soft FM as the people involved in FM services and hard FM as the technological issues in FM. Because there are several interpretations of the soft and hard services of FM, for the purpose of this research, hard FM refers to the maintenance and management of property while soft FM refers to the support services of FM.

To conclude, the major purposes of FM can be distinguished in two aspects: to support and sustain the operations work and activities of organisations and their staff, and to manage work environment (hard services),and support services(soft services). Nowadays, facilities management is gaining greater recognition and acceptance as a significant influence upon organisational success and goal achievement which can enhance business performance.

2.1.1 The Important of Facilities Management

Throughout the years, the importance of the facilities management has grown from many organisations. Design, construction and facilities management skills are necessary for developing innovative projects and for the operation of the completed assets or facilities (Robinson et al, 2010). Generally, different organisations are differently reliant on their facilities and support services, and affected by environment and context (Chotipanich, 2004). This is supported by Schindler (1998), who discovered that the differences in needs for FM are derived from the different cultures, business objectives and nature of organisations. Therefore, facilities managers need to define a management strategy in compliance with their organisation's strategy.

FM literature suggests that FM should be a strategic function with a connection with strategic objectives of core business (Barrett, 2000). In addition, many researchers such as Nutt (1999); Price and Akhlagi, (1999) have suggested that facilities management must evolve to a higher strategic level if an organisation is

to extract the best value from it. Similarly, facilities management is widely seen to have a focus on the strategy of the client organisation. Therefore, Hinks et al. (1999) concluded that an opportunity exists to those involved in facilities management to capitalise on the strategic aspects rather than the technical areas of FM service. This point demonstrates the importance of using facilities management knowledge at the strategic stages of a project.

Hence, the use of facilities management knowledge is becoming increasingly significant to cope with the current demands at both the operational and strategic level. Kincaid (1994) states that within facilities management, managers must be equipped with knowledge of facilities and management to exhibit an effective FM function. Eley (2001) also suggests that facility managers with plenty of experience and knowledge in FM would help any project by making decisions during the early stages of project inception or briefing.

McLennan (2000),outlines the importance of the business brief, the operational brief and the design brief in the integration of facilities management. This echoed by Smith et al. (2009) who state that strategic client briefing at early stages of project is now an essential component of best practice in facilities management. In the briefing process, facilities management can provide reliable life-cycle cost data from the design stage through the operational FM brief (Kelly et al, 2005; El Haram and Agapiou, 2002).

Decisions made during design can have a significant impact upon the future running and maintenance costs of buildings (Nutt, 2000). Ideally the facilities manager would be able to assist with accounting for the added value of buildings that are require less maintenance and are likely to result in fewer complaints by occupants (CIBSE, 2000). This suggest that a facilities manager and his team play a significant role in the inception stage to operational stage, where facilities manager is responsible for planning required for the maintenance of the facility and the day-to-day operation throughout a building’s lifetime especially in the case of PFI project.

It is widely accepted that there is a lack of information and data on the costs of running buildings, making it difficult for designers to be realistic when advising clients of the real costs of ownerships. Nutt (2000) has identified management of information and knowledge resources as a generic type of resource management

central to the facilities management function. Svensson (1998) in his study proposes a Knowledge Based System (KBS) framework model for facilities management purposes by integrating IT with facilities management. The framework developed supports an integrated information system for FM, but also data exchange with core business.

Clearly, the practice of facilities management gradually matures as the shift has been towards resource integration in facilities management (Shiem and Then, 1999) Facilities management is also become more importance as affected by the growth of a new procurement route such as PFI, which fundamentally changes the nature of the construction industry from a product to service base (Khosrowshahi et al., 2004).

2.1.2 Ensuring successful Facilities Management

The successful delivery of FM services depends very much on the previously mentioned service provision of FM that comprises three (3) main elements, namely, people, place and process. Successful FM also highly depends on cost effectiveness and performance management, that is, by controlling and delivering low cost of the service maintenance and at the same time achieving a specific level of quality. In doing so, the role of facilities manager is very crucial in delegating the tasks that fall under the corresponding service type.

2.1.2.1 Appointing a client representative

An organisation should appoint a person that has a good understanding of the nature and long-term business direction runoff the organisation as well as the ability to identify opportunities for improvement. He or she should occupy an executive post and be able to convey information regarding FM to the organisation’s board. This very much reflects the function of facilities manager.

2.1.2.2 Reviewing existing services

It is important to review and understand existing services in the context of company culture before planning for future FM services. It is the duty of the facilities

manager to canvass services for the assessment of specification criteria before translating them to technical performance to decide whether services should be kept in house or outsourced. Should a service be contracted out, a contract between users and the service provider will be prepared by specifying what the service is that users need and how and when it should be delivered.

2.1.2.3 Option appraisal

Should the type of FM services required be determined, the organisation should decide to do it on its own or to contract it out to external experts. Organisations that have started to employ FM programmes must decide whether to contract services out or concentrate on carrying out FM services on their own. Once decisions regarding FM have been made, organisations must decide whether to use a single-service contract or a packaged deal or draw together several services. It should also be determined whether total FM service will be provided or hands-on management will be relinquished.

2.1.2.4 Managing the relationship

Once the decisions regarding FM have been made, several negotiations are necessary, especially during the integration of FM resources. This may include the need to transfer staff to an external provider for the first time or from one supplier to another. It is important to establish the right relationship at the start. Managing the relationship will require translating the documents tendered into effective working manual and managing the risk/reward relationship. The need for this relationship also requires an investment in time to understand the working culture, establish lines of contact, provide conflict management as well as make sure that the people involved are properly informed.

2.1.2.5 Developing the service

FM is a continuous process that requires making changes and improvements, strategic planning, and auditing. It is important to obtain user feedback on requirements and performance. It is also important to benchmark an organisation’s services against those of its competitors and determine how the provisions of FM services compare. Quality and price should be balanced and perhaps re-examined.

Priority should be given to services with high value or complexity or those that carry a high core business risk. In some cases, it may be useful to commission an independent review by a third party.

2.1.2.6 Specifying

Upon assessing current FM provision, the identification of user demand and the need for services is needed and results in the need for specifications to formalise the conclusions. At this point, understanding how people work is a prerequisite for establishing levels of performance.

2.1.2.7 Selecting FM supplier

It is advised that an organisation re-tender outsourced FM services on a regular basis to ensure the latest updates on FM servicing. However, a FM client may be looking for a long-term partnering arrangement with a chosen supplier to secure cost effectiveness and stability. The organisation should have a clear view of how it would conduct the selection process and how it will test competitive bids for quality.(Syed Mustapa & Jusoff, 2009)

2.2 PRIVATE FINANCE INITIATIVE

The Private Finance Initiative (PFI) in the UK was introduced by the Conservative Government in 1992. Since 1997, the Labour Government has preferred to use the term Public Private Partnership (PPP). The term PPP is broader and encompasses a range of financial and organisational forms. This includes joint ventures between the public and private sectors, partial privatisations, sale and lease-back arrangements, as well as the Private Finance Initiative (4Ps, 2007).

According to the HM Treasury (2000), both PFI and PPP are designed to establish arrangements that will bring benefits to both sectors and are a key element in the Government's strategy for delivering modern, high quality public services. However, this is not the preferred strategy beginning from August 2011 due to many critics on the weaknesses of the PFI contract (Treasury Committee Report, 2011). It is anticipated that the development of PFI in the coming years will involve consolidating some of the existing practices and ensuring the long-term variability of PFI procurement as an alternative, offering best solutions for construction and value

for money to the taxpayers (National Audit Office, 2011). Hence, this research is still relevant in the UK construction industry where most of the PFI projects are currently in their operational stage.

In the Malaysia context, the Ninth Malaysia Plan (9MP) defines PFI as involving the transfer of the responsibility of financing and managing capital investment and services in relation to public sector assets to private sector (Economic Planning Unit, 2006). Private sector will be responsible for financing, constructing, managing, maintaining and operating the facility in order to deliver the service to the public sector throughout the concession period. In return, public sector will pay the private sector in the form of lease rental charges which commensurate with the quality of the services provided.

Currently, in Malaysia, the demand for the efficiency in public services has increased towards the promptness of development (Imtiaz et al. 2007). The government accorded a very high priority to infrastructure development (Wen, 2006). In a conventional procurement process, projects with a broad scope are generally broken down into their component parts and managed as separate units that have to be implemented sequentially due to budget limitations. As a result, the opportunity to develop an integrated solution that effectively addresses a public sector need is often missed. To a certain extent, most of the public projects have been plagued by delays and shoddy workmanship, which is inherently seen as a major problem to the government (Jayaseelan & Tan, 2006; Endut, 2008). Furthermore, the Malaysian government is reluctant to spend big bucks on development of public infrastructure projects due to insufficient public sector capital funding (Netto, 2006). Therefore, to bridge these issues the Malaysian government is turning to Private Finance Initiative (PFI) for transforming the public projects. With PFI procurement, the scope of procurement is expanded to reflect a broader content with the focus being shifted to developing an integrated solution.

Table 1 shows the structure of PFI in Malaysia. The PFI project agreement is entered into between the Public sector (represented by various government ministries) and the SPV Company (private consortium). The PFI Sdn Bhd, a specific government body is setup up to administer the Malaysia PFI procurement process. PFI Sdn Bhd borrows money from EPF to finance selected projects under the Ninth Malaysia-Plan. The commitment of PFI Sdn Bhd is to design, construct, operate, manage and maintain the facility throughout the concession periods (Tan, et al. 2006). Therefore, the risk associated with the project includes the risks of construction, management, and maintenance of the assets. In return, the Government will be contracted to pay for the services based on performance and standard provided. Future tariff revision will also be subjected to a Reward-and-Penalty system (Tan, et al. 2006; Express, et al. 2006 and Kok, et al. 2006)

Ministries	Total number of Projects in the Ninth Malaysia-Plan	PFI Projects	Other form of Procurements
1. Prime Minister's Department.	71	**3**	68
2. Treasury Department	13	**1**	12
3. Plantation Industry and Commodities Ministry	3	**1**	2
4. Agriculture and Agro-based Industries Ministry	4	**2**	2
5. Rural and Urban Development Ministry	7	**0**	7
6. Natural Resources and Environment Ministry	12	**4**	8
7. International Trade and Industry Ministry	2	**0**	2
8. Ministry of works	66	**1**	65
9. Ministry of Transport	26	**2**	24
10. Energy, Water and Communication Ministry	12	**0**	12
11. Science, Technology and Innovation Ministry	10	**0**	10
12. Ministry of Education	497	**357**	140
13. Ministry of Health	27	**0**	27
14. Ministry of Culture, Arts and Heritage	6	**1**	5
15. Youth and Sport Ministry	3	**0**	3
16. Human Resources Ministry	1	**1**	0
17. Ministry of Information	10	**8**	2
18. Ministry of Higher Education	25	**0**	25
19. Ministry of Defence	38	**17**	21
20. Ministry of Home Affairs	5	**3**	2
21. Ministry of Internal Security	42	**24**	18
Total	880	425	455

Table 1: The Malaysian PFI projects based on the Government Ministries Source: Badawi (2006)

Despite PFI being perceived by most governments as the most cost effective means of procuring public infrastructure projects, a debate about the nature of this approach is still widespread among the practitioners. In the case of Malaysia, the implementation and policy of PFI has been the subject of considerable debate and critiques. Some of the reasons as mentioned by Abdul Rashid (2007) are leading to

the issues of cronyism, unfair monopolistic advantages, lack of transparency in competitive bidding and, lack of PFI experiences and knowledge in PFI. Besides, there are many aspects within this approach that require fine tuning and improvements in order to make it more cost effective. Areas related to the improvement of key functional skills in technical aspects, finance, personnel management, and value for money, risk allocation and, public knowledge are important to be highlighted. As such, the need for a comprehensive regulatory framework is a matter of some urgency for PFI in Malaysia. A significant reason for this matter is to further encourage participation from the private sector and to make them feel less restrained to exploit their market power.

Depending on the project, the parties involved in the management of the contract will vary. Typically, there are two main parties involved in the PFI procurement process: the public sector client; and the private consortium that acts as service provider from the private sector. In the private sector, the PFI consortium, known as SPV (Special Purpose Vehicle), comprises contractors, lenders, a team of advisors and a facilities management provider to deliver the PFI service. The SPV is the main contractor to the client organisation (Transfield et al., 2005).

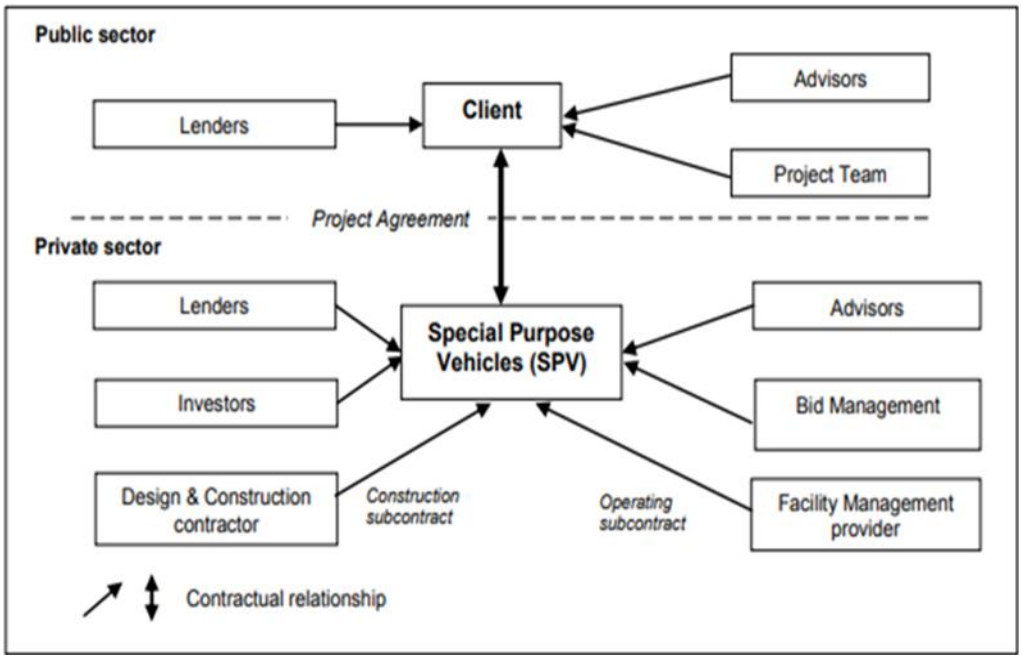
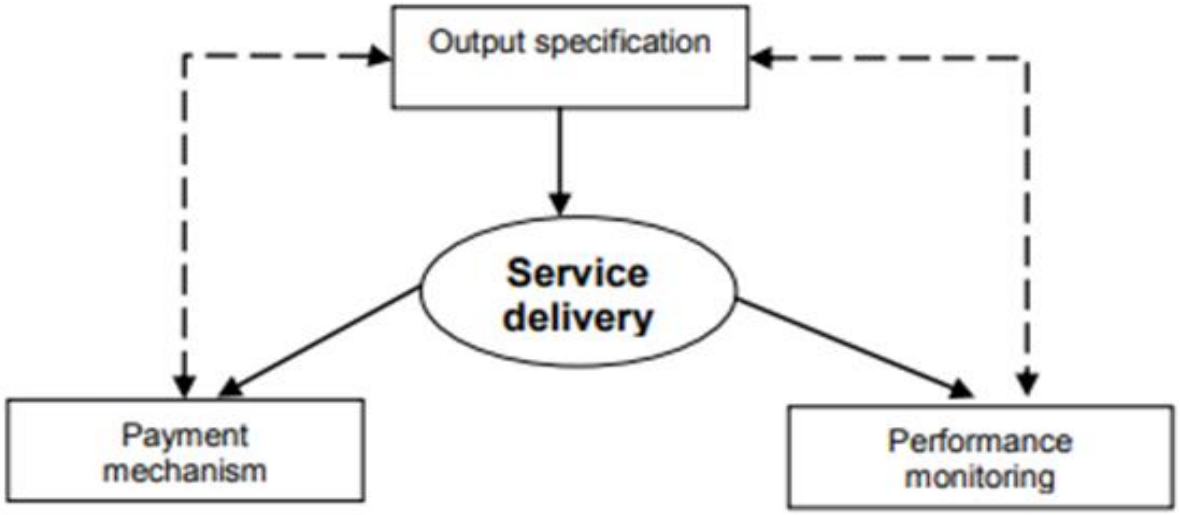


Figure 2: PFI Teams (adopted from El Haram and Agapiou, 2002)

2.2.1 Characteristics of PFI Contracts

The characteristics of PFI contracts are the transfer of liability of design, build, finance and the operation of a public facility or service from the public sector client to the private sector for a long-term contract arrangement, typically lasting 30 years. At the end of the contract, the building either reverts back to the public sector or the contract is renewed. PFI contracts share some common features with the DBFO (Design, Build, Finance and Operate) procurement strategy. Other approaches associated with PFI include BOOT (Build-Operate-Own-Transfer), DMCF, (Design-Construct-ManageFinance) and Concessions.

Robinson and Scott (2009) identified three key components affecting service delivery in PFI projects as shown in Figure 2.3. The single arrows show the components that contribute to success in service delivery. Meanwhile the dotted/double arrows demonstrate the interdependence and dynamics between the



different components of service delivery.

Figure 3: Key components affecting service delivery (Robinson and Scott, 2009)

Key characteristic of PFI is output specification (Audit Commission, 2001). Output specification is the basis by which the client or government defines the services and outputs that the PFI consortium needs to provide. In other words, the public sector client, by procuring authority, specifies the services it wants as well as some basic standards. However, the consortium has control over how the services are delivered.

Consequently, the consortium may implement innovative approaches to service delivery during the contract period, but not open to misinterpretation of specifying a wide range of services (Robinson et al, 2010). Robinson and Scott (2009) further explained the problem in misinterpretation of specification: "…if the output specifications are subjective it can create different interpretations and disagreements, such that one party has one view on the performance requirements specified in the output specification and another party interprets differently". A well-drafted output specification is therefore crucial in design, construction, operation of PFI projects and the successful delivery of long-term services (4Ps, 2005; Robinson and Scott, 2009).

Another characteristic of PFI is performance monitoring. A monitoring mechanism is needed to provide incentives and sanctions for the service provider to deliver the level of services stipulated in the output specification (Ng and Wong, 2007; Robinson et al, 2010). In the PFI health sector, project performance is measured against the output specification and patient satisfaction surveys, patient flow audit and spot checks (McDowall, 2000). However, user satisfaction surveys can create problems where there are multiple layers of users. Therefore, developing a robust performance measurement system with relevant metrics to capture a wide range of services and choosing appropriate monitoring methods is a major challenge (Partnership UK, 2006).

The payment mechanism is another important agreement in the PFI. In PFI contracts, the provider does not receive a payment until the facilities are available for use. Repayments on services delivered will be made either directly from the user or in accordance with a payment mechanism such as unitary charges imposed in the contract by the public sector. This payment mechanism is revised periodically as the contract progresses based on performance, availability of assets, quality of services provided and sometimes level of use by the public sector.

PFI contracts also include penalty clauses to ensure that service is provided at the required level, as stipulated in output specifications. Thus, as the private sector is contracted under the PFI, it can be penalised for failure to perform on time or up to a certain quality and a guaranteed price for the contract. Such penalties include deduction of payments and contract termination. Thus, payment

arrangements are seen by the public sector as an effective risk allocation tool (Boussabaine, 2007).

With the emergence of the PFI procurement system, the private sector has a primary role in delivering services for the whole duration of the contract. Thus, the parties involved in PFI procurement have had to amend their approach away from traditional contracting to a wider view (Payne, 1997). The next section addresses differences between PFI and traditional contracting procurement to better understand how PFI differs in terms of the responsibilities of the parties involved and the effects of long term service delivery in PFI projects.

2.2.2 Royal Institute of British Architects (RIBA) Plan Of work

RIBA Plan of Work is published by the Royal Institute of British Architects (RIBA). The latest version is also is endorsed by the Chartered Institute of Architectural Technologists, the Construction Industry Council, the Royal Incorporation of Architects in Scotland, the Royal Society of Architects in Wales and the Royal Society of Ulster Architects.

It was originally launched in 1963 as a fold out sheet that illustrated the roles of participants in design and construction in a simple matrix format. The first detailed plan of work was published in 1964 (ref. Introduction, RIBA Plan of Work 2007).

Split into a number of key project stages, the RIBA Plan of Work provides a shared framework for design and construction that offers both a process map and a management tool. Whilst it has never been clear that architects actually follow the detail of the plan in their day to day activities, the work stages have been used as a means of designating stage payments and identifying team members responsibilities when assessing insurance liabilities, and they commonly appear in contracts and appointment documents.

The RIBA Plan of Work (2008) describes the input required from each of the management of sub-processes, of which facilities management included at each stage. The facilities manager has a valuable role to play in all PFI stages. The following Table 3 illustrates the ideal involvement of facilities managers in the PFI stages.

Stages as denoted by RIBA			Activities to be undertaken
Preparation	A	Appraisal	• Contributing to pre-briefing discussions
	B	Design Brief	• Inputting to strategic requirements relating to operational issues • Giving advice on the requirements setting within the brief • Ensuring that end user's needs are incorporated into the planning process
Design	C D E	Concept Design development Technical design	• Ensuring that any strategic facilities requirements have been incorporated into the design • Contributing to assessment of design • Checking that the cost plan considers operational costs where this is required • Reviewing the design and ensuring that operating costs meet financial criteria
Pre-Construction	F G H	Production information Tender Documentation Tender Action	• Ensuring that the chosen tenders comply with key requirements
Construction	J K	Mobilisation Construction to Practical Completion	• Ensuring that the commissioning procedures are appropriate • Witnessing that commissioning has been properly carried out
Use	L	Post practical completion	• Ensuring that handover documentation is adequate and complete • Ensuring that facilities staff and end-users have been instructed in using facilities • Ensuring that post-handover services are in place • Obtaining information on building performance; ensuring that feedback is given to the design team and appropriate follow-up

Table 2: Ideal involvement of facilities managers in PFI procurement process (Adapted by Jauzens et al., 2001)

The Plan of Work has evolved through its history to reflect the increasing complexity of projects, to incorporate increasing and changing regulatory requirements and to reflect the demands of industry and government reports criticising the industry. It has moved from a simple matrix representing just the traditional procurement route, to include multiple procurement routes, more diverse roles, multi-disciplinary teams, government gateways and to add stages before and after design and construction.

PFI contract comprised the key stages and the activities that the client and provider would undertake. Based from the RIBA Plan of Work (2008), the role and responsibilities of facility manager are varies and throughout the key stages. The roles and responsibilities of facilities managers are listed below, but not limited to those, as follows:

- Providing information by contributing to the briefing of the design team;
- Establishing a maintenance strategy;
- Undertaking an ongoing review of the facilities lifecycle performance
- Providing project teams with feedback on building and systems performance.

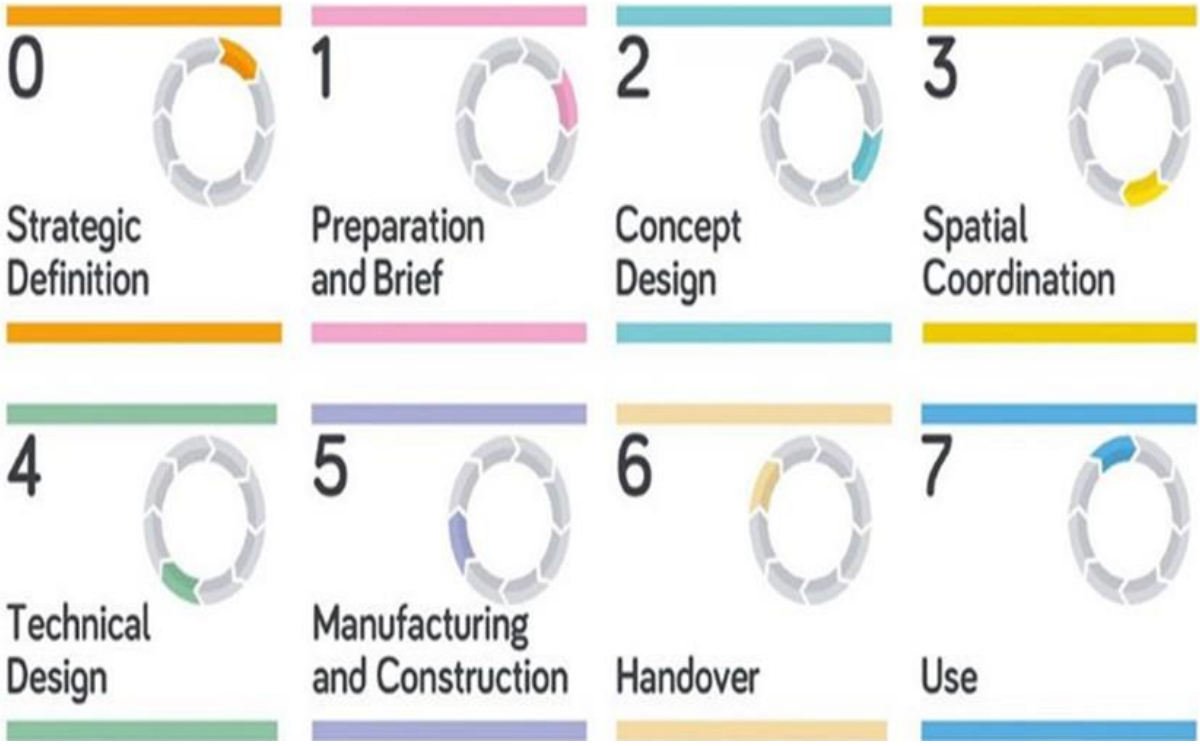


Figure 4: The Royal Institute of British Architects (RIBA) Plan Of work

2.2.2.1 Phase 1: Feasibility and Briefing

Decisions made regarding the sustainability during the early phase of a project have been proved to be helpful for the overall implementation. According to Patel and Fortune (2006), the feasibility and briefing phase is very important based on to two reasons: (1) it sets up a framework for the whole project and the assessment for its sustainability; (2) it establishes a set of benchmark with different criteria for the assessment.

2.2.2.2 Phase 2: Design

Design is a key phase in implementing sustainability in a project. It is a process of producing a building that can successfully perform its functions, benefitted to the company, socially acceptable, and use minimum energy and material without producing hazardous waste (Chiu & Chu, 2012). The elements of design are assessed against energy efficiency, water efficiency, indoor environment, site location, material usage and atmospheric considerations (Bunz et al., 2006).

2.2.2.3 Phase 3: Construction

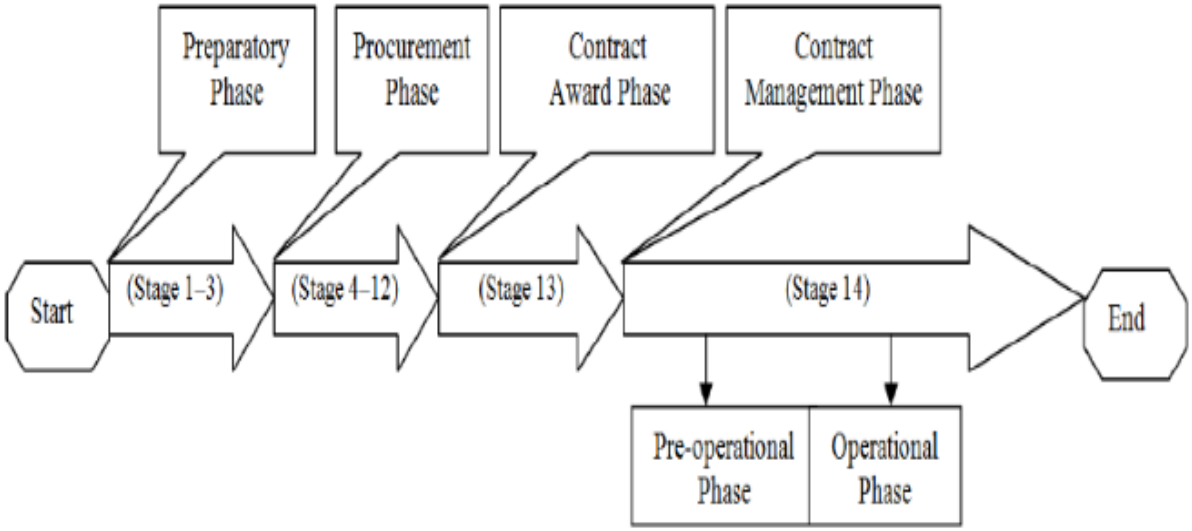
The use of resources and waste generated from the construction of building has given a major impact towards the environment (Rwelamila et al., 2000). Therefore, sustainable aspect needs to be incorporated into the activities as well as material used in the construction. In addition, Chong et al. (2009) stressed that many efforts are needed to bring sustainability into construction including the involvement of professionals.

2.2.2.4 Phase 4: Operational

Consideration towards the life cycle of a building is mainly based on time and resources invested during the operational phase (Cotts et al., 2009). Sustainable initiatives taken in this phase are based on day to day basis where the outcome will reflect the overall success of sustainability implementation.

2.3 STAGE OF PFI PROCESS

H.M.Treasury Taskforce, U.K. (1999) categorized the general implementation process of a PFI project into 14 stages. Figure xxx shows the development stages of a standard PFI procurement process. The proposed EVM (Earned Value Management) technique can be applied during the pre-operational phase (design, construction & commissioning) of a PFI project. Its implementation will help organizations to improve their performance by identifying good practices and cut down the weakness in their process. Performance measurement by EVM will ensure that the organizations are focused on their key priorities and the areas of poor performance are questioned. The EVM performance data is highly useful for project risk management.



Figue 5: Development Stages of a PFI Process

2.3.1 Preparatory Phase

The Preparation Phase is the first stage when planning support for a new country programme, sector programme or project. The purpose is to establish the necessary foundation for taking and justifying the overall strategic decisions on the design of the envisaged support. The preparation phase involves and builds on continuous dialogue with national partners.

It is important to ensure that the objectives and modalities of the support under preparation is well aligned with the Strategy for Denmark's Development

Cooperation and other relevant policy papers, including regional strategies and country policy papers. Furthermore the support should be designed according to relevant Danida guideline

2.3.2 Procurement Phase

Procurement is the process of finding and agreeing to terms, and acquiring goods, services, or works from an external source, often via a tendering or competitive bidding process (Jean, 1993). Procurement generally involves making buying decisions under conditions of scarcity. If sound data is available, it is good practice to make use of economic analysis methods such as cost-benefit analysis or cost-utility analysis. Procurement is used to ensure the buyer receives goods, services, or works at the best possible price when aspects such as quality, quantity, time, and location are compared (Van, 2010).Oporations and public bodies often define processes intended to promote fair and open competition for their business while minimizing risks such as exposure to fraud and collusion. Almost all purchasing decisions include factors such as delivery and handling, marginal benefit, and price fluctuations.

2.3.3 Contract Award Phase

Contract Award is a contract is officially awarded to a contractor. Most of the responsibility in this phase lies with the Program Contracting Officer (PCO) and Contracts Officer's Representative (COR). It is important that the Program Management Office (PMO) and Program Manager (PM) understand all of the components of a contract award so that it can continue to work toward a realistic schedule**.**

2.3.4 Contract Management Phase

The contract management process is the interaction between the vendor and the purchaser that ensures that both parties meet their respective obligations in any procurement relationship. The aim is to meet the operational, functional and business objec The contract management process includes:

2.3.4.1 Managing Service Delivery

To ensure that the products are delivered as and when they are ordered.

2.3.4.2 Managing the Relationship

This is the communications between the vendor and the purchaser.

2.3.4.3 Managing the Contract

This is the ongoing contract administration to ensure that the day-to-day procurement activities follow the spirit and sections of the contract.

2.3.4.4 Seeking Improvements

Improvements within a procurement environment mean greater efficiencies and an increase in profits.

2.3.4.5 Ongoing Assessment

The entire procurement activities are assessed on a continual basis to ensure that the contracts are adhered to and the purchasing processes followed.

2.3.4.6 Managing Change

In a long term procurement relationship, there are sometimes changes in activities, requirements or products available. All of these changes need to be noted and handled effectively.

2.3.4.7 Pre-Operational Phase

Operational phase means the period of time that the relevant part of the authorised development is in operation after construction and operation should be construed.

2.4 FACILITIES MANAGEMENT IN PFI PROJECT

FM completed the formation of consortium purposely developed for the PPP/PFI projects, which is known as Special Purpose Vehicle (SPV). As a part of SPV, FM delivers its services throughout PPP/PFI project life cycle that comprises four phases namely design, construction, operational and hand over. The duration for this life cycle is usually between 25-30 years. During this period, both private and public sectors have to play their roles according to the long – term contractual agreement. In investigating the effectiveness of FM in PPP/PFI projects, Brewer et

al. (2013) found that FM contractors are able to deliver long term value to both clients and service providers.

FM input in the design and construction stages of PPP/PFI projects is very crucial. There is a strong relationship between what have been decided in design stage and the results on the operational phase. According to Baldwin (2003), the injection of FM input in the early stage of PFI project will give a positive impact on operational performance. Due to long term partnership, facilities manager is highly needed in preparing the whole life cost analysis, projecting facility plans and reviewing project proposals in the context of operation and core business requirements (El-Haram & Agapiou, 2002). Lack of FM involvement in feasibility and design phase will leave a negative impact on the value maximisation especially during the operational phase of project (Brewer et al., 2012).

FM is a wide and complex area that covers the asset management, building operations and maintenance as well as business support services (Kadefors, 2008). There are two indicators used in measuring the performance of FM service, which are availability and service failure (Wang, 2010). Therefore, the payment mechanism for FM service delivery in operational stage of PFI project is closely linked with output specification and performance monitoring system (Robinson & Scott, 2009). This system was developed to ensure whether or not the services provided by FM have met the required level and expectation.

In the process of assessing the value for money (VFM) for PFI bids, Takim et al. (2011) viewed FM as a fundamental element in the construction and completion stages of a project. Their findings demonstrated a very strong influence gave by FM involvement in both stages of PFI project. This is in agreement with one of the key principles of PFI - whole-life approach where the private sector is responsible in delivering and maintaining the project until the end of concession period (Oyedele, 2013). The role of FM specifically in design and operational stages were highlighted by El-Haram and Agapiou (2002) as displayed in Table 3.

Phase	FM role
Bid development and design	Developing and estimating the cost breakdown structure - Reviewing and assessing the design from FM perspectives - Selecting cost-effective design option that could optimise the whole life costing - Developing maintenance strategies - Selecting optimum operating scenario - Liaison with other stakeholders in SPV
Operational	Managing and controlling O&M strategies and cost - Collecting and analysing FM data - Monitoring the quality and availability of services - Ensuring the availability of required facilities

Table 3: FM roles over the life cycle of PFI project Source: (El-Haram & Agapiou, 2002)

Considering the important roles played by each project phase, there is a need for a guideline that can be referred to FM. Therefore, the sustainable initiatives that can be conducted by FM in PFI projects.

Feasibility and briefing
Incorporate sustainable strategy with business needs, budget resource and life cycle capital funding - Put consideration into reduction facility operating costs within the decision making process - Set capital cost provision for sustainability based on agreed payback mechanism - Choose property locations that can reduce liability related to climate change impacts affecting asset value
Design
Orientate building to maximise or minimise the sun's energy absorption - Design, select, integrate and commission a building automation system such as energy management, piping and ventilation - Prioritise occupancy requirements within design criteria - Procure building materials with recycled content
Construction

Use environmental friendly construction products - Minimise the use of resources from central and local government, clients and building users - Comply with related standard or rating tools - Produce high efficiency windows and specialised building cladding - Recycle waste materials - Use new technologies including building information modelling (BIM)
Operational
Recycle the programme for office products - Reduce the energy and other resources usage - Record the procurement process - Illuminate retrofits - Reduce the use of water through the installation of aerators for sinks and showers, rainwater collection programmes and run-off for irrigation system.

Figure 6: Sustainable initiatives for facilities management Source: (Cotts et al., 2009; Shah, 2008; Wiggins, 2010).

2.5 APPLICATION OF FACILITIES MANAGEMENT IN EDUCATIONAL INSTITUTIONS

According ERP (2017), facility management in the education sector includes all activity related to keeping a building operating properly, having a clean and safe environment that encourages development and learning in students. Facilities management also includes janitorial services, security, records management, property management and more. It's the responsibility of the facility manager to create an environment that encourages safety and meets government regulations. Facilities management can include, but not limited to, people management, managing building services, customer service, financial management, quality management, procurement, and risk management.

When it comes to the education field, the role of facility management is to maintain the building as best as possible and meet the needs of those who use the building. Any schools or campuses that envision to provide good quality education to their students must provide adequate school facilities, resources and appropriate maintenance services which will, in fact, contribute a more effective learning environment to their users (Global Services, 2019)

According Asiabaka (2008), accomplishing of educational objectives and objectives requires the provision, maximum use and optimal oversight of the facilities. These facilities which the author referred to as school facilities consists Kinds of academic and non-academic facilities, landscapes, athletics and games facilities, gardens and parks including trees, roads and trails, furnishings, toilet facilities, acoustic, heating, storage facilities, parking spaces, safety, ICT, shipping, washing materials, nutrition services and special facilities for the physical challenged. All the above listed facilities, the author noted, perform a vital part in the fulfilment of educational aims and objectives of schools by fulfilling the requirements of the school community.

Facilities management is an important aspect of managing property, ensuring that a school meets certain standards. Adopting modern methods improves the quality of teaching and learning. There is a correlation of the quality of school facilities and the quality of the school. Studies have shown that a close relationship exists between the physical environment and the academic performance of students. Schools are in existence for the purpose of teaching and learning. Material resources, school facilities, provide staff and students to maximize productivity (ERP, 2017). In the education sector, there are an array of activities which facilitate learning. Indirectly, support facilities include cafeteria, toilets, laundry, mowers, common areas, and offices. They are used to improve cleanliness, extend the useful life of a building, increase effectiveness of staff, and improve appearance. Facilities management is an integral part of the overall school management. It can reduce the number of maintenance and repairs. These areas are usually under-funded. Additionally, good facility management reduces disparity in building quality, and establishes a commitment to ongoing funding.

According Global Services, (2019) school and university space are a major part of the education facility. The education institution offered a variety of school programs and extra-curricular activities as it influences the design, nature and types of school space to be provided. For instance, students need an area to study, sports training, conduct experiment, gather social events and other activities while lecturers need area for offices, meeting rooms and teaching classrooms. Today, the education facility creates new modern design spaces for social activities and academic purposes. The educational institutions not only require students to memorize the

books but also involve them with hands-on activities and application of knowledge through conducting experiments in laboratories or other spaces.

Besides that, multipurpose facilities are provided not only for student academics but also to cater for members of the surrounding community especially after school hours in which they are able to access and utilize the school facility areas. The education institution wants to bring the communities closer to schools. Tools, supplies and equipment are necessary for education use and serve a various purpose that enables students to learn such as providing computers in computer labs, microscope, tubes, chemical for experiments in laboratories and even sports equipment. The teachers and students used restrooms, cafeteria, workshops, offices, laboratories, classrooms, etc. Providing a complete and complementary furniture system in the school building is equally important because it can encourage creativity and flexibility for students and staff alike. The set of furniture provided should be able to be rearranged and relocated depending upon the requirements of curriculum and syllabus (Global Services,2019). The correct furniture layout and style can motivate students to learn and stimulate individuals to handle their own learning, boost communication and concentration. Building owners invest in providing good quality furniture, equipment and functional spaces to reinforce the value of learning as well as saving resources in the long term.

2.6 QUALITY

Quality is an important factor when it comes to any product or service. .According Eldin (2009), quality is freedom from errors that require doing work over again (rework) or that result in field failures, customer dissatisfaction, and customer claims also oriented to costs, and higher quality usually “costs less.” Quality is a basic tool for a natural property of any good or service that allows it to be compared with any other good or service of its kind and set of inherent properties of an object that allows satisfying stated or implied needs (Diaz, 2014). Quality is often used indiscriminately for many different meanings. Quality can be defined as “fitness for use,” “customer satisfaction,” “doing things right the first time,” or “zero defects.” When it comes to standards for quality, there are many. ISO (International Standards Organization) is one of the prominent bodies for defining quality standards for different industries (Parekhplast, 2016).

2.6.1 Project Planning and Management

According Margaret (2011), project planning is a discipline for stating how to complete a project within a certain timeframe, usually with defined stages, and with designated resources and Project management is the way a person organizes and manages resources that are necessary to complete a project. Across settings, planning principles and execution methodologies can offer ways in which projects can be run more effectively and efficiently. Project management provides organizations (and individuals) with the language and the frameworks for scoping projects, sequencing activities, utilizing resources, and minimizing risks (Ben,2015).

2.6.2 Architecture Planning and design

According Jstor (2014) , an architectural plan is a design and planning for a building, and can contain architectural drawings, specifications of the design, calculations, time planning of the building process, and other documentation. Architectural design is a concept that focuses on components or elements of a structure. An architect is generally the one in charge of the architectural design. They work with space and elements to create a coherent and functional structure (Cummins,2014). An Institution is a space where evolution and evaluation of ideas take place. They play a profound role in giving direction and learning. Institutions should have linkages be both closed and opened, have short term programmed and long term visions, therefore definiteness and ambiguity become an integral part of institution. The design of institution therefore has the capacity to modify and change both vertically and horizontally all the time, while retaining care. In physical terms, this means that you get course, linkages and spaces which are central and stable even while they and their periphery shifts resulting in a space that responds to and accommodates changing concepts (Choronical,2010).

2.6.3 Human and Environmental Factor

According Hse (2019) , human factors refer to environmental, organisational and job factors, and human and individual characteristics, which influence behaviour at work in a way which can affect health and safety. There includes three interrelated aspects that must be considered: the job, the individual and the organisation. The

learning environment dramatically affects the learning outcomes of students. Schools' open space and noise, inappropriate temperature, insufficient light, overcrowded classes, misplaced boards and inappropriate classroom layout all make up factors that could be confounding variables distracting students in class. According Mongal (2015) , it is difficult to do a good job of teaching in a poor type of building and without adequate equipment and instructional materials. A school building or a classroom has no merit when built without due regard to its educational objectives and functions.

2.7 OPERATION AND MAINTENANCE

According to BS 3811 (1964), maintenance is defined as 'a combination of any work done to preserve an item or maintain it in an acceptable condition'. According to BS 3811(1974) it is defined as a combination of technical and administrative work aimed at preserving an item or restoring it to meet the desired function'. From this definition of maintenance involves the work of repairing and maintaining. Repair activity refers to repairing or replacing damaged elements and components while maintaining greater focus on preventing damage.

According to The Chartered Institute Of Building (1982), it is defined as' Work undertaken to maintain, restore or enhance each facility, that is, each part of the building, its facilities and its surrounding to an agreed level, as determined by the balance between the requirements and available resources'. (Work undertaken to keep, restore or improve every facilies in every part of a building, its services and surrounds to a standard, determined by the balance between need and available resource). Maintenance is also defined as' all action necessary for retaining an item in or restoring it to specified condition.

Maintenance of buildings is closely related to maintaining the condition of a building. It is not possible to produce a building that does not need to be maintained even at the design stage where it is designed to reduce the amount of maintenance work. The process of building maintenance begins as soon as a building is ready for construction as components of the building become obsolete at that stage. The rate of bankruptcy will increase from year to year. The concept of building maintenance is to maintain the physical condition of the building, all its facilities and facilities so that it can continue to fulfill its function as well as maintain the value of the building as it

was originally designed. Maintenance is necessary for a building to function properly, economically and sustain the value of the investment. In addition, it can avoid the huge expense in the future. Maintenance functions are as follows (Sufian 2004).

- To ensure the safety of the living, the property of the building users, visitors and the public.
- To maintain building facilities such as lighting systems, electrical systems, fire prevention systems, elevator systems, air conditioning, information system infrastructure, plumbing systems, sewerage and waste disposal systems, landscapes and so on.
- To ensure that the fabric of the building, finishing works such as paint, ceramic tile, carpet and so on are always in good repair and are not damaged.
- To maintain a clean and comfortable environment at home or work so that consumers can stay and perform their duties more productively.
- When changes in the organization are due to a new policy and strategy, changes will also occur in the use of buildings. Renovation work has to be done to ensure the building works in line with the needs of the new organization.

The classification of building maintenance is divided into 3 main components namely building fabric maintenance, building facility maintenance and cleaning service maintenance (Sufian 2004).

- **Building Fabric Maintenance -** Maintenance of a building's fabric covers the main building of a building such as walls, floors, roofs, doors, windows, gutters, streets and renovations. In addition, the maintenance of building fabrics also includes the maintenance of interior finishes such as refinement, replacement and repairs of a finish.
- **Maintenance of Building Facilities -** Building facilities are, in a building, equipped with plumbing, sewage, ventilation, air conditioning, lighting, vertical transport, fire prevention and more. Most of the maintenance work for these facilities will be done by the maintenance contractors. Some of the building amenities include:

  i) Communication system covering telephone system and intercom sound.

ii) Vertical transport system covering building lift system. iii) Air conditioning systems including installation, lubrication, repair, replacement and safety testing thereof. iv) Fire prevention equipment including fire alarm systems, fire extinguishers, fire detection systems, dry powder fire extinguishing systems, hydraulic pipes and hoses.

v) Electrical equipment system including testing, repair and replacement

- **Maintenance of Cleaning Services -** It is a day-to-day maintenance work done on a regular basis as well as the function and use of the building. This maintenance is done to maintain cleanliness, appearance and prevent future repair at high cost.

Among the benefits that can be gained from this maintenance are be able to meet the actual purpose or function of the building being constructed, costing minimal maintenance, getting a cost or profit return maximum and implement efficient and more economical management (Ahmad bin Ramly, 2002). Therefore, maintenance work must be done on a regular basis systematic and organized. Every job is well supervised and its management must be have trained and competent staff in all matters related to the field maintenance. According to (Singh & Singh, 2010) accuracy in budget is important. If the estimator prepares the budget carefully and takes into account in all cases, it is possible that only a small amount of the difference is estimated with the actual cost of construction. (Smith N. J., 1995) asserted that purpose cost estimates are to provide the most realistic forecasts for the time and cost of each project phase. During the project life, the material is measured should be able to generate a series of cost estimates starting with the budget initial cost at the beginning of the project to the preparation stage a final guarantee that the level of accuracy in the cost estimate will be proven.

With regard to the different levels of FM services, there are several strategies that can be used to maintain facilities, particularly the hard services outlined to ensure that the components are functioning in a safe and efficient manner. This is important in reducing overall operating costs and enhancing the productivity of a given business plan (Prasad and Kanaka, 2009). Additionally, many maintenance models have been designed to overcome problems derived from equipment breakdown. A facilities manager may be required to give strategic information on maintenance-

related matters. The following are the types of maintenance strategies that can be implemented.

- Breakdown maintenance
- Preventive maintenance/periodic maintenance
- Predictive maintenance
- Condition-based maintenance (CBM)
- Pro-active maintenance
- Total Productive Maintenance (TPM)
- Computerised Maintenance Management System (CMMS)

2.7.1 Services

According Morgan (2015), services means of delivering value to customers by facilitating outcomes customers want to achieve without the ownership of specific costs and risks. They must add value to the customer, support his or her business objectives and be perceived as a coherent whole. Based on MA (2016), service business is a company that provides certain professional support to its clients. In these businesses the product is not a tangible one, instead it is an activity that helps a third party at different areas. From a business standpoint, service businesses are those that provide an activity or the performance of a task with a commercial purpose. This task is directed to help a business or an individual in subjects such as consulting, accounting, transportation, cleaning, hospitality, traveling or maintenance, among others. According Patel (2016), Quality service is an experience of a customer with a business during customer service is an experience of a customer with business when he interact with company’s customer service. When you add “Quality” word at the beginning of the term “Customer service” it becomes an experience of a customer with a business during whole customer life cycle that gives him a warm, genuine and positive experience that makes him continuing with the business for long and recommend to others. Customer service includes all of your company's interactions with your customers and clients. This includes the sales clerk who directs them to the right part of the store or digs the item they want out of the storeroom, the receptionist who doesn't put them on hold forever and the help desk that explains how to make the app work properly.

2.7.1.1 Increasing Customer Expectations

Generally, customer expectations have risen than past. Increasing customer expectations may relate to several factors including increased customers' awareness and knowledge, organization advertising, and competitors' performance.

2.7.1.2 Competitor Activity

Competitors by continuous changing of own services and how to provided to customers are constantly do changing markets and they are seek to increase their market share. This act will compel others take steps in order to improve their services quality. (Gronroos 2010).

2.7.1.3 Environmental Factors

Forced to provide high quality services factors of legal and political, economic, social and cultural to organizations. Additionally Today by expanding access to the internet, customers can easily obtain information from around the world.

2.7.1.4 Services Nature

Evaluation of the services quality is problem considering attributes of services for its recipients. For this reason, customers considering services' physical evidence and employees' behavior do evaluation the service quality. (Porter 2007)

2.7.1.5 Organizational Internal Factors

Organizations by own promoting activity raise customers' expectations and demands. As a result, when customer comes to organizations, has expected promised services. Thus, organization performance should will be responsive to the expectations of the customers.

2.7.1.6 Benefits Arising From Service Quality

Benefits arising from service quality is another factor that encourages organizations to provide high quality services. One of the direct effects is increasing the organization's ability to provide efficient services for customers. Because organization found their customers have what demands and needs. So reduce or even eliminate from non-essential services. Organization's profit will increase by increasing the efficiency and effectiveness in providing services. Also provide a

better service to customers makes repeat of purchase and spreading positive mouth to mouth advertising. (SeyedJavadian & Kimasi 2005)

Pascal (2016), service matric is one of the best method. These stats deliver the objective, quantitative analysis of your service. These metrics aren't enough to judge the quality of your service by themselves, but they play a crucial role in showing you the areas you should improve in.

- **First response time.** This metric tracks how quickly a customer receives a response on her inquiry. This doesn't mean their issue are solved, but it's the first sign of life – notifying them that they've been heard.
- **Response time.** This is the total average of time between responses. So let's say your email ticket was resolved with 4 responses, with respective response times of 10, 20, 5, and 7 minutes. Your response time is 10.5 minutes. Concerning reply times , most people reaching out via email expect a response within 24 hours; for social channels it's 60 minutes. Phone and live chat require an immediate response, under two minutes.
- **First contact resolution ratio.** Divide the number of issues that's resolved through a single response by the number that required more responses. Forrester research showed that first contact resolutions are an important customer satisfaction factor for 73% of customers.

2.7.2 Renovation

According Ins (2014) , renovation a series of planned changes and updates made to a facility where business is conducted. Office and building renovation will take place now and again in the environment of most business, at their own or at others' initiative, in response to new needs, technological pressures, or simply the need for maintenance and renewal. Renovations is the process of improving a broken, damaged, or outdated structure (Jstor, 2013). According to Approved document L of the building regulations, 'major renovation' means '...the renovation of a building where more than 25% of the surface area of the building envelope undergoes renovation. The importance of maintenance can leverage on its relationship with the building industry and gross domestic product (GDP). According to a study in the United Kingdom, maintenance activities accounted for 40% of the construction industry output and in turn the construction industry represented approximately 10% of the gross domestic product. Hasnan Abdullah (1994).

No building is free from maintenance activities. This is because no matter how great and beautiful the building is designed and built, it will certainly suffer from defects and defects. Defects can occur for many reasons mainly due to wear and tear processes, weather, usage, imperfect materials and so on. Therefore, maintenance is a method or process for minimizing the level of damage and defects of a building. The combination of several maintenance processes will surely result in great results.

2.8 SECURITY AND LIFE SAFETY MANAGEMENT

According to Wolfers (1952), security is a crucial concept in International Relations, but it can also extremely subjective in. nature. The traditional security paradigm refers to a realist construct of security in which the. referent object of security is the state. Life-safety system, Any interior building element designed to protect and evacuate the building population in emergencies, including fires and earthquakes, and less critical events, such as power failures. For fire suppression, hand-operated fire extinguishers and, often, building sprinkler systems are provided (Britannica,2011). There are various kinds of safety that a institution must ensure for its students:

2.8.1 Fire safety

The institution should be equipped with fire extinguishers and sand buckets. It should also mark the fire exits for easy escape during a fire.

2.8.2 Disaster safety

The institution building should be built to handle any disaster. A mock drill must be conducted on a regular basis to teach the students on how to act during any disaster

2.8.3 Digital safety

Digital safety indicates internet safety. In cases where the institution is equipped with technology and internet, objectionable content and sites must be blocked to ensure no one accesses such contents.

2.8.4 Health and hygiene

Health and hygiene play a crucial role in the well-being of a student. The institution must be equipped with a medical center for immediate first aid.

2.8.5 Safety against harassment

In today's world, the number of harassment cases in institution have increased. The authorities in the school should ensure the establishment of a cell to address such issues.

2.8.6 Safety against alcohol or drugs being sold around the institution

As per the high court ruling, there should be no liquor shops established anywhere at a range of 100 meters near the school. The institution should ensure a security system that monitors any activity outside .

2.9 COMMUNICATION

Communication can be defined as the process of transmitting information and common understanding from one person to another (Keyton, 2011). The word communication is derived from the Latin word, communis , which means common. The definition underscores the fact that unless a common understanding results from the exchange of information, there is no communication. Figure 7 reflects the definition and identifies the important elements of the communication process (Cheney, 2011).

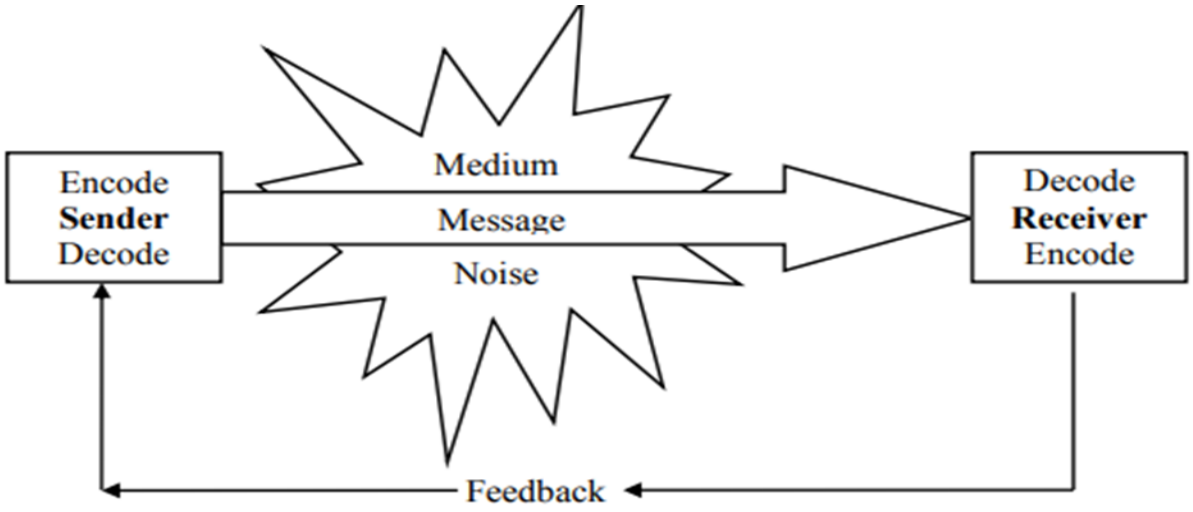


Figure 7: The communication process.

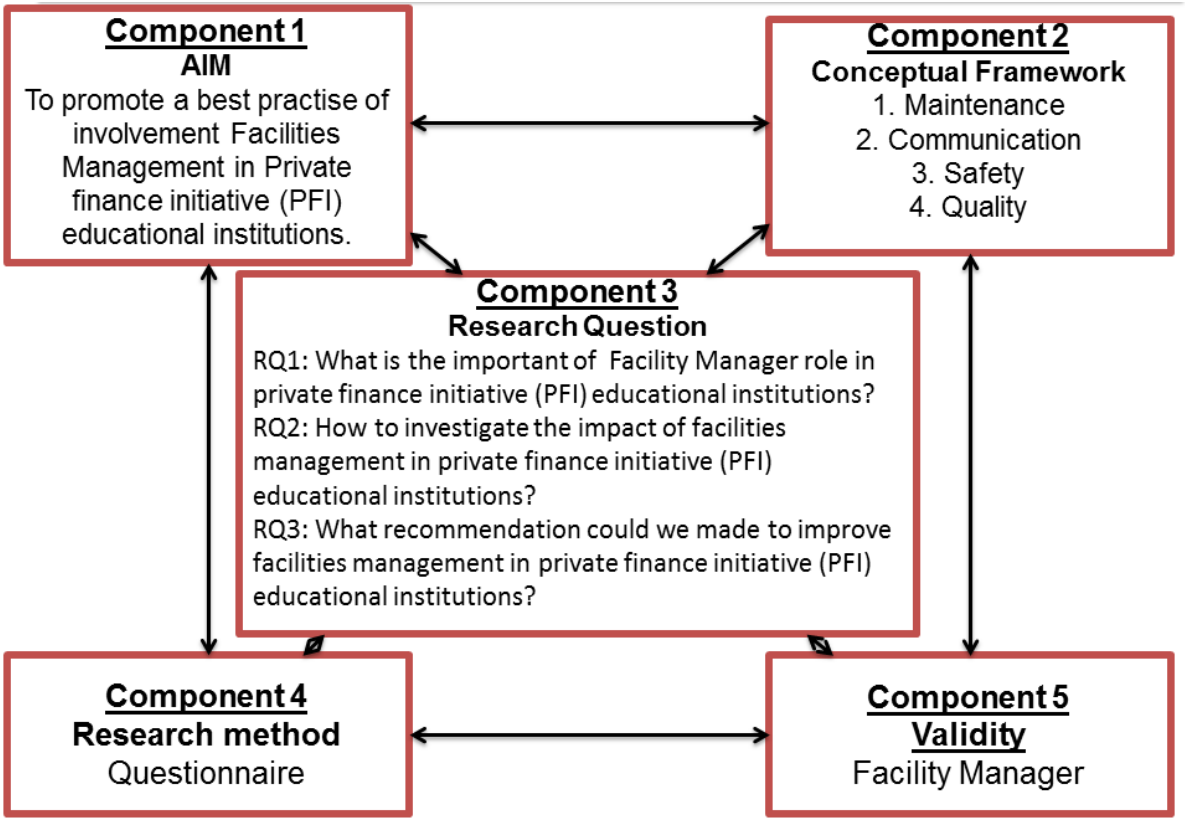
According Fasilitiesnet, (2017) three points in mind can help facility managers improve their communication skills.

- Good communication starts off with understanding and meeting the needs of the audience. One good way to think about delivering a message within the workplace is to think about how you get communications outside of the workplace. With the rise of instant electronic media, like text messages, people are used to frequent and concise messages.
- Appropriate repetition and reinforcement are necessary. The average person is bombarded with more than 300 messages while at work, and multiples of that outside of work, Finney says. Getting a message to land with an audience might take as many as 12 repetitions, in some cases, he says.
- Remember that everyone assimilates information differently. Facility managers should keep this in mind to get their messages across, says Cindy Stevens, associate professor, facilities planning and management program, Wentworth Institute of Technology.

According to a Salesforce (2006), 96% of office executives believe that lack of proper collaboration is what leads to workplace failures. McKinsey Global Institute, (2008), found out that employees who are more connected are expected to perform better than those who are not. For most organizations, the communication flow among maintenance teams and technicians still remains a point of concern. Poor communication leads to inefficient results even if you all have access to modern equipment. Here are some things that can happen:

- Delays in production and fall in productivity
- Same tasks being performed twice
- Low priority work being done before high priority work due to miscommunication
- Deadlines getting missed
- Work delayed because critical spare parts run out of stock without anyone knowing
- No preventive measure set out for the team to follow
- Machines and other equipment not available in the inventory
- Prolonged downtimes

- Reported problems not being resolved due to poor documentation and/or communication



2.10 DESIGN CONCEPTUAL FRAMEWORK OF THE RESEARCH

Figure 8: Factor Conceptual Framework

On the conceptual framework between the effects of early FM involvement in PFI projects in educational institutions. The conceptual framework ensures that broader criteria, other than the maintenance, quality, communication and security considered, support the added value in FM services.

Stable independent variables and not influenced by other variables used to measure. It refers to experimental conditions that are systematically manipulated by explorers. This is the expected reason. Dependent variables that depend on other

measured factors. These variables are expected to change as a result of the experimental manipulation of variable independent variables. It is an expected effect.

Figure 8 describes the conceptual framework of the study in which the input consists of the following: effectiveness of involvement facilities management in early private finance initiative (pfi) for educational institutions. On the other hand, the process used is through questionnaires. the dependent variable for this research is the facility management company.

2.11 SUMMARY OF THE CHAPTER

In this chapter, basic information on the background and flow of research has been explained. The research cycle begins by analyzing the details of the features, the impact of early FM involvement in PFI projects in educational institutions. This will then be produced by collecting data of people's knowledge and awareness of the implementation.

The study subjects were briefly explained based on an independent variable input such as: -

I. Definition Facility Management
II. Application of facilities management in educational institutions
III. Operation and maintenance
IV. Security and life safety management

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter discusses the methodology used to achieve the objective of the study. The research methodology is the backbone of conducting a study, as it contains procedures for conducting the study to ensure that we obtain reliable and valid results appropriate method selection. There are five sections discussed in the study's methodological chapters as example study design, data collection method, research instrument, data analysis technique, and sampling. These five aspects are very important to ensure a smooth and systematic study and produce quality research.

3.2 RESEARCH APPROACH

According to Saunders (2012), there are three approaches that can be used in a study. There are deductive, inductive, and abductive. Each of these approaches has different meanings and procedures.

3.2.1 Deductive

A deductive approach is an approach that uses logic to make quantitative based conclusions. The study was conducted to test theoretical proposals through a special research strategy developed to achieve these goals. Through previous research's spotlight can help researchers develop their next theoretical frameworks as a research framework. This method is used to make a generalization of a theory in the chosen context. Gabriel (2013) notes that the deductive approach usually begins with the hypothesis and it is also a general emphasis on causality.

3.3 THE RESEARCH DESIGN

In order to achieve the ultimate goal of the study, the design of the study was developed as a guide for researchers in conducting research activities. It can explain the strategy of the method as well as the suitability of selecting a statistical test to analyze the research data. Thus, a clear picture of the course of study can be understood by readers through designs that have been developed. The following is a research study design comprising five constructs that hold an Interactive Model developed by Maxwell (2012). Through this model, there are five elements that are discussed namely goals, conceptual frameworks, research questions, methods, and validity.

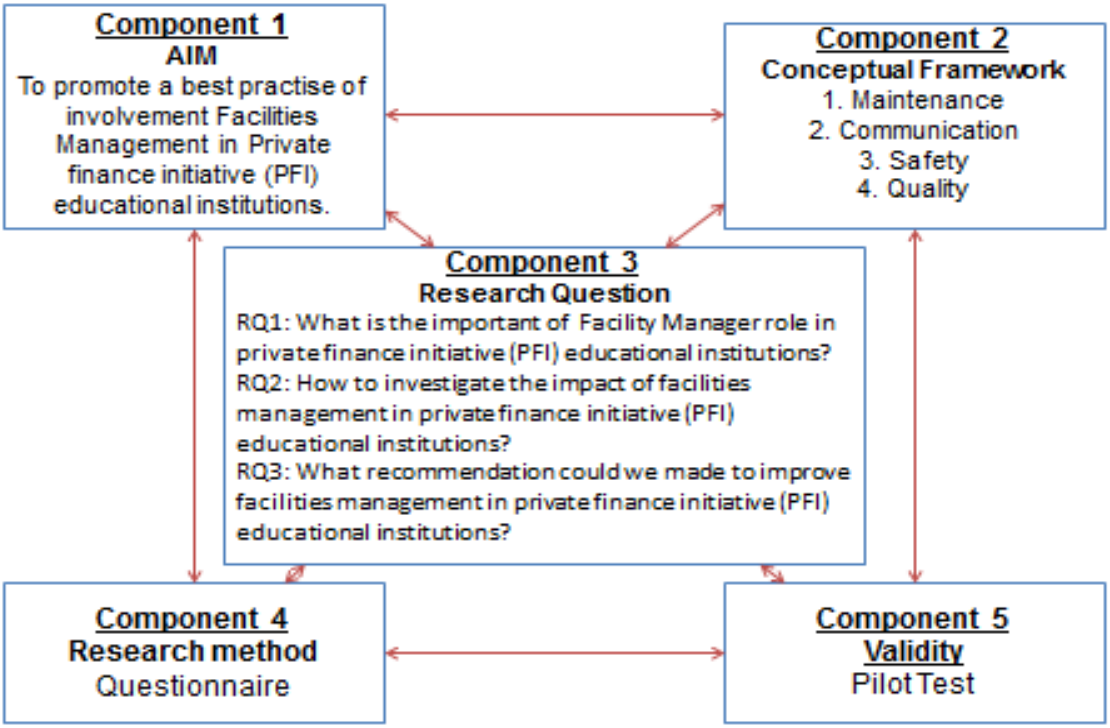


Figure 9: Research Design (Maxwell, 2013)

3.3.1 Methods

The survey method was used in conducting this study. The survey is also defined as a method of sociological investigations to validate proposals inspired by researchers on the relationship between the variables involved in the proposed conceptual framework.

To help researchers develop an understanding of the topics studied, semi-structured interviews are used. For survey purposes, the questionnaire is used as a data-gathering instrument.

3.3.1.1 Questionnaire

The questionnaire was a survey instrument used by researchers in survey studies, while interviews were conducted to support the findings. Therefore, the questionnaire used in this study was prepared by the researcher based on the results of the literature. Researchers distribute questionnaires via email to related parties. According to Chua (2006) survey is one of the most popular research methods because of its extensive use, the use of large sample sizes and information can be collected directly from respondents.

3.3.2 Conceptual Framework

Refer to the conceptual framework of the study (diagram) provided in chapter 2, the conceptual framework consists of constructs and several indicators that can be measured through the construct.

3.3.3 Research Questions

The question for the research is the main thrust of producing and removing research goals, conceptual frameworks, appropriate methods for collecting data and validating research findings. There are a number of research questions that need to be seen and addressed. The question of this study is a guide in conducting research. The study aims to find solutions for the following:

1. What is the important of Facility Manager role in private finance initiative (PFI) educational institutions?
2. How to investigate the impact of facilities management in private finance initiative (PFI) educational institutions?

3. What recommendation could we made to improve facilities management in private finance initiative (PFI) educational institutions?

3.3.4 Validity

The validity of the concept was formulated by Kelly (1927) who stated that a test is valid if it measures what it claims to measure. This validity refers to the extent to which the instrument can measure what it measures. Establish validity would require establishing both reliability and accuracy.

There are few processes involve invalidity. Firstly, a questionnaire was developed based on research philosophy, conceptual framework, problem statement, research goal, research objective, and question.

Second, pilot tests were conducted by researchers. reliability of questionnaire surveys can be measured by pilot tests. Pilot test aim is to review and review draft inquiries. It is to ensure that the respondents understand the question.

3.4 SAMPLING

Sampling is widely used to obtain population data. Data will be extracted from the sample and then conclusions will be drawn. The population of this study involved all FM operations management and students living in residential colleges in institutions built through the PFI project.

The reason for sampling is that it saves time and for limited resources, sampling can be done to broaden the scope of the study. As a sampling strategy, Krejcie and Morgan's (1970) table was adopted. The sampling strategy determines the sample size of the respondents for the questionnaire distribution.

3.5 DATA ANALYSIS TECHNIQUE

Subsequent data will be collected and analyzed. The purpose of the researcher to carry out data analysis is to describe the data that has been collected to be readily understood by the reader.

In this process, researchers use Microsoft Excel to store all the data that has been collected. Graphs will show the data that has been received to make it easier to understand. Researchers will be able to accurately analyze the data obtained and can save time with the use of the software. Each selected respondent needs to relate to the issue either directly or indirectly. Testing will be performed before an analysis test is made.

3.6 SUMMARY OF THE CHAPTER

Overall, this chapter 3 discusses the methodology of this study. It also describes the tests conducted to obtain and collect data. While the method used is by using the interview method and questionnaire conducted to the respondent. Using data collection techniques and systematic analyzes can facilitate the study conducted. Meanwhile, in the next chapter, chapter 4 will explain regarding data collection. The chapter involved sampling and data collection instruments.

CHAPTER FOUR

DATA COLLECTION

4.1 INTRODUCTION

This chapter describes the methods of data collection. Data collection is done to obtain the information needed in order to achieve the purpose of the study. Data collection is the most important step in the study (Creswell, 2008). This chapter will also explain in detail the data collection methods used in this study. This is because good research results from the beginning of the process to the conclusion of the research process.

On this study, the researcher chose to explain the data collection instrument used by the researcher in this study. As discussed in chapter one of this study, there are three objectives. The method of data collection is important because it explains how the information collected is used and what information can be produced (Tehran, 2015). In this chapter, researchers also use interview methods and questionnaires to gather the necessary data and information.

4.2 SAMPLE OF RESEARCH

Sample is a group (person, institution, place, or phenomenon) that is the source of information that researchers need. According to Bartlett (2001), sampling means the process by which something is selected based on population. The fact is that the researchers' desire is to investigate the population that has been identified in the research. However, factors such as large, large, and large population sizes make it difficult for researchers to do so. Finding and contacting all members of the population can be time consuming and time consuming. Therefore, the researchers had to choose the sample for investigation. Therefore, this study is focused only on facilities management companies and students in educational institutions where the institution is being developed through the Private Finance Initiative (PFI) project in Malaysia.

Sampling is an important aspect of research because improper use of samples will reduce the validity and reliability of the research (Chua, 2006). According to (Peh, 2004) the greater the number of samples selected, the lower the sampling error and the selected sample will better represent the population by taking into account all existing populations. Therefore, the results of this study will represent the entire population. The study aimed at two categories of respondents as a sample of the entire population of this study, from facility management (maintenance management) and FM service end users. According to Asika (2008) the sample is a good representative of the population. It is considered a specimen or part of the whole population.

4.3 DATA COLLECTION INSTRUMENTS

Instrument is one of the methods used for the data collection process. The collection of information and data during the study was divided into 2 sections, namely primary and secondary data. Primary data is data or information collected through methods such as questionnaires and interviews. Primary data played an important role in determining the results to be obtained as they were an important source of information in this study. The data will be used to analyze, formulate and plan for the study, even determining whether the objectives of the study and the objectives of the study are being achieved or not.

While secondary data is data and information obtained directly from studies done through literary studies such as through reading sources such as journals, books, previous theses, magazines, internet, papers and the like. One of the data collection instruments for the case study used in this study was the questionnaire form.

4.3.1 Questionnaire

Survey questions are the easiest way to get information (Jasmi, 2012). Gaffar (1999) argues that in order to obtain information from respondents on the topic of the study, the questionnaire method is one of the methods that can be used. As such, the research questionnaire method has been the choice of the researcher as a data

collection instrument for the study of the impact of Facility Management involvement in private finance initiatives (PFI) educational institutions.

This survey will focus on research questions where researchers want to see the impact of early-stage FM involvement in PFI projects as they study the effectiveness of operations management (maintenance) and users (students). The survey questionnaire was developed using the best practice elements related to the management of maintenance operations involving FM staff at educational institutions. There are many advantages of using a survey questionnaire in conducting a survey such as the identity of the respondent, confidential questionnaires can be distributed to more respondents at a time and the cost of obtaining data can be reduced.

All of the information provided by the respondents in this survey question is confidential and is for informational purposes only. The items contained in this survey question were taken based on the first, second, third and fourth constructs in the conceptual framework of the study. This survey questionnaire was also used to answer sub-questions and the first and second objectives of the study. This survey questionnaire is divided into 3 sections

- Part A: Respondents' Backgrounds
- Part B: To investigate the impact of Facility Management in private financial initiatives (PFI) educational institutions
- Part C: To Promote Best Practices of Engaging Educational Facilities in Private Financial Initiatives (PFI) Educational Institutions

4.3.1.1 Part A: Respondents' Backgrounds

Part A deals with the background of the respondent involving the institution of education, the position of the staff and students and the experience of the staff working in the institution and the experience of the students using the facilities at the institution. This section is not analyzed because it is for the researcher only to know the respondent's pattern and will not be disclosed to any party.

4.3.1.2 Part B: To investigate the impact of Facility Management in Private Financial Initiatives (PFI) educational institution

Part B contains two sections of questionnaire in which one section will need to be completed by an FM technician and the second will be completed by a student living in a residential college. The questions in Part B will answer the first objective of investigating the impact of Facility Management on private financial initiatives (PFI) educational institutions. In this section researchers will ask a number of questions to determine the level of effectiveness of FM staff in the management of maintenance at the educational institution

ITEM	**OPERATION MANAGEMENT ACHIEVEMENT** ***PENCAPAIAN PENGURUSAN OPERASI***	**SCALE/SKALA**				
2.1	**Penyelenggaraan / Maintenance**					
2.1.1	I conduct service in compliance with requirements *Saya melaksanakan penyelenggaraan mengikut piawaian*	1	2	3	4	5
2.1.2	I do the consistency of the maintenance well *Saya melaksanakan mutu penyelenggaraan dengan baik*	1	2	3	4	5
2.1.3	I do maintenance until customer satisfied *Saya melaksanakan penyelenggaraan sehingga pelanggan berpuas hati*	1	2	3	4	5
2.1.4	I complete any maintenance performed according to a schedule *Saya memastikan setiap penyelenggaraan yang dilakukan mengikut jadual yang telah ditetapkan.*	1	2	3	4	5
2.2	**Komunikasi / Communication**					
2.2.1	I got clear instructions from the management *Saya mendapat arahan yang jelas daripada pihak pengurusan.*	1	2	3	4	5

2.2.2	I understand the instructions given by the management *Saya memahami arahan yang diberikan oleh pihak pengurusan*	1	2	3	4	5
2.2.3	I use language that is easy to understand and clear when communicating *Saya menggunakan bahasa yang mudah difahami serta jelas semasa berkomunikasi*	1	2	3	4	5
2.2.4	Colleagues collaborate well while working *Rakan sekerja memberikan kerjasama yang baik semasa bekerja*					
2.3	**Kualiti / Quality**					
2.3.1	I perform the service with satisfactory quality *Saya melaksanakan perkhidmatan dengan kualiti yang memuaskan.*	1	2	3	4	5
2.3.2	I ensure quality management of operations management according to standards *Saya memastikan penjagaan kualiti pengurusan operasi mengikut piawaan.*	1	2	3	4	5
2.3.3	I ensure the response time is not longer than 1 hour *Saya memastikan respond time (masa tindak balas) tidak melebihi 1jam.*	1	2	3	4	5
2.4	**Keselamatan / Safety**					
2.4.1	I care about safety while working *Saya mementingkan keselamatan semasa bekerja*	1	2	3	4	5
2.4.2	I work safely at the work place *Saya bekerja dalam keadaan selamat di tempat kerja*	1	2	3	4	5
2.4.3	I use the PPE safety equipment when I work *Saya menggunakan kemudahan keselamatan PPE semasa bekerja*	1	2	3	4	5
2.4.4	Safety briefings were given by superiors before risky work was carried out *Taklimat keselamatan diberikan oleh pihak atasan sebelum kerja-kerja berisiko dijalankan*	1	2	3	4	5

Table 4: Items related the impact of Facilities Management in private finance initiative (PFI) educational institutions (technician)

ITEM	**OPERATION MANAGEMENT ACHIEVEMENT PENCAPAIAN PENGURUSAN OPERASI**	**SCALE SKALA**				
2.6	Penyelenggaraan / Maintenance					
2.6.1	The maintenance operations team performs preventive maintenance based on the schedule *Pasukan operasi penyelenggaraan melakukan penyelenggaraan pencegahan (preventive maintenance) berdasarkan jadual.*	1	2	3	4	5
2.6.2	Management always improves the quality of maintenance well *Pihak pengurusan sentiasa memperbaiki mutu penyelenggaraan dengan baik*	1	2	3	4	5
2.6.3	The maintenance report produced received a fast response *Laporan penyelenggaraan yang dibuat mendapat tindak balas yang cepat*	1	2	3	4	5
2.6.4	Implementation of maintenance performed according to customer requirements *Pelaksanaan penyelenggaraan yang dilakukan mengikut kehendak pelanggan*	1	2	3	4	5
2.7	Komunikasi/Communication					
2.7.1	The maintenance operations team communicates with students in case maintenance work needs to be delayed. *Pasukan operasi penyelenggaraan berkomunikasi dengan pelajar sekiranya kerja penyelenggaraan perlu ditangguhkan .*	1	2	3	4	5
2.7.2	The management has a friendly and welcoming attitude *Pihak pengurusan mempunyai sikap yang peramah dan mesra*	1	2	3	4	5

2.7.3	The management is prepared to interact with the students *Pihak pengurusan bersedia memberi kerjasama kepada pelajar*	1	2	3	4	5
2.7.4	Management is productive at performing the tasks *Pihak pengurusan yang cekap dalam melaksanakan tugasan*	1	2	3	4	5
2.8	Kualiti / Quality					
2.8.1	The quality of facility management meets the standards *Kualiti pengurusan fasiliti menepati piawaian*	1	2	3	4	5
2.8.2	Public facilities are sufficient at the faculty (surau,toilets, cafés, etc.). *Kemudahan awam di fakulti adalah memuaskan (surau, tandas, kafe, dan sebagainya)*	1	2	3	4	5
2.8.3	*The quality of service provided by the management is satisfactory* *Kualiti perkhidmatan yang diberikan oleh pihak pengurusan memuaskan*	1	2	3	4	5
2.8.4	Management always maintains the quality of maintenance *Pihak pengurusan sentiasa menjaga kualiti penyelenggaraan*	1	2	3	4	5
2.8.5	The road system and the architecture of the university buildings are also systematic *Sistem Jalan serta susun atur bangunan didalam universiti adalah bersistematik*	1	2	3	4	5
2.8.6	The services and facilities provided by the university meet the students needs *Perkhidmatan dan kemudahan yang disediakan oleh pihak universiti memenuhi keperluan para pelajar*	1	2	3	4	5
2.9	Keselamatan / Safety					
2.9.1	Safety in the university is guaranteed *Keselamatan didalam universiti terjamin*	1	2	3	4	5

2.9.2	I feel safe while the maintenance work is being done. *Saya berasa selamat semasa kerja penyelenggaraan dilakukan.*	1	2	3	4	5
2.9.3	University equipment (emergency routes, fire extinguishers) is complete and satisfactory *Kelengkapan di universiti adalah lengkap dan mencukupi (laluan kecemasan, alat pemadam api)*	1	2	3	4	5
2.9.4	Basic facilities (water, electricity) at the university are well provided *Kemudahan asas (air,elektrik) di university disediakan dengan baik*	1	2	3	4	5

Table 5: Items related the impact of Facilities Management in private finance initiative (PFI) educational institutions (student)

4.3.1.3 Part C: To promote a best practise of involvement Facilities Management in Private finance initiative (PFI) educational institutions

This C consists of two sections of questionnaire where one section will need to be completed by an FM technician and the second will be completed by a student living in a residential college. The questions in Part B will answer the first objective of investigating the impact of Facility Management on private educational institutions (PFI). In this area researchers want to promote a best practice of Facilities Management.

ITEM	**BEST PRACTICE PERFORMANCE INDICATORS PETUNJUK PRESTASI AMALAN TERBAIK**	**SCALE SKALA**				
2.5	**Best Practices ACHIEVEMENT Pencapaian Amalan Terbaik**					
2.5.1	I am committed to the achievement of operations *Saya komited dengan pencapaian operasi sekarang*	1	2	3	4	5

2.5.2	I ensure an excellent record of the operational management achievement *Saya memastikan rekod pencapaian pengurusan operasi yang cemerlang*	1	2	3	4	5
2.5.3	I am constantly improving the performance of operations management *Saya sentiasa meningkatkan pencapaian pengurusan operasi*	1	2	3	4	5
2.5.4	I am satisfied with the achievements of operations management *Saya berpuas hati dengan pencapaian pengurusan operasi sekarang*	1	2	3	4	5
2.5.5	I was once exposed to operations management *Saya pernah didedahkan dengan pengurusan operasi*	1	2	3	4	5

Table 6: To promote a best practice of involvement in Facilities Management in Private finance initiative (PFI) educational institutions (technician)

ITEM	**BEST PRACTICE PERFORMANCE INDICATORS** ***PETUNJUK PRESTASI AMALAN TERBAIK***	**SCALE / SKALA**				
2.10	**Best Practices ACHIEVEMENT** ***Pencapaian Amalan Terbaik***					
2.10.1	The company is always committed to the achievement of operations management *Pihak syarikat sentiasa komited dengan pencapaian pengurusan operasi*	1	2	3	4	5
2.10.2	The company has excellent operational track record *Pihak syarikat mempunyai rekod pencapaian pengoperasian yang cemerlang*	1	2	3	4	5
2.10.3	The company is constantly improving operations management performance from time to time *Pihak syarikat sentiasa meningkatkan pencapaian pengurusan operasi dari masa ke semasa*	1	2	3	4	5

Table 7: To promote a best practice of involvement in Facilities Management in Private finance initiative (PFI) educational institutions (Student)

The measurement scale used for sections B and C is Likert Scale. The Likert Scale (1932) states that this scale can be used to measure the attitudes, opinions and perceptions of individuals or groups of people who are aware of a symptom. According to the Likert Scale there are two forms of positivity that are used to measure positive attitudes and negative ones to measure negative attitudes. The larger the value selected, the higher the level of agreement represented by the respondents. The likelihoods used in the study are as shown in table 8.

Scale	**1**	**2**	**3**	**4**	**5**
Satisfaction	Strongly Disagree	Disagree	Moderate	Agree	Strongly Agree

Table 8: Likert Scale

In this study, the researchers used five likert scales. The Likert Rensis (1932) suggested that indexes should be constructed by adding items that fit a concept. This Likert scale was chosen because it is a scale that is easy to build and controlled by researchers and most respondents are familiar with the use of this likert scale. Likert-scale questions are used to control the questions presented in line with the research questions to achieve the objectives of the study.

The first option shows a very disagreeable assessment which will allow the respondents to choose if the situation is very negative. While the second option is to disagree where the respondents are still negative but lower than the first choice. The third choice scale is neutral, which is skeptical of the view made. The fourth choice scale was the one in which the respondents agreed and felt positive about the views given and the fifth choice was strongly in favor of the respondents showing very positive criteria for the views raised.

4.4 PILOT STUDY

The researcher had conducted a pilot study before the actual study was conducted. The study was conducted on 30 employees involved. This pilot study aims to test the validity of the items used in the survey questionnaire that has been developed. After this pilot study the researcher can determine which features of the question need to be modified or maintained according to the actual research

question. It may even help the researcher identify any method or instrument of study that is incorrect or inaccurate.

In this study, 30 related workers were randomly selected to conduct this pilot study. The purpose of this study was to review and ensure that the survey questions were completed and complete with clear and easy-to-understand instructions for respondents when they filled in. In addition, reliability testing of the manufactured items is also carried out. When the coefficient value is greater than 0.7, the researcher concludes that the designed questionnaire has high reliability (Najib, 1999). This reliability test uses the SPSS program.

4.5 SUMMARY

Based on the explanations described in this chapter, it involves the design and data collection techniques used by researchers in this study. Instruments for the data collection process used in this study are also clearly described in this chapter. The correct instrument selection is very important in the data collection process. The data collected will be analyzed using the method selected by using the Microsoft Excel application. The results of the study will be discussed in the next chapter.

CHAPTER FIVE
DATA ANALYSIS AND DISCUSSION

5.1 INTRODUCTION

In this chapter, it describes the analysis process based on the findings obtained from the sample using the instrument method selected as the questionnaire. This questionnaire has been sent to 2 UITMs built through the PFI process namely Uitm Tapah and Uitm Puncak Alam. This data analysis is an activity to answer the research questions and objectives once all data has been collected and processed (Angora, 2008).

In this analysis, 2 categories of respondents were selected to meet the objectives of this study, namely students living in residential colleges and maintenance technicians in each educational institution. educating institutions via email and google forms from April to May to get their feedback. A total of 500 questionnaires were distributed and only 403 were returned and samples were studied and analyzed.

The return of the copy has been examined by mistakes, omissions, completeness, and inconsistencies and is found to be adequately completed and therefore used to carry out the analysis. The results will be presented in the form of charts and tables. Data obtained will be analyzed using SPSS. The analysis method used is in the form of a percent, mean and frequency.

5.2 RESPONDENT DEMOGRAPHICS

Part of these respondent demographics explains the background of respondents involved in this study by answering a distributed questionnaire. A total of 403 questionnaires have been received to achieve the objectives of this study.In the respondent's survey from there are

- Institution
- Gender
- Age
- Types of career
- Academic Qualification

All information on the findings and respondents' information obtained from the results of the questionnaire distributed will be shown on the diagram after analysis.

5.2.1 Respondents' Analysis Based on Institution.

This section will describe the background of 2 respondents from different educational institutions. The percentage method used to analyze the background of the respondent institution and the figure below shows the number of respondents by institution.

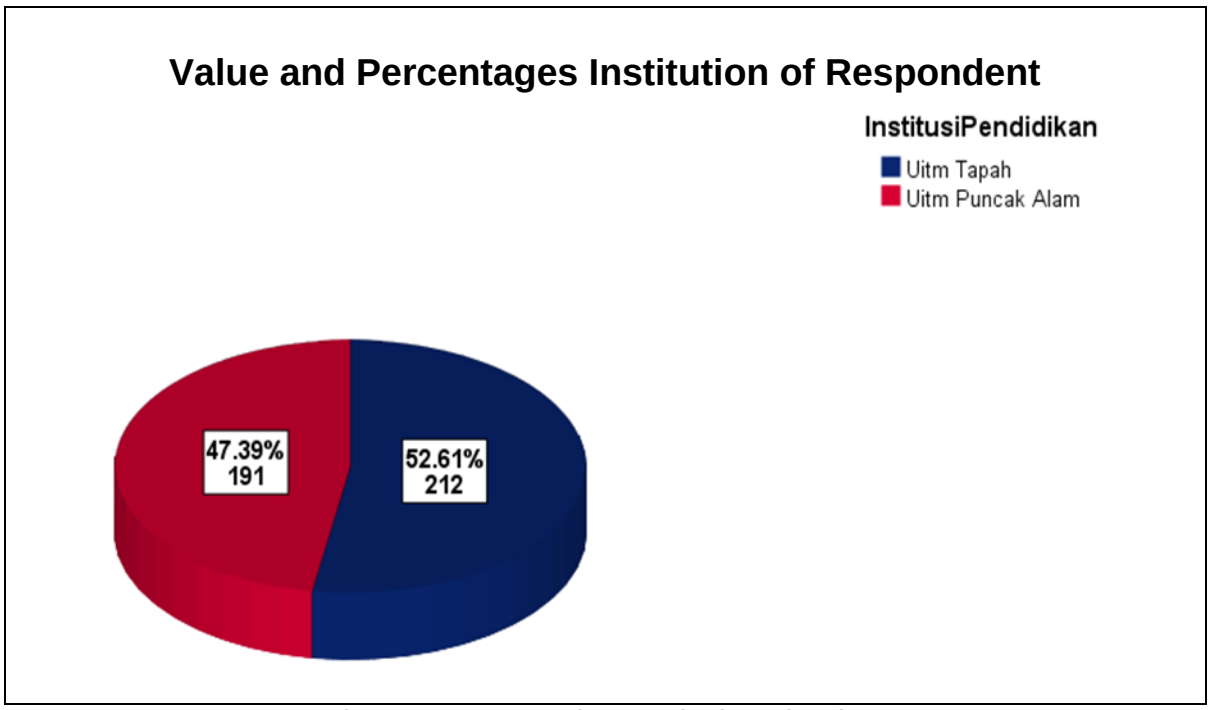


Figure 10: Respondent Institution Pie Chart

Figure 10 above shows the number of both respondents in accordance with Educational Institutions. The total number of respondents who answered the questionnaire and sent it back was 403 people from 2 educational institutions (PFI). The findings show that more respondents are from Uitm Tapah than Uitm Puncak Alam . 52.61% of the respondents were Uitm Tapah and 47.39% were Uitm Puncak Alam. Therefore, it can be concluded that Uitm Tapah is more involved in answering survey questions than Uitm Puncak Alam. This is because, Uitm Tapah is where researcher work and it makes it easier for researcher to communicate with the respondents face to face compared to Uitm Puncak Alam.

5.2.2 Respondents' Analysis Based on Gender.

This section will describe the respondents 'background which consists of respondents' sex. The percentage method used to analyze the background of respondents' gender and the figure below shows the number of respondents according to gender.

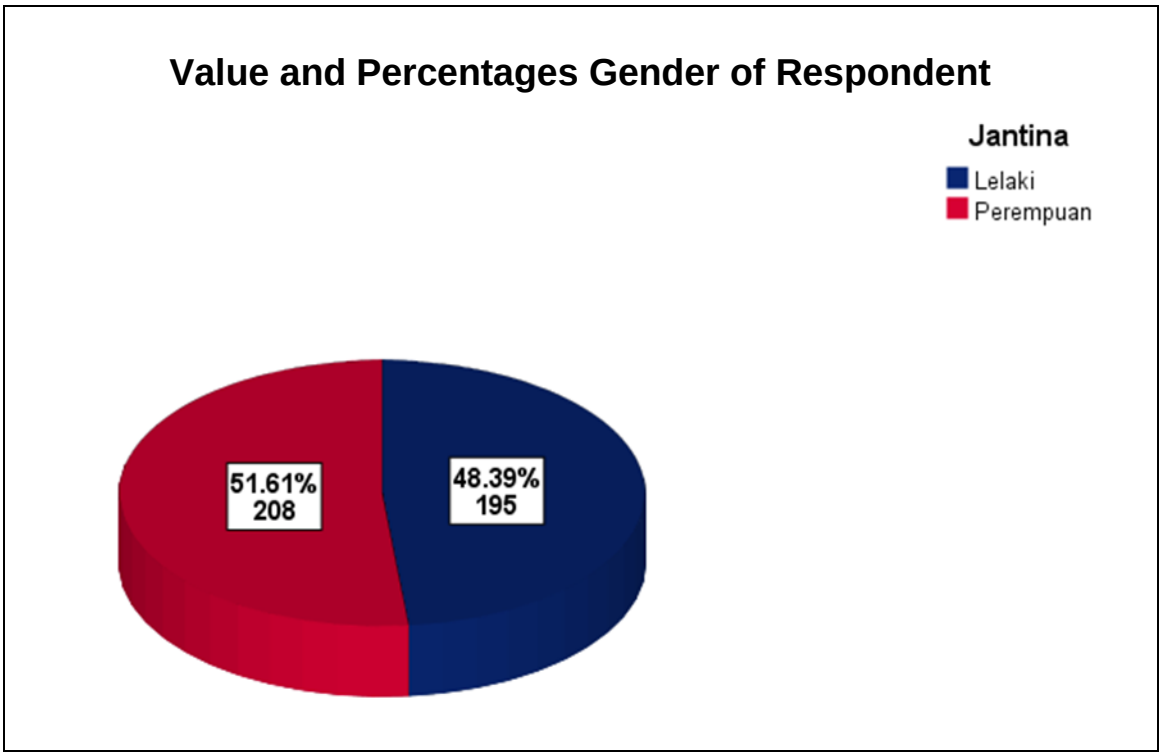


Figure 11: Respondent Gender Pie Chart

Figure 11 above shows the number of respondents for Tapah Uitm and Uitm Puncak Alam by gender. The total number of respondents who answered the questionnaire and sent it back was 403 people from 2 educational institutions. Based on the findings, show that more respondents are women than male. 51.61% of the respondents were female and 48.39% were male. Therefore, it can be concluded that women in educational institutions are more involved in making decisions about procurement choices than male.

5.2.3 Respondents' Analysis Based on Age

This section will describe the background of the respondents who are of the age of the respondents. The percentage method used to analyze respondents' age background and the figure below shows the number of respondents by age.

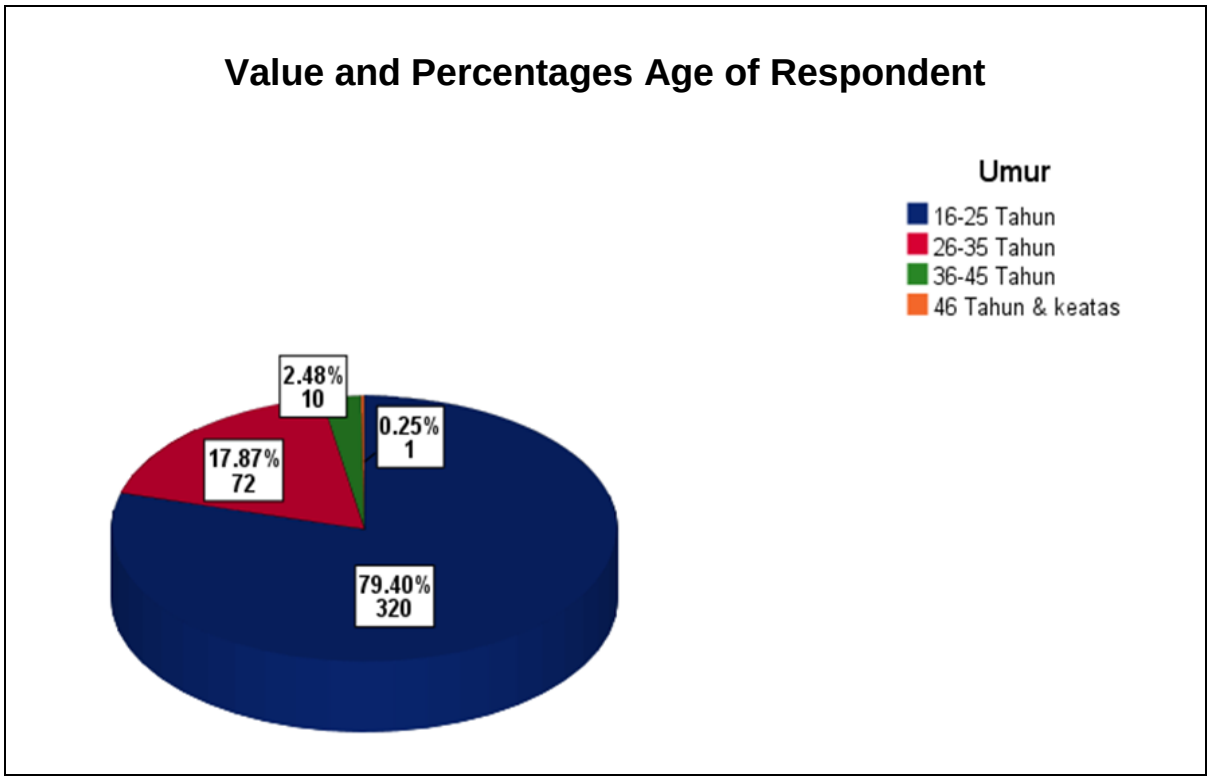


Figure 12: Respondent Age Pie Chart

Figure 12 above shows the number of respondents for 2 educational institutions by age. The total number of respondents who answered the questionnaire and sent it back was 403 people from 2 educational institutions. Based on the findings, it shows that more respondents are in the age group of 16-25 years in educational institutions. A total of 79.40% were (16-25 years) at the same time as the highest proportion of students and maintenance technicians who answered this survey question and the remaining 17.87% (26-35 years old), 2.48% (36-45 years) and 0.25% (46 years & above). Therefore, it can be concluded that the majority of respondents are teenagers from both educational institutions.

5.2.4 Respondents' Analysis Based on Academic Qualification.

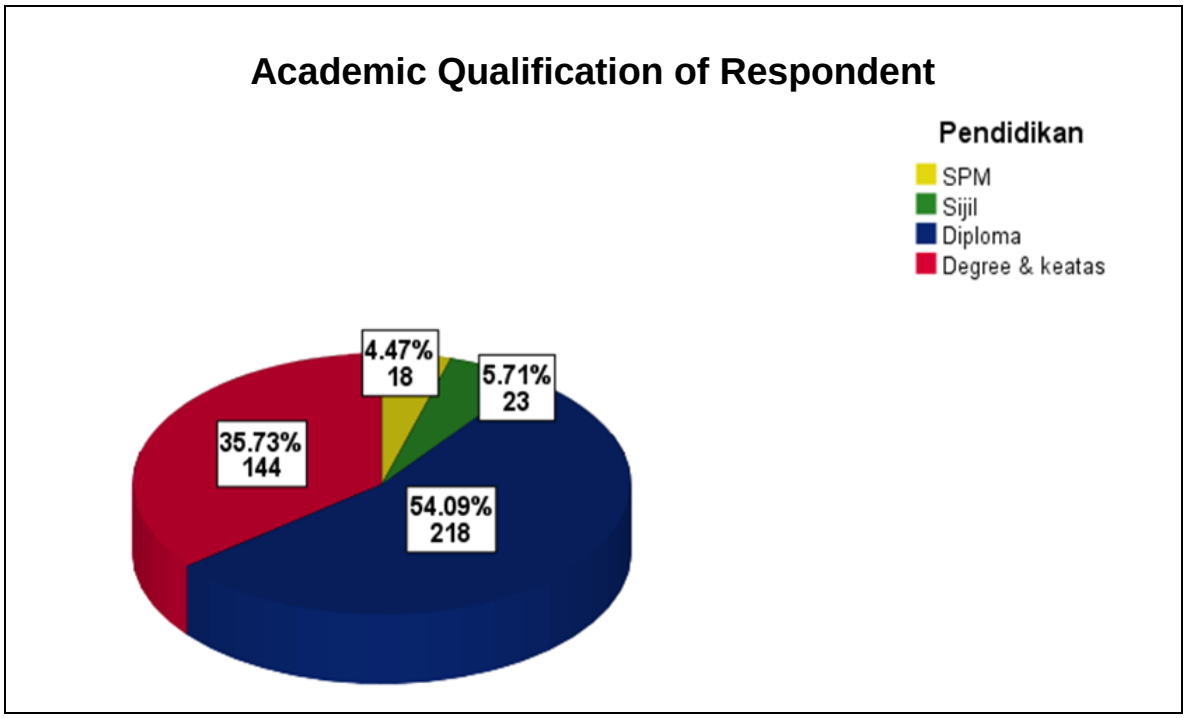


Figure 13: Academic Qualification of Respondents

Referring to Figure 13 shows the level of academic eligibility of the students and the maintenance technicians involved in this study. The majority of respondents had a diploma in academic qualification of 54.09% (218 respondents), while those with a postgraduate academic qualification were 35.73% (144 respondents). Additionally, there were 5.71% (23 respondents) of academic qualifications and the other 4.47% (18 respondents) were SPM. This indicates that respondents with sufficient academic knowledge were sought to provide useful information for the purpose of this study.

5.2.5 Respondents' Analysis Based on Type of Position.

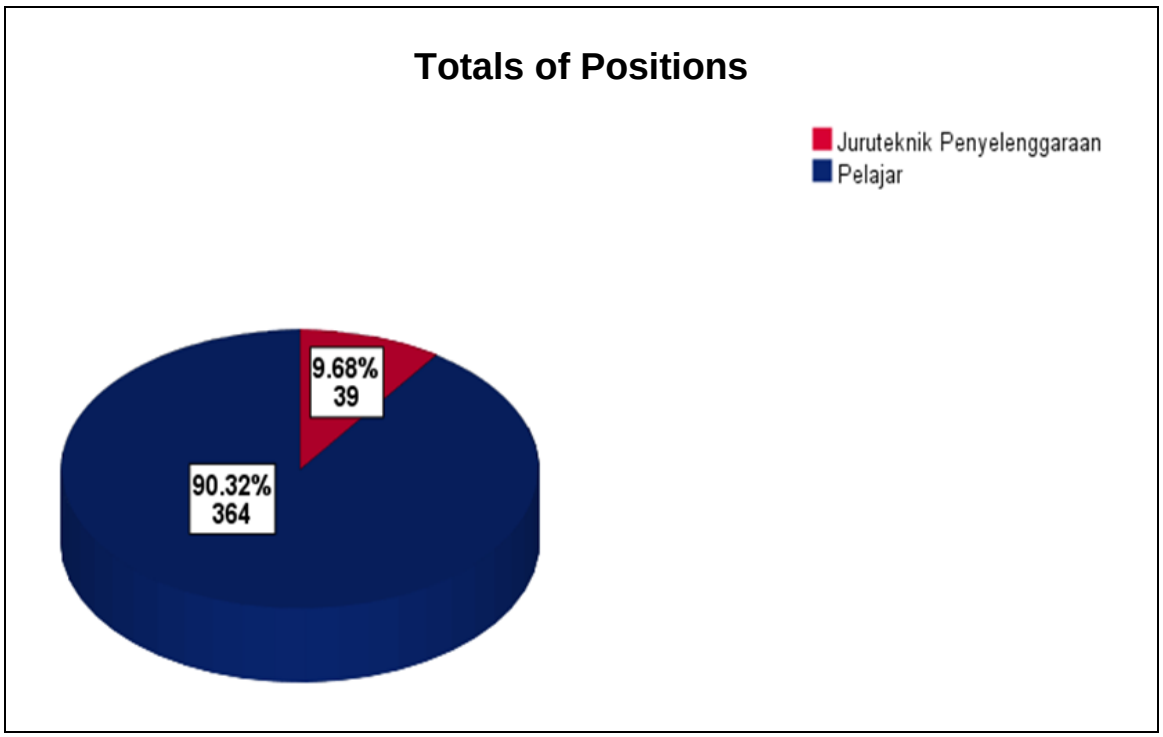


Figure 14: Total of Positions

According to Figure 14 shows the total of positions of respondents involved in this survey question namely students and maintenance technicians for Uitm Tapah and Uitm Puncak Alam. The purpose of both positions is to assist in the production of sufficient data to achieve the second and third objectives. This indicates that the student respondents and the maintenance technicians met the objectives sought to provide useful information for the purpose of this study.

5.3 OBJECTIVE 1: THE ROLE OF FACILITIES MANAGER

The first objective of this study was to identify the role of facilities manager in private finance initiative (PFI) educational institutions. Therefore, in this chapter, the first objective can be achieved in 2 steps. First is the discussion in chapter 2. Therefore, more comprehensive reading and discussion processes have been made about variables in the construct that have been discussed by previous researchers.

Based on the reading from the researcher, it can be stated that, the importance of the facilities management has grown from many organisations. Design, construction and facilities management skills are necessary for developing innovative projects and for the operation of the completed assets or facilities (Robinson et al, 2010).

Besides that, when it comes to the education field, the role of facility management is to maintain the building as best as possible and meet the needs of those who use the building. Any schools or campuses that envision to provide good quality education to their students must provide adequate school facilities, resources and appropriate maintenance services which will, in fact, contribute a more effective learning environment to their users (Global Services, 2019). According ERP (2017), facility management in the education sector includes all activity related to keeping a building operating properly, having a clean and safe environment that encourages development and learning in students. Facilities management also includes janitorial services, security, records management, property management and more.

. Parts B and C in the survey questions are the second step to achieving the first objective. where researchers use questionnaires to investigate the impact of facility management in private financial initiatives (pfi) educational institutions. Based on the response given by the respondents it was found that there are 2 parties involved that affected of FM involvement in the PFI project which is technician and student.

5.4 OBJECTIVE 2: THE IMPACT OF FACILITIES MANAGEMENT IN PRIVATE FINANCE INITIATIVE (PFI) EDUCATIONAL INSTITUTIONS.

This section aims to analyse the data to achieve the secondary objective of the study, namely, to investigate the impact of Facility Management in private financing initiatives (PFI) educational institutions. The data obtained were quantitative and the data were analysed using SPSS software. The instrument used to obtain the data was to disseminate survey forms to selected respondents, maintenance technicians and residential college students at two centre's built through the PFI project, Uitam Tapah and Uitm Puncak Alam.

Through the instruments used, the researcher analysed the data received to answer the second objective and state the findings obtained from the study which is to investigate the impact of Facilities Management in private finance initiative (PFI) educational institutions. The researcher uses mean analysis to answer the second objective of the study. Mean is defined as the sum of scores in the distribution divided by the number of scores. By performing the mean analysis, the study will be able to identify the average value generated from a data set. In this questionnaire, mean analysis was used to obtain the average value of each data related to impact of Involvement FM in early PFI project in education institution.

In this study, two types of respondents were used namely students and technicians. Therefore, this analysis will be done based on data from both respondents. Figure 15 is the analysis of the mean score data of the students which is from Uitm Tapah and Uitm Puncak Alam while figure 16 is the mean score data for technician.

Data for analysis and finding is the effectiveness of facility management engagement in early private financial initiative education institutions (PFI). In general, this section is designed to investigate the impact of Facility Management on private financial initiatives (PFI) educational institutions. The maintenance factors below were identified as one of the factors affecting the effectiveness of FM involvement in the early stages of the PFI project.

5.4.1 Student Data for Section B

Qst.	Section B1: Student	N	Mean	Rank
B4.i	Student safety	364	4.09	1
B4.iii	Safety tools	364	4.03	2
B4.iv	Basic fasilities	364	4.01	3
B3.i	Quality fasilities management	364	4	4
B3.v	Road system	364	4	4
B1.i	Team operation	364	3.99	5
B3.ii	Public facilities	364	3.99	5
B3.vi	Services	364	3.99	5
B3.iv	Management	364	3.97	6
B4.ii	Maintenance safety	364	3.97	6
B3.iii	Quality services	364	3.96	7
B2.iii	Management cooperation	364	3.94	8
B2.iv	Management efficiency	364	3.94	8
B1.ii	Quality of maintenance	364	3.93	9
B2.ii	Friendly Management	364	3.93	9
B1.iv	Implementation of maintenance	364	3.91	10
B2.i	Operations team communication	364	3.91	10
B1.iii	Complaint response	364	3.89	11

Table 9: Mean Score Benefit of Involvement FM in PFI: Student Respondent

In this second objective there are four main factors that influence the level of effectiveness of early FM involvement in the PFI project. These four factors have been identified and discussed in chapter two of the literature. The former include maintenance, communication, quality and safety factors. From 364 completed and returned survey forms, 195 of 364 respondents were respondents from Uitm Tapah and 169 of 364 respondent were respondent from Uitm Puncak Alam. Score mean Uitm Tapah are highest than Uitm Puncak Alam, it's because from the data, the operation facilities management from the Uitm Tapah more effective and efficient than others institution but both of the institution get a highest data. Data analysis for effectiveness of involvement of FM in PFI project option has 18 items.

Table 9 and figure 15 show the mean scores of factors influencing involvement of FM in PFI project using Microsoft Excel and Excel forms to analyse the survey data. Referring to Appendix A, it is found that the Likert scale used in this study was to use scale 1 to 5, scale 1- strongly disagree, 2 - strongly disagree, 3 - moderate, 4 - agree and 5 - strongly agree.

According to table 9, respondents agree that the most important factor influencing selection benefit of involvement FM in PFI project is student safety with a mean score of 4.09. Of the 364 completed and returned survey forms, which 59.3% of respondents voted in agree, 25.3% strongly agree, 14.8% moderate and 5% disagree. According to Lewis (2000), building maintenance management is responsible for overseeing the safety and health of the operations and maintenance of each facility under control. Reese (2004) adds that building maintenance is a key component of fire safety equipment at the university are also considered to be important factors influencing the selection of options with an average value of 4.03.According Jacobc (2019), fire safety is important because it doesn't matter who you are, how much money you have, how popular you are. Based on graph it shows the score mean of data student from both institution are highest which is Uitm Puncak Alam 4.01 and Uitm Tapah 4.16. Fire has a way of making you pay for your (or anyone else's) satisfaction or ignorance. There are not a lot of second chances, and it's important to consider, instead of a fire that is dangerous to us humans, it is the most dangerous smoke and side effects.

Furthermore, the basic facilities provided by the university such as water and electricity supply were the third highest of 4.01.This explained that this facility greatly influenced the needs of the university students. Of the total respondents, 56.9% agreed that service provided by the university of the university, 22.5% were strongly respondents, 19.8% were moderate and 0.8% disagreed. This makes the statement below the safety factor very important to the students and makes it the 3rd highest followed by the quality facility management and road system in the university where both have the same mean of 4.00 less than 0.01 of the safety factor which is basic facility.

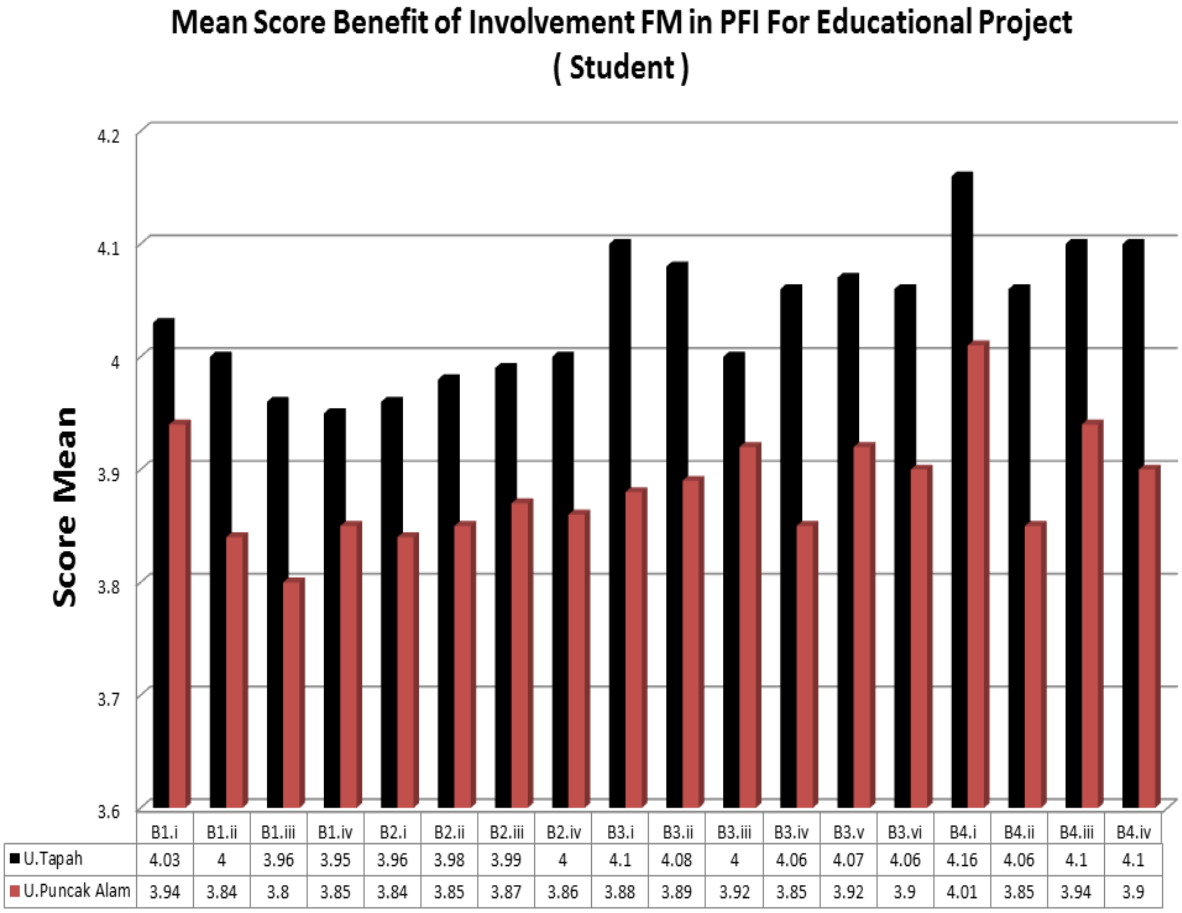
Meanwhile, the 3.99 score mean was given by the respondents from Uitm Tapah and Uitm Puncak Alam to three questions, namely, team operations and

quality factors (public facility and services), answered 50% above is agree. Thus so, as a result of the respondent's response, these three questions ranked 5th.

Based on table 9, there are two mean scores of 3.97 which represents the quality and safety factor and less than 0.01 point which is 3.96 which also represent the quality factor that comes close to the mean score. The questions that represent the quality factor are (management and quality services) while for the safety factor is. Based on the analysis made on the response of the respondents from the two groups, to the above three questions, 58% were agreed and only 0.8% of respondents voted strongly disagreed and terms of communication the mean score for all questions is 3.94 and below is communication between operations management and students. According to the respondents, 51% agreed and 1.8% strongly disagreed. It can be concluded that the communication factor is less satisfying than the students.

The lowest mean score of 3.89 is the maintenance factor. Where the survey question is (the maintenance report made responds fast). Out of these findings 58.2% agree, 22.8% moderate, 16.8% strongly agree, 1.9 disagree and 0.03 strongly disagree and from the mean score this question is ranked 18th.

Based on the mean score for all of these factors, it is found that the highest mean score is from the safety factor and the lowest is from the maintenance factor.This assessment was based on the results of the respondents' responses from two units built through the PFI project, Uitm Tapah and Uitm Puncak Alam. Conclusion, it can be seen that safety factors are one of the most important factors that need to be emphasized in the university to ensure that students are safe in the classroom or residential college that the FM needs to do. In addition, other factors are also important factors such as the quality, communication and maintenance that the FM needs to provide from the beginning of construction until operation.



	B1.i	B1.ii	B1.iii	B1.iv	B2.i	B2.ii	B2.iii	B2.iv	B3.i	B3.ii	B3.iii	B3.iv	B3.v	B3.vi	B4.i	B4.ii	B4.iii	B4.iv
U.Tapah	4.03	4	3.96	3.95	3.96	3.98	3.99	4	4.1	4.08	4	4.06	4.07	4.06	4.16	4.06	4.1	4.1
U.Puncak Alam	3.94	3.84	3.8	3.85	3.84	3.85	3.87	3.86	3.88	3.89	3.92	3.85	3.92	3.9	4.01	3.85	3.94	3.9

Figure 15: Mean Score Effectiveness of Involvement FM in PFI Project

5.4.2 Technician Data For Section B

Question	Section B2: Technician	N	Mean	Rank
B4.i	Prioritize safety at work	39	4.69	1
B4.ii	Work safety	39	4.69	1
B4.iii	PPE	39	4.67	2
B2.iii	Communication language	39	4.64	3
B1.i	Maintenance standards	39	4.62	4
B1.iii	Customer satisfaction	39	4.62	4
B3.ii	Quality operation standard	39	4.62	4
B1.ii	Quality of maintenance	39	4.59	5
B2.iv	Cooperation between friends	39	4.59	5
B3.i	Quality service	39	4.59	5
B4.iv	Safety briefing	39	4.54	6
B1.iv	schedule maintenance	39	4.51	7
B2.i	Clear Instructions	39	4.49	8
B2.ii	Instruction	39	4.46	9
B3.iii	Respond time (feedback)	39	4.46	9

Table 10: Mean Score Benefit of Involvement FM in PFI:Technician Respondent

In this second objective (B2) there are four main factors that influence the level of effectiveness of early FM involvement in the PFI project.4 These factors have been identified and discussed in chapter two of the literature. The first covers maintenance, communication, quality and safety factors. Of the 39 completed and returned survey forms, 17 out of 39 respondents were Uitm Tapah respondents and 22 of 39 respondents were Uitm Peak Nature respondents. Data analysis for the effectiveness of FM involvement in PFI project selection has 15 items.

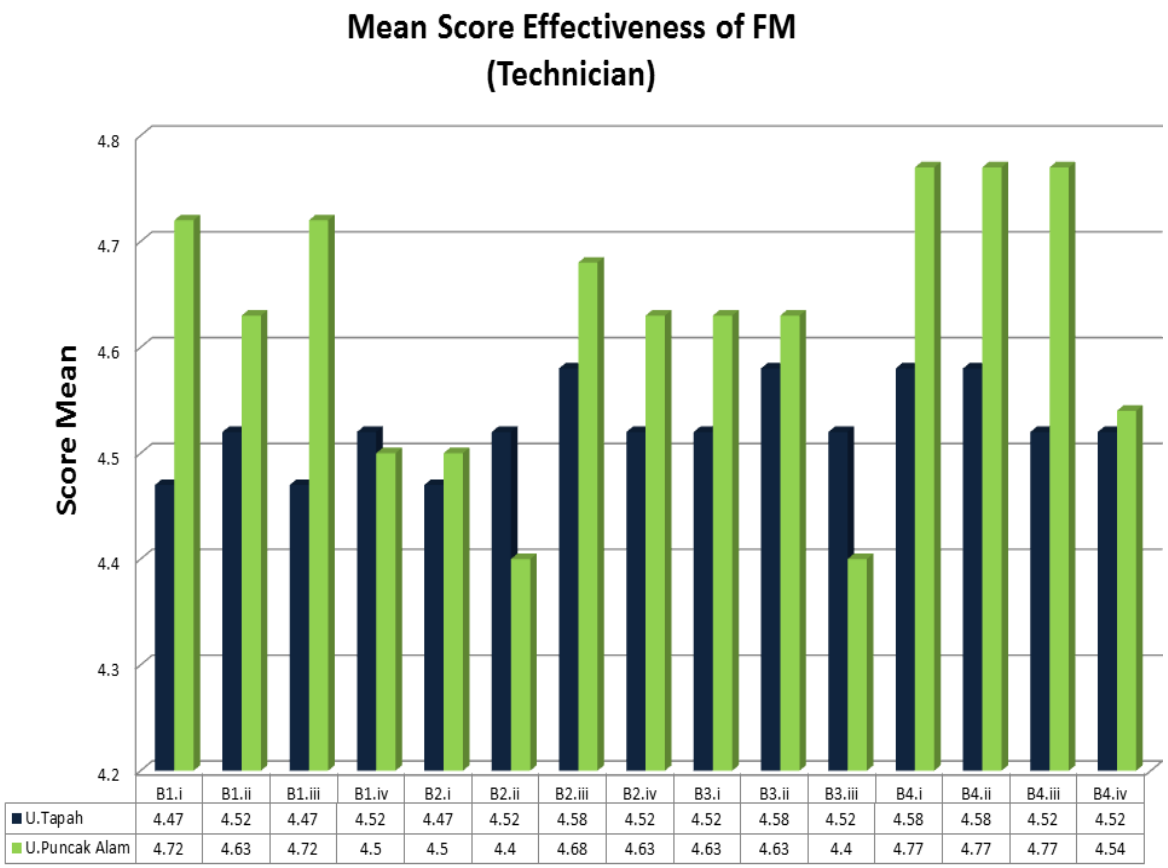
Table 10 and figure 16 show the mean scores of factors influencing involvement of FM in PFI project using Microsoft Excel and Excel forms to analyze the survey data. Referring to Appendix A, it is found that the Likert scale used in this study was to use scale 1 to 5, scale 1- strongly disagree, 2 - strongly disagree, 3 - moderate, 4 - agree and 5 - strongly agree.

Among the factors above, it is surprise that most of the respondents agree that four factors such as maintenance, communication,quality and safety are most important factors with ranks the highest with mean score 4.46, assessing it as a very important factors influencing the choice effectiveness early involvement FM in PFI project. Most FM companies will ensure that all the expertise available to their organization will be practiced and updated with the latest services over time, so that all operations and responsibilities received can run more smoothly and in quality.According Maintenx (2017), facility management is a very important aspect of any business or organization. When someone is in charge of managing the safety, security, and regular maintenance of the building and equipment of a business, you'll find that safety for all increases, while repair costs and injuries decrease.

Based on the data received from the respondent (technician), out of the total 39 respondents 34 were male technicians while 5 were female.19 of them are educational certificates, 16 diplomas and 2 are from SPM as well as dgree.This indicates that respondents have sufficient educational background and knowledge to answer this survey question. Based on figure 16, it's show the highest score mean from Uitm Puncak Alam at question about safety B4.i (4.77), B4.ii (4.77) and B4.iii (4.77). It can also be influenced by the education and gender of a technician where, 5 of the total technicians are from Uitm Puncak Alam are women with the highest education that is diploma. The higher one's education, the more knowledge and experience. According to table 10, there are two highest mean scores of 4.69 which represent the factor of safety. Among the questions that have the highest mean score are (do they care about safety while working and do they work in a safe manner). This explains that they have been exposed to workplace safety science provided by the company. From the data obtained from these two questions, an average of 74.4% voted strongly agree, 20.5% agreed and 5.1% moderate. Because the mean score for these two questions is highest, it puts the safety factor first and is the most important factor for the respondents

The second highest score mean was also the respondents' choice of safety factor. 4 out of 3 questions on safety factors are the respondents' choice of Uitm Tapah and Uitm Puncak Alam. It makes the second highest mean of 4.67 where the questions are asked (do they use PPE equipment while working). Where 71.8% strongly agreed, 23.1% agreed and 5.1% moderate. Direction and reaction time (feedback) were evaluated as a factor of communication and quality that did not influence this choice with mean 4.46. Although low score mean does not mean that it is not emphasized to respondents.56.4% strongly agreed, 33.3% agreed and 10.35 moderate and ranked lower at 14 and 15.

Based on the conclusions made through the technician data from Uitm Tapah and Uitm Puncak alam, which addressed the second objective, the effectiveness FM involvement in early PFI project, all respondents assessed safety factors as a key factor, followed by maintenance factors, quality and communication.All data obtained can be referred to table 10 and figure 16.



	B1.i	B1.ii	B1.iii	B1.iv	B2.i	B2.ii	B2.iii	B2.iv	B3.i	B3.ii	B3.iii	B4.i	B4.ii	B4.iii	B4.iv
U.Tapah	4.47	4.52	4.47	4.52	4.47	4.52	4.58	4.52	4.52	4.58	4.52	4.58	4.58	4.52	4.52
U.Puncak Alam	4.72	4.63	4.72	4.5	4.5	4.4	4.68	4.63	4.63	4.63	4.4	4.77	4.77	4.77	4.54

Figure 16: Mean Score Effectiveness of Involvement FM in PFI Project.

5.5 OBJECTIVE 3: A Best Practise Of Involvement Facilities Management

The findings of the third objective were made to promote a best practise of involvement Facilities Management in Private finance initiative (PFI) educational institutions and used in the facility management company thus giving a good impact to the organization. The data obtained were quantitative and the data were analyzed using Google Excel software and SPSS software. The instrument used to obtain the data was to disseminate the survey form to the selected respondents, namely students living in residential colleges as well as maintenance technicians for the two units built through the PFI project, Uitm Tapah and Uitm Puncak Alam.

Through the instruments used, the researchers analyzed the data received in response to the third objective and to promote best practices for the educational institutes of the Institute of Educational Initiatives in Facility Management (PFI). The researcher uses mean analysis to answer the third objective of the study. Mean is defined as the sum of scores in a division divided by the number of scores. By performing a mean analysis, the study will be able to identify the average value generated by one set of data. In this survey, mean analysis is used to promote best practices influenced by the second objective.

From the analysis of the collected data, it is found that in the decision to promote best practices for involvement of facilities management in private educational institutions (PFI), the organization will consider the most important factors to ensure its continued existence and growth. Studies show that in order to ensure that management is in good working condition, from the planning stage to the operational level, the initial FM involvement in the project is beneficial to the client or not.

In this third objective, two respondents were used and all data from the survey questionnaire were recorded. It consisted of students and maintenance technicians at two educational institutions namely Uitm Tapah and Uitm Puncak Alam. A total of 364 students answered In this section C's 195 objectives are respondents from UitmTapah and the rest 169 are from Uitm Puncak Alam. The male respondents consisted of 161 while the female respondents for both institutions were 203.

In addition, the total number of respondents from the maintenance technicians was 39 people, 17 from Uitm Tapah and 22 from Uitm Puncak Alam. Out of the total 35 were male and 5 were female respondents with a background skills certificates in education. The total number of respondents was 403.

5.5.1 Student Data For Section C

Question	Section C1: Student	N	Mean	Rank
C1	The company is always committed to the achievement of operations management	364	4.02	1
C3	The company is constantly improving operations management performance from time to time	364	4.02	1
C2	The company has excellent operational track record	364	3.99	2

Table 11: Mean Score of Best Practise

Based on table 11, in section c there are three questions related to the third objective to promote best practices for involvement of Financial Management Facility educational institutions in private financial initiatives (PFI). Two of these three questions have a mean score of 4.02. Questions C1 and C3 were in the first rank where 18.7% strongly agreed, 65.1% agreed, 15.4 moderate and 0.8% disagreed. Meanwhile for question C3, 19.8% strongly agreed, 62.4% agreed, 17.6 moderate and 0.3 disagreed. From the mean score data, it shows that the students agree with the methods and services provided by the FM company. This shows that FM companies are constantly improving their good practice in all aspects. The second mean score was 3.99 which was only 0.03 and put it second. Data received 18.15% strongly agreed, 62.9% agreed, 18.7% moderate and 0.03% strongly disagreed

For the conclusion, a best practice is a technique or methodology that, through experience and research, has proven to reliably lead to a desired result. A commitment to using the best practices in any field is a commitment to using all the knowledge and technology at one's disposal to ensure success (Rause, 2014).

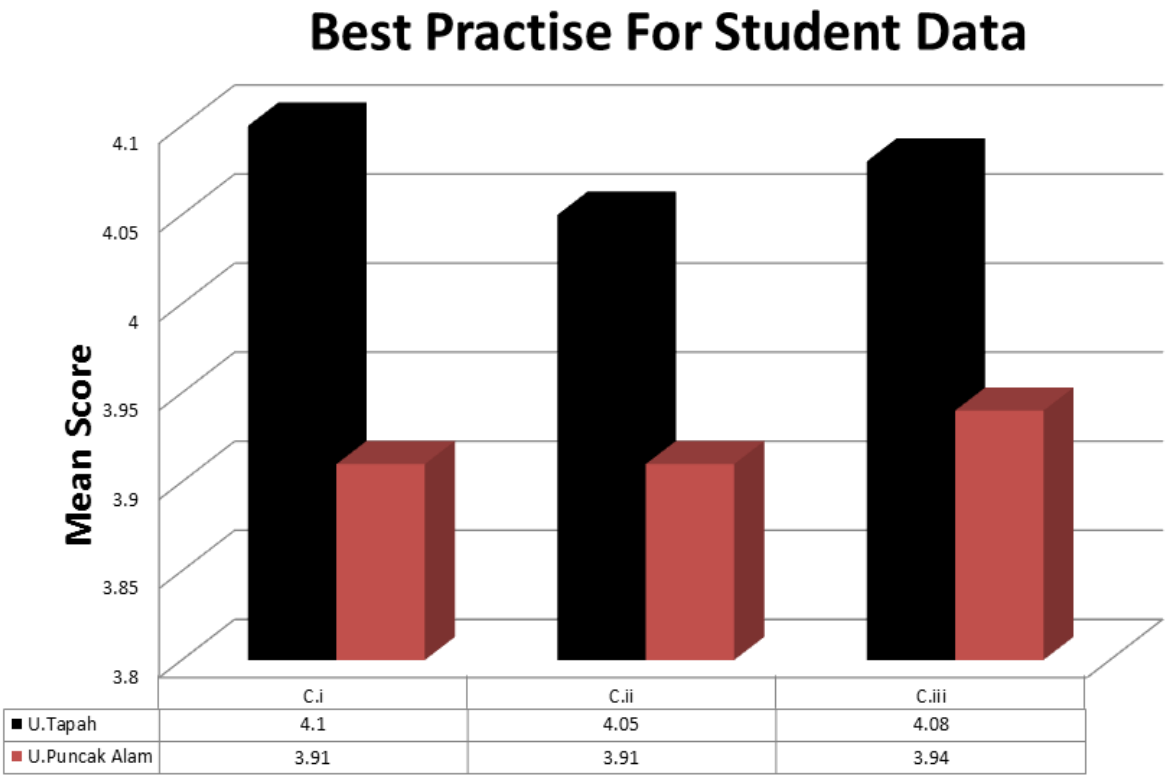


Figure 17: Mean Score for Student Data

5.5.2 Technician Data For Section C

Question	Section C1: Technician	N	Mean	Rank
C3	I am constantly improving the performance of operations management	39	4.67	1
C2	I ensure an excellent record of the operational management achievement	39	4.64	2
C5	I was once exposed to operations management	39	4.56	3
C1	I am committed to the achievement of operations	39	4.54	4
C4	I am satisfied with the achievements of operations management	39	4.51	5

Table 12: Mean Score for Student Best Practise Data

Table 12 is the result of mean score data of respondents, technicians. In this third objective is to promote best practices for involvement of Financial Management Facility (PFI) education institutions. In this section there are 5 questions that are closely related to that objective. All five of the questions in the survey question in section c, all of them had a high mean score of 4.51 to 4.67.

Question c3 had the highest mean score where the questionnaire was operation improvement which got 4.67. Of the 39 completed and returned survey forms, of which 28.2% of respondents voted in agree, 69.2% strongly agree, 2.6% moderate in first rank. Next is the c2 question each time obtained with a high mean score of 4.64.Of the 39 respondents who answered this survey, 66.7% strongly agreed, 30.8% agreed and 2.6% moderate. This proves that the data obtained by the respondents has agreed that it is a good value practice.

Next, the mean scores are 4.56 and 4.54. Both of these questions are ranked third and fourth respectively.For 4.56 it represented question c5 with 65.1% strongly agreed, 33.3% agreed and 5.1% moderate, while score mean representing 4.54 was question c1 where the percentage was 61.5% strongly agreed, 30.8% agreed and 7.7% moderate.Here it can be concluded, that all 39 respondents answered between strongly agreed to moderate, not even one pound respondent disagreed and strongly disagreed.It proves that these 3 objectives play an important role in the services of the Fm company.

Lastly, a mean score of 4.51 representing question c4.Based on data obtained 61.5% strongly agreed, 30.8% agreed and 7.7% moderate.Although it is in the final position but the mean score value of the respondents is still in satisfactory condition. According figure 5.9 show the histogram graph for best practise data for technician.

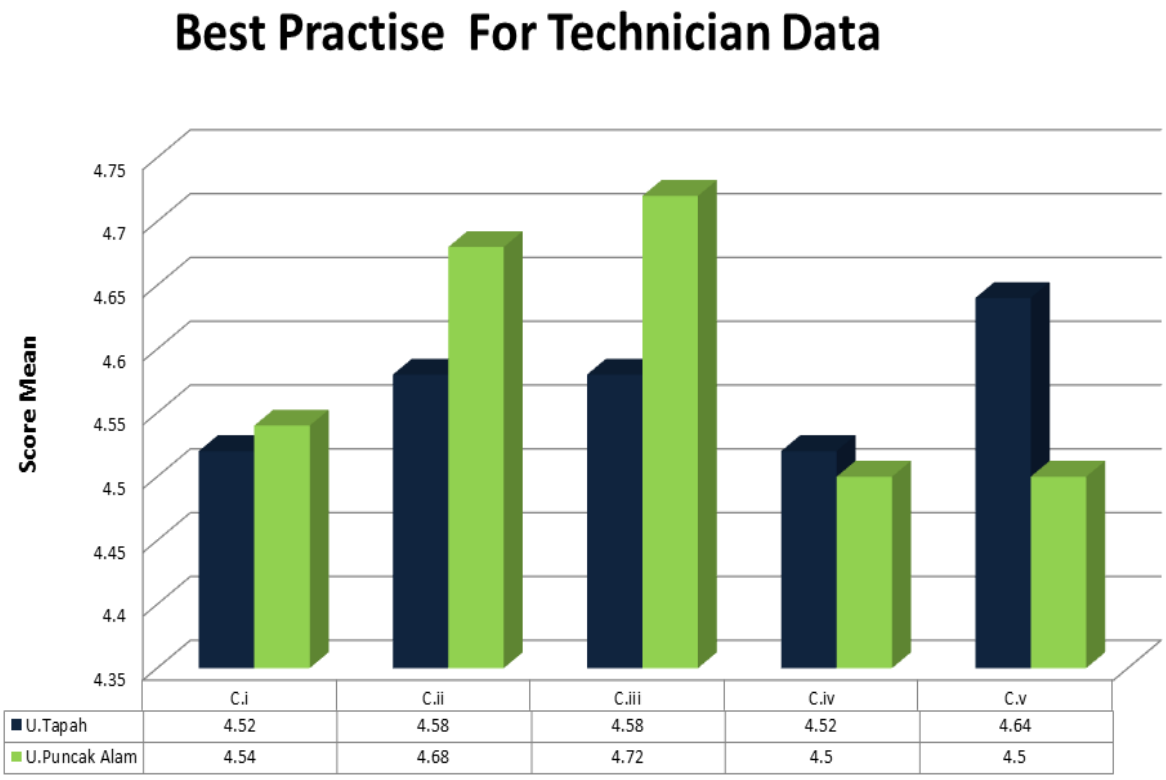


Figure 18: Mean Score for Technician Best Practise Data

5.6. SUMMARY

In conclusion, based on the results of the study that have been analysed by the researchers through questionnaire, it was clearly explained and analysed. All data is collected and processed using SPSS Software and excel Google form. Percentage statistics and mean score of the mean score is made in sequence. Based on the results of the study, the researcher obtained an answer to the three objectives stated in chapter one.

This clearly shows that with the involvement of FM organizations in the early stages of construction, it can provide more secure services and achieve a balance between the key factors that influence a company or industry to run their core business without considering anything else. As described in this study and in previous studies have been mentioned. If these factors are balanced, firms / organizations can achieve optimum benefits and strong competitive advantage among competitors in the industry.

CHAPTER SIX
CONCLUSION

6.1. INTRODUCTION

This chapter will summarize the findings and conclusions of the study, in which all research findings will be expressed and formulated to achieve the three established objectives. Based on the analysis and discussion that has been done in chapter five, the conclusion will be made in this chapter and proposals will be submitted for further study and reference purposes improvements in the future.

6.2. SUMMARY OF THE RESEARCH QUESTIONS

This study aims to promote a best practise of involvement Facilities Management in Private finance initiative (PFI) educational institutions and to assess and rank the factors affecting the impact of Facilities Management in PFI project.

6.2.1. Central Research Question

Readings and findings of the researcher through questionnaire instruments to identify the role of facilities managers in private financial initiatives (PFI) educational institutions based on relevant sources and answer the first question of the study. Among the responsibilities and role of the facility manager in the development project relationship is to ensure successful facility management in terms of appointing a client representative, reviewing existing services, managing the relationship, developing the service and others.

Hence, the use of facilities management knowledge is becoming increasingly significant to cope with the current demands at both the operational and strategic level. Kincaid (1994) states that within facilities management, managers must be equipped with knowledge of facilities and management to exhibit an effective FM function. Eley (2001) also suggests that facility managers with plenty of experience

and knowledge in FM would help any project by making decisions during the early stages of project inception or briefing.

6.2.2 Second Research Question

The second objective of the study was to study the impact of early FM involvement in PFI projects in educational institutions. As a result of this objective, two respondents were studied, namely students and maintenance technicians at two different institutions (Uitm Tapah and Uitm Puncak Alam) . Based on the findings obtained through the survey questionnaire, it is shown that both respondents from different institutions have their own experience in answering the question. Overall, the average respondent is more in agreement with the factor of safety effectiveness provided by the FM based conducted surveys and arguably the most popular by its mean calculation.

6.2.3 Third Research Question

The third objective is to promote the best practices of FM involvement in Private Financial Initiatives (PFI) educational institutions. By promoting such best practices, it can further strengthen the credibility of FM companies in other organizations. Based on the survey conducted by both respondents, students and maintenance technicians at two different educational institutions (Uitm Tapah and Uitm Puncak Alam) averaged good practice given by FM. This proves the effectiveness of a service will further strengthen one's confidence.

6.3. RESEARCH IMPLICATIONS

Referring to the conceptual framework established at the beginning of the study based on the literature review, the research shows that the findings of the research can contribute significantly in many aspects, especially for companies that are unaware of the importance of FM in an organization and the services it provides. Based on the empirical evidence, which was discussed in detail in this study, the

findings of the data analysis, conducted in this study have yielded and produced a number of recommendations.

6.4. RESEARCH LIMITATION

The conclusion of this study takes into account the limitations of the study. During the course of the study, there are various limitations and obstacles encountered. Among the limitations encountered are:

- Time constraints to analyze due to slow questionnaire. Researchers sent 500 survey forms to 500 students from Uitm Tapah and Uitm Puncak Alam but only 364 students returned the form to researchers. To get respondents more than 30% of respondents had time constraints to do data analysis.

- Slow response from students selected to submit questionnaire. This is because of the worldwide catastrophe caused by Coronavirus disease (Covid-19) which is a relatively small factor in responding to questionnaires and taking a long time to obtain a contact number for a student representative to distribute the survey question. In addition, only a few respondents from the maintenance technicians responded very slowly, but after being informed it was resolved.

Nevertheless, the problems mentioned above do not disturb the process of research findings. The above problems can be handled professionally by researchers. The parties involved cooperate and help the researcher to complete the sample of the respondent's predetermined study and reduce the problem of the researcher to the minimum level. Hence, overall this study has achieved the goals and objectives set out.

6.5. RECOMMENDATION AND SCOPE FOR FURTHER RESEARCH

6.5.1 Recommendation

This study is a preliminary study involving only a few of the parties involved in making decisions about studying the effects of early FM involvement in the PFI project. This study has been able to evaluate the factors that influence the effectiveness of the FM organization's involvement as well as to fully demonstrate the expertise of the FM as well as the services provided in the project as a whole.

Some suggestions have also been made based on the findings and conclusions made in this research. Researchers believe that these suggestions when implemented will assist organizations in deciding on FM engagement options for adopting FM services as well as improving organizational performance in delivering effective FM services.

First, having an early FM involvement in a construction relationship can give you an idea based on their experience while advising on something that can save you money. For example, if FM is involved early, it can control the financial cost, which led to more electricity than other lamps.

In addition, to achieve efficiency in service delivery, an organization should strive; this will enhance customer satisfaction and to develop staff knowledge and support gained. Lastly, the organization should also take account of the performance level of the company before making a decision in selecting the appropriate procurement option for the company. This is because every option made either in-house or outsource will affect the performance of the company, especially from the services rendered.

6.5.2 Scope for Further Research

The findings of this study are more focused on the organizational services of the facilities management company. Therefore, there are several areas of research that researchers can develop. The scope of the proposed study is as follows:

i) In general, facilities management companies have been introduced all over Malaysia, even expanding. Each facility management company also uses a variety of services according to their expertise. Therefore, in conducting studies related to the effectiveness factors of FM organization involvement in the early stages of construction, it is possible to focus on one area only.

6.6. CONCLUSION

This research can determine that the existence of such an FM can help other organizations in running their core business as well as assist the organization in the areas of management, such as asset management in terms of maintenance, renovations and so on which are beyond the organizational skills. All topics related to influencing factors the effectiveness of this FM involvement is discussed in detail in this study. The questions discussed reach three research objectives. The mean scores for these four factors influence the major determinants of FM engagement in the early stages of construction.

The findings of this study indicate that security services are an important factor influencing decisions when considering FM involvement while maintenance, communication and quality are considered to be the major factors affecting the impact of FM engagement. However, organizations must strive to achieve the impact of improving the quality of each work performed. From the results of this study, it is clear that most organizations will obtain organizational activities through internal or external sources for obvious reasons such as; promotion of organizational development, effective management of organizational information and to control all organizational activities.

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POLITEKNIK MALAYSIA
SULTAN SALAHUDDIN ABDUL AZIZ SHAH

THE IMPACT OF INVOLVEMENT FACILITIES MANAGEMENT IN EARLY PRIVATE FINANCE INITIATIVE (PFI) FOR EDUCATIONAL INSTITUTION

QUESTIONNAIRE ON THE EFFECTIVENESS OF INVOLVEMENT FACILITIES MANAGEMENT IN EARLY PRIVATE FINANCE INITIATIVE

Facilities Management (FM) can be described as a process of providing solid support to key business operations as well as contributing to the achievement of the objectives and strategies of an organization to ensure that buildings, service equipment, systems and manpower are in an effective condition. The aims of this study is to identify the impact of FM's early involvement in the PFI “Private Finance Initiative in the construction for educational institutions.

This questionnaires consists of three (3) sections namely Section A, B, and C.

1. SECTION A- General information
2. SECTION B- The impact of Facilities Management in private finance initiative (PFI) for educational institutions.
3. SECTION C- A best practise of involvement Facilities Management in Private finance initiative (PFI) for educational institutions.

PART A: DEMOGRAPHICS OF RESPONDENTS

Instructions: The following is a statement regarding the basic information of the respondent, please tick (/) in the space provided.

A1 Institusion

☐ Uitm Tapah ☐ Uitm Puncak Alam

A2 Gender

☐ Male ☐ female Female

A3 Age

☐ 16-25 years ☐ 26-35 years

☐ 36-45 years ☐ 46 and above

A4 Career

☐ Technician ☐ Student

A5 Education

☐ SPM ☐ Certificate

☐ Diploma ☐ Degree and above

PART B1: To study the impact of early involvement of Facility Management in projects (PFI) on operations management (Student)

Scale	1	2	3	4	5
Satisfaction	Strongly Disagree	Disagree	Moderate	Agree	Strongly Agree

Instructions: This section is based on your experience and knowledge. Please mark (/) according to the set scale.

ITEM	**OPERATION MANAGEMENT ACHIEVEMENT PENCAPAIAN PENGURUSAN OPERASI**	**SCALE SKALA**				
2.6	Penyelenggaraan / Maintenance					
2.6.1	The maintenance operations team performs preventive maintenance based on the schedule *Pasukan operasi penyelenggaraan melakukan penyelenggaraan pencegahan (preventive maintenance) berdasarkan jadual.*	1	2	3	4	5
2.6.2	Management always improves the quality of maintenance well *Pihak pengurusan sentiasa memperbaiki mutu penyelenggaraan dengan baik*	1	2	3	4	5
2.6.3	The maintenance report produced received a fast response *Laporan penyelenggaraan yang dibuat mendapat tindak balas yang cepat*	1	2	3	4	5
2.6.4	Implementation of maintenance performed according to customer requirements *Pelaksanaan penyelenggaraan yang dilakukan mengikut kehendak pelanggan*	1	2	3	4	5
2.7	Komunikasi/Communication					

2.7.1	The maintenance operations team communicates with students in case maintenance work needs to be delayed. *Pasukan operasi penyelenggaraan berkomunikasi dengan pelajar sekiranya kerja penyelenggaraan perlu ditangguhkan .*	1	2	3	4	5
2.7.2	The management has a friendly and welcoming attitude *Pihak pengurusan mempunyai sikap yang peramah dan mesra*	1	2	3	4	5
2.7.3	The management is prepared to interact with the students *Pihak pengurusan bersedia memberi kerjasama kepada pelajar*	1	2	3	4	5
2.7.4	Management is productive at performing the tasks *Pihak pengurusan yang cekap dalam melaksanakan tugasan*	1	2	3	4	5
2.8	Kualiti / Quality					
2.8.1	The quality of facility management meets the standards *Kualiti pengurusan fasiliti menepati piawaian*	1	2	3	4	5
2.8.2	Public facilities are sufficient at the faculty (surau,toilets, cafés, etc.). *Kemudahan awam di fakulti adalah memuaskan (surau, tandas, kafe, dan sebagainya)*	1	2	3	4	5
2.8.3	*The quality of service provided by the management is satisfactory* *Kualiti perkhidmatan yang diberikan oleh pihak pengurusan memuaskan*	1	2	3	4	5
2.8.4	Management always maintains the quality of maintenance *Pihak pengurusan sentiasa menjaga kualiti penyelenggaraan*	1	2	3	4	5
2.8.5	The road system and the architecture of the university buildings are also systematic *Sistem Jalan serta susun atur bangunan didalam universiti adalah bersistematik*	1	2	3	4	5

2.8.6	The services and facilities provided by the university meet the students needs *Perkhidmatan dan kemudahan yang disediakan oleh pihak universiti memenuhi keperluan para pelajar*	1	2	3	4	5
2.9	Keselamatan / Safety					
2.9.1	Safety in the university is guaranteed *Keselamatan didalam universiti terjamin*	1	2	3	4	5
2.9.2	I feel safe while the maintenance work is being done. *Saya berasa selamat semasa kerja penyelenggaraan dilakukan.*	1	2	3	4	5
2.9.3	University equipment (emergency routes, fire extinguishers) is complete and satisfactory *Kelengkapan di universiti adalah lengkap dan mencukupi (laluan kecemasan, alat pemadam api)*	1	2	3	4	5
2.9.4	Basic facilities (water, electricity) at the university are well provided *Kemudahan asas (air,elektrik) di university disediakan dengan baik*	1	2	3	4	5

PART B2: To study the impact of early involvement of Facility Management in projects (PFI) on operations management (Technician)

Instructions: This section is based on your experience and knowledge. Please mark (/) according to the set scale.

ITEM	OPERATION MANAGEMENT ACHIEVEMENT *PENCAPAIAN PENGURUSAN OPERASI*	SCALE/SKALA				
2.1	**Penyelenggaraan / Maintenance**					
2.1.1	I conduct service in compliance with requirements *Saya melaksanakan penyelenggaraan mengikut piawaian*	1	2	3	4	5
2.1.2	I do the consistency of the maintenance well *Saya melaksanakan mutu penyelenggaraan dengan baik*	1	2	3	4	5
2.1.3	I do maintenance until customer satisfied *Saya melaksanakan penyelenggaraan sehingga pelanggan berpuas hati*	1	2	3	4	5
2.1.4	I complete any maintenance performed according to a schedule *Saya memastikan setiap penyelenggaraan yang dilakukan mengikut jadual yang telah ditetapkan.*	1	2	3	4	5
2.2	**Komunikasi / Communication**					
2.2.1	I got clear instructions from the management *Saya mendapat arahan yang jelas daripada pihak pengurusan.*	1	2	3	4	5
2.2.2	I understand the instructions given by the management *Saya memahami arahan yang diberikan oleh pihak pengurusan*	1	2	3	4	5

2.2.3	I use language that is easy to understand and clear when communicating *Saya menggunakan bahasa yang mudah difahami serta jelas semasa berkomunikasi*	1	2	3	4	5
2.2.4	Colleagues collaborate well while working *Rakan sekerja memberikan kerjasama yang baik semasa bekerja*					
2.3	**Kualiti / Quality**					
2.3.1	I perform the service with satisfactory quality *Saya melaksanakan perkhidmatan dengan kualiti yang memuaskan.*	1	2	3	4	5
2.3.2	I ensure quality management of operations management according to standards *Saya memastikan penjagaan kualiti pengurusan operasi mengikut piawaan.*	1	2	3	4	5
2.3.3	I ensure the response time is not longer than 1 hour *Saya memastikan respond time (masa tindak balas) tidak melebihi 1jam.*	1	2	3	4	5
2.4	**Keselamatan / Safety**					
2.4.1	I care about safety while working *Saya mementingkan keselamatan semasa bekerja*	1	2	3	4	5
2.4.2	I work safely at the work place *Saya bekerja dalam keadaan selamat di tempat kerja*	1	2	3	4	5
2.4.3	I use the PPE safety equipment when I work *Saya menggunakan kemudahan keselamatan PPE semasa bekerja*	1	2	3	4	5
2.4.4	Safety briefings were given by superiors before risky work was carried out *Taklimat keselamatan diberikan oleh pihak atasan sebelum kerja-kerja berisiko dijalankan*	1	2	3	4	5

Part C1. Promoting Facility Management best practices in projects (PFI): for Educational Institutions (Student)

Instructions: This section is based on your experience and knowledge. Please mark (/) according to the set scale

ITEM	**BEST PRACTICE PERFORMANCE INDICATORS** ***PETUNJUK PRESTASI AMALAN TERBAIK***	**SCALE / SKALA**				
2.10	**Best Practices ACHIEVEMENT** ***Pencapaian Amalan Terbaik***					
2.10.1	The company is always committed to the achievement of operations management *Pihak syarikat sentiasa komited dengan pencapaian pengurusan operasi*	1	2	3	4	5
2.10.2	The company has excellent operational track record *Pihak syarikat mempunyai rekod pencapaian pengoperasian yang cemerlang*	1	2	3	4	5
2.10.3	The company is constantly improving operations management performance from time to time *Pihak syarikat sentiasa meningkatkan pencapaian pengurusan operasi dari masa ke semasa*	1	2	3	4	5

Part C2. Promoting Facility Management best practices in projects (PFI): for Educational Institutions (Technician)

Instructions: This section is based on your experience and knowledge. Please mark (/) according to the set scale

ITEM	**BEST PRACTICE PERFORMANCE INDICATORS** **PETUNJUK PRESTASI AMALAN TERBAIK**	**SCALE** **SKALA**				
2.5	**Best Practices ACHIEVEMENT** **Pencapaian Amalan Terbaik**					
2.5.1	I am committed to the achievement of operations *Saya komited dengan pencapaian operasi sekarang*	1	2	3	4	5
2.5.2	I ensure an excellent record of the operational management achievement *Saya memastikan rekod pencapaian pengurusan operasi yang cemerlang*	1	2	3	4	5
2.5.3	I am constantly improving the performance of operations management *Saya sentiasa meningkatkan pencapaian pengurusan operasi*	1	2	3	4	5
2.5.4	I am satisfied with the achievements of operations management *Saya berpuas hati dengan pencapaian pengurusan operasi sekarang*	1	2	3	4	5
2.5.5	I was once exposed to operations management *Saya pernah didedahkan dengan pengurusan operasi*	1	2	3	4	5