Title

FACILITIES MANAGEMENT STRATEGY: A CASE STUDY OF THE CHARLOTTE MAXEKE JOHANNESBURG ACADEMIC HOSPITAL

BY

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ABSTRACT

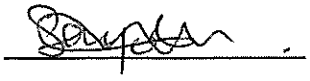
In healthcare facilities, the Facilities Management Unit (FMU) generally advances the operational and managerial activities that provide support to the core clinical and medical diagnostic services. There is a knowledge gap within the field of healthcare Facilities Management (FM) regarding the appropriate strategy suited for South African public hospital facilities, from the structure through to the planning processes and measurement of service performance. The purpose of the study is to identify the existence of a documented FM strategy through a single case study approach at the Charlotte Maxeke Johannesburg Academic Hospital (CMJAH) and to add empirical evidence to this subject. The main objectives are to gain insight into the arrangement of the FM strategic adoptions at CMJAH and to propose an FM strategy guideline in a South African public tertiary hospital context. By way of a mixed research approach, the data was collected through the administration of open-ended questionnaire surveys measured through descriptive statistics, content analysis of FM archives and supporting interviews.

A total of 400 open-ended questionnaires were distributed among the selected patient sample, and 333 completed questionnaires were returned. Three and five respondents were targeted for interviews from the hospital's FM department, equivalent to senior and middle management, respectively; only two responses were received from the senior management. The significant findings of the study indicate that the practice of FM in the CMJAH does not compare satisfactorily with the general best practice methods of the profession. Drawing on a theoretical analysis, in addition to input from the case study, an FM strategy guideline comprising eight stages was developed to assist the CMJAH to achieve best practice FM processes. A recommendation is made among other academics for further research to be conducted to validate the framework in similar public hospital institutions.

Keywords: End-user Satisfaction, Facilities Management Strategy, Hospital Facility, Key Performance Indicators, Performance Measurement, Service Delivery

DECLARATION

I, Mosha Piloane Senyolo, hereby declare that this report is the result of my investigation and research and that this has not been submitted in part or full for any degree or any other degree to any other University.



Name

19 October 2016

Date:

DEDICATION

In loving memory of my lecturer and mentor

Ian Murray Cochran

1935 - 2016

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LIST OF ACRONYMS AND TERMS

CMJAH: Charlotte Maxeke Johannesburg Academic Hospital.

NDoH: National Department of Health

DPWRT: Department of Public Works, Roads and Transport

FM: Facilities Management

FMU: Facilities Management Unit

IFMA: International Facilities Management Association

KPA: Key Performance Area

KPI: Key Performance Indicator

PM: Performance Management

SAFMA: South African Facilities Management Association

TQM: Total Quality Management

QMF: Quality Managed Facilities

CHAPTER 1: INTRODUCTION TO THE RESEARCH PROBLEM

The chapter provides an introduction which highlights the research background and problems, including the research questions, aims, objectives and the significance of the study. The research design and methodology, its scope and limitations are also covered. In addition to this, the chapter also provides an outline of the report's structure.

1.1. INTRODUCTION

The position of the Facilities Management (FM) practice has risen over the years equally in the public and private sector operations for strategic input relating to competitiveness, added value, continual organisational quality improvement and customer satisfaction (Alexander, 2003). The function of FM is depicted as a centralised internal administration discipline that aims to control and reduce cost through the organisational management of varied activities, by applying concepts and tools such as benchmarking, sustainability, sourcing options and key performance indicators (KPIs) (Jensen et al., 2013). This function highlights the possible differences in the organisational goals and objectives of Facilities Managers of different institutions, within both the public and private segments.

In general, a strategy is a set of concepts, resolutions, and activities arranged carefully to achieve pre-determined goals and objectives. Moreover, it is regarded as the provision of a direction and scope of an organization over the long-term which matches its resources to its changing environment, in particular, its markets, customers or clients to meet stakeholder expectations (James, 2011). Its purpose is to establish immediate judgements, plans, and courses of action that an organisation decides in reaction to its environment (Chotipanich and Lertariyanun, 2011). The FM strategy further captures the organisational structure, management operations which are the processes that accommodate the assembling and delivery of goods and services (James, 2011). Also, from the operational viewpoint, the role is to manage the transformation of an organisation's inputs into finished goods and services by the use of pre-determined and documented processes.

According to James (2011), the two main types of transforming resources in the management of any organisation are:

1. Facilities such as building, equipment, and process technology
2. Staff, all the people involved in the process. In services, the customer may well be involved as a transforming

Generally, the Facilities Management Unit (FMU) serves as one of several service units that supports the core functions of healthcare service delivery. Other units include the administration, human resources, and finance divisions (Ogbeifun, 2011). For this study, the meaning of the term 'FM strategy' applies to the organisation of and phased processes for the implementation and delivery of FM services resulting in organisational added value and end-user satisfaction. According to Atkin and Brooks (2014), the successful implementation of FM depends upon the identification, communication, delivery and management of the minimum steps and stages of the FM strategy.

In recent years, FM in the hospital sector has been gaining momentum following from developed and developing countries (Ikediashi, 2014; van der Zwart and van der Voordt, 2013; and Shohet and Lavy, 2017). Accordingly, hospitals are defined as institutions within the built environment which provide patient treatment by the use of specialised medical care, equipment and nursing staff. For the individual well-being, health improvement, maintenance, and promotion; healthcare services are defined as services that are generally delivered by healthcare providers in a traditional setting that is conducive for the performance of this function (WHO, 2007).

According to Shohet and Lavy (2004), within the FM sector, the support and administration of healthcare centers are some of the more multifaceted subjects in contention. Furthermore, the contributing factors to this perceived challenge within hospitals are attributable to the criticality of mechanical and electrical frameworks, coupled with the shortage of supporting resources. Hospitals are deduced to be a crucial element in the delivery of services in the health care system, as they account for more than half of the expenditure allocated to health services-related expenditure (McKee and Healy, 2000). According to Atkin and Brooks (2014), the strategy for FM is key to

highlighting the necessary steps and critical considerations in the implementation of FM within the hospital facilities.

Palanisamy et al. (n.d.) indicate that governments have in recent times, been exploring possible improvements in which the equity, quality, efficiency, and responsiveness of their health systems to health needs. Peprah and Atarah (2014) further highlight patient satisfaction as the critical indicator of quality health care service delivery, whereas the factors that play a significant role in influencing the patient satisfaction include attitudes of the medical staff, availability of up-to-date equipment and attractiveness and cleanliness of the hospital (South Africa. Department of Health). Several studies (Pai and Chary, 2016; Andaleeb, 2001; Nkrumah et al., 2015; Peprah and Atarah, 2014 and Aikins et al., 2014) have reported that there is a definite relationship between patients' satisfaction and the health result. In the subjects of FM and healthcare (Rui, 2013; Ikediashi, 2014; Hofer and Stampfli, 2011; and Shohet and Lavy, 2017), there is significant evidence of studies that direct the importance of the end-user or customer satisfaction as an indication of successful FM service delivery.

Within the healthcare sector, consequently, FM is categorised as an essential component in the delivery of services; as it creates the suitable environment for the improved performance of key personnel in administering clinical and medical diagnostic services (Ikediashi, 2014). In addition to this, Shohet (2006) argue that the decisions that relate to the hospital FM strategy of the organisation immensely affect the effectiveness of the facility in achieving its end-goals. Consequently, the development of KPIs for healthcare FM further provide a rigorous approach in the direction of the facilities' service life and conditions. Also, the KPIs make it possible to integrate the FM function suited to the specialist service demands of the hospital facilities.

1.2. RESEARCH CONTEXT: BACKGROUND

Since real estate is considered as one of the resources that organisations use to add value and reach organizational goals (van der Swart and van der Voordt, 2013); FM has over the years, flourished from what was customarily considered to be the small management of buildings (Price et al., 2011). Considering that healthcare facilities form

part of the more complex and financially burdensome buildings to manage, hospital FM is given particular attention (Rui, 2013). In a holistic view, the FM function has been adopted based on an opinion of having the capability to improve workplace processes, inspire productivity in workers and support their efficiency; which results in activities which ultimately impact the organisational goals of satisfying the customer positively (Alexander, 2003).

According to the Property Sector Charter Council (PSCC, 2017), the South African property sector contributes significantly to the country's economy, which makes up 8.3% of the Gross Domestic Product (GDP). Within the property sector, the public sector owns property extensively, in which hospitals make up a majority of the general portfolio. Of the 5.8 trillion-rand property market, the public-sector market share is worth 757-billion-rand including land ownership (PSCC, 2017). Based on this report, there is a clear indication of the importance of the management of facilities within the public sector. In this view, it is noted that since the establishment of the FM discipline in South Africa 20 years ago, the profession has continued to grow from strength to strength (Frost and Sullivan, 2012).

According to French (1994), as summarised by Mukori (2013), the global public property is generally an underemployed resource within many cities. Moreover, previous colonial injustices are the primary cause of the public property challenges experienced in developing countries (Kaganova and McKellar, 2006); which had systems and processes that were meant to serve a population of a bygone era. Therefore, the FM of South African public hospitals need to have a stringent system which enables the use of inadequately designed and crumbling infrastructure to cater to the needs of the current population. The typical problems associated with public infrastructure management indicate the need and importance of FM to maximise public funds and have a more positive impact on the society.

Since the dawn of the new democracy, the South African health sector has observed an increase in the demand for health services which had left the public sector confronted with several added challenges (Burger, 1999). These challenges include a change in emphasis from expensive to more cost-effective levels of care, producing measurable results and the increasing strain on hospital facilities due to the AIDS epidemic (Bothma

and Cloete, 2000). Further to this, the public-hospital sector faces lower human-resourcing ratios, financial constraints and crumbling infrastructure (Ranchod et al., 2017), where buildings and building services have deteriorated due to a lack of proper maintenance and proper maintenance management (Bothma and Cloete, 2000).

Moreover, the national health department has, due to the increased demand, witnessed a deterioration of reliable and satisfactory healthcare service provision within the public hospital sector (South Africa. Section 27, 2013); with preventable deaths marked additionally by shortages of medicine, uncontrolled infection, wrecked equipment, and maladministration of funds (South Africa. Section 27, 2011). Due to the challenges faced by the public hospital institutions, there is a growing concern in dealing with the impact of these challenges on the delivery of quality health service and the patient health outcomes (Georgiadou and Maditinos, 2017; Omondi, 2016 and; Aikins et al., 2014). According to Okoroh et al. (2006), the issues that are associated with the administration of the support services within the healthcare environment are incorporated under FM and are beginning to emerge as having an impact that results in an added value.

Thus, the rising demand for healthcare services coupled with the inadequate resource provision has placed public hospital facilities under rigorous service regimes that demand strategic and tactical planning of the facilities maintenance and management; including the performance indications and measurements (Lennerts et al., 2003). As with any organisation that utilizes buildings and related facilities to support and enhance its core processes and activities; the deficiency of an organized approach of strengthening the infrastructure and support services function will negatively impact the organizational performance, including the operational costs and the overall quality of the service delivered to the end-user (Musa, 2011).

It is argued that the traditional maintenance practice of hospital facilities need to be strategically re-organised to achieve better quality and performance (Rani et al., 2014). Furthermore, most of the healthcare-related literature to FM only relates to maintenance strategies and not integrated FM strategies. For increased orderly administration, some countries and healthcare structures include the maintenance of clinical systems within FM (Atkin and Brooks, 2014). Moreover, modern researchers have recommended a more

tactical role for healthcare FM, with an emphasis that the core function of service delivery revolve around the achievement of best value and the enhancement of customer satisfaction (Atkin & Brooks, 2014); since the successful organisation is measured by the performance of the facilities which have the most significant impact on the end-user.

The described above allude to the challenges that the current government in South Africa faces in providing adequate and quality support services for its primary healthcare facility users; which is in the form of an efficient FM strategy. It can be regarded as a tool needed to tackle any institutional deficiencies and provide support for improved service delivery. Based on current academic work, there is a weakness in previous studies that do not provide a systematic approach in the identification, integration, and application of FM concepts, inputs, and processes for South African public hospital facilities which result in the maximisation of the end-user satisfaction. Furthermore, there is a silo approach to the different concepts relating to hospital FM. From a non-core function point of view, there appears to be a lack of clarity to the underlying factors considered in the selection of the FM service delivery inputs and implementation methods.

The proposed FM strategy following the needs of the Charlotte Maxeke Johannesburg Academic Hospital (CMJAH) seeks to incorporate the human resources, risk related inputs, processes and decision-making factors in the delivery and performance of FM services that results in end-user satisfaction. Moreover, the strategy seeks to provide feedback on the perceived quality of services from a departmental and organisational strategic position. This would further seek to provide the association through analysis and feedback between FM knowledge and practice in the planning and management of hospital facilities. The study explored the FM organisational and operational structure including the opinions of the facility end-users at CMJAH; on the perceived quality of FM services provided.

1.3. THE RESEARCH PROBLEM

The focus of the research is on the CMJAH as it is one of the central hospitals in Johannesburg that serves as a pioneer for healthcare service delivery, research and teaching training of healthcare givers. CMJAH has its cluster of hospitals that it shares a

referral pathway within the province as well as nationally. This means as a central hospital, it sits at the top of the cluster, with hospitals escalating referrals when the interventions needed are beyond their scope as well patients being de-escalated when they are ready for a lower level of care. The accomplishment of the goals and objectives necessitates constant development and improvement of the quality of its core healthcare, teaching and research delivery outputs. This improvement centres on the standard, quality and functional state of the support infrastructure and services.

According to Shohet and Lavy (2017), the development, operation, and management of the healthcare support facilities ambit are the responsibility of the FMU. There is, however, a knowledge gap within the field of healthcare FM on the strategy suited for South African public hospital facilities; from its structure through to the planning of its processes, decision factors and measurement of service performance. An FM strategy is a plan specifying how an organization will allocate resources to support infrastructure and service delivery, which is driven by the overall organisational strategy.

A lack of an FM strategy for the systematic implementation of FM services that align with the organisational objectives could contribute to the poor delivery of the hospital facilities' support and non-core services, resulting in failing infrastructure and poor healthcare delivery that results in avoidable infections and death.

1.4. THE AIM OF THIS STUDY

The purpose of the study is to identify the existence of the FM strategy of the CMJAH with an aim to provide empirical evidence to this subject in the field of hospital FM within the South African context. Its main objectives were to gain insight into the arrangement of the FM strategic adoptions of the CMJAH, in relation to its health objectives and end-user satisfaction and to propose an FM strategy guideline from a South African public tertiary hospital context by integrating the FM structure, process and performance management for service delivery that permits provision of end-user satisfaction.

1.5. RESEARCH OBJECTIVES

To achieve this aim, the following objectives were formulated:

1. To determine the FM organisational structure and operations plan in the management of the CMJAH facilities;

2. To identify and examine the FM sourcing model for the delivery of the key FM services and the risks and factors that influence the option selection.

3. To identify the FM KPIs applied to the hospital;

4. To ascertain the hospital end user's perception of the FM services delivered; and

5. To use the outcome of the four objectives above to develop and recommend a best practice FM strategy guide to adopt for the implementation of the CMJAH FM services.

1.6. RESEARCH QUESTIONS

The research aims to identify and provide an understanding of the FM strategy used in the delivery of hospital support services for end-user satisfaction.

The research questions derived are as follows:

1. What is the FM organisational structure and operations plan in the management of the CMJAH facilities?

2. What are the FM key services sourcing model and the risks and factors that influence the decision to outsource versus the provision of in-house hospital FM services?

3. What are the FM KPIs applied to the hospital;

4. What is the hospital end user's perception of the FM services delivered; and

5. What is the CMJAH's FM strategy guide applied in the management the FM services?

1.7. SIGNIFICANCE OF THE STUDY

The management and maintenance phases of healthcare facilities including the carrying out of the FM service; have a bearing on the performance and competence of the healthcare institution (Sarel and Lavy, 2004). The FM strategy within the South African public hospital context has no clear direction and the application thereof. As stated by Shohet (2004), the integration of FM and the tools that result in cost-efficiency and organisational performance must be at the tactical level, in order to meet the overall objective of integrating FM services that enhance healthcare delivery. Moreover, due to the nature of the objectives and constraints of the public sector, it is essential to highlight the hospital facilities sourcing models adopted and the risks and factors which influence the decision-making process for FM service delivery. Since the public sector has its standards and procedures according to which take into consideration, social and political undertones, and not profit-driven, it is, therefore, crucial to adopt an FM strategy to suit.

Although the primary function of hospitals is for the provision of clinical and medical diagnostic services for patients; the assessment of the hospital service quality by the end-user may be subjective due to the lack of medical expertise (Lim & Tang, 2000b). Similarly, patients may from time to time, be direct or indirect customers of FM services (Lennerts et al., 2005). According to Georgiadou and Maditinos (2017), there are quality dimensions that have been found to have substantial influence over the quality of service delivered, including a direct relationship to the measure of patient satisfaction in the hospital. Likewise, within the hospitality sector, Mohamad et al. (2017) further deduced that a more substantial number of satisfied customers were found to be from establishments that provided a higher level of service quality, which in turn were seen to have had higher performance levels.

The seven domains of risk which have been identified by the South African National Department of Health to rate hospital facility compliance and performance are as follows:

Patient rights

Safety and clinical risks

Clinical support services

Public health

Leadership and corporate governance

Operational management

Facilities and infrastructure

(South Africa. Department of Health, 2014)

Further to the above, the top six priority areas within the identified domains are as follows:

Positive and caring attitudes

Waiting times

Infection prevention and control

Availability of medicine and supplies

Cleanliness

Patient safety

(South Africa. Department of Health, 2014)

As indicated, most of the key performance areas (KPAs) identified fall within the FM scope of services, where the continual assessment and monitoring of the support services and the operation and maintenance performance of built assets are crucial for the achievement of the objectives of the National Department of Health (NDoH).

To this end, the appropriate KPIs identified in the study will assist in the enhancement of FM service delivery in the public hospital. End-user satisfaction is essential to evaluate

the successful delivery of the public hospital FM through the evaluation of the levels of performance based on established, measurable and quantifiable KPIs (Lavy et al., 2014).

According to (Shohet and Nobili, 2015) the performance levels required infer that the results of the procedure characterise the expectations as opposed to the actual activity. This study has the potential to highlight the role that the FM strategy implemented by the public hospital Facilities Managers has in the operations and functioning of the hospital and how this impact on the primary end-user of such facilities. Moreover, this may provide a foundation for understanding the needs and constraints faced by the public hospital sector, thus a starting point to the mitigation of the challenges associated with public healthcare FM. The practical contributions of the research to the field of healthcare FM practice in public hospitals include the provision of a systematic approach from healthcare Facilities Managers in a proactive and performance orientated manner. This is due to the FM strategy influencing the standard, quality and functional state of the support services and structures that impact the hospital's ability to execute its core functions, which result in the achievement of set objectives.

Furthermore, the CMJAH and the relevant government constituents may well be challenged to pay close attention to the processes, staffing, organisation and operational management of their FMU and recognize the unit as a separate entity at a strategic management level. This would enable the unit to contribute meaningfully to the strategic objectives of the institution. By demonstrating that a documented FM strategy is critical for adequate and progressive capacity building, service delivery and performance management; the effectiveness of FM services are maximised for the provision of a meaningful contribution towards the healthcare sector. The academic contributions of the study explore the use of a case study method of research as a veritable tool for the in-depth study of Facilities Management operations within the healthcare sector.

1.8. METHODOLOGY

In order to address the research questions and achieve the objectives of the study, a contextual analysis in the form of a case study is employed to gather the research data. This is accomplished through a mixed method approach of desktop research, semi-

structured interviews, open-ended questionnaire surveys, site visits, and content analysis through an evaluation of existing FM operations related records. For both the qualitative and quantitative data collection, the population sample was identified from the relevant medical and clinical staff and non-critical hospital patients. The site assessment was to confirm the general FM organisational structure as indicated in the operations documents.

1.9. ASSUMPTIONS, LIMITATIONS AND DELIMITATIONS

In research, assumptions are often an essential element, as they are a requirement that enables the study to be carried out (Simon and Goes, 2013). For this study, the following assumptions were made:

- Participants in the study will answer the survey and interview questions honestly and factually.
- Respondents may not necessarily be familiar with the vital aspects of FM. Thus, it was assumed that in such cases the respondent's perspective would be primarily reflected from an essential human right experience.
- Standard management practice relevant to FM which provided a basis for the development of the proposed FM strategy is derived from renowned academics and authors within the FM discipline; including professional bodies such as the South African Facilities Management Association (SAFMA) and International Facility Management Association's (IFMA).
- The lack of a formal FM strategy, regulation, and management thereof within institutions results in poor execution and implementation of best service delivery practices. This results in poor quality services which impact on the end-users of the facilities. The measurement and management of performance requirements from various stakeholders are also affected; therefore, the use of the proposed FM strategy guideline for FM implementation by public hospitals may provide some solutions to mitigating the challenges currently in contention.

The following limitations are observed

- The study is constrained to an individual public organization, which is the CMJAH. The importance is positioned on the organizational structure, sourcing methods and the evaluation of the end-user satisfaction on the FMU performance of its functions.
- The primary reasons for selecting the institution as a case study include its objective to provide highly specialised healthcare service and a foundation for the preparation of health caregivers, a position of research, and to provide referral facilities to neighbouring districts. Also, being the third largest and one of four central hospitals in the Gauteng Province; it serves a region that is densely populated with the most in-migration and plays a significant role within the continuum of care pathway for patients seeking health care in Gauteng, through its cluster hospitals and Primary Health Care (PHC) facilities situated within its referral system.
- According to Simon and Goes (2013), contributing implications cannot be made from case studies as alternative accounts cannot be excluded. Furthermore, the generality of the findings may be unclear as the case study involves the characteristics of one person, group or institution. The behavior of the single unit of analysis may or may not reflect the behavior of similar entities and is only suggestive of what may be found in similar organisations.
- From the respondent point of view, access was limited to specific groups of the population, FM related documents, and data.
- The type of research instruments used in the form of self-administered questionnaire surveys distributed to the hospital clinical staff served as a limitation due to the time pressures and constraints associated with the demands of the hospital environment. Based on the results from the pilot study, most of the respondents did not have time to complete the survey. For those that did, the questionnaires were neither fully completed nor did the respondents fully acquaint themselves with the structure of the questionnaire for clarification regarding the

purpose of the investigation; thus, limiting the responses to the text in the survey itself.

- FM is an emerging field in South Africa, hence the availability of relevant information was considered a significant limitation. As a result, comparison with the available literature from developed countries was limited.

Delimitations of the study

Based on the above assumptions and limitations, the following delimitations apply:

- This study was conducted based on the adoption of an FM strategy within public hospital facilities.
- The focus of this study was on the development of an FM strategy guideline to be implemented within existing public hospital infrastructure.
- Due to the inadequate response of the hospital clinical staff in the pilot study, for purposes of this study, the end-users of the hospital refer and focuses to the patients of the hospital only.

1.10. STRUCTURE OF THE STUDY

The structure of this study is as follows:

- **Chapter One: Introduction**

  This chapter provides an introduction, the context, problem statement, research objectives, research questions, scope and significance of the research, limitations, and structure of the research report.

- **Chapter Two: Literature Review**

  This chapter presents the critical literature review on FM, with a focus on the general overview, related concepts and the FM strategy within the South African context. The role of FM in hospitals; the available sourcing models for FM service delivery, and the factors that influence the selection process and the hospital FM

performance measurement and management are also explored from the end-user point of view. Finally, the theoretical framework for the FM strategy is presented.

- **Chapter Three: Research Design and Methodology**

  This chapter describes the research methodology and strategy, including the justifications for why the research was carried out as it was. This is presented along with an explanation of how the study was carried out and highlights the ethical issues in research.

- **Chapter Four: Results and presentation of findings**

  This chapter is the presentation of the data and key findings according to descriptive statistical and thematic analysis. The key findings are presented relating to the research questions and reviewed literature.

- **Chapter Five: Discussion of the Findings**

  This chapter discusses and explains the key findings and their implications concerning the research objectives and the reviewed literature. The proposed FM strategy is presented based on the findings.

- **Chapter Six: Conclusions and Recommendations**

  The final chapter presents the conclusions, recommendations to Facilities Managers within the public hospital sector and suggestion for further studies.

1.11. CONCLUSION

This chapter has served to outline the general structure and orientation of the study. The South African public hospitals continue to face challenges relating to quality healthcare service delivery, necessitating a study such as this. The efficient planning and execution

of FM services in achieving organisational goals and objectives may assist in the identification of the cause of the challenges experienced by public hospital facilities and the impact that they have on the end-user.

CHAPTER 2: LITERATURE REVIEW

This chapter contextualised the study by reviewing the available literature around the fundamental concepts and the main problem identified in the preceding section. The discussion describes the FM concepts relevant to the study and concludes by presenting the FM strategy framework for the successful implementation of FM within the public hospital facility.

2.1. INTRODUCTION

The key areas identified for the study are represented in Figure.1 as follows:

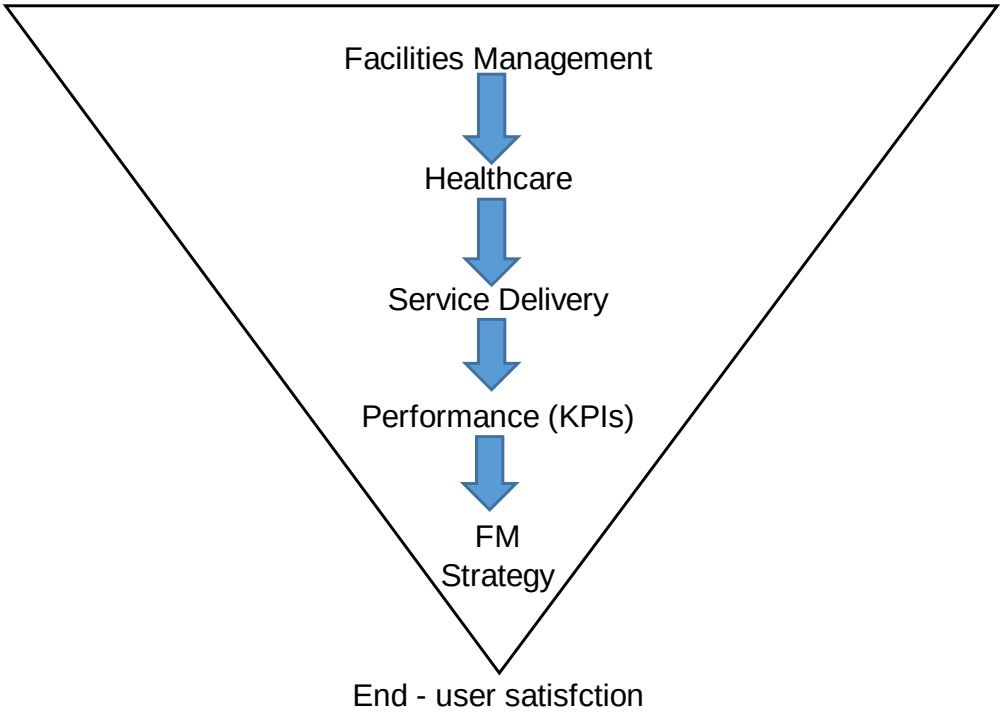

Figure1. Conceptual Inverted Pyramid Model in Literature Review (Adapted from Maier, 2013)

The domain of study is first defined in Figure 1, wherein the relevant research in the area allows for the identification of the current problems being studied. The discussion on the study area flows from the body of knowledge behind the FM service, the link between FM strategy and the impact this has on the end-user satisfaction within the public hospital sector.

2.2. CLASSIFICATION AND DEVELOPMENT OF FACILITIES MANAGEMENT

2.2.1 Definition and FM concepts

FM has been regarded as a relative newcomer to the real estate, engineering, and construction sectors (Atkin and Brooks, 2014) due to emerging over the past several years as a result of an unstable change in the professional environment (Alexander, 2003). Furthermore, this trend is noticeable around healthcare facilities, office buildings, and engineering structures. According to Shohet (2006), within the healthcare industry, a significant demand for health services has been observed. This recent growth has had an impact on the limited hospital resources, therefore necessitating evolved service patterns that allow for reduced inpatient admission days, which may result in an increased service capacity of the hospitals.

According to Drion *et al.* (2012), the discipline of FM has been in existence for over 40 years, notwithstanding this, there lacks a consensus on what the profession is all about. Likewise, Tay and Ooi (2001), state that there is a challenge amongst experts regarding the constitution of FM due to the diversity of views and opinions which contributes to an identity crisis of the discipline. It can be argued that the definition is still obscure due to the scope of FM still evolving (Alexander, 2003); to which Ikediashi (2013) further expresses a lacking robust approach on what may be deemed a satisfactory definition of FM.

FM is popularly regarded as a discipline that encapsulates several professions embedded within itself for the achievement of its function (Drion et al., 2012). Further to which, Alexander (2003) indicates that the extent of FM covers all perspectives of real estate and space management, waste management, health and safety, and non-core support services; all functions which require that the proper monitoring and management centers be established in the institution. In the same view, Chotipanich (2004) observes that the variety of FM services is widely recognized as being extensive and inclusive of numerous functions and roles played out by different professional experts; with a contributing factor from a strategic, cultural, resource control, service delivery and customer satisfaction

viewpoint (Amaratunga and Baldry, 2003). The definition of FM has in most cases, been conventionally observed in the "old fashion" sense of janitorial services; which comprise cleaning, repairs, and maintenance (Atkin and Brooks, 2014). However, in recent literature, topics such as sustainability; added value; workplace; benchmarking; built-environment; usability and healthcare (Junghans and OE Olsson, 2014) have been associated with FM. The responsibilities under this authority have moreover expanded to encompass the buying, selling, development, and adaptation of resources to meet wants of stakeholders with regards to space, location and quality amongst other factors (Drion, 2012).

According to Matthew and Michael (2009), FM is defined as the *"integrated management of the workplace to enhance the performance of the organisation";* including the management of infrastructure and support services required to suit the core business activities of the organisation and constant added value to the stakeholders. Alternatively, Atkin and Brooks (2014), state FM by its broader definition to cover a variety of functions which include the management of real estate; financial resources; human resources health and safety, security and the environment; in addition to maintenance, internal services, and utility provisions. The challenge that is attributable to the current nature and scope of FM is in the regulation and control of multi-disciplinary or inter-departmental boundaries within varying organisations (Waheed and Fernie, 2009). Indeed, it can be contended that if current FM experts cannot narrow down and agree on what constitutes the scope of FM, it is not astonishing that given numerous factors that influence the discipline such as organisational requirements, corporate sector, culture and facility structures (Chotipanich, 2004); the role of FM may further be obscured if placed in the charge of non-core FM decision makers. This combative issue can be said to be the mitigating factor in a perhaps fragmented development of the FM function, mainly if it is to be viewed from different organisations.

The most cited definition of FM however, is according to the International Facilities Management Association (IFMA) definition, which states FM as "*the practice or coordinating of the physical workplace with the people and work of the organization;*

integrates the principles of business administration, architecture, and the behavioral and management sciences" (IFMA, 2007); whilst the South African Facilities Management Association (SAFMA), defines it as *"an enabler of sustainable enterprise performance through the whole life management of productive workplaces and effective business support service" (SAFMA, 2016).* SAFMA's definition is based on adding a few key concepts which are relative to the performance and productivity of the users of the facility and the addition of effective business support services.

In far-reaching terms, it can be understood from the several definitions of FM that it is about the adoption and application of critical processes by the right people, for the benefit of the users of the facility, to achieve a full spectrum of different but linked organisational goals. However, Atkin and Brooks (2014), note that there are some organisations which require input beyond the general facility support services, such as those that fall within the ICT or healthcare sectors. This lack of a generalised definition that allows for complete flexibility to suite non-conventional facilities further obscures the function, standardisation, and application of FM and its processes.

For purposes of this study, the re-defined working definition of FM in hospitals is described as:

A value adding, integrated management strategy of support services which enhance the performance of the people, place, processes and organizational objectives which result in customer satisfaction.

2.2.2 FM in South Africa

The practice of FM was unfamiliar to South Africa until 1998 when SAFMA was formed. Since the FM industry is relatively young in comparison to other well-established professions, before the inception of SAFMA, a Facilities Manager was understood to be someone responsible for the maintenance staff and in charge of, for example, the cleaning and security functions (SAFMA, 2016). Furthermore, the service offerings were fragmented and haphazard, until FM examples came from abroad and the industry was

established. Since then, the industry has grown aggressively from being associated with minor building maintenance to the realisation by building owners of the value of FM as a profession; and as a consequence started employing Facilities Managers, or appointing FM companies to manage their buildings (Frost and Sullivan, 2012).

As per Figure 2, the year 2008 - 2009 economic recession drove most companies in both the private and public sectors to actualize more financially savvy measures of managing their operations. This included outsourcing some of their FM related activities with a specific end goal to reduce financial expenditure and concentrate more on their core activities.

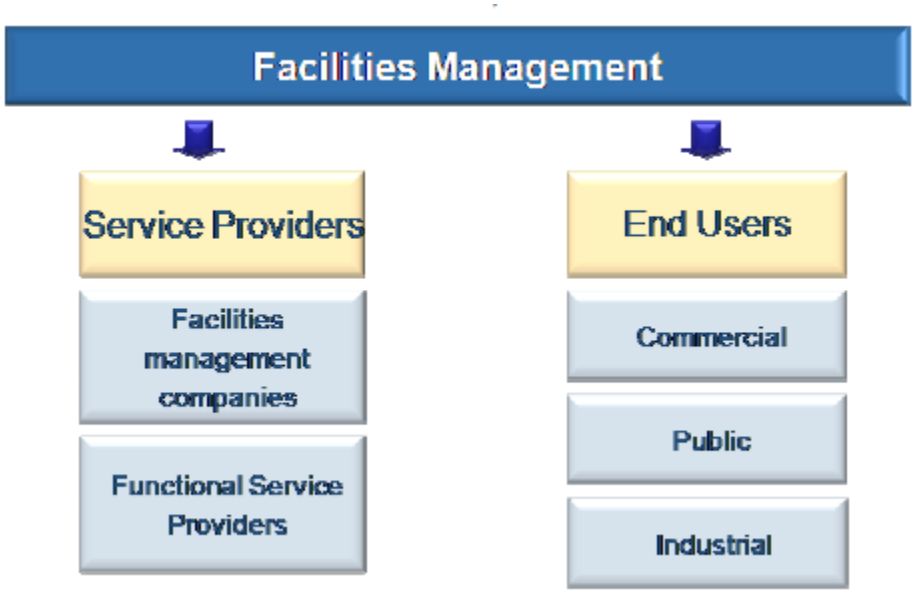

Figure 2. South African FM Market Overview, 2010 (Frost and Sullivan, 2012).

According to Frost and Sullivan (2012), a strengths, weaknesses, opportunities and threats (SWOT) analysis of the primary factors that affect the outsourcing market for FM in South Africa is summarised as follows:

1. *Strengths and opportunities*

    - Cost advantages of outsourcing the FM service

- The requirement for organisations to focus their attention on the core business
- Infrastructure development and improvement in the private and public sectors
- Increased focus on sustainability issues and green buildings

2. *Weaknesses and threats*

- Strong resistance to outsourcing FM services in the industrial sector
- The perception that the administration of FM services can be achieved more cost-effectively in-house
- Delayed approval of government contracts

Whilst the market overview as per Figure 2 and the SWOT analysis suggest a steady grasp of FM within the South African context, according to Frost and Sullivan (2012), the discipline is yet to obtain formal acknowledgment from government institutions such as Statistics South Africa (StatsSA), which can be regarded as a possible deterrent to the growth of the industry. This finding is further corroborated by the market share of the public sector in the FM market, as presented in Table 1.

Table 1. South African FM Market share (SAFMA industry survey, 2016)

Sector	Revenues
Commercial	70.16%
Public	19.82%
Industrial	10.02%
Total	100%

According to Mukori (2013), the public sector has a significant property market share in South Africa, but in contrast, the returns from the assets to do match the capital expenditure. This observation is further indicated to be due to mismanagement of the public property portfolio. As per Table 1, comparisons of both the public and private sector FM market shares indicate an imbalanced relationship between the two. This disparity could be likened to the South African public sector's historical approach of a lack of emphasis on the principle of cost versus benefit (Mukori, 2013). The limited recognition of FM in South Africa (Frost and Sullivan, 2012) compounded by the lack of a market share by the public sector characterises the various challenges affecting the development of the industry. The need to formalise the discipline will require partner engagements and joint effort among the different stakeholders, including the interaction between Facilities Managers and end-users of the service.

In contrast, from an academic point of view, extensive literature exists in first world countries like the UK, USA, and Asia Pacific region in respect of the practice of FM. A substantial number of studies have analysed the size and composition of FM and established its relevance over and above traditional property management (Regterschot, 1990; and Nelson and Alexander, 2002). Other studies in the USA and UK have concentrated on determining the strategic role of FM in a business organisation. Examples include the works of Pratt (1997); Russell (1997); McGeever (1997); Waardhuizen (1999), Nutt (2000) and Masha (2006).

Within the developing world, countries, such as Nigeria, Malaysia, and Thailand have produced several studies dealing with FM related topics such as healthcare, benchmarking, sourcing strategies, sustainability, and strategy. Examples include the work of Ikediashi and Ekanem (2015); Adewunmi et al. (2017); Chotipanich and Lertariyanun (2011); and Sodangi et al. (2014).

These studies have, however, not addressed the practice and concepts related to FM in South Africa. Campbell (2003) has identified the challenges of FM as the need for competence, cost control services and performance measurement. Therefore, having emphasised FM as a critical function in delivering and providing significant value to

healthcare facilities, Then (2003) as summarised by Chotipanich and Lertariyanun (2011) argues the need for "*Supporting Facilities Strategies"*.

2.2.3 FM service coverage and functions of the FMU

2.2.3.1 FM service operations

As presented in Figure 3, the typical FM departmental organogram highlights the hierarchy, functions, responsibility and the numerous key personnel involved. Within a hospital setting, the FMU serves as a part of a variety of elements whose function is to provide support towards the clinical and medical diagnostic services. Supplementing units comprise of the human resources and finance administration departments.

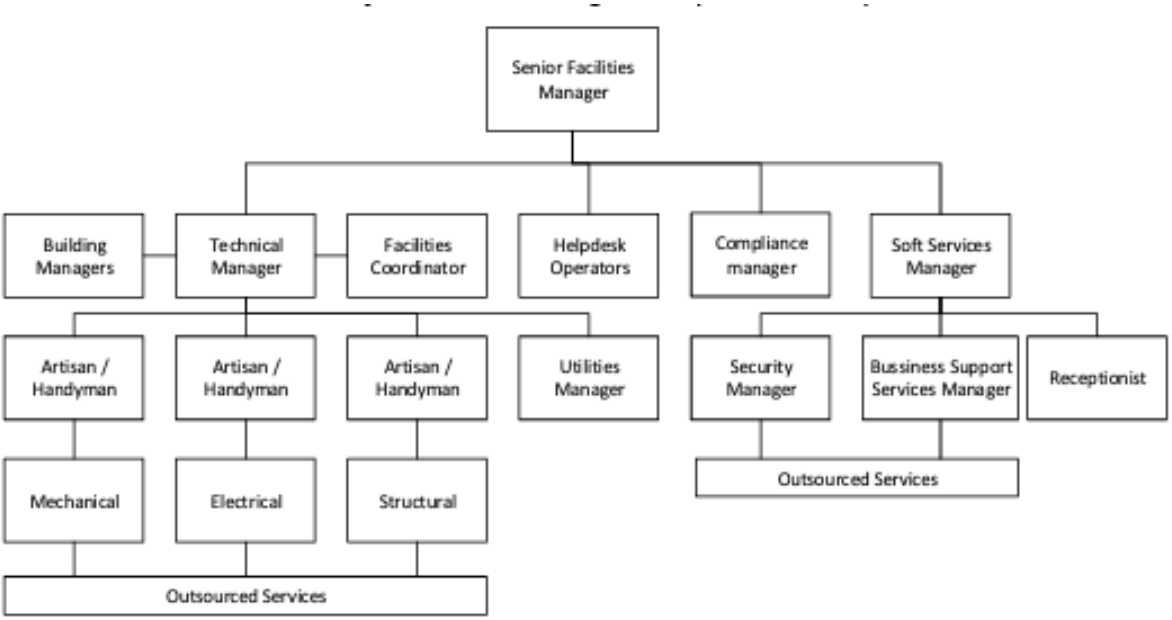

Figure 3. FM operational structure (South African Facilities Management Handbook, 2016)

Porter demonstrates the impact of supporting services as presented in Figure 4 on the primary activities of an organisation (1990) summarised in Carder (1997). According to the analogy, the provision of FM services within hospital facilities is crucial to the achievement of the key objectives identified by the institution. In a typical setting, it is found that the arrangement, activities, and support of infrastructure and ICT; including the

administrative services are the primary responsibilities of the FMU. From a general perspective, FM covers other services, such as the management of real estate, change, human resources, health and safety, and contractual agreements, in addition to domestic services and utility supplies (Atkin and Brooks, 2014). This puts a considerable burden on the Facilities Manager to construct and manage a strategic FM function following the needs of the institution.

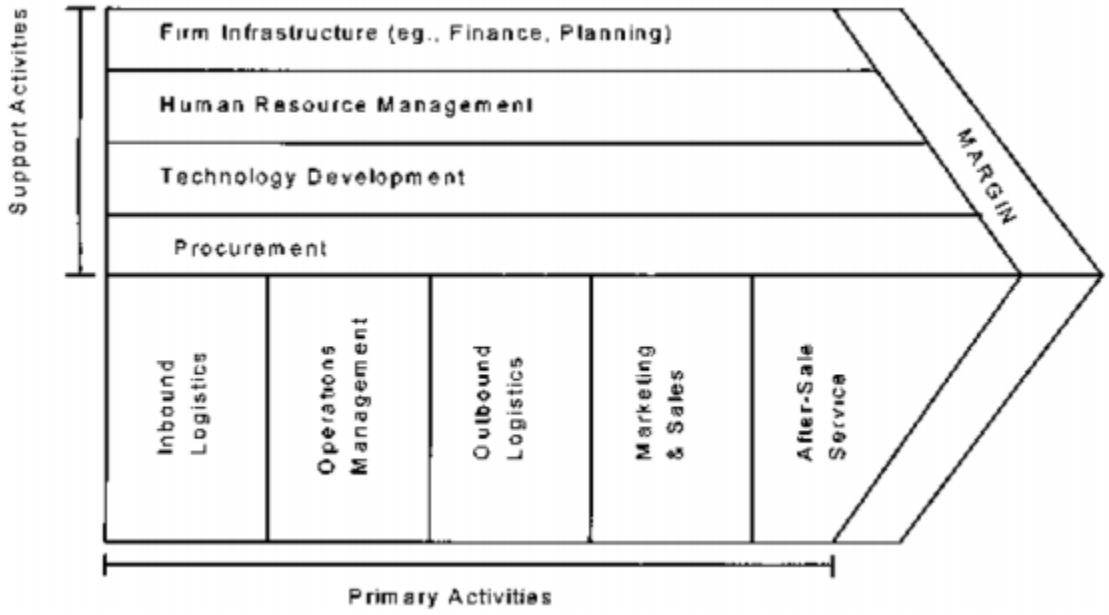

Figure 4. Porter's model for support and primary activities (Carder, 1997).

The primary responsibilities to be carried out within the identified administrative areas incorporate organizational management, facility planning and projections, occupant organization, space arrangements, and building design in Table 2, Barret and Baldry (2009) further provide an additional assortment of standard services that are usually covered under FM. The depiction of the dimensions associated with FM could additionally be ventured into four essential divisions with various sub-divisions to suit the requirements of the individual organisation. The four common structures and their sub-divisions recommended by Barrett and Baldry (2009) are indicated as follows:

Facility planning	Building operations and maintenance	Real estate and building construction	General/office services
Tactical space arrangement Corporate planning standards and guidelines User needs Furniture layouts Monitoring of use of space Selection and control of use of furniture Definition of performance measures Computer-aided facilities management (CAFM)	Operation and maintenance of the plant Maintenance of building fabric Management and adaptation Energy management Security Voice and data communication Control of operating budget Monitoring of performance Supervision of cleaning and decoration Waste management and recycling	New building design and construction management Acquisition and disposal of sites and buildings Negotiation and management of leases	Provision of management support services Office purchasing (stationery and equipment

Table 2: Typical FM services (Barrett and Baldry, 2009).

The above list is not a comprehensive representation as it indicates the numerous functions undertaken by the FMU to support the primary activities of the institution. The institution may be able to implement the support at the strategic and operational levels through the in-house team or a balance of both in-house and outsourced service providers (Ogbeifun, 2011).

According to Tucker and Pitt (2009), from a customer-oriented point of view, there are eleven general FM services regarded under the FM service coverage. These services include building maintenance, waste management, mechanical and electrical engineering services, landscaping, catering, health and safety, cleaning, reception services, and security. Subsequently, one can infer that the scopes and benefit of FM differs within organisations. For example, the scope of FM in a shopping mall will differ to the scope in an industrial building. The delivery of specific FM services will, therefore, depend on the characteristic of the organisation and the requirements of the primary function.

In general terms, FM may be divided into two groups of 'hard' and 'soft' services. The hard services refer to the actual building fabric and infrastructural frameworks which are maintenance related, and the soft services might be considered as more of the support services. As per Table 3, the two categories include:

Table 3: FM hard and soft service (IFMA, 2009)

Hard services		**Soft services**	
Building fabric maintenance	HVAC maintenance	Cleaning	Recycling
Decoration and refurbishment	Lift and escalator maintenance	Security	Pest control
M&E plant maintenance	Fire safety system maintenance	Handyman services	Grounds maintenance
Plumbing and drainage	Minor project management	Waste disposal	Internal plants

2.2.3.2 FM Concepts

According to (Junghans and OE Olsson, 2014), there are a variety of FM topics that have been identified within academic literature. The ten most relevant concepts associated with FM based on literature towards the institutional background are:

- *Sustainability,*
- *Knowledge,*
- *Added value,*
- *Workplace,*
- *Demand and supply,*
- *Built environment,*
- *Usability,*
- *Future,*
- *Health care and*
- *Work organisation*

(Junghans and OE Olsson, 2014)

For purposes of this study, the following four topics are briefly discussed, including the impact that they have within the FM function:

1. *Added Value*

   The added value function is defined as the estimation of the product diminished by the value of the assets utilized in the process; in this way lessening cost by expanding efficiency leads to added exchange value. (Jensen et al., 2012). Likewise, according to (Okoroh et al., 2001) an FM partnering arrangement in a trust hospital has the potential to secure added value, lead to cost savings and consequently enhance service quality, improved customer focused service

provision and improved the corporate image. It is further noted that the concept of added value puts focus on the strategic needs.

2. *Strategic FM*

According to Grimshaw (1999), conversely, FM is to oversee the progressions and rapport between the organisation, their representatives and their facilities. Nutt (2000) as summarised in Yim Yiu (2008) reconciled the afore-mentioned strategic method and re-engineered FM as a *"resource management at strategic and operational levels of support*."

3. *Sustainable FM*

Because of the varying ideas and scope of FM, Facilities Managers are progressively drawn into the sustainability agenda and the improvement or take-up of sustainability policies and arrangements within their organisations (Elmualim et al., 2012). However, further to this, the requisite compliance monitoring, administration, and provision of details regarding the environmental impact are not exceptionally evaluated although the central issues of sustainability that are managed within the FM scope are energy, waste and greenhouse emissions. Olaniyi (2017), found that the achievement of sustainable buildings through the application of a practical framework could be adopted by Facilities Managers (Sodangi et al., 2014).

4. *Benchmarking FM*

Benchmarking presents a successful administration instrument that empowers the FMU to gauge the delivery of its support activities consistently. Here the FMU measures its execution against related organizations keeping in mind the end goal to identify and manage areas for continuous improvement that will improve the ranking and compliance of the hospital within the healthcare sector. In the same

view, Adewunmi et al. (2017) emphasize the concept of benchmarking processes, whereas it is defined as the continuous, systematic process which enhances the effectiveness of organisations by evaluating products, services or work processes against recognised best practice.

2.2.3.3 Functions of the FMU

According to Ogbeifun (2011), the activities generally undertaken by the FMU differ subject to the extent, aims and objectives, and primary activities of the client organization. These activities may perhaps be as multifaceted as strategic planning to as uncomplicated as cleaning services; including a variety of activities amidst these arrangements. Given this, FM duties can fundamentally be separated into three classes of responsibility as per the following: Facilities Managers, professional consultants and service providers (Price, 2003). Typically, Facilities Managers function at a tactical level and oversee either single or multiple facilities. In contrast, professional consultants provide expert advice relating to architectural and engineering design and implementation; cost management; venture administration; ecological evaluation and to a great extent work at a strategic level.

Service providers, who are also known as suppliers or contractors, generally provide a range of services such as building construction, security, catering, cleaning, office supplies and a variety of other services of that nature. Moreover, the suppliers mainly function at an operational level (Price, 2003).

2.2.3.4 FMU success factors

According to Patanapiradei (2006), added value and minimised costs are attributes which are a result of successful FM, which better support productivity for the organisation. Furthermore, Kam-Shim,1999 summarised on Rui (2013) reiterates that a commitment to meet customer expectations from relevant stakeholders within a multitude of disciplines is the key to the successful impact of FM.

A variety of studies have endorsed many crucial aspects that may contribute to successful FM as indicated in Table 4:

Table 4: Key aspects contributing to the success of the FMU (Rui, 2013)

	Factors	Sources
1	Management of information and knowledge	Atkin and Brooks (2009); Pathirage *et al.* (2008); Nutt (1999)
2	Fitting FM function and role to the environment of practice	Atkin and Brooks (2009); Chotipanich (2004); Nutt (2002)
3	Sufficient budget and cost effectiveness	Rondeau *et al.* (1995); Shohet and Lavy (2004)
4	Selecting and dealing with the outsourcer	Hui (2005); Bull (1996)
5	Leadership and experience of facilities manager	Hui (2005); Rogers (2003); Rondeau *et al.* (1995); Bandy (2002)
6	Facilities managers' involvement in hospital level decision-making	Cotts *et al.* (2010); Barrett and Baldry (2009); Shohet and Lavy (2004)
7	Staff development and training: soft and hard skills	Srinivasan (2008); Bowers and Akhlaghi (1999); Rondeau *et al.* (1995); Bandy (2002)
8	Service tasks standardisation and benchmarking	Wauters (2005); Massheder and Finch (1998); Alexander (2003); Bandy (2002)

It can be observed from the key factors attributable to successful FM as presented in Table 4 that multiple activities ranging from a financial aspect, human resources, and best practice have a crucial role in in the implementation of FM. These factors stem from other concepts and disciplines, ultimately broadening the FM knowledge base. However, the actual impact of the identified success factors will be defined by the context of the organisation. Arguably, FM ought to be incorporated and positioned as a predetermined support function of any given organisation. The significance of the strategic influence of FM to the core business has been stressed by many, for example, van der Voordt et al. (2016); Atkin and Brooks (2014); Barret and Baldry (2009) and Alexander (2003). Regardless of whether FM forms part of the strategic activities, the FMU needs typically to build up its individual systems that must line up with its corporate strategy and adapt

to both tactical, vital and operational threats of the client organisation (Atkin and Brooks, 2014). Consequently, it can be contended that in the short and long-term the FM strategy is an essential requirement if FM is to be effective in supporting the hospital facility.

2.3. FACILITIES MANAGEMENT IN HOSPITALS

In general, the public, patients and administrative and medical staff make up the stakeholders to hospital facilities (Rania et al., 2014); where the environment and physical conditions have the potential to cause strain and discomfort for the end-users. This stress may be as a result of factors such as unreasonable commotion due to clinical announcements and alerts, and tension triggered by poor signage, confusing building, and passageway layouts and other defective parts of the facilities' design. These may aggravate a patient's well-being and even contribute to the transmission of disease and incite the requirement for more regular, tedious and possibly erroneous patient transfers. According to Shohet and Lavy (2004), hospital FM is considered to be one of the critical components for the confident delivery of healthcare services. Likewise, Ikediashi and Ekanem (2015) highlight that from a healthcare setting, FM has continuously provided the aiding environment which underpins the primary function of rendering clinical and medical services.

2.3.1 Healthcare system in South Africa

The description of the South African healthcare system can be referred to as a two-tiered system, which is split along socio-economic lines (South Africa. Health Department, 2015). The separation between the private and public healthcare service areas has implied that the burden of disease is conveyed to the public sector; which additionally provides to an increasing number of individuals from private medical aid schemes which have diminished the provision of numerous benefits, thus leaving these people to address their issues through the public healthcare system (Jobson, 2015). Hospitals in the public sector can be categorized as follows: district health services manage district hospitals; provincial health services manage regional, tertiary and specialised hospitals; and central hospitals operate on a national level to provide both general and highly specialised

services (Ranchod et al., 2017). In 2012, there were more than 11 000 hospital beds in the ten central public hospitals in Gauteng (South Africa. Department of health, 2012). Table 5 presents each of the hospitals in the Johannesburg and Ekurhuleni metropolitan, including the size and the population numbers each district caters.

Designated Hospitals in the Johannesburg and Ekurhuleni Metropolitan					
District	Sub-district	Facility level	Facility	No. of beds	Population
Ekurhuleni	Ekurhuleni E1 SD	Regional hospital	Pholoshong hospital	300	8, 809, 246
	Ekurhuleni E2 SD	Regional hospital	Far east rand hospital	311	
	Ekurhuleni N1 SD	Provincial tertiary hospital	Tembisa hospital	840	
	Ekurhuleni S1 SD	Medium district hospital	Germiston hospital	300	
		Regional hospital	Tambo memorial hospital	642	
	Ekurhuleni S2 SD	Regional hospital	Natalspruit hospital	784	
City of Johannesburg Metropolitan	Johannesburg B SD	Provincial tertiary hospital	Helen Joseph Hospital	485	11 488 424
		Regional hospital	Raheema Moosa Hospital	338	
		Specialised hospital	Tara H Moros Centre Hospital	141	
	Johannesburg D SD	Central Hospital	Chris Hani Baragwanath Hospital	2 888	
		Large district Hospital	Jabulani Hospital	380	
	Johannesburg E SD	Regional Hospital	Edenvale Hospital	230	
		Specialised hospital	Sizwe Tropical diseases hospital	286	
	Johannesburg F SD	Medium district Hospital	South Rand Hospital	280	
		Central Hospital	Charlotte Maxeke Academic Hospital	1 018	

Table 5: Johannesburg and Ekurhuleni Metropolitan No. of public hospitals and population served

According to Crisp (1997), the public hospital portfolio is reaching a mature age with some hospitals dating back to 1898, further compounding the infrastructural challenges. The aforementioned issues are further multiplied where there is a lack of maintenance, which tends to be more noticeable in ageing facilities due to the accumulation effect, thus causing consequential damage (Bothma & Cloete, 2000) as witnessed with the roof collapse of a central hospital in the Johannesburg area (Section 27, 2017). From a healthcare service delivery point of view, despite improvements to address the post-1994 challenges, there are also substantial quality problems within hospital facilities. Among the typically referred experiences by the public in general are: safety and security of staff and patients, cleanliness, long queues, staff attitudes, disease and infection control and shortages of medicine (Young, 2016).

This can be attributed to the notion that the awareness of the significance of the administration and upkeep of facilities has not been stressed expressly and efficiently, which has brought about lower quality maintenance and repair works. Subsequently, it would be contended that complex building facilities such as hospitals that require numerous resources that operate daily necessitate added focus in order to extend their life cycle. Likewise, as expressed by Rania et al. (2014), every end-user of the hospital facilities ought to feel satisfied with the services rendered by these resources and the support services. This rationale further reiterates the requirement of the FMU to have a crucial support plan intended to observe the facilities and to enable it to perform with reduced risk of failure.

2.3.2 FM in healthcare

According to Nielsen (2004), healthcare facilities are built for the medical treatment and recovery of the patient; therefore, patient health outcomes should be considered before aesthetics when re-designing and managing a healthcare facility. Furthermore, McKee and Healy (2000) indicated that hospital facilities pose numerous difficulties for those undertaking the improvement of the facilities as they are firm structures whose outline and capacity was customarily confirmed in preceding years. Additionally, the design regularly reflects the healthcare practices and staff/patient populaces of a former era. Their inconsistency with current needs goes from planning and design issues, for

example, a shortage of working theatres, to more minor issues, such as the absence of electricity for the consistently growing number of electronic screens. Although Nielsen (2004) concludes that the most critical aspect of a hospital is the exemplary support of patient needs, as an indispensable component in the delivery of healthcare services (McKee and Healy, 2002), hospitals regrettably provide a costly system for the provision of care.

The International Federation of Hospital Engineering (2004) has also concluded that when designing a new building, it is critical that the environment and supporting activities fulfil the patients' needs (Baldassari et al., 2005). Therefore, the priority of hospitals is to deliver excellent healthcare in a cost-efficient way (van der Zwart & van der Voordt, 2013).

2.3.2.1 Maintenance versus Management

SAFMA (2014) defines maintenance *as "the process of keeping something in good condition"*. Although seemingly one-dimensional, it has been found to be a general idea. The public hospital view of FM has a strong focus on maintenance (Bothma and Cloete, 1999); but according to SAFMA (2014), "maintenance" forms only one section within the FM framework. The benefits of a proper maintenance programme are to provide the following:

- preservation and enhancement of the property value;
- tenant retention – tenant satisfaction, lower vacancy rates, ability to negotiate escalation that leads to improved turnover; and
- reduced operating cost – planned maintenance is less costly than reactive work and utilities can also be saved by the optimal running of equipment and building systems.

(SAFMA, 2014).

2.3.2.1.1 Maintenance management strategy

According to Rani et al. (2015), a strategy for maintenance is an incorporated framework that is required by the organization to provide the significance of parts of different equipment which impact the types of maintenance activities. The maintenance strategy presented in Figure 5 is typically divided into two sections namely planned and unplanned maintenance as follows:

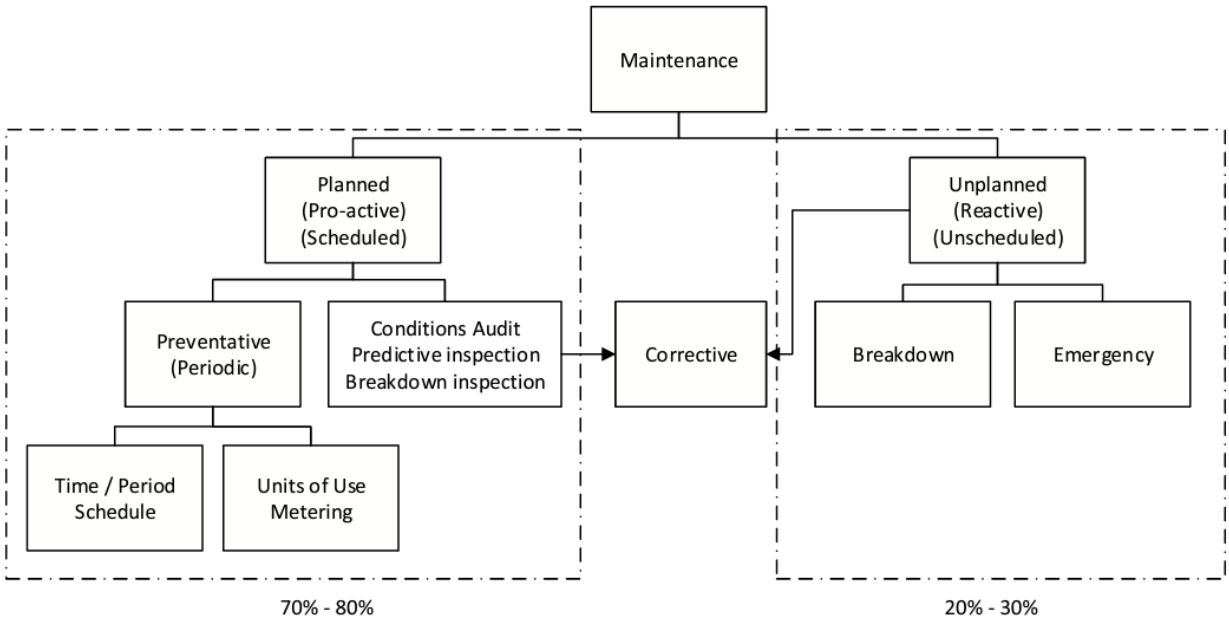

Figure 5. Types of maintenance strategies (SAFMA: 2014).

Loosemore and Hsin (2001) and Shohet (2003) indicate that due to the intricate nature of hospital infrastructure which is comprised of multiple engineering service networks and coupled with typical budgetary constraints; concerning the maintenance and repair services, it is crucial to have a for a strategic maintenance plan in place. The overall maintenance and management of hospital facilities require concentrated effort and attention to improve results and permit reductions in cost (Hoadley, 2010). Furthermore, there are diverse inputs that influence the expected performance and delivery of hospital facilities such as the actual as opposed to the planned occupancy, building age and the surrounding environment, administrative assets invested and support services that are

either delivered in-house or outsourced. In some cases, an inadequate administrative arrangement may lead to the performance shortcomings of the facility in question.

Hicks (2004) further stipulates that each strategic plan should be arranged given the vision, mission, and objectives of the organisation. Alluding to the goals and objectives of the maintenance management of hospital facilities, in basic terms, the best support system on that allows for the retention of all available resources while enhancing their performance. According to Onawoga et al., (2010), the mere stipulation of the maintenance strategy for the equipment and other hardware will not be satisfactory unless if the building blocks are adequately planned. This idea is further corroborated by Marquez et al., (2009) by the illustration of the connection between the available resources and the maintenance strategy shown in Figure 6 as follows:

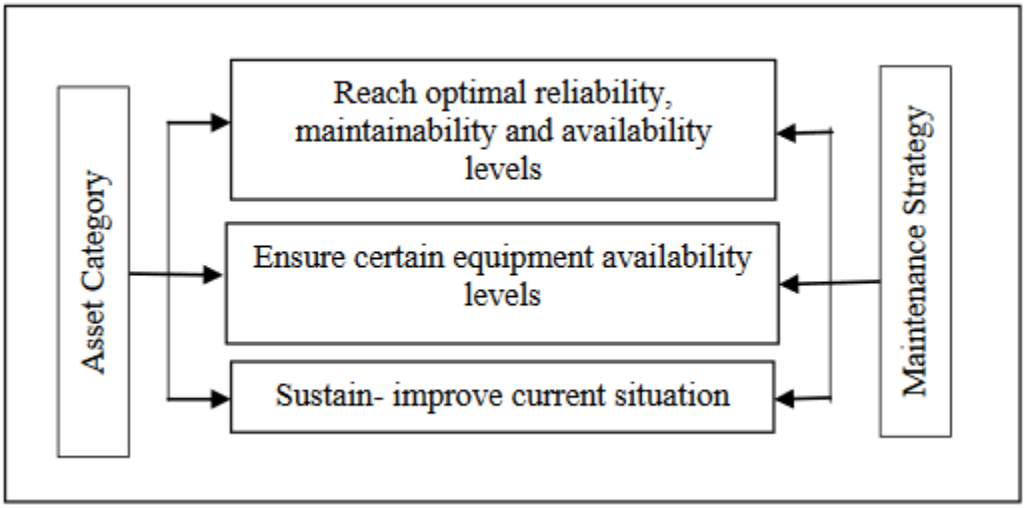

Figure 6. Relationship between asset category and maintenance strategy (Márquez et al.,2009).

A brief explanation of the types of maintenance approaches as indicated in Figure 6 and their implications is described as follows:

1. *Unplanned maintenance strategy*

This system is alternatively referred to as reactive or emergency maintenance. Its upkeep is with regards to unexpected problems and commonly results in high support costs.

2. *Planned maintenance strategy*

This methodology is broadly utilized as a part of maintenance management. The premise of the arranged management is because of reliable and exact information. The FMU typically designs its support work appropriately, that is, the Facilities Manager is responsible for observing the upkeep of the work. The kinds of planned maintenance procedures are additionally separated as:

- Pro-active maintenance – this approach is intended to recognize the risks and issues from the root of the failure. Moreover, it can prompt the extension of the life of the hardware and improve its productivity.

- Preventive maintenance – the application of this approach allows for the evaluation of the equipment at consistent time intervals, which may likewise cater for the extension of the life of the hardware. This procedure additionally limits the cost of operations.

- Corrective maintenance or condition-based maintenance - the functions relating to this approach regularly occur because of a system collapse or at a specific client request. It differs from preventive support as it is grounded in the present state of the hardware. As specified by (Horner et al., 1997), this type of maintenance strategy is the least complex, as it includes only the repair or substitution of a component that has malfunctioned.

- Predictive maintenance- this approach is more similar to the condition-based method of maintenance. This approach assists in the estimation of the state of the equipment by using tools such as vibration examination, infrared thermography, ultrasonic identification (Hisham,2003) and it includes assessments of equipment running conditions in between stoppages (Onawoga et al., 2010).

2.3.2.1.2 Facilities management operations strategy

The maintenance process and administration of the hospital can be separated into two sections: the definition and implementation of the strategy. The initial segment requires the defined scope of the maintenance goals and objectives as input, which will usually be extracted from the organisation business plan (Crespo Márquez et al., 2009). According to Rani et al. (2015), the maintenance of facilities is just a small part of healthcare FM. Maintaining the facility is extremely important but managing that facility goes much deeper. When talking about managing a hospital facility we look at the whole operation from the utilities entering the building, resulting in productive hospital staff and improved health of the healthcare patients. All parts of the operation of a facility must work in unison and everyone involved must be on the same page. Facilities Managers work with physicians, nurses, administrators, accountants and a host of other people to ensure that the facility as a whole is meeting everyone's needs. Further to this, each person or department in a hospital or healthcare setting has specific needs that must be met in some way or another by the facility team (Lucas, 2017).

An outline of the aforementioned indicates that, be that as it may, the research studies from the body of literature found on the subject of FM lack on the topic of FM strategy. Furthermore, the literature that makes inferences to a strategy concerning FM is mostly conceptual or theoretical ideas, in contrast to empirical investigations. This creates a gap in the understanding of the attributes of FM procedures from a practical point of view. Due to the lack of relevant studies in this area, there was a requirement to research this subject.

2.4. SOURCING STRATEGIES IN FACILITIES MANAGEMENT

The increasing need of FM in the hospital sector, combined with the developing enthusiasm from the public sector, underlines the requirement for organisations to take and apply informed directives between the decision to out-source or the use of in-house staff in the delivery of services.

2.4.1 Types of sourcing models in FM

As per Figure 7, The South African FM market is segmented into outsourced and in-house FM market segments as follows:

Figure 7. South African FM market segmentation, 2010 (Frost and Sullivan, 2012)

According to Frost and Sullivan (2012), the market for outsourced FM is defined by integrated FM companies in addition to functional suppliers; while the in-house FM is portrayed by service providers that are directed internally by the client organisation. Further to this, from a global point of view, Ancarani and Capaldo (2005) note the various strategies available for the delivery of FM services. These strategic possibilities include:

- In-house FM – within this strategy, service delivery is provided by an allocated resource utilized explicitly by the organisation although the checking and control of execution is directed under the conditions of a regular employer/employee contract

- Outsourcing; this is where an external service provider is appointed for the rendering of services, often under the terms and conditions of a contractual agreement (service level agreement).

- Public-private partnership (PPP); this is concerning an association or strategic co-operation framed between the client organisation and the specialist service provider regarding sharing the responsibilities for service delivery and performance; including the sharing of the benefits emerging from any gains and financial savings.

- Total facilities management (TFM); with this strategy, the complete scope of services is packaged and contracted out to a single service provider that in turn becomes responsible for the delivery, checking, control and achievement of expected performance levels as indicated in the contractual agreement (service level agreement).

(Ikediashi, 2014)

Notwithstanding the different service delivery strategies mentioned, the effectiveness of the adopted strategy centers on how it is executed. The method towards executing a sourcing strategy comprises of five phases that include planning, setting of performance standards, work transactions, performance review and management, and strategy audit (Hui and Tsang, 2004). By the same argument, Atkin and Brooks (2014) additionally propose three fundamental types of contractual agreements in the outsourcing of FM services. These include the managing agent, the managing contractor and the FM contractor. The role of the managing agent is necessary when an organisation intends on

retaining its staff but do not have the pre-requisite expertise or skills, while the external agent's responsibility is to administer the services delivered skillfully and practically as if he/she belongs directly in the organisation. For purposes of this study, the most popular sourcing strategies are briefly discussed within the hospital FM setting as follows:

2.4.1.1 In-house FM services in hospitals

Following the definition of the in-house service approach, its function primarily lies in dealing with internal resources that require expertise in achieving and maintaining the satisfaction of end-users (Kamarazaly, 2007). As with any methodology, there are benefits and risks to the decisions adopted. The advantages and disadvantages of in-house FM services are identified as follows:

- *Advantages of in-house FM services*

    a) in-house staff members own their work, thus encouraging better performance in comparison to the out-sourced staff; who may settle on decisions that are because of how they will influence their businesses and not for the benefit of the end-users of the client organisation

    b) Long-term economic expectations usually support the in-house option as opposed to the outsourcing alternative.

    c) The in-house alternative usually results in enhanced staff productivity as well as end-user satisfaction.

    d) The benefit associated with the in-house approach is that it allows for the empowerment of internal staff instead of the continued skill development and expertise afforded to external contracted parties.

    e) Outsourcing may be able to assist the organisation with the selection of the most appropriate service provider as far as experience, quality, speed, and

productivity are considered. In contrast, these may be convenient solutions which may not be manageable over the long term.

(Wise, 2007)

- *Disadvantages of in-house FM services*

a) An inadequately defined scope of services will unavoidably contribute to challenges in the administration; resulting in higher supervision costs and reduction of end-user satisfaction. The involvement of and consultation with all stakeholders is crucial.

b) Without a clear description of roles and obligations, it may be challenging to quantify the work executed by the in-house staff.

c) One of the highest risks faced by the in-house team is from a lack of concern and tardiness, which is effortlessly observed by clients.

(Atkin and Brooks, 2005)

2.4.1.2 Out-sourced FM services in hospitals

Quality and value are most often the factors that impact on the decisions undertaken by organisations in selecting the outsourcing strategy (Atkin and Brooks, 2014). Fill and Visser (2000) take note that although management should take responsibility for the tasks that characterize an organization's primary business and its related procedures, the secondary functions ought to be viewed as having the potential to the possibility for outsourcing. Furthermore, it is contended that by outsourcing the secondary functions, an organization may use its budgetary resources, spread its financial risks and enable the focused management of the core functions. Mudrak et al. (2005) affirm this by finding that outsourcing all the non-core practices engages the managing of client relationships with an added focus of the business activities. According to Blumberg (1998) a record the most practical conditions for which the FM service deliverables are appropriate for outsourcing are indicated as follows:

- Customers are focused on the result of the functions performed and are not too concerned with the processes
- Competencies are accessible on the broader market and access to the client is not a challenge
- There are sufficient innovation and technology to carry out the functions
- Performance as per world class standards provide the minimum achievement factor
- External providers are distinctly more capable
- Performance inadequacies can be mitigated by employing substantial capital and supporting resources

The decision to out-source services carries its advantages and disadvantages (Kamarazaly,2007). According to Gilley and Rasheed (2000), singular dependence on outsourcing is not usually a sensible approach. Likewise, Markides and Berg (1998) contend that the persistent replacement of one service provider with another may only delay the reality of when firms must fix what is inadequate within their organisations. The advantages and drawbacks of outsourced FM are identified as follows:

- *Advantages of outsourcing*

    a) Reduction in costs/economies of scale

    b) Concentration on core business / strategic appreciated of service

    c) Enhanced productivity

    d) Increased flexibility

    e) Overcome skills shortage

    f) Added value at no extra cost

    g) Improved accountability/performance levels

The typical outsourced hospital services are presented in Table 6 as follows:

Table 6: Outsourced FM services in the US (Ikediashi, 2014).

Rank	Service	Number of hospital vendors	
		1995	1994
1	Food service	1733	1550
2	Emergency	1298	981
3	Housekeeping	718	619
4	Laundry	557	533
5	Clinical/diagnostic equipment maintenance	445	289
6	Pharmacy	436	370
7	Plant operations	341	310
8	Rehabilitation/physical therapy	308	255
9	Financial management	474	342
10	Psychiatry	211	214
11	Skilled nursing/sub-acute care	134	60
12	Security	119	100
13	Radiology	69	43
14	Gift shops	67	44
15	Managed care	47	-
16	Substance abuse	47	23
17	Accounts receivable	39	31
18	Materials management	33	26
19	Surgery	31	29
20	Anaesthesia	30	21

According to Atkin and Brooks (2014), an emphasis is placed on the full FM functions, which may be effectively implemented by either the in-house or out-sourcing strategy. Also, the strategy adopted will rely upon the priority and urgency of activities of the organisation. Alternatively, the organisation may decide to retain or out-source the services as a whole completely; or, the organisation may contract out portions of the services and retain some of them in-house (especially if the FM function forms a strategic implication in the management processes).

2.4.2 FM sourcing decision factors in hospitals

Per the sourcing options available, Atkin (2003) indicates that some organisations prefer a mixed approach to the delivery of their FM services by utilising both the in-house and out-sourced methods at once. Barret (2003) strengthened this argument with a view that while some organisations support a straightforward in-house approach, others contract out every service available; and others apply a blend of both. The choice will depend on the factors that enable long-term success and added value to the organisation. This is accomplished by assessing the opportunities and threats to the organisation, particularly the actual cost of all available strategies (Kamarazaly, 2008).

The literature reviewed thus far has identified the FM definition, function and concepts as applicable within the public hospital setting. Moreover, the types of service delivery strategies available have also been explored. Within the public hospital sector, it is therefore prudent to identify the decision factors that influence the FMU in the processes undertaken in the delivery of the FM services. As adapted from Ikediashi (2014), Table 7 indicates the factors that can impact the sourcing decision. The factors are categorised into eight separate groups and briefly described as follows:

Factor Category	Description	Authors
Cost / financial	to make cost straightforward, change over settled cost to variable cost, lessen cost, ingrain cost-effectiveness, dispose of settled cost of inward staff, decrease interest in resources, diminish put capital subsidies in non-center capacities, to control working expenses, to evaluate outside supplier's lower taken a toll structure, to accomplish cost decrease with upgraded execution, to moderate capital, to lessen capital consumptions	Quelin and Duhamel, 2003; Jiang, 2006, Bustinza et al., 2005; Ghodeswar et al., 2008; Kroes and Ghosh, 2010; Hsiao et al., 2010; Wagenberg, 2003.
Strategic	to give attention to primary competencies, enhance tactical positioning, increase productivity, improved marketing, turn out to be more adaptable and dynamic in meeting constraints, enhance control of operational processes including risky administration, enhance process responsiveness and process durations, enhance volume capacity, Multiply sourcing, handle fluctuating interest all the more successfully through economies of scale, investigate opportunities in new geological areas, increase competitiveness	Bustinza et al., 2005; Ghodeswar et al., 2008; Kroes & Ghosh, 2010
Innovative	to access innovations in ICT, gain expertise	Deaver, 1997; Wagenberg, 2003; Ghodeswar et al., 2008; Kroes and Ghosh, 2010; Abraham and Taylor, 1996
Revenue	acquire advancements not accessible in-house, fortify development among work force, allow faster reaction to new needs	Burdon and Bhalla,2005; McCarthy and Anagnostou, 2004; Ghodeswar et al., 2008

Quality	to create extra subsidies to organisations, accomplish dynamic developmental goals by expanding the market, test and construct new products and services, oversee request effectively through pariah's robotization, process development and most recent innovation, use on the specialist organization's best procedures and frameworks	Burdon and Bhalla, 2005; Ghodeswar et al., 2008; Kroes and Ghosh, 2010
Time	to enhance timely and decisive service, there isn't sufficient time to procure devices and methods in-house	Weber et al., 1991; Lonsdale & Cox, 1998; Gottfredson et al., 2005
Social	to divert assets from secondary activities to more focused input in serving the end-user, improve partnership arrangements, upgrade dependability, enhance end-user relations, enhance labour relations, enhance corporate social responsibility, job creation for surrounding communities	Brackertz and Kenly, 2002; Burdon and Bhalla, 2005; Alexander and Brown, 2006; Ghodeswar et al., 2008
Others	constrained by insufficient organisational resources, participation in the movement towards privatization	Wagenberg, 2003; Quelin and Duhamel, 2003; McCarthy and Anagnostou, 2004; Burdon and Bhalla, 2005; Schoenherr, 2010; Deavers, 1997

Table 7. Factors that influence the sourcing decision (Ikediashi, 2014).

2.4.3 FM and healthcare service delivery

Since FM provides vital support to organizational core functions and activities, any break or loss in the delivery of services has the risk to potentially negatively impact business operations and undermine business progress (Atkin and Brooks, 2014). According to Goldstein et al., (2002), service delivery by an organization can only be fulfilled by incorporating investment in various resources. Edvardsson et al. (2000) characterise the service concept as a comprehensive account of the customer needs and how these should be fulfilled. The service concept is further defined as follows:

- Service operation - the way by which the service is delivered;
- Service experience - the customer's direct experience concerning the service;
- Service result - the benefits and outcome of the service for the customer and;
- Value of the service - the benefits and consequences the customer perceives as essential in the service weighed against the cost of the service.

Service organisations have since perceived the significance of service execution given customer expectation and satisfaction for consumer loyalty and dependability. According to Pullman and Gross (2004), customer experience occurs when a client has an impression or attains facts and information from some level of association with the components of a setting fashioned by a service provider. As per Figure 8, the service strategy concept is illustrated by the relationship between the inputs, outputs, and performance; with customer satisfaction being a critical indicator as follows:

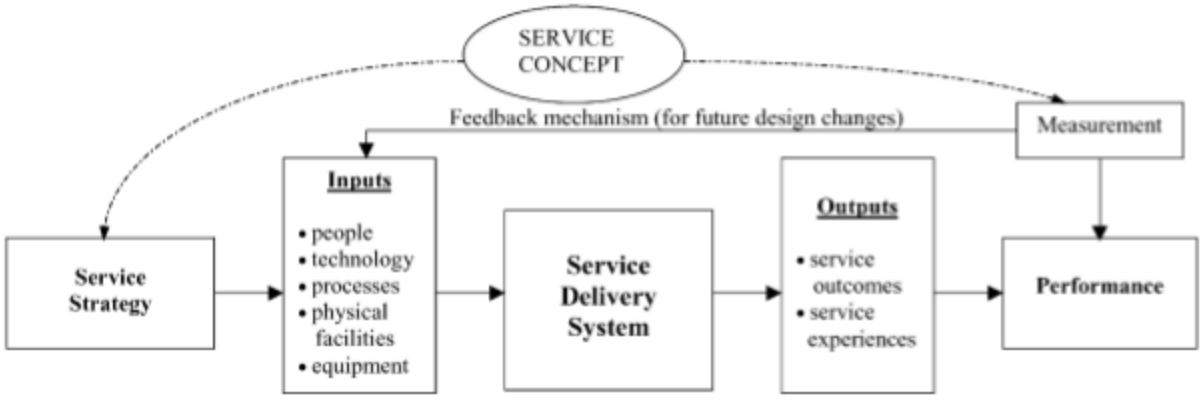

Figure 8. Service concept model (Pullman and Gross, 2004).

Further to the aforementioned, from a hospital healthcare delivery point of view, Rui (2013) discusses various authors that have underlined the significance of stakeholder involvement and client satisfaction as a tactical component of the objectives of an organisation (Brackertz and Kenly, 2002; Burdon and Bhalla, 2005; Alexander and Brown, 2006).

2.4.3.1 Healthcare service delivery

In past studies, Peprah (2014) and Nkrumah, Yeboah, and Adiwokor (2015) describe the delivery of healthcare services to encompass a high level of consumer engagement. It is further noted that should the inadequate delivery of services occur, this poses a risk that may potentially result in the loss of life. In order to mitigate this, the five critical components of customer satisfaction in hospitals include; tangibles (physical facilities, medical hardware and appearance of staff), dependability (ability to provide services correctly and continuously and in accordance with assurance procedures), responsiveness (ability to provide adequate attention to the patient), compassion (convenient opening hours and giving individualised care and consideration, which incorporates both access to and client appreciation), and guarantee (patient safety and security, health caregiver knowledge, cordiality and capacity to convey trust and assurance) (Nkrumah, Yeboah and Adiwokor, 2015). For patient satisfaction, there is a need for health institutions and facilities that offer services which provide maximum value (Aikins, Ahmed & Adzimah, 2014).

Consequently, checking and surveying customer satisfaction concerning healthcare services is a fundamental effort in enhancing the value of the healthcare system (Bara et al., 2002). As indicated by Karen (2010), proper administration and not poor good outcomes identify to patient satisfaction. For customers to be fulfilled, there is a requirement for healthcare institutions to provide service delivery which results in the maximum value (Aikins, Ahmed, and Adzimah, 2014). As highlighted previously, the general poor infrastructure conditions within the public health sector provide a constraint in the provision of healthcare services that meet the needs of patients (Nkrumah, Yeboah and Adiwokor, 2015). Moreover, insufficient resource allocation destabilizes facilities functioning, brings disrepute to the organisation, increases costs to patients and brings general mistrust and hostility (Aikins, Ahmed, and Adzimah, 2014).

2.4.3.2 Measuring and impact of FM service quality in hospitals

Service quality has been portrayed as the difference between the client's view of services administered when the service meets or surpasses expectations (Pitt et al., 2016). Since response channels amongst clients and healthcare facilities are more apparent and more available than any time in recent history; it is essential that quality management is directed to guarantee that expectations are met.

Moreover, it is essential for FM to convert the measurement of performance to management. The correct relationship between the service quality and the performance of the facilities given the end user satisfaction needs to be resolved.

2.4.3.3 Customer satisfaction levels

Frequently individuals liken the quality of service in light of previous experience, with little to high expectations. It has been presented that mere service offering is not sufficient and that organisations need to satisfy their customers. The nature of the experience exists in how adequately the organization deals with quality and assurance related issues of the service delivery from start to finish. According to Rui (2013), within hospital FM, the SERVQUAL model used to measure service quality indicates the following paraments for satisfactory service as follows:

1. Reliability or capacity to administer and guarantee the assured services;

2. Responsiveness or eagerness to serve clients;
3. Assurance of the service staffs' knowledge and capabilities in providing the service undertaken;
4. Empathy or the service staffs' consideration towards and care for clients;
5. Tangibles or physical facilities, equipment, premises, staffs' appearances and any other material aspect of the institution.

The SERVQUAL model might be utilised as a scale that measures the expectations of clients who are affected by the services to indicate the levels which the clients are satisfied with the receipt thereof.

2.4.3.4 Service quality and customer perception

According to Pitt et al. (2016), the function of service quality is generally perceived to be similar to a critical determinant of the existence and relevance of an organisation in competitive environments. Furthermore, the method of service delivery irrespective of patients' expectations is the determinant of service quality. Consequently, how well services are delivered becomes the primary focal point of estimating client or patient satisfaction, which depends on client judgements of the satisfaction level of products or services. In the end, it is vital for the organization to decide on their target market and select the level of value that will address the quality expectations of their market. In the instance of the healthcare sector, hospitals offer comparable services yet with fluctuating degrees of service quality. Thus, it gives separation of where the client view of significant worth differs. Identifying with Duggirala's (2011) explanation, that regarding quality care, most methods center around estimating the level of customer satisfaction in light of the service delivered.

2.5. PERFORMANCE MANAGEMENT IN FACILITIES MANAGEMENT

Following the concept model previously illustrated in Figure 8, the relationship between service delivery and performance is critical in achieving end-user satisfaction.

In order to contextualise the performance function, this section was divided into three (3) sub-topics which included:

- Performance management.
- Performance management in FM
- Hospital FM Key performance areas/indicators

2.5.1 Performance Management

The literature around performance management suggests that the concept of performance management has been around and implemented over three decades. In many instances, it has been widely accepted to improve the performance of organisations (Amaratunga & Baldry, 2003; De Waal & Counet, 2009). These include using performance management to track the organisation's progress towards attaining its mission and can give understanding, as to whether and if so, which management mechanism to choose. Amaratunga and Baldry (2003) list four potential benefits that can arise due to having an appropriate performance management system as follows:

- Satisfying customers, in which customer satisfaction revolves around time, cost and quality.
- Managing progress;
- Benchmarking procedures and activities; and
- Establishing change.

Performance is a concept that involves multiple aspects with regards to the execution of the given work and achieving the planned results (Adhikari, 2010). In addition to this, the requirements of the term "*performance"* should be defined regarding the most robust linkage to the strategic goals of the organisation, customer satisfaction, and financial contributions. This assertion suggests that performance management cannot be separated from FM. As previously discussed, the goal of FM is linked to organisational success, and as per the definition of performance management, the organisational success can be achieved through performance management.

Neely et al. (1995) define performance measurement as being identical to the process of evaluating implementation, where measurement is taken as the process of quantification

and activity concerning execution. Mostly, performance measurement is also characterized as the process by which an organization manages its execution, which ought to be following its corporate and functional strategies, goals and objectives (Bititci et al., 2006). According to Nel *et al.* (2008) *"performance management can be defined as a holistic approach and process towards the effective management of individuals and groups to ensure their shared goals, as well as that of organisational strategic objective, are achieved*." Amaratunga and Baldry (2003) break the concept into two entities, performance measurement, and management. Performance measurement is depicted as a method of measuring the advancement towards achieving pre-determined goals and objectives, including the data on the effectiveness with which resources are converted into goods and services, the quality yields and results and the adequacy of activities with regards to the contributions they make toward organisational goals and objectives. For this research, the term performance management means both the act of measuring and management.

2.5.2 Performance management in FM

2.5.2.1 Structure of performance management in FM

According to Amaratunga and Baldry (2000), performance management in earlier studies tends to quantify productivity, financial aspects, and environmental issues while recently, sustainability issues. Even so, it is noted that there is an absence of literature that emphasises on performance management from the FM point of view. Amaratunga and Baldry (2000) additionally contend that there is likewise a restriction on KPIs or erroneous KPIs that can be utilized as a part of FM. Furthermore, the systems and models applied to the measures from different types of indicators are too broad for FM function. Albeit numerous performance measurement techniques are accessible, Amaratunga and Baldry (2003) contend that the majority of tools either prompt much disarray about the explanations behind the performance indices and measures or that there are excessive indices in the FM market taking a glimpse at more extensive issues; which neglect to connect the core business issues with those of the facilities. In addition to this,

performance measurement tools and techniques available in the management literature have not been fully adapted into FM literature. However, the research by Amaratunga and Baldry (2003) found that KPIs in FM can be categorised into four categories as follows:

- Customer relations;
- FM internal processes,
- Learning and growth; and
- Financial implications

The categories are further broken down into the sub-sections as follows:

1. *Customer perspective*

   This perspective deals with the customer requirements (expectations and needs) and performance measures are set to monitor and manage the delivery of these requirements. Moreover, these performance measures typically include time, cost and quality.

2. *Organisational business perspective*

   This outlook necessitates that the organisation focuses on the effectiveness of the internal process. Performance indicators used are those that have the most significant impact on the operation of the business, and these may include cost, cycle time and productivity among others.

3. *Innovation and Knowledge perspective*

   This viewpoint requires that the organisation consider its performance and how resourceful it is at adjusting to change, given the consistently expanding pressures of global competition. The measures tend to give attention to staff satisfaction and

advancement and the observation of current products and services with an emphasis being placed on innovation.

4. *Economic perspective*

The financial point of view is traditionally considered to be the primary measure for organisations. The other perspectives can be viewed as the drivers of future performance, while the financial viewpoint can be considered as a measure of past performance, enabling the executive management to consider the effect of changes and their impact on the bottom line.

5. *Financial indicators*

All expenditure is gathered under the financial indicators category that represents expenditure to facilities, the structures, and their frameworks and components. These indicators differ from KPIs in different categories as they give insight on the evaluation of budgetary performance and can be adopted for both the short-and long-term decisions within the various management levels of the organisation. These budgetary KPIs further represent performance concerning expenditure per unit area, person or output.

6. *Physical indicators*

KPIs demonstrating the physical state of the building or facilities under examination are characterized under the physical indicators category. This classification alludes to the physical condition of a building as far as suitability (how well the building supports the desired function and capacity), quality of space (spatial, environmental and psychosomatic issues), accessibility (site, area, and physically disabled accessibility), and asset consumption (energy, water, building fabric). This classification contains subjective and also quantitative indicators.

7. *Functional indicators*

KPIs recorded under the functional category measure the working performance of a building or facilities by assessing viewpoints identified with organisational aims, space, staff component and other support facilities. Dilapidated and underused spaces can indicate the condition of space usage in facilities, while the productivity and turnover rates can regulate the level of occupants' satisfaction with the building.

8. *Survey-based indicators*

KPIs that can't be measured or that are gathered by conveying the views of respondents are assembled in the survey-based indicators category. Surveys generally utilize questionnaires in which the inquiries rely upon the sort of study being performed. Respondents could be comprised of building occupants, for example, full and part-time staff members, or temporary occupants, similar to clients or visitors or potentially some other respondents, as required by the investigation.

2.5.3 Hospital FM Key performance areas / indicators

According to Ho et al. (2000), KPIs are particular principles of performance measures used to link the performance of one benchmarking party against another, consequently evaluating the performance and providing a platform on which correlations can be made. These KPIs are points of reference which are notable and quantifiable; as set by organisations utilizing the Specific Measurable, Assignable, Realistic, Time-Related (SMART) technique. The indicators are sensitive to each organisation, depending on the impact the facilities have on accomplishing the benchmarks and targets of the organisation. As indicated by Rodriguez – Labajos et al., (2016), a limited number of

studies have investigated performance measurement and management for hospital facilities, with Pullen et al., (2000) investigating seven KPIs relating to Australian hospitals. However, all the KPIs were business related and none identified with the physical performance of the institutions. Shohet (2006) proposed an integrated approach comprising of 11 KPIs for analysing the performance, maintenance and cost viability of hospital facilities. Expanding on this, Lavy and Shohet (2007) constructed an 'Integrated Healthcare Facility Management Model' set up through an incorporated investigation of KPIs which co-ordinate the key and strategic decision-making process from the building life cycle viewpoint. Moreover, Steinke et al., (2010) constructed a building performance assessment approach by observing hospital facilities from the service, functional, physical and economic views. Moreover, other than these investigations, the authors are of the opinion that there is an opportunity for improvement and seek to offer an added functional arrangement of indicators as per internationally prescribed procedures, with reliance on current performance and methods.

2.5.3.1 Hospital FM Key performance indicators

Shohet (2006) presented KPIs that were developed from an integrated maintenance management model implemented in public critical care hospitals in Israel. The healthcare KPIs are classified into four categories as follows:

1. Asset development;
2. Organization and management;
3. Performance management; and
4. Maintenance efficiency

Presented in Table 8 is a brief description of the different parameters within the identified categories, including reference to their application on the FM practice:

Indicators	Descriptions	Units
1. Built Area	Shows the physical-practical state or state of facilities as far as building parts, floor area, frameworks and procedures	Per unit area (m2)
2. Occupancy of the asset	This parameter echoes the depreciation rate. The inhabitance of hospital facilities is characterized as the number of patient beds per 1,000 m2 constructed.	Patient beds / 1000m2
3. Facility age	The facilities' or building portfolio age has numerous ramifications on its state and the condition of its frameworks. The building's age will affect the support necessities	AC*y*
4. Number of employees per 1000m2 built area	This parameter indicated the extent of internal maintenance per area occupied by staff members	No. of employees per 1000m2
5. The scope of FM outsourcing	Outsourcing constitutes a contrasting option to the execution of maintenance activities by the in-house team, who require long term management and supervision	Maintenance sources diagram (MSD)
6. Managerial span of control (MSC)	This indicator is characterized as the number of subordinates answering to a specified administrator. It indicates the extent of administrative resources invested in the FMU	Managerial span of control (MSC)
7. Maintenance organizational structure	Facilities management serves as a principal means technological and cultural changes within organisations	Organisationl structure
8. Building performance indicator (BPI)	Establishes the condition of the facilities as far as the building parts, frameworks and procedures	Measured as a 100-point scale, with various scores indicating the different conditions of the building and the remedies to be adopted (where applicable)
9. Annual maintenance expenditure (AME)	This parameter indicates the extent of expenditure per building square meter, excluding cleaning, energy, and security costs	$US (or equivalent) per unit area

10. Annual maintenance expenditure per “output” unit (patient Bed)	This indicator distinguishes the extent of investment per unit of output and is imperative in the appraisal of the cost of the facilities and the maintenance per unit of output	$US (or equivalent) per patient bed
11. Maintenance efficiency indicator (MEI)	This indicator enables the examination of the investment made in maintenance given the	$US (or equivalent) per unit area

Table 8: Hospital KPI parameters (Shohet, 2006).

Based on the literature conducted in the preceding sections, arguably, FM ought to be incorporated and situated as a tactical and strategic support function within hospitals. The significance of the strategic function of FM to the core business activities has been underscored by many, for example, Atkin and Brooks (2014), Then (2003), Varcoe (2000), Alexander (2003) and Barrett (1994). For that reason, an FM strategy is crucial if FM is to be effective in supporting the institution in both short and long-term views. However, as found in literature, the search study in the area of FM practice and strategy in South African hospitals has been less frequent. Internationally, a study relating to FM strategies was conducted in order to explore the strategy implemented by commercial banks in Thailand and to introduce a framework thereof. A qualitative case study approach was adopted, where five case studies relating to the FM practice of the top banks in the country were selected. The key findings of the study indicate four types of strategies which were identified based on the added value function of FM. Furthermore, the added value approach relates to the business value, workplace, facility performance and financial benefit to the institution.

2.6. RESEARCH GAP

Numerous efforts have been made at evaluating the FM strategy for the enhancement of healthcare service delivery and performance adopted by the FMU in public hospitals. However, with the available literature, most of the efforts have been a silo approach towards certain aspects of FM practice, and none of the reviewed literature on FM in healthcare was specific on the holistic and integrated process that focuses on the end-user satisfaction.

Amaratunga and Baldry (2000) on “Assessment of Facilities Management Performance” within organisations focus on the quality of the facilities observing:

“research attempts to build from the broad principles of facilities performance evaluation by developing a methodology for assessment of a facility’s ability to satisfy the objectives of providing healthcare services within [hospital] institutions…It is hoped that the collection, interpretation, and analysis of information about performance measures of

facilities will provide the key to better planning and design for the future "(Amaratunga and Baldry, 2000).

The gap identified in the literature; which frames the focus of this research; is the evaluation of how the hospital management, clinical and medical components are affected by the contribution of the FMU in achieving the hospital's core functions and attaining the goal of providing comprehensive and patient-focused health care services. The study further assesses the challenges and constraints of the FMU and makes a full recommendation that will encourage the advancement of an effective and efficient strategy vital for the accomplishment of the institution's objectives.

2.7. FACILITIES MANAGEMENT STRATEGY THEORETICAL FRAMEWORK

The previous chapters reviewed past studies on the concepts of hospital FM and uncovered the importance and relationships between inputs and processes for improving the performance of hospital organisations. To support this, the critical success factors, including the sourcing strategy, were extracted from the literature review in the previous sections.

According to Ikediashi (2014), the theoretical framework of an investigation is "*a loose collection of logically related assumptions, concepts or propositions that trigger thinking and research*." It sets out the goal, inspiration, and desires for exploration without which there is no reason for following decisions with regards to approach, strategies or plan (Mertens, 2009). This section presents the theoretical framework for the study and uses it to discuss the characteristics of inputs for the research as well as the underlying relationships within the inputs. In this regard, the chapter explores the perspective on the FM strategy adapted from Atkin and Brooks (2014), to be adopted for public hospitals, the theories that underline the FM plan, including service delivery, quality and the relationship with user satisfaction.

2.7.1 FM Strategy

The efficient and effective management of facilities requires a robust strategy created within the organisational setting. This ought to include the development of strategic objectives and an arrangement for the FM, with appropriate reference to the overall organisational strategy within which it may be contained.

According to Atkin and Brooks (2014), a strategy (or business plan) for FM should:

- Consider the requirements of the institution
- Identify and construct viable, effective and manageable procedures for addressing those needs
- Establish suitable resource requirements for providing services, whether obtained in-house or externally;
- Identify the source of financial support and finance the strategy and its ramifications;
- Establish short-term financial expenditure requirements and best value over the long term; and recognition of information management as a tool providing a basis for effective control of FM.

The different steps and stages identified in the development of an FM strategy are as follows:

1. *Strategic analysis*

   The point of the assessment is to build up a thorough understanding of the current organisational requirements of FM. The following inputs are required for this process:

   i. the organisation's objectives;

   ii. physical assets and space utilisation achieved;

   i. a resource assessment, processes and systems review to indicate the current provision of services and;

ii. a cost assessment

2. *Solution development*

Information from the assessment is interpreted in a structured manner that allows for the precise interpretation of the information resulting from the analysis. This allows for innovation and the development of new ideas as follows:

i. generation of options

ii. criteria assembly for judging option

iii. evaluation of options and;

iv. selection of the preferred option, i.e., the organisation's actual FM strategy

3. *Strategy implementation*

Strategic policies can be produced into operational plans and executed through a procedure that is equipped for overseeing change. The change administration process ought to be embraced by adopting best practice in human resource administration. The execution plan should incorporate programmes, milestones, performance management and risk analysis. The issues that may provide constraints to the successful implementation of the strategy should be identified and the responsibilities to mitigate the risks should be assigned.

In summary, the plan ought to incorporate the organisational staff, frameworks, communication, resource planning, and procurement. Furthermore, the significant FM inputs that flow from the organisational strategy that is focused on, referenced and presented in the facilities management plan are as follows:

i. Facilities management strategy development
ii. Service sourcing model development
iii. Service delivery
iv. Performance management and measurement
v. Stakeholder management

It is further noted that the facilitation, control, and management of each stage primarily lies in the FM strategy, wherein the organizational goals, objectives and other considerations of strategic importance can be secured through the robust FM strategy. Relationship of the different input and outputs is of a cyclic nature, as illustrated in Figure 9 as follows:

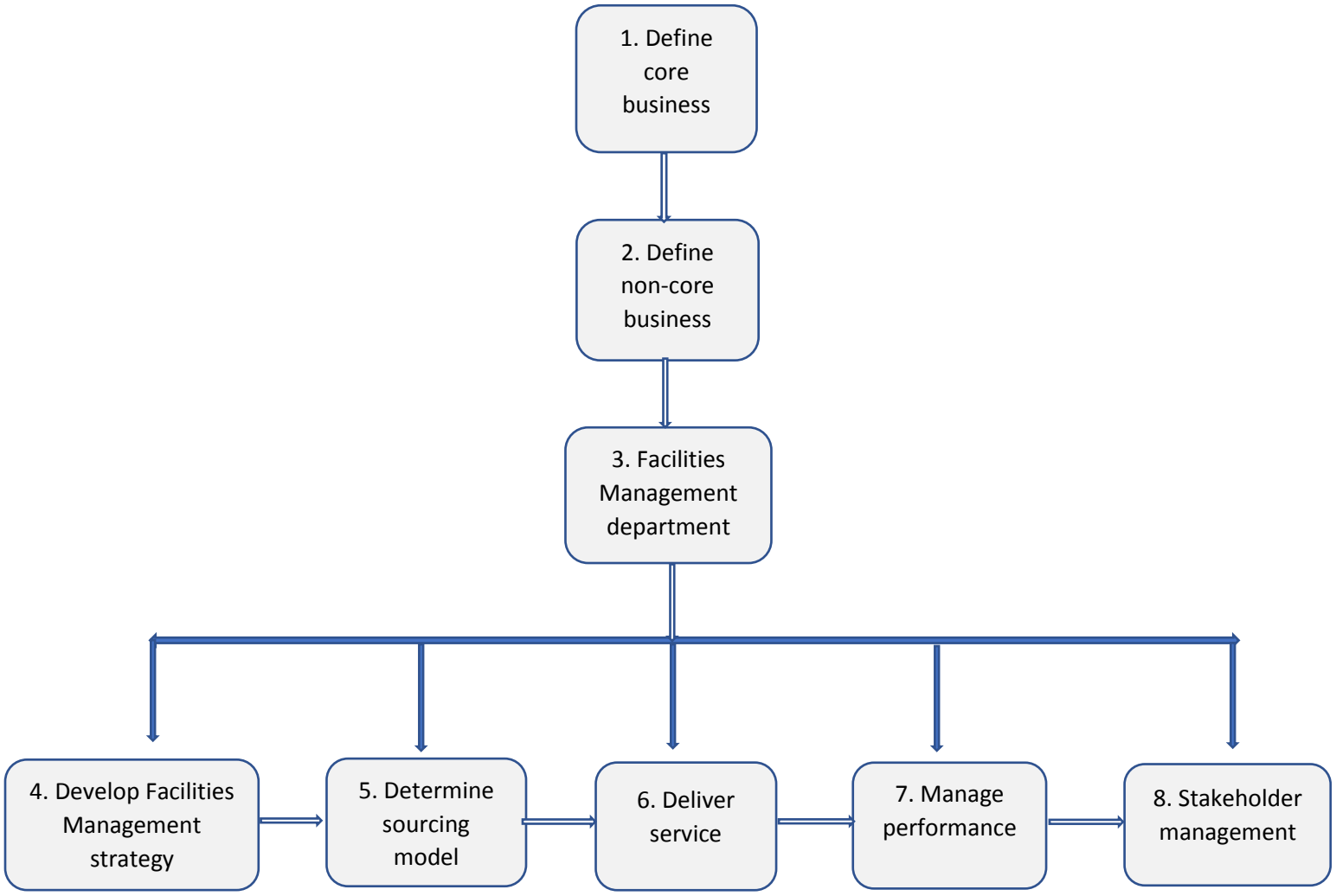

Figure 9. FM strategy framework (Adapted from Atkin and Brooks, 2014)

Based on this FM framework, five literature review topics were identified to answer the research questions as follows:

A. Facilities Management

The literature review around FM sought to define the general scope and FM functions in order to understand its role in public hospital facilities.

B. FM in hospitals

The goal of the literature review around hospital infrastructure needs and requirements from the healthcare perspective sought to understand the role of FM processes in the delivery of quality healthcare, with the goal of integrating the needs, constraints, and objectives of the hospital facility from an end-user point of view.

C. FM Sourcing models

Available literature on FM sourcing models in developing countries was also reviewed and discussed, with the intention of incorporating factors influencing the decision-making process and the risks and advantages associated with each available model specifically from a hospital facility point of view.

D. Hospital FM service procurement and delivery

The perceptions of service delivery and customer satisfaction were reviewed to determine their role and significance in the facilities management and the healthcare sectors. The measurement and approach toward the concepts were also discussed as factors for consideration in the hospital FM performance management, from the end-user perspective.

E. Hospital FM strategy from the end user perspective

Available literature on strategic FM for end-user satisfaction was also reviewed and discussed, for the integration with healthcare facility objectives and the development of an FM plan guideline that incorporates best practice.

F. Performance management in hospital FM

The literature review around performance management in FM was intended to identify the KPIs adopted for the measurement and management of hospital facilities. From these FM KPIs, the KPIs that are likely to have a bearing on the end-user were identified and extracted to form the basis for a strategy that takes customer satisfaction into account.

The gaps of the literature lead to understanding the theory and practice between the FM definitions, functions and applications – within the South African public hospital sector.

In the establishment of the theoretical framework, some studies have focused on FM's definitions in influencing the success of the organisation – through performance and thus the adoption and later, development of KPI's; while others have emphasised, the facilities influence on the behaviour, productivity, and well-being of the people using them. However, the scope of FM within the hospital should be clear as not to overlap with other responsibilities within the organisation that may fall within separate departments, especially considering the location and time frame from which the theory was developed. This is not to say that FM should have different meanings, but the standardised meaning should be fluid in its application, over different organisations. This lack of an integrated theoretical framework is considered a weakness of the field, thus has the potential of losing credibility and application in certain sectors, especially within healthcare.

2.8. CONCLUSION

The chapter presents the structure and elements of FM which are as unique as the setting in which it is employed. In numerous hospital facilities, FM functions may be performed through different autonomous divisions, yet the best practice championed by Jensen (2008) and being practiced in both developing, and developed economies support the idea of a single structure. Likewise, according to Ogbeifun, 2011, this structure allows for the FMU to function systematically and more strategically thus enabling the unit to maximise impact as per the objectives of the organisation.

CHAPTER 3: RESEARCH METHODOLOGY

In the preceding chapter, the literature related to the research problem was reviewed, with the intention to answer the literature question of an appropriate FM strategy for hospital facilities.

3.1. INTRODUCTION

This section defines the methodology adopted to answer the empirical questions, also the research strategy, instruments and processes used to gather and analyse data.

3.2. RESEARCH METHODOLOGY

3.2.1 Research design

According to Bam (2014), the systematic way of collating data involving designing and following many steps for analysis or in pursuit of seeking a solution to a problem is known as research. Furthermore, research is conducted in order to obtain knowledge and information about a specific area or problem. It helps in exploring the problems related to the field of research and thus finding out possible and feasible solutions (Alkins, 2010). Zikmund (2010) further emphasises that the research process constitute the application of the scientific method in searching for the truth about business phenomena including defining business opportunities and problems, generating and evaluating ideas, monitoring performance, and understanding the business process.

For this research, the model of ‘Research Onion Process’ (Sauders et al., 2008) shown in Figure 10 has been selected as it indicates all steps involved in the research process. It presents a very comprehensive framework for the research by giving options for the research process in every step involved.

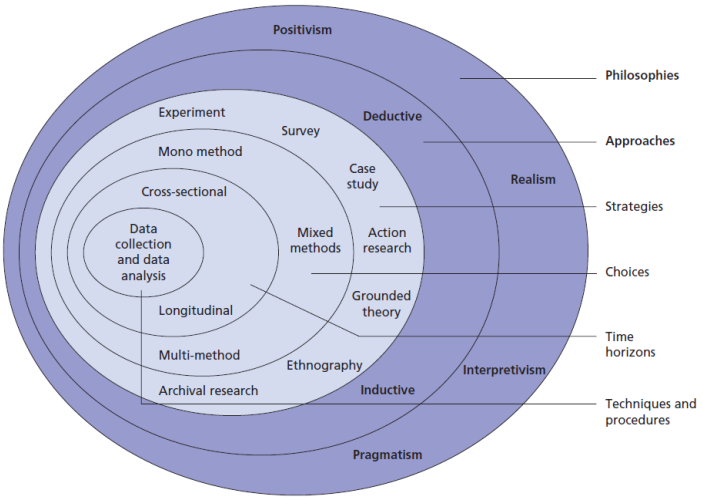

Figure 10. Research onion process (Source: Saunders et al., 2008)

3.2.2 Research philosophy

According to Amaratunga et al. (2002), a long- standing epistemological debate about how best to conduct research has been a philosophical issue of contention among researchers and methodologists. Furthermore, the debate has centred on the relative value of two fundamentally different and competing schools of thoughts or inquiry paradigms as indicated in Table 9

Table 9. Research philosophies (Amaratunga et al., 2002)

Approach	Concepts	Methods
Positivism	Social structure Social facts	Quantitative Hypothesis testing
Interpretive science (phenomenological)	Social construction Meanings	Qualitative Hypothesis generation

In the academic context, the option of selecting two research philosophies first is *interpretivism*, and another one is *positivism.* Philosophy of interpretivism works on the

principle that nature and society are two different objects (Martin and Guerin, 2006). It further states that there can be many approaches to deal with a specific issue. On the other hand, the philosophy of positivism states that logical treatment is the best method of gathering the desired information. It is also known as scientific philosophy and is based on the facts (Bam, 2014). According to Amaratunga et al. (2002), the nature of research undertaken within built environment fields and disciplines draw on a wide variety of long-standing subjects such as the natural and social sciences, engineering and management. The individual subjects are then further applied to the particular built environment context and requirement, by the use of the appropriate research methods and methodologies.

Research studies relating to the built environment have been criticised for their anecdotal approach when interpreting real-world phenomena. In this sense, it is argued that a clear definition of a research strategy is a fundamental and requirement for a sound empirical study. The goal of the built environment research under the phenomenological doctrine is, therefore, the development of theories through analytical tools rather than through the creation of generalisations. The research methodology then becomes a question of whether one has made sensible method decisions, given the purpose of the study, the questions being investigated and the resources available (Then,1996), as opposed to the adherence of the uniform prescription of either positivism and interpretivism (Amaratunga et al., 2002). Table 10 provides a pragmatic view of a summary of the strengths and weaknesses of the two research paradigms in the selection of the appropriate approach for purposes of the study.

Table 10. Research philosophy strengths and weaknesses (Amaratunga et al., 2002)

Theme	Strengths	Weaknesses
Positivist (quantitative paradigm)	They can provide wide coverage of the range of situations They can be fast and economical Where statistics are aggregated from large samples, they may be of considerable relevance to policy decisions	The methods used tend to be rather inflexible and artificial They are not very effective in understanding processes or the significance that people attach to actions They are not very helpful in generating theories Because they focus on what is, or what has been recently, they make it hard for policy makers to infer what changes and actions should take place in the future
Phenomenological (qualitative paradigm)	Data-gathering methods seen more as natural than artificial Ability to look at change processes over time Ability to understand people's meaning Ability to adjust to new issues and ideas as they emerge Contribute to theory generation	Data collection can be tedious and require more resources Analysis and interpretation of data may be more difficult Harder to control the pace, progress and end-points of research process Policy makers may give low credibility to results from qualitative approach

The study aims to inductively and holistically understand human experience in context-specific settings. Therefore, the interpretive philosophy was selected. Furthermore and in line with the study, interpretive philosophy uses qualitative and naturalistic approaches. This approach tries to understand and explain a phenomenon, rather than search for external causes or fundamental laws. For the study, the inductive approach was applied because it follows the bottom-up approach (Daff, 2011). Specific information was identified first and thereafter driven towards generalised findings of the results. The report does not aim at creating any hypothesis; instead, work with the theories and frameworks present.

3.2.3 Research strategy

According to Yin (1994), research strategy should be chosen as a function of the research situation. Each strategy has its specific approach to data collection and analysis - thus providing different advantages and disadvantages. Table 11 summaries the research strategies according to the general philosophical base as follows:

Table 11. Research strategies (Amaratunga et al., 2002)

Research approaches	Positivistic (quantitative)	Phenomenological (qualitative)
Action research		Strictly interpretivist
Case studies	Have scope to be either	Have scope to be either
Ethnographic		Strictly interpretivist
Field experiments	Have scope to be either	Have scope to be either
Focus groups		Mostly interpretivist
Forecasting research	Strictly positivistic with some room for interpretation	
Futures research	Have scope to be either	Have scope to be either
Game or role playing		Strictly interpretivist
In-depth surveys		Mostly interpretivist
Laboratory experiments	Strictly positivistic with some room for interpretation	
Large-scale surveys	Strictly positivistic with some room for interpretation	
Participant observer		Strictly interpretivist
Scenario research		Mostly interpretivist
Simulation and stochastic modelling	Strictly positivistic with some room for interpretation	

The case study is a research strategy which focuses on understanding the dynamics present within unique settings (Amaratunga and Baldry, 2000) and usually refers to a relatively intensive analysis of a single instance of a phenomenon being investigated. Bell (1999) defines a case study as "*an approach that is particularly appropriate for individual researchers as it gives an opportunity for one aspect of a problem to be studied in some depth within a limited time scale.*" Yin (1994) defines a case study as an empirical investigation into contemporary phenomenon operating in real – life context. Furthermore, it is particularly valuable when there is no clear definition between the phenomenon and the context itself. Case study research is defined as an activity of a heterogeneous nature that covers a range of research methods and techniques, a range of coverage, differing lengths, and levels of involvements in organisational functioning and range of different types of data (Hartley, 1994).

Furthermore, it is noted that case studies are tailor-made for exploring processes and behaviours or those which are not known or well understood. According to Amaratunga et al., 2000), in the context of this study, the case study has an essential function in building theory relating to built- environment research. Detailed case studies may be

essential in comparative research where an intimate understanding of what concepts mean to the human judgement, meanings attached to particular behaviours and how the behaviours are linked. The critical feature of a case study approach is not method or data but the emphasis on understanding processes as they are adapted or occur in a given context.

The investigator interviews individuals or studies historical documents to gain insight into behaviours and attempts to discover unique features and common traits shared. Due to the open-ended inquiry, the case study research can draw on inductive methods of research which aim to build on theory. Specifically, the research objectives are derived from the gaps in the literature, and the research design embraces both qualitative and quantitative methods, the former being the more prevalent and the latter providing statistical support for qualitative findings. This difference, in the context of this research, elaborates the strategy, performance assessment in FM, in the former case, and performance measurement as a critical success factor in FM services, in the latter case (Amaratunga and Baldry, 2000).

3.2.4 Research method

From the discussion in the previous sections, it is apparent that both qualitative and quantitative methods involve differing strengths and weaknesses. According to Amaratunga et al., 2002), the qualitative method most widely used within the built environment is the interview and asking and obtaining answers to questions by conducting surveys of people by using questionnaires. Often, such responses are measured with hard data concerning hard costs or performance measures. Survey techniques, such as questionnaires, interviews, and so on, are highly labour intensive on the part of the respondents and particularly on the part of the researcher, while a further consequence is the low response rate (Fellows and Lui, 1997). Other sources of the descriptive survey include official reports or statistics. The prospective outcome will be a sizeable volume of information that can be classified by the type, frequency and central

tendency McGrath (1982) indicates that research choices have no ideal solutions but only a series of compromises.

Amaratunga et al. (2002), indicate that there is a strong suggestion within the research community that research, both qualitative and quantitative is best thought of as complementary and should be mixed in research of many kinds. Furthermore, qualitative research by itself is often criticised for the subjective nature of its data collection and analysis strategies, as it is interpretive, with the aim of obtaining in-depth, rich data and an explanation of psychosocial phenomena and social interactions (Saunders et al., 2012). As indicatd in Table 12, by contrast, quantitative research is associated with a deductive approach, where the focus is on using data to test a theory (Saunders et al., 2012).

Table 12. Qualitative and Quantitative methods (Amaratunga et al., 2002)

Quantitative	Qualitative
Inquiry from the outside	Inquiry from the inside
Underpinned by a completely different set of epistemological foundations from those in qualitative research	An attempt to take account of differences between people
Are simply different ways to the same end?	Aimed at flexibility and lack of structure, in order to allow theory and concepts to proceed in tandem
Involves the following of various states of the scientific research	The results are said to be, through theoretical generalisation, "deep, rich and meaningful"
The results are said to be "hard generalisable data"	Inductive – where propositions may develop not only from practice, or literature review, but also from ideas themselves
	An approach to the study of the social world, which seeks to describe and analyse the culture and behaviour of humans and their groups from the point of view of those being studied

The mixed method approach is therefore particularly important in testing the practicalities and validity of the proposed FM strategy framework. This approach was used to rate the

service perception experienced by the hospital end-users. According to Onwuegbuzie and Collins (2007), the study's goal is to understand complex phenomena which lead to the research objectives of exploring the existence on the FM strategy adopted by the CMJAH which, in turn, lead to a determination of the research purpose (i.e., triangulation) as presented in Table 13.

Table 13. Mixed methods matrix (Onwuegbuzie and Collins, 2007)

Purpose of Mixed Methods Research	Concurrent Design Appropriate?	Sequential Design Appropriate?
Triangulation	Yes	No
Complementarity	Yes	Yes
Development	No	Yes
Initiation	Yes	Yes
Expansion	No	Yes

The selection of this method further allows the researcher to adequately:

- To compare results from quantitative and qualitative research
- To use qualitative research to help explain quantitative findings
- To explore using qualitative research and then to generalize findings to a large population using quantitative research
- To develop an instrument because none are available or useful
- To augment an experiment with qualitative data

The concurrent triangulation is further presented from a visual perspective in Figure 11 as follows:

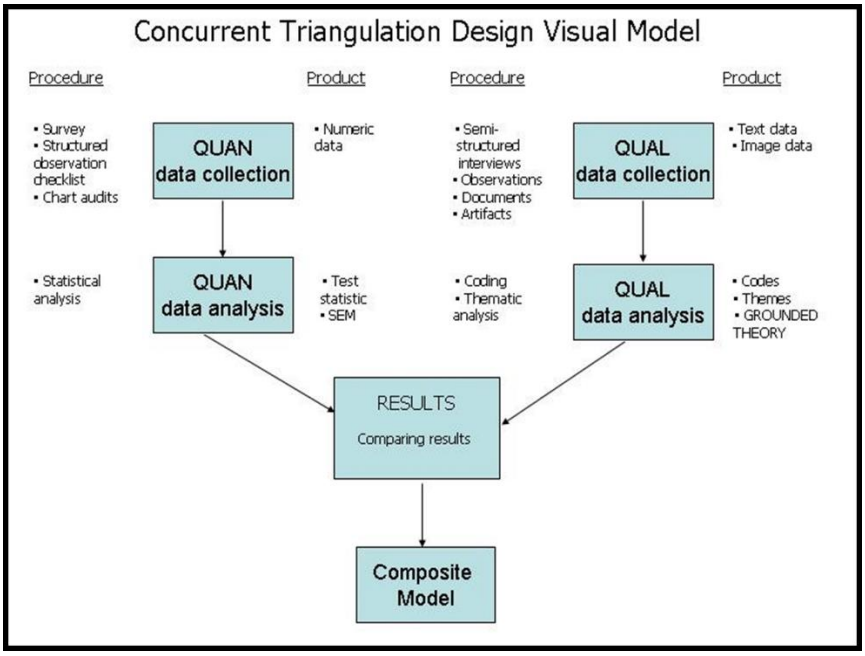

Figure 11. Concurrent Triangulation Model (Source: Cresswell, 2008)

Further to the above, the mixed method is useful in cases such as:

- Insufficient argument – either quantitative or qualitative may be insufficient by itself
- Multiple angles argument – quantitative and qualitative approaches provide different “pictures”
- The more-evidence-the-better argument – combined quantitative and qualitative provides more evidence
- A community of practice argument – mixed methods may be the preferred approach within a scholarly community
- Eager-to-learn argument – it is the latest methodology
- “It is intuitive” argument – it mirrors “real life”

The single case study for this investigation focuses on the operation of the FMU of the Charlotte Maxeke Johannesburg Academic Hospital (CMJAH) with particular emphasis on the FM strategy and its contribution to the hospital's core functions of clinical and medical health services delivery; including the impact on the end-user satisfaction. The contextual analysis based on mixed methods with an emphasis on the qualitative method

was selected because the strategy encourages the sourcing of comprehensive information that would answer the research questions with a specific end goal to accomplish the research objectives set out. One of the objectives of the research was to obtain opinions from the hospital end-users on the level of satisfaction associated with the relevant FM services. Therefore a mixed method approach was adopted with the underlying theoretical framework being a pragmatic paradigm. A mixed method approach was selected in this research as one can make many observations, and then try to explain the different aspects of the problems in order to come to a practical solution for the problem at hand (Saunders et al., 2012).

3.2.5 Case study hospital

CMJAH is a central hospital which is located in the City of Johannesburg Metropolitan Municipality, Gauteng, South Africa and has a length of 1.04 kilometres. The location of the hospital is presented in Figure 12.

Figure 12. Location of the Charlotte Maxeke Johannesburg Academic Hospital

The earliest recorded permanent building blocks of the hospital date back to 1890, during the period of the Johannesburg 'gold rush' and the subsequent need for health facilities (Gear and Salmon, 1965), comprising of 130 beds, an operating room, and surgical equipment. In 1893 the eastern wing was added, and in 1897 the Barney Barnato block was completed (Latilla, 2016) and additional west pavilions with operating theatre and combined bed accommodation for 109 beds opened in 1913. In 1915, medical staff

quarters, dispensary and a central kitchen with provision for a kosher kitchen opened. A three-story building, named after Julius Jeppe, to accommodate a further 111 patients was completed in 1919 (Latilla, 2016). Between 1919 and 2016, there has been a range of activities such additional training and patient facilities, staff accommodation, hospital extensions, and renovations.

Over the years, the hospital The CMJAH has been classified by the Regulations Relating to the Categories of Hospitals of the National Health Act (Act No. 61, 2003) as a central hospital and its function is; "*to provide a highly specialised healthcare service, a platform for the training of health workers, a place of research, and serve as specialist referral centres for regional hospitals and neighbouring provinces"* (CMJAH Operational Plan, 2017). The provision of these specialized services, the training of health workers and research are guided by a matrix of various legislative, policy and planning documents, which range from national level to provincial and in-house institutional level. The current number of beds in the hospital is 1088, with an additional 105 beds provided by the "Folateng" private unit, bringing the total to 1193 beds as presented in Table 14.

Table 14. CMJAH Hospital characteristics (CMJAH Operational Plan, 2017)

Type/Level of bed	**Number of beds**
Adult Intensive Care Unit (ICU) beds	43
Adult High Care beds	51
Neonatal Intensive Care Unit (ICU) beds	18
Paediatric High Care Beds	35
Theatre beds	33
Standard in-patient beds (adult & paediatrics)	886
Folateng Beds	105
Total number of approved beds (on – site)	1193

Further to this, the CMJAH is one of the central hospitals in Johannesburg that serves as a pioneer for healthcare service delivery, research and teaching training of healthcare givers (CMJAH Operational Plan, 2017). CMJAH has its cluster of hospitals that it shares a referral pathway within the province as well as nationally. This means as a central hospital it sits at the top of the cluster and with hospitals escalating referrals when the interventions needed are beyond their scope as well patients being de-escalated when

they are ready for a lower level of care. The approach that the hospital will be taking on is to focus on strengthening the cluster in order to ensure that there is a capacity to manage conditions adequately at the various appropriate levels of care (CMJAH Operational Plan, 2017). This is being done mostly via strategic meetings of the cluster with management teams where projects to capacitate ailing units and to facilitate utilisation of resources optimally as a pool are initiated.

The organisational structure of the institution determines how the roles, power, and responsibilities are assigned, controlled, and coordinated, and how information flows between the different levels of management within the hospital(CMJAH Operational Plan, 2017). The Chief Executive Officer is the head of the hospital and has ten main divisions, which are:

- Clinical Services
- Nursing Services
- Finance and Procurement
- Human Resources and Labour Relations
- Information Management
- Patient Affairs
- Logistics
- Public Relations Office
- Facility Management Unit
- Risk Management
- Folateng Private Wing

3.2.6 Literature review/ document review

Secondary data analysis is defined as *"analysis of data that was collected by someone else for another primary purpose."* Secondary qualitative data analysis is used for, but not limited to, the continued in-depth analysis of previous datasets, to study additional subsets of original data, and to describe historical/contextual characteristics of populations and societies. The research was grounded in the literature review on hospital

FM and performance measurement related to the topic under discussion. Literature review information was drawn mainly from journal articles, reference books, government periodicals and publications, the internet and conference proceedings. In addition to this, an analysis of the CMJAH documents relating to FM such as policies, reports and minutes of meetings was undertaken.

3.2.7 Population and sampling strategy

Saunders *et al.* (2012) define sampling as a process of selecting a small group of people to be a representation of the larger population to be studied. The authors argue that sampling offers a valid alternative to a census, which may not necessarily provide more useful results than collecting data from a sample that represent the entire population. For practical reasons, and for this study, sampling was also preferred as opposed to selecting the entire population of the CMJAH. This method was deemed suitable given the research objectives. The sampling process adopted is according to the sampling process for mixed method research as presented in Figure 13. The stratified random sampling method was used for this study in order to reduce the margin of error introduced by the element of respondent's bias and to improve the level of representation from various facility end-users within the CMJAH. The respondents were drawn from all wards within the hospital.

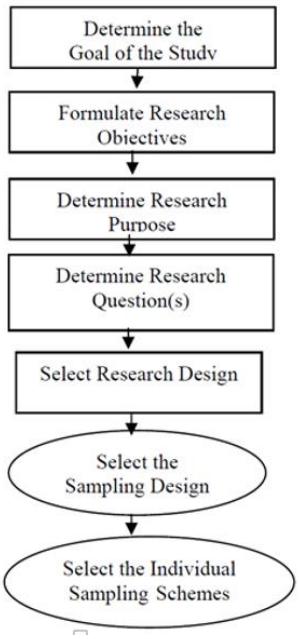

Figure 13. Mixed Methods Sampling Designs Source (2007, Onwuegbuzie and Collins)

Target population refers to all the members who meet the particular criterion specified for a research investigation (Mohsin, 2016). The population of the CMJAH comprises of the hospital administration, clinical and medical staff, and hospital patients. At the time of data collection, there were 1750 nurses, 900 doctors and the rest was the administration staff. The respondents were targeted due to being affected be the FM services delivered at the hospital – as per the definition of FM of value adding, integrated management strategy of support services which enhance the performance of the people, place, processes and organizational objectives which result in customer satisfaction. Overall, the hospital's professional and support staff exceeds 4000 people. The support services are delivered through a mix of in-house, outsourced and other government agencies, e.g., maintenance through Public Works (CMJAH Operational plan, 2017). The target population of respondents for the case study was the CMJAH hospital Logistics Department managers, the clinical hospital staff; out-patients and non-critical in- patients.

Sampling, which is the process of selecting "*a portion, piece, or segment that is representative of a whole"* (The American Heritage College Dictionary, 1993, p. 1206), is an essential step in the research process because it helps to inform the quality of inferences made by the researcher that stem from the underlying findings. According to Onwuegbuzie and Leech (2005a) in both quantitative and qualitative studies, researchers must decide the number of participants to select (i.e., sample size) and how to select these sample members (i.e., sampling scheme). Specifically, random sampling schemes are presented as belonging to the quantitative paradigm, whereas non-random sampling schemes are presented as belonging to the qualitative paradigm (Onwuegbuzie and Leech, 2005a). The appropriate sampling strategies available for mixed-method research are summarized in Table 15

Table 15. Mixed methods sampling frame (Onwuegbuzie and Collins, 2007).

Sampling Scheme	Description
Simple[a]	Every individual in the sampling frame (i.e., desired population) has an equal and independent chance of being chosen for the study.
Stratified[a]	Sampling frame is divided into sub-sections comprising groups that are relatively homogeneous with respect to one or more characteristics and a random sample from each stratum is selected.
Cluster[a]	Selecting intact groups representing clusters of individuals rather than choosing individuals one at a time.
Systematic[a]	Choosing individuals from a list by selecting every *kth* sampling frame member, where *k* typifies the population divided by the preferred sample size.
Multi-Stage Random[a]	Choosing a sample from the random sampling schemes in multiple stages.
Maximum Variation	Choosing settings, groups, and/or individuals to maximize the range of perspectives investigated in the study.
Homogeneous	Choosing settings, groups, and/or individuals based on similar or specific characteristics.
Critical Case	Choosing settings, groups, and/or individuals based on specific characteristic(s) because their inclusion provides the researcher with compelling insight about a phenomenon of

Theory-Based	interest.
Confirming Disconfirming	Choosing settings, groups, and/or individuals because their inclusion helps the researcher to develop a theory.
Snowball/Chain	After beginning data collection, the researcher conducts subsequent analyses to verify or contradict initial results.
Extreme Case	Participants are asked to recruit individuals to join the study.
	Selecting outlying cases and conducting comparative analyses.

Typical Case	Selecting and analyzing average or normal cases.
Intensity	Choosing settings, groups, and/or individuals because their experiences relative to the phenomena of interest are viewed as intense but not extreme.
Politically Important Case	Choosing settings, groups, and/or individuals to be included or excluded based on their political connections to the phenomena of interest.
Random Purposeful	Selecting random cases from the sampling frame and randomly choosing a desired number of individuals to participate in the study.
Stratified Purposeful	Sampling frame is divided into strata to obtain relatively homogeneous sub-groups and a purposeful sample is selected from each stratum.
Criterion	Choosing settings, groups, and/or individuals because they represent one or more criteria.
Opportunistic	Researcher selects a case based on specific characteristics (i.e., typical, negative, or extreme) to capitalize on developing events occurring during data collection.
Mixed Purposeful	Choosing more than one sampling strategy and comparing the results emerging from both samples.
Convenience	Choosing settings, groups, and/or individuals that are conveniently available and willing to participate in the study.

Due to the nature of the population setting and the varying experiences of the respondents (i.e., staff versus patient); for purposes of this study, the stratified random sampling process was selected for the quantitative aspect, and the stratified purposive sampling

was selected for the qualitative aspects of the study. The sampling was conducted within the hospital administrative offices, dispensary, and selected clinical wards.

In addition to deciding how to select the samples for the qualitative and quantitative components of a study, mixed methods researchers also should determine appropriate sample sizes for the research study (Onwuegbuzie and Collins, 2007). The choice of sample size is as important as is the choice of sampling scheme because it also determines the extent to which the researcher can make statistical and analytic generalizations (Saunders *et al.,*2012). Table 16 presents the proposed sample sizes per research design as follows:

Table 16. Minimum sample size recommendations (Onwuegbuzie and Collins, 2007).

Research Design/Method	Minimum Sample Size Suggestion
Research Design[1]	
Correlational	64 participants for one-tailed hypotheses; 82 participants for two-tailed hypotheses (Onwuegbuzie et al., 2004)
Causal-Comparative	51 participants per group for one-tailed hypotheses; 64 participants for two-tailed hypotheses (Onwuegbuzie et al., 2004)
Experimental	21 participants per group for one-tailed hypotheses (Onwuegbuzie et al., 2004)
Case Study	3-5 participants (Creswell, 2002)

Phenomenological	≤ 10 interviews (Creswell, 1998); ≥ 6 (Morse, 1994)
Grounded Theory	15-20 (Creswell, 2002); 20-30 (Creswell, 2007)
Ethnography	1 cultural group (Creswell, 2002); 30-50 interviews (Morse, 1994)
Ethological	100-200 units of observation (Morse, 1994)
Sampling Design	
Subgroup Sampling Design	≥ 3 participants per subgroup (Onwuegbuzie & Leech, 2007c)
Nested Sampling Design	≥ 3 participants per subgroup (Onwuegbuzie & Leech, 2007c)
Data Collection Procedure	
Interview	12 participants (Guest, Bunce, & Johnson, 2006)
Focus Group	6-9 participants (Krueger, 2000); 6-10 participants (Langford, Schoenfeld, & Izzo, 2002; Morgan, 1997); 6-12 participants (Johnson & Christensen, 2004); 6-12 participants (Bernard, 1995); 8–12 participants (Baumgartner, Strong, & Hensley, 2002) 3 to 6 focus groups (Krueger, 1994; Morgan, 1997; Onwuegbuzie, Dickinson, Leech, & Zoran, 2007)

3.2.8 Pilot study

According to Lancaster et al.,(2004), within the hospital sector, pilot studies have a significant role in healthcare-related research. A well carried out pilot study within a strict background that provides clear goals and objectives will enable the methodological accuracy, guarantee that the work is valid and reliable, and will prompt quality outcomes. Piloted questionnaire surveys (Carfoot et al. 2002) is especially vital, particularly when the patient needs to self-administer the questionnaire or when a few distinct assessors gather the information. This will guarantee that the questionnaire is clear and fits the purpose of the study and that the questions are plainly understood and presented consistently. The pilot study for this research was carried out to among others gain a pre-understanding of the phenomena under investigation and as quality control measure

through positive feedback to ensure that the questionnaire for the primary survey is reliable.

The pilot was carried out a week before the actual research process to a population of an average of 900 out-patients and full time and part time 2800 clinical staff members belonging to the maternity and other wards of the hospital. The sample selected for the pilot was based on the sampling method selected. The survey questionnaires designed were adapted from Rui, 2013, which were piloted to a selected sample of the CMJAH out-patients and hospital clinical staff; a set of 50 questionnaires were distributed to each of the identified population set.

Initially, the study aimed to measure the quality of FM services from the end-user point of view as per the SERVQUAL parameters. Upon conducting the pilot study, it was noted that a majority of the patients did not understand the "perceptions" versus "expectation" rating for each of the 17 identified FM service attributes. From the hospital clinical staff point of view, the questionnaire was found to be too long and causing frustration, as they did not see the necessity of the "expectation" attribute. This may have also been consistent with the high-pressure environment and time constraints associated with spending time completing both viewpoints. Based on the results from the pilot study, most of the clinical staff respondents fully complete the questionnaires nor had the time to fully acquaint themselves with the structure of the questionnaire for clarification with the purpose of the investigation; thus, limiting the responses to the text in the survey itself on the direction of completing the questionnaire.

Based on this feedback, the patient questionnaires were edited and adjusted as per the responses, where the "expectations" column was removed. Instead of measuring the service quality, only the rating score of the identified service attributes is applicable in identifying the end-user satisfaction levels with regards to the FM services identified. The staff component was subsequently removed from the survey, due to the meager response rates highlighted.

Feedback from the pilot survey was collected, and the necessary editions to the questionnaires were carried out, which included re-wording some parts which were considered to be unclear. In comparison to Rui (2013), the re-wording of the survey

questions was due to the educational experience disparity between the respondents. Furthermore, from an African perspective, there were concepts that the respondents were not necessarily familiar with in comparison to their Asian counterparts.

3.2.9 Content / Discourse Analysis

White and Marsh (2006) characterise content analysis as a systematic, rigorous approach to analysing documents obtained or generated in the course of research. It is further noted to be a highly flexible research method that has been widely used in library and information science (LIS) studies with different research goals and objectives. The research method is applied in qualitative, quantitative, and sometimes mixed methods research frameworks and employs a wide range of analytical techniques to generate findings and put them into context.

3.2.10 Semi-structured interviews

To get a general overview of the FMU, its policy formulation, scope, and processes framework; a semi-structured interview was carried out with the relevant department, which is the Logistics Department under which the FMU falls. This also assisted in gaining an understanding of the public health system's attitude towards FM as a discipline, including the challenges experienced by their current organizational set-up. Interviews are the most generally utilized information accumulation strategies (Taylor 2005), and the semi-structured interview is the most common method used in qualitative research (DiCiccoBloom and Crabtree 2006) and within a hospital setting (Gill et al. 2008).

The utilization of semi-structured interviews requires a specific level of past investigation in the research topic (Wengraf 2001, RWJF 2008, Kelly 2010) because the interview questions depend on previous information. The semi-structured interview guides were designed and adapted from Ikediashi, 2014, and were adjusted to suit the context of the hospital setting in order to offer a sound structure for the dialogue during the interview

which is relevant to the objectives of the study, grounded in previous research processes. Furthermore, the motivation behind the popularity of the semi-structured interview as a method for data collection is that it has turned out to be both flexible and versatile, and the rigidity of its structure can be adjusted depending on the research aim and questions (Kelly 2010). The primary advantages are that the semi-structured interview has been observed to be beneficial in providing interaction and reciprocity between the interviewer and interviewee (Galletta 2012), empowering the questioner to improvise follow-up questions in light of interviewee's reactions (Hardon et al. 2004, Rubin and Rubin 2005, Polit and Beck 2010) and permitting the interviewees verbal articulations (Kallio et al., 2016). For purposes of this study, the use of the semi-structured interview allows for the gathering of rich and in-depth information triangulated with the content analysis of the historical and current data relating to the FM of the hospital.

3.2.11 Questionnaire surveys

3.2.11.1 Open ended questionnaire surveys

As described by Bhattacherjee (2012), the purpose of the open-ended questionnaire survey as a tool is used to be able to capture responses from the respondents, including further opinions for elaboration. As one of the objectives of the research was to obtain the opinions of the end-user on the FM services, a Likert scale was adopted for the ranking of the FM services provided; according to the respondent experience within the CMJAH facility; with a section for additional comments deemed necessary and vital to the objectives of the study (see Appendix D).

The Likert scale is considered an attitude measure with a bipolar reaction scale, in which respondents are requested to rate the degree to which they agree or disagree with a remark proposed to elicit a positive or negative attitude toward the object in question (Sturgis *et al*., 2014).

For results interpretation, the coding of the Likert scale ranking applies to the second and fourth objectives of the study and is applied as follows:

Rank Weighting of identified FM service attribute

- Very poor 1,
- Poor 2,
- Neutral 3,
- Good 4,
- Very good 5.

3.2.11.2 Administration of questionnaire

Person administered surveys were distributed to the hospital. One of the popular classification for validity in qualitative research was provided by Maxwell (1992), who identified the following five types of validity:

- Descriptive validity (i.e., the factual accuracy of the account as documented by the researcher);
- Interpretive validity (i.e., the extent to which an interpretation of the account represents an understanding of the perspective of the underlying group and the meanings attached to the members' words and actions);
- Theoretical validity (i.e., the degree to which a theoretical explanation developed from research findings is consistent with the data);
- Evaluative validity (i.e., the extent to which an evaluation framework can be applied to the objects of study, as opposed to a descriptive, interpretive, or explanatory one); and
- Generalizability (i.e., the extent to which a researcher can generalize the account of a particular situation, context, or population to other individuals, times, settings, or context).

For purposes of this study, the interpretive validity was applied for this study.

3.2.12 Data analysis and tools

For the qualitative section of the study, a thematic content analysis with triangulation of the discussion was adopted. The study objectives for which this was applied are as follows:

- What is the FM organisational structure and operations plan in the management of the Charlotte Maxeke Johannesburg Academic Hospital facilities?

- What are the FM key services delivery sourcing model and the risks and factors that influence the decision to outsource versus the provision of in-house hospital FM services?

- What are the FM key performance indicators applied to the hospital;

- What is the CMJAH's FM strategy guide applied in the management the FM services?

For the quantitative section, descriptive statistics were applied. SPSS and Microsoft Excel were used to analyse the quantitative data.The study objectives for which this was applied are as follows:

- What is the hospital end user's perception of the FM services delivered; and

3.2.13 Validity and reliability

To ensure the validity and reliability of the study, the following methods were adopted and applied in the research process:

Qualitative analysis:

- Adoption of appropriate, well-recognised research methods as per the literature review

- Development of early familiarity with the culture of participating organization was carried out
- Random sampling was applied to individuals participating in the study where applicable
- Debriefing sessions between researcher and superiors
- Examination of previous research to frame findings
- In-depth methodological description to allow the study to be repeated
- Confirmability Triangulation to reduce the effect of investigator bias
- Admission of researcher's beliefs and assumptions
- Recognition of shortcomings in study's methods and their potential effects

Quantitative analysis

Cronbach's alpha is a measure of internal consistency, that is, how closely related a set of items are as a group. It is considered to be a measure of scale reliability. A "high" value for alpha does not imply that the measure is unidimensional. Table 17 highlights the levels of reliability that would be credible.

Table 17. Cronbach Alpha Reliability Indicators (Source: After Zikmund, Babin, Carr and Griffin, 2012

Cronbach Alpha coefficient	Level of Reliability
Below 0.60	Poor
0.60-0.69	Fair (0.624)
0.70-0.79	Good
0.80 +	Very good

3.3. ETHICAL CONSIDERATIONS

Ethics clearance was sought from the University of the Witwatersrand School of Construction Economics and Management Research Ethics Committee. This clearance allowed for the study to proceed and permission to be obtained from the CMJAH in order to conduct the study.

Although the objective of the research was to assess the FM strategy adopted in the CMJAH, unintentionally, the data provided might suggest the evaluation of the overall performance of an individual or the institution in delivering healthcare services; which is not the objective of the research. Furthermore, due to the sensitivity of the healthcare environment in which the study was conducted; to safeguard the identity of the respondents and guarantee their active participation and satisfy ethical considerations, the following were adhered to:

- The data will be used strictly for academic purposes;
- The identity of the respondents should be protected; their contributions should have presented in general terms except where it is necessary to refer to the office or representative;
- After the interview, the respondents are required to vet the draft of the interview report. This is part of the measures to guarantee the confidentiality of the exercise; and
- The manuscript of the interview should not be made available in any public domain.
- At the end of the research, essential information that can support further research should be preserved by the researcher while the others should be destroyed.

3.4. CONCLUSION

This chapter aimed to describe the methodology adopted in the research as well as explaining various mechanisms used to assist in reaching research conclusions. The study adopted a mixed method, descriptive survey design whereby both primary and secondary data collection methods were used.

CHAPTER 4: RESULTS AND PRESENTATION OF FINDINGS

This chapter presents the key findings of the survey and interviews conducted concerning the hospital FM strategy.

4.1. INTRODUCTION

The findings have been presented according to the research questions and objectives as indicated in Chapter One, with the qualitative results being presented first and followed by the quantitative results.

A total of 400 questionnaires were distributed among the patients' selected sample, and a total of 333 completed questionnaires were returned. For the interviews from the hospital's senior and middle FMU management, three and five respondents were targeted respectively and two responses were received from the senior management only.

The results are split into two sections as follows:

A. Qualitative results:

Interview results

- Respondent's profile: position in the organisation, professional affiliation, number of years in service
- Hospital characteristics: ownership structure, category, number of admitted patients, number of beds
- Interview responses: FM strategy, sourcing model, performance measurement and management (KPIs).

Secondary report analysis

- Secondary data analysis (reports, documents, minutes of meetings, site inspections, observations)

B. Quantitative results

1. Respondent's profile: age, gender, race, educational background
2. Ranking of identified FM service attributes from end-users

4.2 SECTION A QUALITATIVE RESULTS

4.2.1 Response rate

Out of the three respondents from the senior management that were targeted, only two responded. There were no responses from the middle management. The respondents interviewed have 37 years' worth of experience and whose professional affiliations are in public administration and management. It is important to note that the opinions and views identified in this study are a representation of the respondents who participated in this study.

4.2.3 Analysis of data and presentation of findings

4.2.3.1 To determine the FM organisational structure and operations plan in the management of the Charlotte Maxeke Johannesburg Academic Hospital facilities;

The institutional, regional and central FMUs are established by the Gauteng Department of Health (GDH), whose function is to oversee all requests for maintenance services. Furthermore, the Gauteng Department of Public Transport, Roads and Works (GDPTRW) acts as a service provider of the services to be provided to the GDH.

Table 18. CMJAH Hospital Organisational structure

Hospital management	**Hospital support services**
CEO's office	Food services
PRO	Auxiliary and mortuary services
Quality management	Clinical engineering
Risk management	**Maintenance**
Human resources	
Logistics	
Finance	
Supply chain management	
Information management	

The hospital's management structure is headed by the CEO's office, with sub-structures following. The support services are managed separately from the rest of the hospital as presented in Table 18. The results related to the first research question are presented in Tables 18 and 19 and Figure 14. These questions were designed to assess the FMU organisational structure of the hospital. The Logistics Department of the CMJAH has sub-departments relating to the hospital's support services and the FMU. A lead supervisor manages each sub-department.

Table 19. CMJAH Logistics Department organisational structure

Logistics department	
Cleaning	Linen room
Accommodation	Porters
Registry	Gardening
Security	Mortuary
Facilities Management Unit (Maintenance)	Laundry
Messenger services	Transport
Pest control	

FM Organisational structure

Figure 14. CMJAH FMU departmental / institutional organogram

The procedure manual of the FMU is per the Gauteng Department of Health's Provincial manual for Facility Management, which primarily centres on the Department's strategic goals to achieve the following:

- Strengthen the district health system by providing caring, responsive and quality health services at all levels
- Operate smarter and invest in health technology, communication and information management systems

The manual for FM further refers to the Public Finance Management Act No.1 of 1999 and related legislation for the compliance with statutory provisions and procedures for efficient resource management, building maintenance and development of infrastructure.

The CMJAH has the following composition for the Facility management committee:

- Unit Manager
- Hospital CEO
- Occupational health and safety officer
- State accountant
- Procurement officer
- Nursing management
- Works foreman
- Works inspectors
- Administration head
- Labour relation officer

The following FMU goals and objectives were recorded:

- To maintain buildings
- To improve landscaping
- To render support and assistance with Hospital equipment maintenance
- To support Occupational Health and Safety in the work place
- To ensure correct and efficient pest control implementation
- To develop and build the capacity of staff
- To ensure user-friendly access to facilities
- To render planning and commissioning services within allocated budget, policies and procedures

4.2.3.2 To identify the hospital FM sourcing model

The results related to the second research question are presented in Table 20 and Figure 15. These questions were designed to assess the sourcing model adopted by the hospital. Of the typical hospital FM services identified in the literature, the study revealed that 5 (17%) of the total number of FM services were outsourced, 14 (49%) of the FM services were provided in-house, and 10 (34%) of the FM services were not applicable to the hospital

FM MANAGEMENT SERVICE SOURCING MODEL			
	Not applicable to the Logistics department	**In-house**	**Out-sourced**
Real estate / property management			
Real estate/ property portfolio management		✓	
Sub-letting services		✓	
Retail outlets and space renting		✓	
Extensions and alterations	✓		
Demolitions	✓		
Maintenance and repairs			
Facility refurbishment and signage			✓
Plant maintenance and repairs			✓
General cleaning services		✓	
Waste disposal and environmental management			✓
Housekeeping		✓	
Pest control			✓
Health and safety management		✓	
Landscaping maintenance		✓	
Administration and management of office services			
Security			✓
Courier services		✓	

FM MANAGEMENT SERVICES Continued…

	Not applicable to the Logistics department	In-house	Outsourced
Storage distribution of medical supplies		✓	
Reception and telephone operator	✓		
Public relation and liaison services		✓	
Travel arrangements	✓		
Car park maintenance		✓	
Purchasing and contract control and negotiation	✓		
Office furniture and stationery provision	✓		
Human resource management		✓	
Support services			
Child nursery administration	✓		
Recreations	✓		
Food catering / restroom management	✓		
Residential accommodation		✓	
Community affairs		✓	
Management of employees with special needs	✓		

Table 20. CMJAH Sourcing model

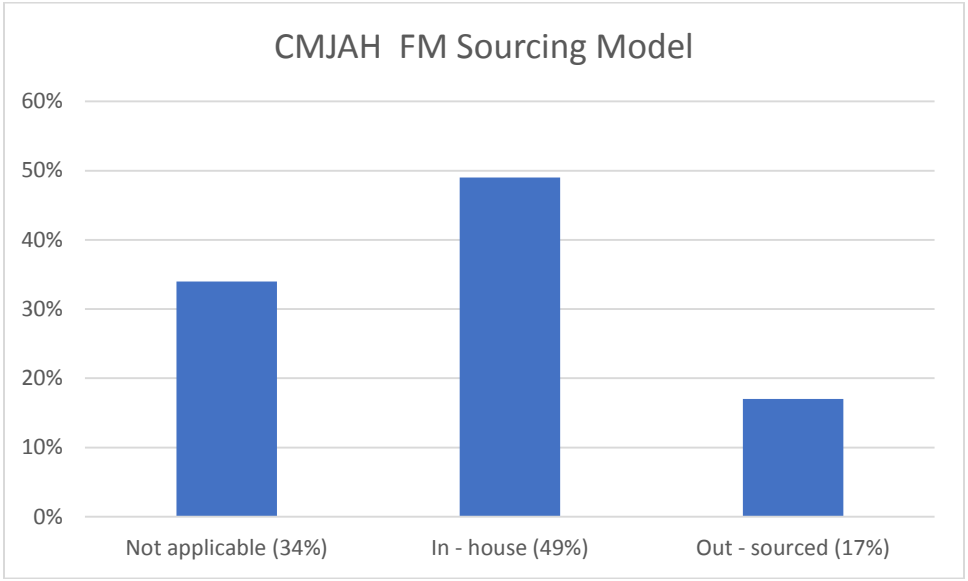

Figure 15. Graphical representation of the CMJAH sourcing model

4.2.3.3 Key factors and risks that influence the sourcing decision

The results related to the third research question are presented in Tables 21 and 22. These questions were designed to assess the critical decision factors and risks associated with the FM sourcing strategy of the hospital.

FM OUTSOURCING DECISION FACTORS	(1) Extremely Unimportant	(2) Unimportant	(3) Neutral	(4) Important	(5) Extremely Important	Weighted average rating	Response count
Cost related factors		**2**	**3**	**12**		**3.40**	**5**
To make costs transparent				✓			
To reduce investment in assets		✓					
To reduce invested capital funds in non-core functions				✓			
To assess vendor's cost-efficient system			✓				
To achieve cost reduction with enhanced performance of services				✓			
Strategy related factors		**4**	**12**	**8**	**10**	**3.40**	**10**
To focus on core competencies					✓		
To improve strategic positioning					✓		
To increase flexibility			✓				
To multiply sourcing in case of uncertainties)			✓				
To handle varying demand more effectively				✓			
Restricted by insufficiency in own resources				✓			
To compare performance of in-house staff with vendors' staff			✓				
To play along with the trend of privatisation			✓				

To share risks	✓					
To limit the size of staff	✓					
Innovation factors			**4**	**20**	**4.80**	**5**
To gain access to new products, services and technologies			✓			
To obtain skills, expertise and ideas				✓		
To obtain technologies not available in-house				✓		
To stimulate innovation among personnel				✓		
To permit quicker response to new needs				✓		
Quality related factors			**4**	**10**	**4.67**	**3**
To improve performance standard				✓		
To improve quality of service to users				✓		
To improve mutual trust between hospital and customers			✓			
Time related factors		**3**	**4**	**5**	**4.00**	**3**
To improve timely delivery of service				✓		

There is not enough time to acquire tools and techniques in-house			✓		
To improve process responsiveness and cycle times		✓			
Service to community	**4**	**9**		**2.60**	**5**
To improve stakeholders' satisfaction	✓				
To improve customer relation	✓				
To improve labour relations		✓			
To improve the corporate social responsibility of the hospital		✓			
To create jobs for local communities		✓			
OVERALL OUTSOURCING DECISION					

Table 21. CMJAH out-sourcing decision factors

Table 22. CMJAH in-house decision factors

FM IN-HOUSE DECISION FACTORS	(1) Extremely Unimportant	(2) Unimportant	(3) Neutral	(4) Important	(5) Extremely Important	Weighted average rating	Response count
Cost related factors		**4**	**6**			**2.5**	**4**
To make costs transparent		✓					
To reduce investment in assets		✓					
To reduce invested capital funds in non-core functions			✓				
To achieve cost reduction with enhanced performance of services			✓				
Strategy related factors		**6**	**6**	**8**	**10**	**3.33**	**9**
To focus on core competencies		✓					
To improve strategic positioning		✓					
To increase flexibility				✓			
To handle varying demand more effectively				✓			
Restricted by insufficiency in own resources					✓		
To compare performance of in-house staff with vendor's workers			✓				
To play along with the trend of public sector requirements			✓				
To share risks		✓					
To limit the size of staff					✓		
Innovation factors		**2**		**4**	**5**	**3.67**	**3**
To obtain skills, expertise and ideas		✓					
To stimulate innovation among personnel				✓			

To permit quicker response to new needs			✓		
Quality related factors	**3**	**8**		**3.67**	**3**
To improve performance standard	✓				
To improve quality of service to users		✓			
To improve mutual trust between hospital and customers		✓			
Time related factors	**1**	**4**	**5**	**3.33**	**3**
To improve timely delivery of service			✓		
There is not enough time to acquire tools and techniques in-house	✓				
To improve process responsiveness and cycle times		✓			
Service to community		**4**	**20**	**4.80**	**5**
To improve on stakeholders' satisfaction			✓		
To improve customer relation		✓			
To improve labour relations			✓		
To improve on corporate social responsibility of the hospital			✓		
To create jobs for local communities			✓		

Using an average score of 3 {(1+2+3+4+5)/5}, the factors influencing the sourcing decision were ranked in order of significance. The factors considered as highly significant are presented in Table 23 in order of importance. These are all a summary of the categorised factors as presented from Tables 21 and 22.

Table 23. CMJAH in-house decision factors

Sourcing decision factors					
Out-sourced			**In-house**		
	Weighted average	Rank		Weighted average	Rank
Innovation	4.80	1	Service to community	4.80	1
Quality	4.67	2	Quality	3.67	2
Time	4.00	3	Innovation	3.67	3
Cost	3.40	4	Time	3.33	4
Strategy	3.40	5	Strategy	3.33	5
Service to community	2.60	6	Cost	2.5	6

As per Table 24, the FM sourcing risk that is most critical to the hospital FMU management is the vendor risk, while the customer risks are the least critical. The results were designed and ranked by the interviewee to assess the risks associated with the FM blended - sourcing strategy of the Logistics department.

Table 24. CMJAH sourcing risk factors

Sourcing risk factors	Rank.
Vendor	1
In-house personnel	2
Out-sourcing contract	3
Political	4
Customer	5

4.2.4 Document Review results

4.2.4.1 Key performance areas and indicators

The results related to the fourth research question were extracted from the hospital Logistics / FM related reports are presented in Tables 25, 26 and 27. These questions were designed to identify the FM key performance indicators of the adopted by the FMU.

Overall Logistics Report

- ***Measures*** **-** To enable objective and comparable assessment of compliance, each criterion is broken down into measures that have been adapted to be context specific. Measures are the means or evidence for determining whether or not the criterion has been met.

- ***Extreme measures (X)*** **-** are those most likely to cause serious harm to both patients' safety and staff and are therefore not negotiable for compliance to be awarded to a facility

- ***Vital measures (V)*** - are those measures that ensure that the safety of patients and staff are safeguarded to not result in unnecessary harm or death
- ***Essential measures (E)*** - are those measures considered fundamental to the provision of safe, decent, quality care and are designed to provide an in-depth view of what is expected within available resources.

- ***Developmental measures (D)*** - are those elements of quality of care to which health management should aspire in order to achieve optimal care. While non-compliance to these standards does not necessarily constitute a risk to patients, they form an integral part of a comprehensive healthcare system.

Table 25. Performance measurement criteria (CMJAH feedback report, 2016)

Non-compliance Cut-Off Levels	Overall Score
Extreme Measure (X): Overall score < 100% will result in "Non-Compliance"	X = 79%
Vital Measures (V): Overall score <90% will result in "Non-Compliance"	V = 67%
Essential Measures (E): Overall score < 80% will result in "Non-Compliance"	E = 59%
Developmental Measures (D): Overall score < 60% will result in "Non-Compliance"	D = 55%

The KPI measures adopted by the FMU are presented in Tables 26 and 27 .The performance measures are represented by four categories of measurement criteria where for extreme measures (x), an overall score of less than 100% will result in non-compliance; for vital measures (v), an overall score of less than 90% will result in non-compliance; for essential measures, an overall score of less than 80% will result in non-compliance and for developmental measures, and overall score of less than 60% will result in non-compliance. For a complete list of all KPIs identified and measured by the hospital see Appendix E (list of KPI scores).

Table 26. Performance domains (CMJAH feedback report, 2016)

Key performance areas	**Outcome**	**Score**
Patients' rights	Non-compliant	58%
Patient safety / clinical governance / clinical care	Non-compliant	83%
Clinical support services	Non-compliant	67%
Public Health	Non-compliant	61%
Leadership and Corporate Governance	Non-compliant	55%
Operational Management	Non-compliant	51%
Facilities and Infrastructure	Non-compliant	51%

Table 27. Priority performance areas (CMJAH feedback report, 2016)

Key performance indicators	Outcome	Score
Availability of medicines and supplies	Non-compliant	70%
Cleanliness	Non-compliant	46%
Improve patient safety	Non-compliant	68%
Infection Prevention and Control	Non-compliant	68%
Positive and caring attitudes	Non-compliant	62%
Waiting times	Non-compliant	56%

The KPAs in which the KPIs fall are within the patients' rights; patient safety, clinical governance and clinical care; clinical support services; public health; leadership and corporate governance; operational management and facilities and infrastructure.

The KPAs of the hospital are the availability of medicine and supplies; cleanliness; improved patient safety; infection prevention and control; positive and caring attitudes and waiting times, quality and times.

The KPAs identified are further allocated the specific KPIs, including the measures that are used to verify the current state of performance (compliance). The definition of the concept of "measures" identified are briefly summarized in Table 28 as follows:

Table 28. CMJAH Hospital performance indicators (CMJAH feedback report, 2016)

Key Performance Indicators	Weighted Score	X	V	E	D
7.2.4 A functional public communication system allows communication throughout the establishment in the event of an emergency - **Operational**	3/4	0%	3/4	0%	3/4
7.3.1 People and property are actively protected to minimise safety and security risks – **Operational**	0/2		0/2		0/2
7.4.1 The buildings and grounds are kept clean and hygienic to maximise safety and comfort – **Cleanliness and quality**	52.94%	N/A	52.94%	N/A	52.94%
7.5.1 Waste management in the establishment and surrounding environment complies with legal requirements / national standards / with good practice – **HSE**	0/0	0%	0/0	0%	0/0
7.5.2 Health care risk waste (HCRW) is handled / stored / disposed of safely to reduce potential health risks and to protect the environment - **HSE**	0/2	100%	0/2	100%	0/2
7.5.4 General waste (office / kitchen / garden / household waste) is managed according to protocols to protect the safety of staff and patients – **HSE**	4/4	33.33%	4/4	33.33%	4/4
7.6.1 Linen and laundry services are managed to meet the needs of the health establishment and legislative requirements – **Cleanliness**	1/3		1/3		1/3
7.7.1 Food services are provided to meet the needs of patients – **Food quality and quantity**	46.43%	N/A	46.43%	N/A	46.43%

Overall FMU Report

FMU KPAs:

- Compliance with the necessary statutory requirements
- FMU budget control
- Day to day maintenance management
- Stock control (to ensure that the necessary stock levels are maintained)
- Updating the FMU database
- Keeping statistics
- Project Management (FMU and PCU projects)
- Reporting to the necessary stakeholders
- Horticulture, pest control and Landscaping
- Support in occupational health and safety issues
- Accreditation (signage according to prescribed regulations)
- Management of period contracts
- Building audits
- Key control

FM KPIs by service

The FM KPIs identified for each of the FM service attributes at CMJAH are briefly summarized in Table 29 as follows:

Table 29. CMJAH FM performance indicators (CMJAH feedback report, 2016)

FM Service Attribute	KPI
Clarity of signage	Quality indicator – appearance and visibility
Attractiveness of the public landscape	Quality indicator - appearance
Condition of elevators	Operational and financial indicators - Up-to-date equipment, efficiency of equipment, optimisation of maintenance and operational cost

Cleanliness of public areas	Quality indicator – appearance and infection control
Performance of pest control in the hospital	Financial, strategic and quality indicators –maintenance cost, convenience and free from infestation by pest species of public health significance or nuisance
Adequacy of security prevalent in hospital	Financial, strategic and quality indicators –personnel training and electronic cost, convenience (time flexibility),
Cleanliness of overall environment in ward	Quality indicator – appearance and infection control
Cleanliness of bedding in ward	Quality indicator – appearance and infection control
Provision of patient privacy	HSE and Social Impact – safety, integrity and discretion (as per Department of health requirements)
Performance of lighting systems in ward	Operational, financial and quality indicators : up-to-date equipment, efficiency of equipment, optimisation of maintenance and operational cost, heating, energy usage and visibility (internal environment)
Performance of ventilation systems in ward	Operational, financial and quality indicators : up-to-date equipment, efficiency of equipment, optimisation of maintenance and operational cost HVAC, noise and air quality of life (internal environment)
Performance of bedside nurse call system in ward	Operational, financial and quality indicators : up-to-date equipment, efficiency of equipment, optimisation of maintenance and operational cost, accessibility, and convenience
Performance of drinking water supply systems	Quality indicator – clean water with no chemical after-taste,

Performance of non-drinking water supply systems	Strategic, operational and HSE indicator – physical and functionality and the design life of plumbing and drainage system and sanitary fittings, water usage and environmental impact (waste)
Choice and availability of food and drinks provided by hospital	Quality indicator – convenience, appearance and quality of life
Quality of food and drinks provided by hospital	Quality indicator – convenience, appearance and quality of life
Quantity of food and drinks provided by hospital	Quality indicator – convenience, appearance and quality of life

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4.3 SECTION B QUANTITATIVE SURVEY RESULTS

4.3.1 Response rate

General overview of the response pattern:

- A total of 100 questionnaires were distributed to the hospital non-critical in-patients, only 44 of the returned questionnaires were fully completed. A total of 3 patients opted out of the survey and 53 of the returned questionnaires were not completed in full.
- A total of 300 person administered questionnaires were distributed to the hospital out-patients, and 289 of the returned questionnaires were fully completed. A total of 11 of the returned questionnaires were not completed in full.

As per Table 30, in total, 333 questionnaires were completed by all the groups of identified patients as presented. It is important to note that the perceptions identified in this study are a representation of the respondents who participated in this study.

Table 30. Response rate per end-user (percentage)

End - user	Distributed	Count	Response
Non- critical In-patients	100	44	44%
Outpatients	300	289	96%
Total	400	333	83.25%

4.3.2 Demographics

As per Figure 16, out of the 333 patient respondents in the survey, 310 of them indicated their gender. From the 310, there were 81 (26.1%) males and 229 (73.9%) females. The bar graph shows the distribution of males and females in the research. It is evident that more females participated in the survey than males.

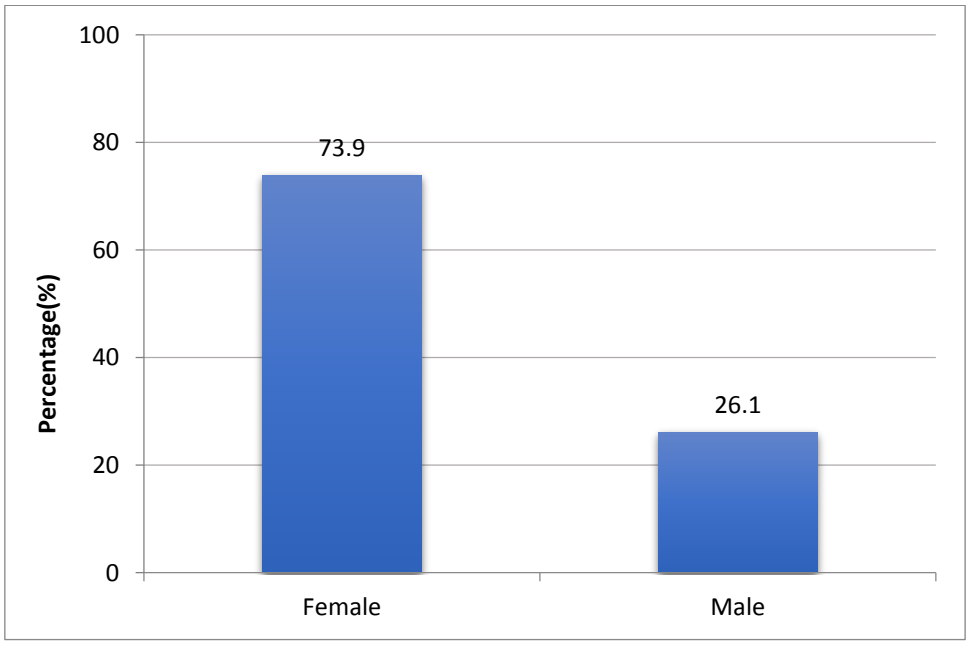

Figure 16. Graphical representation of the respondents' gender

As per Figure 17, from the total of 333 respondents who took part in the survey, a total of 327 of the respondents indicated their age category. From this number, 51 (15.6%) were in the 18 to 20-year category, 182 (55.7%) were in the 21 to 35-year category,

72 (22%) were in the 36 to 50-year category, 14 (4.3%) were in the 51 to 65-year category while 8 (2.4%) were above 66 years. Figure 3 shows the distribution of the age categories of the respondents who took part in the survey. It shows that most of the respondents were in the 21-35-year group with the least being those respondents who are above 66 years.

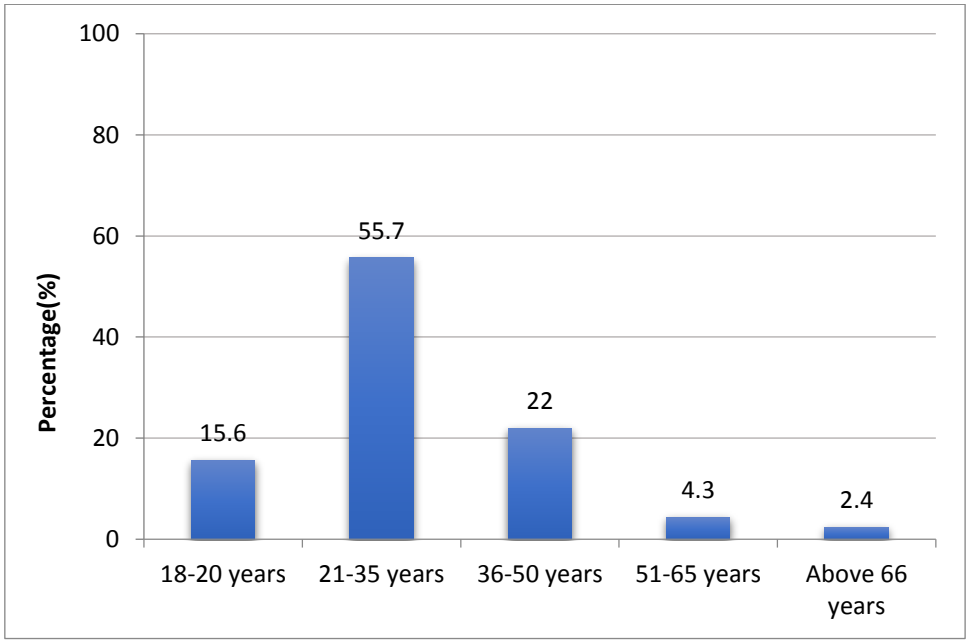

Figure 17. Graphical representation of the respondents' age group

As per Figure 18, there was a total of 280 respondents who indicated their race during the survey. From this total number, 234 (83.6%) were Black, 22 (7.9%) were Coloured, 21 (7.5%) were White, 2 (0.7%) were Indian while 1 (0.4%) belonged to another race.

The bar graph shows the distribution of the respondents' race in the survey. From the graph, it is evident that majority of the respondents were Black followed by Coloured while other races remain the lowest.

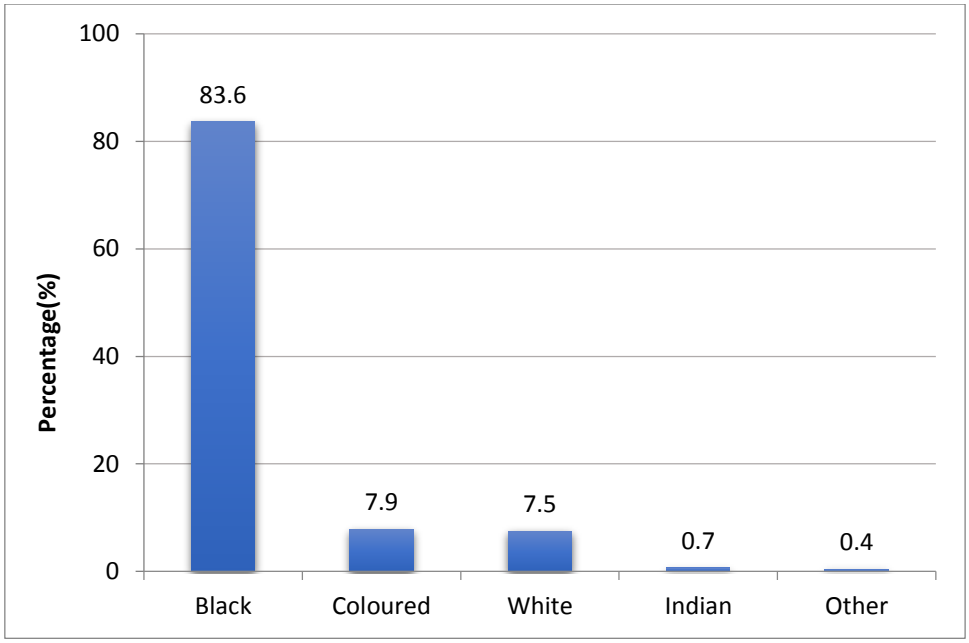

Figure 18. Graphical representation of the respondents' race

As per Figure 19, from the total number of respondents in the survey, 291 indicated their educational background. From the total number who indicated their educational background, 37 (12.7%) had below lower secondary education, 209 (71.8%) had secondary education, 33 (11.3%) had diploma certificates while 12 (4.1%) had university and above degrees.

The bar graph shows the distribution of the educational backgrounds of the respondents in the survey. From the graph, it is evident that majority of the respondents had a secondary education while the minority of them had university and above type of education.

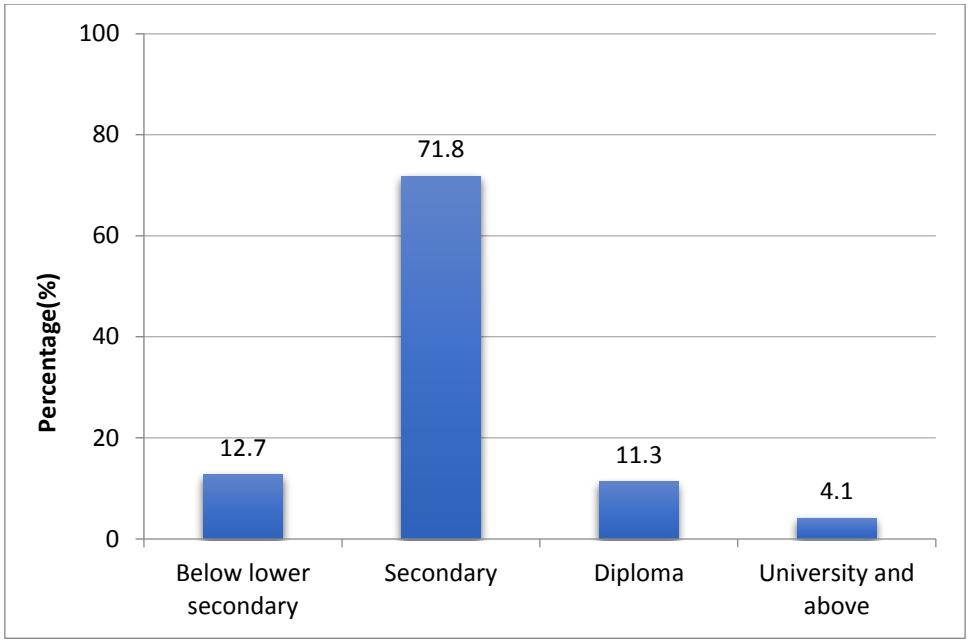

Figure 19. Graphical representation of the respondents' educational background

4.3.3 Analysis of data and presentation of findings

Before the data was analysed, the reliability of the FM attributes was tested. Table 31 below highlights that a fair level of reliability was achieved; and that the statistical results generated would be credible (see Appendix F).

Table 31. Cronbach's Alpha reliability test results

Reliability Statistics	
Cronbach's Alpha	N of Items
0.624	17

4.3.3.1 To elicit opinions of the hospital end-users on the perceived quality of the FM services

The results related to the fifth research question are presented in Table 32 and Figure 16. The results are further summarised per FM service attribute as follows:

- From the data available, 32(9.8%) of the respondents indicated that the clarity of the signage was very poor, 14(4.3%) stated that it was poor, 37(11.3%) remained neutral, 60(18.4%) stated it was good while 183(56.1%) stated that the clarity of the signage was very good.

- The study reveals that 4(1.2%) of the respondents indicated that the attractiveness of the public landscape is very poor, 11(3.4%) stated that it was poor, 15(4.6%) remained neutral, 76(23.3%) stated that it was good, while 220(67.5%) indicated that it was very good. From the study, it is established that the public landscape is attractive as the majority of the respondents indicated so.

- For the condition of elevators in the hospital, 1(0.3%) stated that it was in a very poor state, 7(2.1%) stated it was poor, 17(5.2%) remained neutral, 49(15%) of the total number of respondents indicated that it was good while 253(77.4%) indicated that the conditions of the elevators were very good. Majority of the respondents indicated that the elevators were in very good condition.

- From the data available, 2(0.6%) of the respondents indicated that the cleanliness of the public areas is very poor, 5(1.5%) indicated that it was poor, 17(5.2%) were neutral, 48(14.7%) stated it was good while 254(77.9%) of the total number of respondents stated that the cleanliness of the public areas is very good. This indicates that the walls, floors and seating areas in the hospital are generally clean.

- The study revealed that 5(1.5%) indicated that there was a very poor performance of pest control in the hospital, 7(2.1%) indicated that it was poor, 8(2.5%) remained neutral, 40(12.3%) stated that the performance of the pest control was very good in the hospital while 266(81.6%) of the total number of respondents indicated that there was a very good performance of the pest control in the hospital.

- Security at public or private institutions is very important especially when lots of people use the facility. Patients and other individuals who visit the hospital need to be safe whenever they are there. From the survey, 5(1.5%) of the respondents indicated that the adequacy of security prevalence in the hospital

is very poor,1(0.3%) stated that it was poor, 14(4.3%) had nothing to say about it, 36(11%) stated that it was good while 270(82.8%) of the total number of respondents in the survey stated that there is a very good number of security prevalence in the hospital.

- From the available data, 6(1.8%) of the respondents stated that cleanliness of overall environment such as bathrooms in the ward is very poor, 6(1.8%) indicated that it was poor, 11(3.4%) remained neutral, 48(14.7%) stated that the cleanliness of the overall environment in the ward is good while 255(78.2%) which represents majority stated that it is very good.

- The study revealed that 11(3.4%) of the total number of respondents indicated that the cleanliness of the bedding in the ward is very poor, 4(1.2%) stated that it is poor, 12(3.7%) could not say whether it was good or poor, 57(17.5%) stated that it was good while 241(74.2%) of the total number of respondents in the survey stated that the cleanliness of the bedding in the ward is very good.

- From the data available, 1(0.3%) of the respondents indicated that there is very poor provision of patient privacy in the hospital, 10(3.1%) of the respondents remained neutral, 55(17%) of the respondents indicated that it is good while 258(79.6%) of the total number of respondents indicated that there is very good provision of patient privacy.

- From the study, 4(1.2%) of the total number of respondents indicated that performance of lighting systems in ward or general public areas is very poor, 3(0.9%) of the respondents stated that it was poor, 8(2.5%) remained neutral, 57(17.6%) of them stated that it was good while 252(77.8%) of the total number of respondents stated that performance of lighting systems in the ward or general public areas is very good.

- From the data available, 1(0.3%) of the respondents in the survey indicated that performance of ventilation systems in the ward or public areas is very poor, 2(0.6%) of the respondents stated that it was poor, 14(4.3%) of the respondents remain neutral, 57(17.6%) of the total number of respondents stated that it was good while 250(77.2%) of the total number of respondents stated that the performance of ventilation systems in the ward or public areas is very good.

- From the study, 2(0.6%) of the respondents stated that performance of the bedside nurse call system in the ward is very poor, 4(1.2%) of them indicated that it was poor, 14(4.3%) of the respondents were neutral, 77(23.5%) of the total number of respondents indicated that the performance of the bedside nurse call system was very good while 230(70.3%) of the total number of respondents stated that it was very good.

- The study revealed that 3(0.9%) of the total respondents indicated that performance of non-drinking water supply systems was very poor, 9(2.8%) stated that it poor, 29(8.9%) remained neutral, 109 (33.5%) of the total number of respondents stated that it was good while 175 (53.8%) of the respondents stated that the performance of non-drinking water supply systems was very good.

- The study revealed that 3(0.9%) of the total respondents indicated that performance of non-drinking water supply systems was very poor, 9(2.8%) stated that it poor, 29(8.9%) remained neutral, 109 (33.5%) of the total number of respondents stated that it was good while 175 (53.8%) of the respondents stated that performance of non-drinking water supply systems was very good.

- From the study, 12(3.7%) of the total number of respondents stated that the choice and availability of food and drinks provided by the hospital was very poor, 28(8.6%) of the respondents indicated that it was poor, 58(17.8%) remained neutral, 125(38.5%) stated that it was good while 102(31.4%) of the total number of respondents stated that the choice and availability of food and drinks provided by the hospital was very good.

- From the available data, 37(11.4%) of the total number of respondents stated that the quality of food and drinks provided by hospital was very poor, 96(29.5%) of the respondents stated that it was poor, 95(29.2%) of the respondents remained neutral, 49(15.1%) of the respondents stated that quality of food and drinks provided by the hospital was good while 48(14.8%) of the respondents indicated that it was very poor.

- The study revealed that 94(28.9%) of the total number of respondents stated that the quantity of food and drinks provided by the hospital was very good,

117(36%) of the respondents indicated that it was poor, 77(23.7%) remained neutral, 25(7.7%) of the respondents stated that it was good while 12(3.7%) of the total number of respondents indicated that the quantity of food and drinks provided by the hospital was very good.

Table 32. Survey response on the ranking of the FM service attributes

FM Service Attribute	Very poor	Poor	Neutral	Good	Very good
Clarity of signage	32	14	37	60	183
Attractiveness of the public landscape	4	11	15	76	220
Condition of elevators	1	7	17	49	253
Cleanliness of public areas	2	5	17	48	254
Performance of pest control in hospital	5	7	8	40	266
Adequacy of security prevalent in hospital	5	1	14	36	270
Cleanliness of overall environment in ward	6	6	11	48	255
Cleanliness of bedding in ward	11	4	12	57	241
Provision of patient privacy	1		10	55	258
Performance of lighting systems in ward	4	3	8	57	252
Performance of ventilation systems in ward	1	2	14	57	250
Performance of bedside nurse call system in ward	2	4	14	77	230
Performance of drinking water supply systems	3	6	17	92	209

Performance of non-drinking water supply systems	3	9	29	109	175
Choice and availability of food and drinks provided by hospital	12	28	58	125	102
Quality of food and drinks provided by hospital	37	96	95	49	48
Quantity of food and drinks provided by hospital	94	117	77	25	12

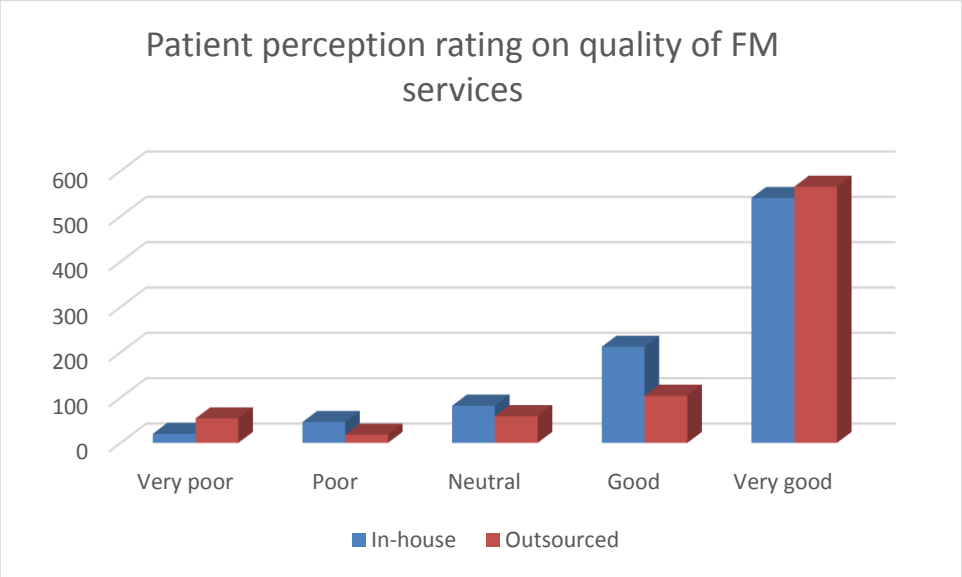

Figure 16: Graphical representation of the respondents' overall FM service rating

4.3.4 Test of Hypothesis

4.3.4.1 Mann – Whitney Test (Gender)

The Mann – Whitney test is a non-parametric analysis of two populations' means through the use of statistical examination. The test was conducted to determine if the service attributes were different for the male and female respondents at 0.05 level of significance.

As per Table 33, from the results, there was a significant difference in gender for clarity of signage (p-value=0.001), the performance of drinking water supply systems (p-value=0.004) and choice and availability of food and drinks provided by the hospital

(0.010). The average service level for clarity of signage for males was 3.5 while it was 4.2 for females and, there is no statistically significant difference between males and females for attractiveness of the public landscape, conditions of the elevators, cleanliness of public areas, performance of pest control in the hospital, adequacy of security prevalence in the hospital, cleanliness of the overall environment in the ward, cleanliness of the bedding in the ward, provision of patient privacy, performance of lighting systems in ward, performance of ventilation systems in ward, performance of bedside nurse call system in ward, performance of non-drinking water supply systems, quality of food and drinks provided by hospital and quantity of food and drinks provided by hospital.

Table 33. Survey response on the ranking of the FM service attributes (Mann-Whitney test)

FM Service Attribute	U-value	Z - statistic	P- Value
Clarity of signage*	6948.000	-3.292	0.001
Attractiveness of the public landscape	8621.500	-0.675	0.499
Condition of elevators	8661.500	-0.684	0.494
Cleanliness of public areas	8635.500	-0.658	0.511
Performance of pest control in hospital	8951.500	-0.019	0.985
Adequacy of security prevalent in hospital	8530.000	-0.997	0.319
Cleanliness of overall environment in ward	8784.500	-0.360	0.719
Cleanliness of bedding in ward	8588.500	-0.506	0.613
Provision of patient privacy	8697.500	-0.324	0.746
Performance of lighting systems in ward	8309.500	-1.184	0.237
Performance of ventilation systems in ward	8170.000	-1.465	0.143
Performance of bedside nurse call system in ward	7863.000	-2.117	0.034
Performance of drinking water supply systems*	7348.500	-2.892	0.004
Performance of non-drinking water supply systems	7949.000	-1.612	0.107

Choice and availability of food and drinks provided by hospital*	7309.500	-2.569	0.010
Quality of food and drinks provided by hospital	8865.500	-0.084	0.933
Quantity of food and drinks provided by hospital	8547.500	-0.579	0.563

* p-value < 0.05

4.3.4.2 Kruskal Wallis test

A Kruskal Wallis test was conducted to determine if the service attributes were different for the respondents with a different educational background.

From the results obtained, there was a statistically significant difference for many in all the service attributes of the educational background for most of the attributes except cleanliness of public area (p-value=0.005492), adequacy of security prevalence in the hospital (p-value=0.01351), cleanliness of bedding in the ward (p-value=0.002896), performance of lighting systems in the ward (p-value=0.02381), choice and availability of food and drinks provided by hospital (p-value=0.01188).

Table 34. Survey response on the ranking of the FM service attributes (*Kruskal Wallis test)*

FM Service Attribute	Degrees of Freedom	Chi-Square Value	P-Value
Clarity of signage	3	8.8342	+7
Attractiveness of the public landscape	3	5.0755	+9
Condition of elevators	3	7.5503	+77
Cleanliness of public areas	3	12.637	+13
Performance of pest control in hospital	3	5.1293	-8
Adequacy of security prevalent in hospital	3	10.693	+1
Cleanliness of overall environment in ward	3	2.0028	+4
Cleanliness of bedding in ward	3	14.006	-10
Provision of patient privacy	3	4.5112	-8

Performance of lighting systems in ward	3	9.4556	+5
Performance of ventilation systems in ward	3	7.6685	+1
Performance of bedside nurse call system in ward	3	5.24	+1
Performance of drinking water supply systems	3	0.94586	-10
Performance of non-drinking water supply systems	3	3.3683	-8
Choice and availability of food and drinks provided by hospital	3	10.971	+5
Quality of food and drinks provided by hospital	3	5.4856	+1
Quantity of food and drinks provided by hospital	3	4.1112	+1

4.4 CONCLUSION

This chapter presented the data analysis results from the questionnaire and interview surveys and secondary data analysis.

CHAPTER 5: DISCUSSION OF THE FINDINGS

This chapter discusses and explains the interview and survey results with reference to the research objectives.

5.1 INTRODUCTION

The structure of this chapter is divided into four sections to discuss the respondents' profiles, findings on the surveys and secondary document analysis, proposed framework hospital FM strategic plan, and the chapter conclusion.

5.2 FINDINGS FROM THE STUDY

In this section, firstly the critical findings in light of the literature review are presented followed by the critical findings ascertained from the primary research.

5.2.1 Qualitative findings

5.2.1.1 What is the FM organisational structure and operations plan in the management of the CMJAH facilities?

The FMU and the support service departments are separate components that fall under the Logistics division of the hospital. The overall management structure of the Logistics department comprises of the director, deputy director, and the assistant director; while the FMU and the support services sub-departments are each allocated a supervisor that manages the junior staff members.

The management of the sub-departments is guided by a policy that is drafted for each unit, which is based on the departmental and institutional health objectives. In contrast, the Logistics department does not have an overall reference policy which serves as a guideline to the policy drafting of the sub-departments. This finding indicates a fragmented and silo approach to managing and controlling the scope, objectives, functions, and responsibilities to be carried out by the different units that are incorporated within the division as a whole.

According to the results from the interview, from a management perspective, this fragmentation leads to overlapping roles and responsibilities and a lack of accountability. Likewise, from an implementation point of view, the challenges experienced relating to the in-house staff include low employee morale, non-performance of duties or prolonged absenteeism. It can be deduced that the lack of the clear and documented scope of roles and responsibilities between the senior management, middle management, and the implementing staff has the potential to increase the challenges identified.

Additionally, it can be determined that the challenges experienced by the in-house management are attributable to the organisational structure adopted by the hospital. According to SAFMA (2016), the typical FM structure for best practise is to have an integrated FM department which is led by a Senior Facilities Manager. The hierarchy is then split into the hard and soft services divisions. The management of the hard services is overlooked by the building manager, technical manager, and the facilities coordinator; from which the maintenance and repair services and engineering related functions are managed. In the same view, the soft services manager overlooks the security, cleaning, pest control, waste disposal, and other business support services.

In view of the aforesaid, it is noted that the Logistics department was meant to be the operations department because logistics has mainly to do with supply chain functions. This further causes a misunderstanding of the scope, role, and function of the department in comparison to the actual supply chain department. Due to a majority of the identified FM related services having been found to be provided in-house, it is imperative to have a clear organisational structure that facilitates the adequate functioning of the FM department.

5.2.1.2 To identify and examine the FM sourcing model for the delivery of the key FM services and the risks and factors that influence the option selection.

The co-sourcing option has been adopted by the Logistics division, where 49% of the services identified in the literature are provided in-house, 17% of the services are outsourced, and 34% of the services are not applicable to the FMU of the hospital; but are managed under separate divisions (for example supply chain and information management). Over and above the typical FM services identified, there were no

additional services that were found to be executed by the FMU of the hospital. Effectively, 73.68% of the FM services are provided in-house whereas the 26.32% are out-sourced. The challenges articulated as a result of the organisational structure of the Logistics department further create an added risk to service delivery since most of the activities are provided in-house. According to Atkin and Brooks (2014), it has been observed that a lack of concern and tardiness are often associated with the in-house team. Further to this Fill and Visser (2000) indicate that the spread of risk is achieved when the outsourcing option is utilised for the non-core activities. Given this, the hospital should capitalize on the blended sourcing approach by striking a balanced distribution of services that may result in the spread of risk.

The findings are based on the key decision factors identified in the FM sourcing approach as presented by Ikediashi (2014). From the six factors considered for the blended sourcing strategy adopted by the hospital, the following findings are discussed for each strategy in the order of the most to the least important as follows:

Out-sourced services:

1. Innovation – the innovation that comes with FM contracted vendors are vital as they introduce up to date technology and skill in the execution of the services
2. Quality -this factor has deemed an advantage as FM companies tend to benchmark and measure their services based on best practice methods
3. Time – as part of the SLA, the vendors typically must perform based on stipulated time measures, which form a part of the performance measurements
4. Cost – the costs associated with the out-sourced service are neutral
5. Strategy – the strategy adopted by the sourced company is not that important
6. Service to the community – the surrounding community is least significant as the sourced companies have nothing to do with any corporate social responsibility to be adopted by the hospital

In-house services:

1. Service to a community – from a public sector point of view, social development is one of the key factors that are typically considered in the decision making. It is not surprising to find that this mainly influences the in-house decision
2. Quality – this is a factor that is also highly considered by the hospital, from a service delivery point of view
3. Innovation – innovation may be able to assist in skill development and training
4. Time – the timeous delivery of service has an impact on the operations of the hospital
5. Strategy- the strategy adopted by the in-house team is least significant; this is also attributable to the fact that the organisational structures of the Logistics department are muddled up
6. Cost – costs are the least considered factors in making an in-house sourcing decision factor.

5.2.1.3 What are the FM key performance indicators applied to the hospital?

The study sought to identify the FM KPIs adopted by the hospital. The results of the study indicate that the hospital has identified five categories for which the FM services are measured against. The KPIs that have been implemented are consistent with FM best practice and are summarized in Table 35 for as follows:

Table 35. FM service attributes KPIs

KPI adopted for CMJAH FM services	Description
Operational indicators	These indicators are associated with the efficiency and effectiveness of the facility, which is equipment operations such as air-conditioning, ventilation, energy-saving systems, fire protection, and lifts. This indicator is also limited to the structural integrity of the building such as structural cracks and water leakages
Financial indicators	These KPIs are associated with facility maintenance costs. These costs can be determined within the FM planning process as a result enabling FMU to adopt the appropriate sourcing strategy for the facility.
Strategic indicators	These KPIs set the overall basis for other indicators in other different categories. They define the facility model and performance requirements as per the National health standards. Therefore, any decision taken under this category will impact on the FM strategy
Quality indicators	These KPIs are associated with the required quality for the health facility and mandated by the National Department of Health.
Health, safety and environmental indicators	These KPIs defines the requirements for operational OHS, environment and social contribution

The findings indicate that the compliance within the service categories has not been met or achieved by the hospital. An extraction of the Facilities and Infrastructure domain KPIs (see Appendix E) as presented in Tables 25-27 of the preceding chapter is further discussed as follows: *Four out of the sixteen (25%)* Facilities and

Infrastructure related identified KPIs meet the minimum compliance scores stipulated, where in contrast, 75% of the KPIs indicate non-compliance. This had resulted in an overall score of 51% for the Facilities Management and Infrastructure domain, thus indicating an overall non-compliant score by the CMJAH.

This is a worrying finding for the study because it implies that the FM is not performing within the hospital, in order to adequately support the needs of the hospital end-users. Interestingly, the patients' positive perspective on the quality of the FM services is in contrast to the non-compliant status of the Facilities and Infrastructure domain. As indicated in the preceding sections, this result is highly influenced by the comparisons that patients make with other hospitals, where in comparison, the CMJAH's quality of FM service is an improvement.

Further to this finding, it is noted that since 49% of the FM services are provided in-house, this infers that the FM service strategy adopted lacks in meeting the requirements of the organisation. This result may be deduced as a result of the challenges associated with the in-house FM as indicated by the interviewee. . During the site visits, in some instances, the following were noted:

- Observations made during the Logistics department management meetings, there lay a risk among the in-house FM staff members where their interests in the work at hand were limited.
- The supervisors of each sub - department had reported that in dealing with such challenges, they had taken all steps necessary in to motivate the respective problematic employees, and also went a step further in adopting "scare tactics" that put the employment of such employees at risk should they continue to proceed in objectionable manners that are currently adopted.

This problematic behaviour in late coming or prolonged absenteeism had an impact on the functioning on some services, where a limited staff component would result at times, invariably forcing the supervisors of each sub-department to complete specific FM tasks at hand and jeopardise their supervisory roles and responsibilities (overall management of other staff members).The hospital FMU is not using any data at their disposal to measure, mitigate and control the issues associated with the delivery of the FM services. Therefore, the argument that there is fragmentation between the role

of FM, the sourcing strategy, the delivery and the performance of the service is supported. However, the successful implementation of the FM function depends the ability of the CMJAH FMU to generate and use FM knowledge to construct a FM strategy that set up the KPIs identified for the PMF.

The hospital Logistics department is not using any data at their disposal to measure, mitigate and control the issues associated with the delivery of the FM services. Therefore, the argument that there is fragmentation between the role of FM, the sourcing strategy, the delivery and the performance of the service is supported. However, the successful implementation of the FM function depends on the ability of the CMJAH Logistics department to generate and use FM knowledge and best practise methods to construct a strategy that is set up around the performance and compliance assurance.

Furthermore, to successfully implement FM services within the hospital facility, a FM strategy highlighting the step by step process, including the inputs required for implementation and performance measurement resulting in the end-user satisfaction; need to be in place for use by the Logistics department. Further, the FM strategy may be successfully implemented from the top level down management, due to the unusual structure that has been adopted by the hospital since the FM organisational structure adopted by the CMJAH is not in line with the typical FM departmental structures as proposed by SAFMA (2016). This lack of a coherent structure may be argued to further contribute to overlapping responsibilities, mismanagement and lack of a clear point of reference.

5.2.2 Quantitative findings

The data analysis results for the patient survey are shown in Chapter 4; this section continues the discussion of findings from the patients ‘quality perception survey.

The data analysis results indicate that in general, the hospital patients find the FM services satisfactory. Most of the patients thought that the performance of the 17 FM service attributes was good or very good. This result may be attributable to the level of expectation of the patients, which due to the response received in the pilot study, was not measured. Within the South African context, patients may only be so content to receive attention due to the burden of disease, thus feeling an overall positive

response based on medical treatment. Further to this, in comparison to other public hospitals within the Johannesburg and Ekurhuleni district, most of the inferences made from the comments indicated their more positive outlook on the quality of FM service delivery at the case study hospital. In addition to this, it is likely that patients evaluate hospital service based on their real-life experience, while also comparing the services of other hospital visitations. The FM related services such as food catering, cleanliness, clarity of signage and security among others usually are instinctively judged first instead of the clinical and medical diagnostic services because of the lack of technical expertise and knowledge by the patients on the core healthcare services. As further indicated in Chapter 2, the role of FM in hospitals is to ensure that the core business function is supported and enabled in order to achieve overall customer satisfaction.

Noticeable patient comments gathered during the survey process regarding the remaining attributes are presented, and these comments are useful inputs for further quality improvement:

A1 – "Clarity of signage": The signage in the hospital is written in English, and the lettering is not visible enough. During the survey process, some elderly patients reported that they could not read the signs clearly, and such a challenge is worsened when they visit the hospital by themselves, as sometimes when they ask for directions, most of the people asked are also patients that are not familiar with the setting of the hospital. Further to this, some of the signage indicates medically related jargon, which is sometimes difficult for the patient to understand.

A3 – “Condition of elevators and escalators”: A few patients relayed experiences where they got stuck a few times in the elevators. They said that they had to wait an hour before they received assistance, this may pose a risk as the same elevators are used by all end-users of the hospital, sometimes in the transportation of patients. Further to this, it was indicated that said that the temperature inside the elevators was at times too low, so they wanted a better ventilation system in the elevators.

A5 – "Performance of pest control in hospital": Although the majority of the patients did not give negative comments about the pest control, the senior manager interviewed reported that there were complaints received relating to pest control due to the change in the contracting company dealing with the pest control. There were

challenges experienced within the kitchen areas, due to inconsistencies in the service provided by one vendor which was appointed on a new contract while familiarising themselves the hospital. This led to infection due to the infestation of insects and rodents, but the situation was stabilized.

A10 – "Performance of lighting systems in ward": A few elderly patients complained that some of the hospital passages and corridors were too dark. This is mostly a design and sustainable FM problem which should be reflected in the future renovation or construction plans.

A13 – "Performance of drinking water supply system": During the survey, the researcher found that some patients were dissatisfied with the drinking water supply, mainly because sometimes there was a bitter taste in the water. Also, although the catering staff members fill the water jars around the hospital and in the wards, patients reported that there were many empty water dispensers in the public areas in the hospital, sometimes forcing them to either purchase water from the canteen or drink water from the toilet taps.

A14 – “Performance of non-drinking water supply system”: During the survey, the most frequently mentioned problem of the non-drinking water supply system was that the flush system in the toilets did not work. Some patients also reported that they had found unflushed toilets when trying to relieve themselves, which left them very discontent about this situation.

A15 – “Choice and availability of food and drinks provided by hospital”: During the survey, the researcher found that a lot of the patients were content with the choice of hospital food that was presented to them. However, there were a few patients who complained that the food was not catering to their nutritional needs, for example diabetic patients.

5.3 PROPOSED FM STRATEGY FRAMEWORK

The results of the study were discussed in detail, allowing some deductions and interpretations to be made. The results demonstrated the importance of an adequate FM strategy that incorporates the function, sourcing, service delivery and

measurement of performance that results in achievement of the goals and objectives of the hospital. The implementation of such a strategy is the basis of successful FM delivery. The proposed theoretical framework as presented in Figure 21 may be seen to provide a comprehensive framework to develop a robust FM plan and should not be seen as the end by itself, but as one of the tools to provide the hospital FMU with a platform to address the issues that have an impact on facility's performance in supporting the delivery of healthcare services.

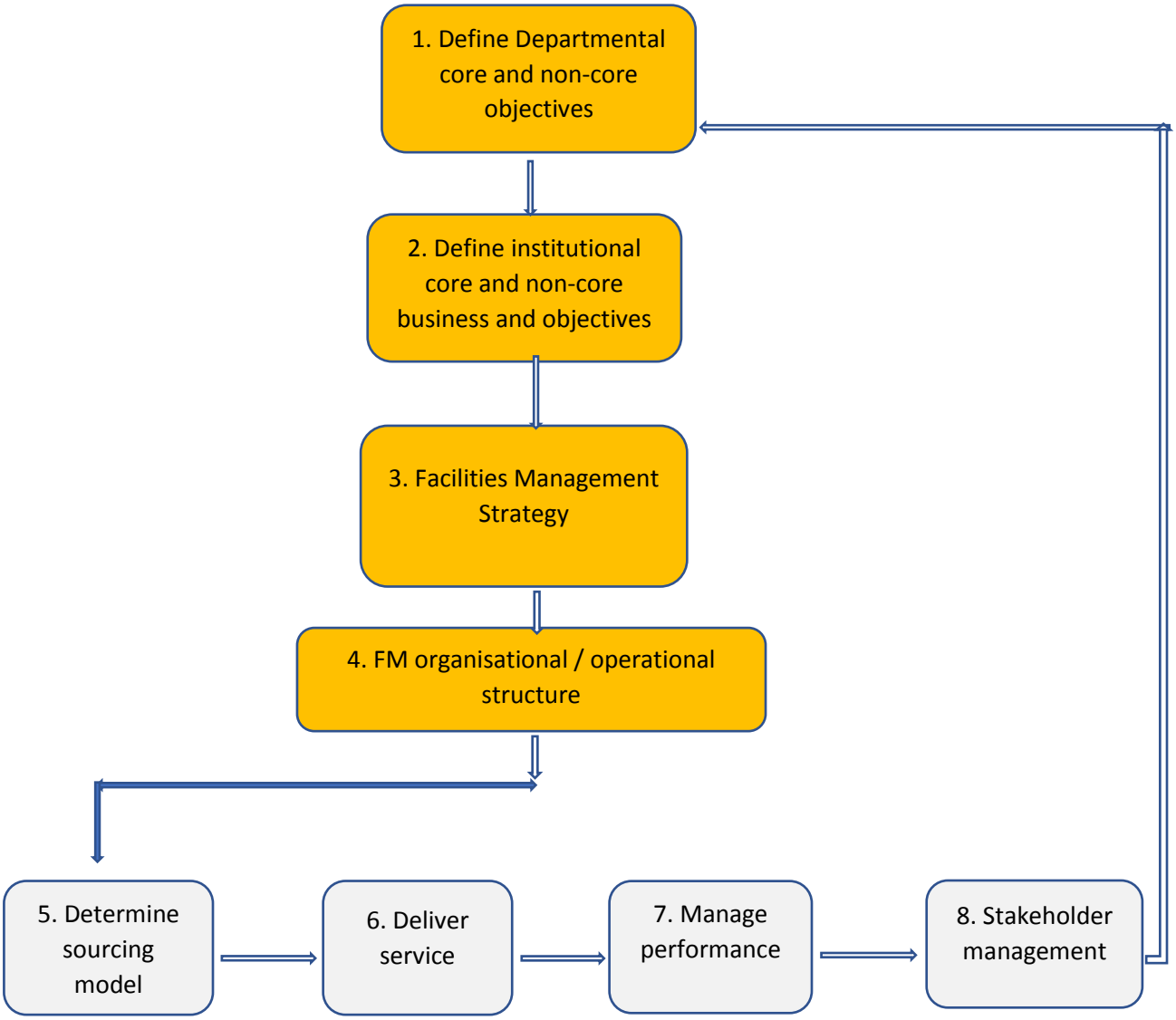

Figure 21. Proposed FM strategy framework

Based on the findings, the general process and structure of the developed framework proposed as per the findings are illustrated in Figure 21 and comprises of eight successive stages. Each stage has some sub-activities that have been identified for the application. The eight stages making up the framework are described as follows:

1. Define provincial Department core business and objectives

This step comprises of four functional activities which involve the definition of and development of the National FM process manual by the user DPW; and an analysis of which FM functions are most relevant for the public healthcare facilities as per the findings, together with the adjustment of the FM bespoke process manual suitable for the CMJAH. The four activities discussed as inputs and outputs are given below:

1a. Definition of Facilities Management (activities i.e., soft services, hard services and maintenance)

The primary input from the NDoH and the DPW is the accurate definition of the scope of FM services attributable to public healthcare facilities. Several studies (Atkin and Brooks, 2014, IFMA, 2009, Rui, 2013; Ikediashi, 2014; Hofer and Stampfli, 2011; and Shohet and Lavy, 2017) have listed such activities and functions of healthcare FM to include the following:

i. *Soft services: Provision and management of organisational support services such as cleaning, security, pest control, landscaping, waste disposal and handyman services.*
ii. *Hard services: Building fabric maintenance, Mechanical and Electrical plant maintenance, HVAC maintenance, and plumbing and drainage.*

The initial segment further requires the defined scope of the FM goals and objectives as input, which will usually be extracted from the NDoH core objectives and healthcare policies. The defined scope of FM will further provide for added benefits in the institutional application of the FM manual such as consistency and transparency, increased quality, flexibility and focus on core competencies which are in line with the strategic objectives of the NDoH. This

step further identifies the benefits indicated as it relates to FM services in the context of public hospitals. It is also noted that a Departmental adopted definition may facilitate better accountability and management, and ability to re-focus scarce resources onto core functions at a lower cost (Kremic et al., 2006). The organisational KPIs are to be separated from the FM related KPIs.

1b. Development of the Facilities Management Procedure

This step promotes the adoption of a process approach in the development of the standardised FM manual, with the effectiveness of the document being based on best South African FM quality and best practice manuals such as the SANS 10400, SANS 1752: 201. For the department to function effectively, it has to determine and manage numerous linked activities which relate to the relationship between the integrated planning process and the six pillars of the Management System Standard (MSS). Furthermore, it is recommended that the documentation associated with the six pillars of MSS be subject to certification assessments by the relevant FM accreditation body (i.e., SAFMA), to ensure the best practise and compliance standards. The six pillars under consideration are as follows:

i. Defining the correct leadership requirements
ii. Defining the planning procedures
iii. Acquiring the correct and adequate support
iv. Implementation and control of facility operations
v. Evaluation of the processes listed in steps i-iv
vi. *Continuous improvement*

1c. Review and Implementing agent of FM

This function examines the managing Department's structure, together with the end-user facility (that is, the CMJAH) and its ability to manage the FM relationship using the SWOT analysis. It involves looking into both the DPW's and CMJAH's resource allocation to explore the strengths; and the likely weaknesses that may serve as clog on the wheel of the FM manual

implementation process; opportunities which result in the separation of powers outsourcing and threats from the external economic and political environment in order to protect the integrity of both the Department and hospital; all in the context of the application of a transparent FM manual in line with public policies.

1d. Identification of risks factors associated with FM institutional manual

This function identifies and evaluates the risks associated with adopting a generalised FM manual for different healthcare facilities. Based on literature (Lavy *et al*., 2010); (Shohet, 2006), the risk factors include but are not limited to:

i. *Building size*
ii. *Age of building*
iii. *Occupancy levels*
iv. *Space utilization*
v. *Site location*
vi. *Functionality requirements*

The risk identification and assessment for the FM manual need to be undertaken in the context of the CMJAH. This function designs and puts in place standard mitigation mechanisms to address the risks identified in implementing a generic FM manual and suggest for the mitigation of such risk by the introduction of flexibility clauses that allow for the adjustment of the manual in order to compile a facility-specific bespoke FM manual.

2. **Define institutional core and non-core business and objectives**

This step comprises of the functional activities which involve the definition of and development of the institutional FM processes; and an analysis of the FM functions most relevant to the CMJAH; as per the findings, for the development of the bespoke FM processes and procedures. The four activities discussed as inputs and outputs are given below:

2a. Identification of Facilities Management activities

i. This step identifies all FM related services described as non-core functions that support the tactical and operational objectives of the hospital. The strategic objectives identified by the institution should be in line with the National FM manual as per stage one of the proposed framework. Findings based on the empirical investigation indicate that 19 of the 29 services identified were available in the hospital. A register of the list of non-core services enables the proper planning and resource allocation relevant to the CMJAH.

ii. In line with and further to step 1b indicated in the prior stage, the defined scope of FM would further provide the CMJAH the opportunity to identify and examine the capabilities and capacities of hospital's internal staff in managing the process of carrying out FM services efficiently and effectively.

iii. This function further examines the hospital's overall structure and its ability to manage the relationship between the various support departments, such as the Chief Financial Officer's Office, Quality Management, Human Resources, Risk Management, and Supply Chain Management. Based on the findings of the study, a single, robust FM department which provides a single source of reference should be established at the CMJAH.

3. Drafting of the Facilities Management Service Policy

This stage designs and puts in place standard FM policy for each identified service, including the mitigation mechanisms to address the risks through performance measures, identified and assessed as critical in 1b under the development of the FM procedure.

i. This function further examines the hospital's overall policy, its structure and ability to manage the relationship between the various support departments, such as the Chief Financial Officer's Office, Quality Management, Human Resources, Risk Management, and Supply Chain Management. Based on the findings of the study, a single, robust FM department which provides a single source of reference should be established at the CMJAH.

ii. The policy formulation for each FM services identified should include but not exclusive to the organisation and management, quality management systems, occupational health and safety guidelines that are in line with FM regulations identified for the inclusion in the stage 1 process.

4. **FM organisational structure**

This stage examines the FM department's organizational structure and its capacity to accomplish the implementation of the activities identified in stages 1-3.

4a. FM department Organogram

This function provides the arrangement of and details of the processes and staff component necessary for ensuring the correct, efficient and effective implementation of FM services within the FM department. This stage will include the continuous observations of the operations within the CMJAH, including the effectiveness of the arranged channels of responsibility. Based on literature (SAFMA, 2016) the typical FM departmental organogram highlights the hierarchy, functions, responsibility and the numerous essential personnel involved. Furthermore, a typical single unit FM organisational structure comprises of the in-house senior facilities manager, technical / building manager, compliance manager, soft services manager, artisan/ handyman and outsourced hard services.

This function further serves for the CMJAH to apply effective management of the FM department and its related processes as follows:

- tracking and reporting of FM service-related challenges
- challenge escalation and dispute resolution
- change management (internal and external processes)
- cost management (budget allocations and spend)
- implementation of new FM services
- authorisation and counter-signature processes (with supporting departments).

i. Based on the findings, the organisational structure of the current FMU comprises of a combination of the clinical, administrative and FM staff. The profiles of the members in senior positions indicate no prior built-environment qualifications or experience. This function also provides the necessary details for pre-qualification of suitable personnel and budgetary planning processes. Furthermore, the budget allocations should comprise of costs that relate to facility operation, including but not limited to air-conditioning, ventilation, overhead costs and wages, energy requirements, lifts repair and maintenance, security, cleaning, and other expenses and fees.

ii. The function further contributes to the effective communication and resource planning and allocation between the FM department, supporting departments and the CMJAH CEO's office.

5. **Determine the sourcing model**

This stage involves the analysis of all functions described in stages 1-4, together with the sourcing strategies available in the markets, the sourcing strategies preferred by the hospital and the risks identified in the literature. As per the findings of the study, the risk factors identified have different rankings for each sourcing strategy. The hospital's perception of each risk, in line with

the overall strategic goals of the organization provide a cross-reference with a view towards assisting in deciding whether to outsource or not. Based on the literature, the activities and inputs and outputs on the appropriate service strategies include but are not limited to:

- Advantages and disadvantages of in-house service provision
- Advantages and disadvantages of outsourcing
- Advantages and disadvantages of co-sourcing
- Ranking of risk decision factors with each strategy
- Review of FM service register to track existing and new service requirements
- Resource capacity of in-house FM staff to provide factors which influence the decision of which FM services to provide in-house
- Procurement process for out-sourced services to provide factors which influence the decision for which FM services to outsource

Further to the inputs and outputs indicated above, it is noted that the selection of the appropriate strategy is a function of the resources at the disposal of the respective hospital, as indicated in stage 2 of the proposed framework.

6. Service delivery requirements and process

This stage provides the process in the preparation of a standard set of procedures and specifications stipulating the tasks and responsibilities of each party to the sourcing strategy selected.

6a. Drafting of Service Level Agreements and Contract of Employment / Engagement

i. Depending on the strategy adopted, either a service level agreement (SLA) or a contract of employment is created between the hospital and its service providers or employees, respectively. This process involves the preparation of a standard set of procedures and specifications detailing responsibilities of each party to the

outsourcing arrangement; including the KPIs for each FM service included in the service register. Public institutions are governed by the supply chain processes that are per the Preferential Procurement Policy Framework (PPPF). According to Atkin and Brooks (2015), the supply chain process to be adopted in the selection of the appropriate external suppliers or in-house human resources must involve best practise steps and processes that must be followed if the institution is to have a robust basis for service delivery.

ii. A full description and overview of the SLA or Contract of Employment to perform the services described and meet or exceed conditions of the contract that have been agreed.

iii. The drafting and inclusion of a schedule of critical activities, resources, and activities pertinent to the effective delivery of FM services

6b. Service description

Depending on the strategy selected, this function allows for a clear definition and detailed description of each FM service is to be provided and captured as follows:

i. A detailed and clear depiction of the FM service being performed and reported, as per the FM service register.

ii. An activity programme which indicates the sequence of activities determining the minimum time needed for an operation, expected completion dates and potential risks identified

iii. Detailed roles and responsibilities of the FM department in the management of the FM activities of either strategy.

iv. The establishment of service KPIs in the form of quality, operational and financial indicators.

v. Depending on the institutional preference, manual or IT reporting on FM service status, hazards and potential budgetary risks.

vi. A termination of service/employment clause indicating the ground

to which this clause may come into full force and effect. The clause describes the procedures and remedies for one of the parties to the contract, should the other party default on the expected performance requirements.

6c. Supplier/employee selection

The selection process is based on the institutional policy objectives, which may be based on cost competitiveness and community upliftment considerations. Other factors such as the experience and qualifications of potential service providers/employees should be considered.

6d. Termination of contract

This function provides the review of the performance by the implementation of a penalty or a disciplinary action for non- performance, and compensation for the highest standard of best practice and exceeded expectations. The outcome of the review is then reported and documented for the use as a benchmark in the delivery of future services.

7. **Manage performance**

This stage of the framework encompasses the measurement and management of FM service requirements captured in the SLA or contract of employment under stage 6. The responsibility in ensuring that the FM services are delivered according to the performance requirements ultimately lies with the senior management of the FM department.

7a. Testing of identified FM KPIs

i. This function includes all measures taken by the service provider/employee to deliver quality service, including a full evaluation of the activities, performed, including challenges and opportunities and best practice identified.

ii. The non-FM related hospital KPIs are separated from the institution's FM related KPIs, as indicated in stage 1 of the proposed framework.

7b. Performance management tools

i. According to the findings, the measurement and assessment of the FM KPIs are completed on a semi-annual basis via a standard core services delivery focused checklist, on an ad hoc basis by external departmental officials. This function examines the KPI recording and measurement processes for best practise methods. Furthermore, the periodic assessment is undertaken by the senior management of the FM department. The development of performance measurement and management tools for the monitoring, measuring, analysis, controlling, reporting and improvement of the efficiency and effectiveness of all the FM services.

ii. According to Moss et al., (2008), the Quality Managed Facilities (QMF) Framework as presented in Figure 22 is a performance measurement tool that has incorporated the key advantages of a variety of FM measurement tools, including the Management-by-Variance tool, SOSKPIs, FRISQUE, PISCES, Balance Scorecard and the EFQM Excellence model (Zhou, 2003).

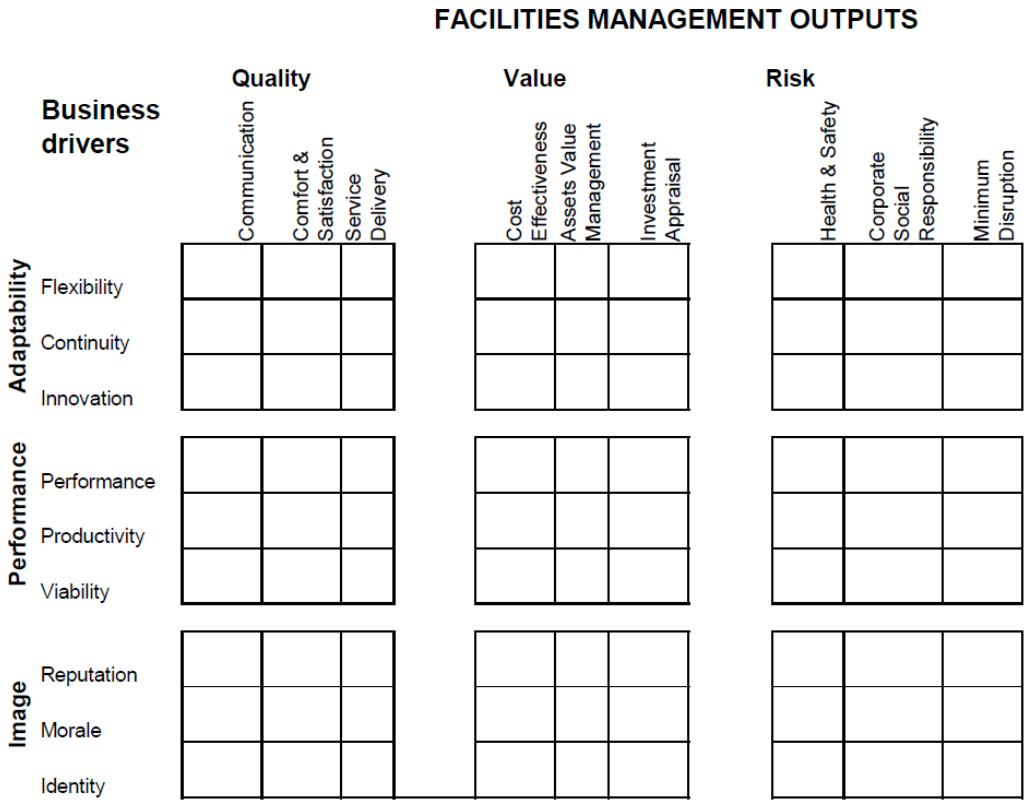

Figure 22. Quality Managed Facilities Framework, source (Moss et al., 2008)

Moss et al., (2008) further note that the QMF is derived from the Total Quality Management (TQM) concept. The QMF framework serves as a process to guide an organisation through a quality journey to outstanding service delivery, by continuous improvement of service quality and customer satisfaction.

It further focuses on three FM aspects namely strategy, processes, and performance (Moss et al., 2008). The QMF framework was designed as an improvement process addressing the needs of customers. Emphasis towards customer satisfaction has also been reflected in the changes to ISO9000 series (Bendell, 2000). This stage involves the implementation of the QMF as an institutional performance measurement tool, as it may assist the organisation in periodically setting goals, and providing feedback on progress towards the attainment of set goals. Furthermore, based on the historical formulation of the QMF, it is regarded as being compliant with FM best practise as a rigorous; systematic, and quantifiable method to measure and manage performance.

7c. Quality Control

The above functions provide a combination of a quality of service, which is documented and reviewed on a periodical basis. This serves a quality control which the FM department can adapt to ensure control that the level of user satisfaction is met and potentially, exceeded.

7d. Surveys and benchmarking

Person administrated end-user surveys can be conducted within the hospital facility in order to provide immediate feedback to the FM department; including the assessment of priority preventive and corrective actions. This method further provides an ongoing process and performance improvement, immediate identification of trends and alarms, improved communication between different management levels and to link the day to day organisational short-term operations to the FM strategy and contribute to continuous improvement. This function also facilitates the comparison of the FM KPIs and performance of CMJAH to performances of similar institutions, where gaps can be identified in the overall system from where additional improvement recommendations can be made.

7e. Balance scorecard

Contrast to end-user surveys, the application of the balanced scorecard for stakeholder management may be implemented to emphasise realistic competitive demands and quality standards from end users. Furthermore, the scorecard provides emphasis on future development and improvement, rather than the more traditional focus maintaining the status quo. According to Ogbefuin (2015), a properly designed scorecard should help management to understand the many essential interrelationships within their organisations, which more traditional

measures generally mask or even ignore; which further requires the involvement of a range of senior managers from various departments.

8. **Stakeholder management**

The final stage of the proposed framework begins once stages 1 – 7 are complete. It involves all processes and assessments which would provide feedback of the FM services performed. The function leads to the eventual and effective management of those individuals and groups that are directly or indirectly affected by the FM function.

From the hospital viewpoint, these stakeholders will include the department of health, the hospital staff, and the hospital patients. Furthermore, these individuals and groups collectively will determine the overall nature of the required FM function, including the processes and activities to be adopted by the FM department and the extent to which they can satisfy their interests

Stakeholder management within the FM strategy will allow achievement of the following:

8a. Workshops

The institution may organise workshops for all stakeholders which is to include the end-user constituents, in-house team, and external service providers. The workshop may be used to refine the structure of the overall FM department and to involve all stakeholders to understand their roles, functions and an opportunity for all stakeholders to interact with each other, share their views and identify strengths, weaknesses, opportunities, and threats. In this way, the gaps and links among all the processes of the FM strategy can be more exposed and solution driven, which findings can be recorded, analysed and used to improve further the strategic goals and objectives of the provincial Health Department, as identified in stage 1 of the FM strategy guideline.

In conclusion, this chapter presented details of the developed proposed framework. The framework was developed using inputs from the literature review, the questionnaire survey, and the case study.

CHAPTER 6: CONCLUSIONS AND RECOMMENDATIONS

6.1 INTRODUCTION

This chapter presents the conclusions, recommendations, and suggestions for the study. The FM structure, end-users, and KPIs were identified for the CMJAH.

6.2 CONCLUSION

The study has identified the need for a structured and systematic approach to the FM of public hospital facilities that result in end-user satisfaction. The contribution of this research was to identify the FM service strategy which integrates the unique requirements within a public hospital setting. The intention is to assist the Facilities Managers in the strategic FM construct, management and delivery requirements of the NDoH. Within any organisation, there are challenges and opportunities. However, within the public hospital sector, the issues are further rooted to include social, financial and political constraints.

6.3 RECOMMENDATIONS

The following recommendations are made.

- This research has identified the need for an FM strategy to be adopted by hospitals in the public sector. It is, therefore, recommended that the FMU organise itself in a manner that is in line with best practice, in order to facilitate the adoption of the proposed guideline for a systematic approach to FM. There must be an appropriate and integrated, institutional, organisational structure which caters for the process flow of information and requirements from the identified need of FM services; to the performance measurement of the service delivered.

- The hospital KPIs identified in the study should be incorporated to include end-user surveys in the performance measurement and management of the FM services. Even from an FM perspective, the majority of the domains identified by the National Health Department revolve around the well-being of the patients, thus indicating the importance of performance for end-user satisfaction. Therefore, end-user satisfaction may be linked to the FM strategy and goals.

6.4 SUGGESTIONS FOR FURTHER STUDIES

Although this research has identified the FM strategy guideline to be adopted by the CMJAH, further research is recommended on the following topics:

- Validation of the proposed conceptual framework as per the conceptual model validation process (Yahaya 2008) at facilities similar to the CMJAH
- A study comparing the FM organisational structure of other public hospitals in Due to the limited time for this research, it is suggested that further research is conducted to include a comparison of the FM approach adopted by private hospitals.

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APPENDIX A: ETHICS CLEARANCE CERTIFICATE

School of Construction Economics & Management

University of the Witwatersrand, Johannesburg -PO Box 20, Wits 2050, South Africa • Tel: +27 (0)11 717 7652/77669 · Fax: +27 (0)11 717 9729 Email:CEM@wits.ac.za

SCHOOL OF CONSTRUCTION ECONOMICS AND MANAGEMENT RESEARCH ETHICS COMMITTEE

CLEARANCE CERTIFICATE

PROTOCOL NUMBER CEM/17/01/MS1/MSC

PROJECT TITLE:

Outsourcing versus in-house facilities management in selected Johannesburg hospitals: A selection framework for end-user satisfaction

INVESTIGATOR **Mosha Senyolo** 0500708m

SCHOOL/DEPARTMENT **SCHOOL OF CONSTRUCTION ECONOMICS AND MANAGEMENT**

DATE CONSIDERED 21/01/2017

DECISION OF THE COMMITTEE Approved conditionally with respect to declaration.

EXPIRY DATE 30th January 2018

DATE 03 December 2016

CHAIRPERSON_____
Dr. Kola Ijasan

cc: Supervisor: **DR Y ADEWUNMI**

DECLARATION OF INVESTIGATOR (S)

To be completed in duplicate and **ONE COPY** returned to the Secretary Mrs. M. Sithole at the CEM reception desk.

I fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. **I agree to completion of a yearly progress report.**

_____ _____/_____/_____

Signature **Date**

APPENDIX B: PERMISSION TO CONDUCT STUDY

GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

CHARLOTTE MAXEKE JOHANNESBURG ACADEMIC HOSPITAL

Enquiries:
Ms. G. Ngwenya
Office of the Nursing Director
Tell: (011): 488-4558
Fax: (011): 488-3786
15 March 2017

Ms Mosha Piloane Senyolo
University of Witwaterand

Dear. Ms Mosha Piloane Senyolo

RE: **"Outsourcing versus in-house facilities management in selected Johannesburg hospitals: A selection framework for end-user satisfaction"**

Permission is granted for you to conduct the above recruitment activities as described in your request provided:

1. Charlotte Maxeke Johannesburg Academic hospital will not in anyway incur or inherit costs as a result of the said study.
2. Your study shall not disrupt services at the study sites.
3. Strict confidentiality shall be observed at all times.
4. Informed consent shall be solicited from patients participating in your study.
5.

Please liaise with the Head of Department and Unit Manager or Sister in Charge to agree on the dates and time that would suit all parties.

Kindly forward this office with the results of your study on completion of the research.

Supported / ~~not supported~~

Ms. M.M Pule
Nursing Director
Date: 2017/03/15

Approved / ~~not approved~~

Ms. G. Bogoshi
Chief Executive Officer
16/03/2017

GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

Charlotte Maxeke Johannesburg Academic Hospital
Ing: Mr T Mostert
Tel: 011 488 4421
Email: murendeni.gangashe@gauteng.gov.za

MISS MOSHA PILOANE SENYOLO
STUDENT No. 0500708M
University of the Witwatersrand
Johannesburg

Dear Ms Senyolo,

This letter serves to acknowledge your request to conduct a research on Hospital Facility Management in Charlotte Maxeke Johannesburg Academic hospital as part of your studies.

Your request is granted on conditions that you comply with hospital policies, Regulations and Acts. You will do so by reporting to the hospital Facility Manager on your visit to the hospital.

Wishing you all the best on your studies,

Sincerely,

Mr M NYEMBE
DIRECTOR: LOGISTICS
DATE: 16/01/2017

GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

CHARLOTTE MAXEKE JOHANNESBURG ACADEMIC HOSPITAL
OFFICE OF THE DIRECTOR LOGISTIGS

ENQUIRIES:
Mr. M Nyembe
Director: Logistics
Tell. No: (011) 488 – 3748/3757
Date: 15 March 2017

Ms Mosha Piloane Senyolo
University of Witwatersrand

Dear. Mosha Piloane Senyolo

RE: "Outsourcing versus in house facilities management in selected Johannesburg hospitals: A selection framework for end-user satisfaction"

Permission is granted for you to conduct the above recruitment activities as described in your request provided:

1. Charlotte Maxeke Johannesburg Academic hospital will not in anyway incur or inherit costs as a result of the said study.
2. Your study shall not disrupt services at the study sites.
3. Strict confidentiality shall be observed at all times.
4. Informed consent shall be solicited from patients participating in your study.

Please liaise with the Head of Department in facility to agree on the dates and time that would suit all parties.

Kindly forward this office with the results of your study on completion of the research.

Supported / not supported

Mr. M. Nyembe
Director Logistics
Date: 15/03/2017

Approved / ~~not approved~~

Ms. G. Bogoshi
Chief Executive Officer

GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

Charlotte Maxeke Johannesburg Academic Hospital
Ing: Mr T Mostert
Tel: 011 488 4421
Email: murendeni.gangashe@gauteng.gov.za

MISS MOSHA PILOANE SENYOLO
STUDENT No. 0500708M
University of the Witwatersrand
Johannesburg

Dear Ms Senyolo,

This letter serves to acknowledge your request to conduct a research on Hospital Facility Management in Charlotte Maxeke Johannesburg Academic hospital as part of your studies.

Your request is granted on conditions that you comply with hospital policies, Regulations and Acts. You will do so by reporting to the hospital Facility Manager on your visit to the hospital.

Wishing you all the best on your studies,

Sincerely,

pp Nyembeka

Mr M NYEMBE
DIRECTOR: LOGISTICS
DATE: 16/01/2017

Date: 15 March 2017

To whom it may concern

RE: Hospital Facilities Management Service Provision Research Report.

Good day

My Name is Mosha Piloane Senyolo and I am a Master's student in the Property division of the School of Construction Economics and Management, University of the Witwatersrand, Johannesburg. Facilities Management studies indicate that the role that Facilities Management has in the healthcare sector has impact on the performance of the Hospitals.

I am conducting an investigative study on the decision to outsource or use of in-hose Facilities Management services in hospitals, and how this impacts on the hospital facility performance and the subsequent end user experience.

The literature review undertaken for purposes of this study indicate that there is a gap on the strategy for FM services in South Africa hospitals. The strategy is important as it assists in measuring the key performance indicators identified by the specific healthcare institutions, which will indicate whether the objectives are being met or can be improved from the FM point-of view.

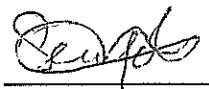
The aim of the study is to develop and test a process model for the decision to out-source or provide in-house facilities management services in hospitals.

Th9is letter serves as a request for the permission to use the Charlotte Maxeke Johannesburg Academic Hospital as the subject Hospital. The study to be conducted will be cross-sectional and application of a pragmatic methodology will be adopted, where qualitative research will be undertaken with hospital management and quantitative method will be conducted on hospital en-users (Patients and Staff).

Thank you for taking this time out to consider the request stipulated above.

Should you have any questions or wish to find out more about the study, please contact men on 078 423 8897 or e-mail me or my supervisor, Doctor Yewande Adewunmi on 0500708m@students.wits.ac.za or yewande.adewunmi@wits.ac.za respectively.

Kind Regards



Ms. Mosha P Senyolo

APPENDIX C: MANAGEMENT SEMI-STRUCTURED INTERVIEW QUESTIONS

Dear Sir/Madam,

MANAGEMENT QUESTIONNAIRE SURVEY

This survey section is part of an on-going research on the service strategies of facilities management services and the impact thereof on the end user in selected hospitals in Johannesburg. It is aimed at developing a decision-making framework for the strategy of non-core services in the hospitals with the view of enhancing the end - user satisfaction as part of measures targeted by the value adding component of facilities management.

The following working definitions are provided for your ready reference:

Facilities management outsourcing: is the contracting out of all or part of facilities management services in the hospital to an external provider for a fee over a given period**. Facilities management services**: are the services that support the core or primary activities of a hospital. Such include repairs and maintenance, cleaning, security services and others. **Customer**: is the end- user (hospital staff or patient) that obtains or is directly/ indirectly impacted services from an external service provider or internal member of staff while **Vendor** is the external service provider or organisation that carries out the services.

We would therefore appreciate if you could spare us 30 minutes of your time to respond to the questionnaire. Be assured that your participation is highly valued and necessary, while precautions have been put in place to protect your privacy and anonymity.

Thank you in anticipation.

Regards

Mosha Senyolo

Management Survey on Facilities Management Sourcing Decisions in CMJAH

PART 1: GENERAL INFORMATION

1. Please indicate your present position in the hospital……

2. Please indicate your professional affiliation……

3. Academic Qualification:

A. HND [ ] B. BSc. [ ] C. MSc [ ] D. MBBS [ ] E. PhD [ ]

F. Other (Please specify)……

4. Number of years in service:

A. 1 – 5 years [ ]B. 6 – 10 years [ ]C. 11 – 20 years [ ] D. 21 – 30 years [ ] D. Above 30 years [ ]

PART 2: HOSPITAL CHARACTERISITICS

1. What kind of ownership structure is your hospital?

A. Public [ ] B. Private [ ]

2. How would you categorise your hospital?

A. Tertiary / Teaching hospital [ ] B. Secondary / General hospital [ ]

3. What is the approximate number of staff in your hospital?

A. 0 – 50 [ ] B. 51 – 100 [ ] C. 101 – 500 [ ] D. 501 – 1000 [ ] E. Above 1000 [ ]

4. What is the average number of patients in your hospital?

A. 50 – 100 [ ] B. 101 – 500 [ ] C. 501 – 1000 [ ] D. 1001 – 5000 [ ] E. Above 5000 [ ]

5. What is the number of beds in your hospital?

A. Less than 10 [ ] B. 11 – 50 [ ] C. 51 – 100 [ ] D. 1001 – 5000 [ ]

E. Above 5000 [ ]

6. What is the approximate value of contracts awarded in a year by your hospital (in South African Rands)

A. Less than 500k [ ] B. 500k – 1m [ ] C. 1.1m – 5m [ ] D. 5.1m – 10m [ ] E. Above 10m [ ]

7. What is the percentage of value in (6) allocated to outsourcing of Facilities Management service?

A. Less than 5% [ ] B. 5 – 10% [ ] C. 10 – 20% [ ] D. 20 – 50% [ ] E. Above 50% [ ]

PART 3: HOSPITAL FM STRUCTURE

i. Do you have a policy in place for a FM service strategy in the hospital? If yes, what is this based on? Kindly elaborate on how this is integrated in the FM function and healthcare objectives of the hospital.

ii. Is there a FM department in the hospital?

iii. If answered yes to question ii above, what is the FM process framework?

iv. If answered no to question ii above, why do you think there is no FM department in the hospital and how does the hospital view this?

v. How many service providers does the hospital use for FM services? What is the FM system in place?

vi. Could you kindly provide a list of the services rendered? How are these services executed and by whom?

vii. How many full-time employees / vendors does the hospital use for the FM services?

viii. How do you think the following factors influence the FM services strategy adopted by the hospital and why? If there are others, kindly indicate them. Please rate the following identified using the scale of 1 = No influential to 5 = Highly influential, from the following factors:

a. Cost

b. Strategy

c. Innovation / technology

d. Quality of service

e. Time

f. Corporate social responsibilities / skills transfer

g. Customer satisfaction / employee alignment

h. Risk management

ix. What are the FM key performance indicators identified by the hospital and why?

x. What are the tools / process systems used to measure the FM key performance indicators?

xi. Does the hospital have a performance management system in place? If not, why? If yes, is the system effective (result driven).

In your own view, please rate the criticality of the following risk categories using the scale of 1 = not critical, 2 = somehow critical, 3 = moderately critical, 4 = critical and 5 = very critical

i. Customer / employee risks

ii. Out-sourcing contract risks

iii. In-house personnel risks

iv. Vendor risks

v. Political risks

vi. General risks

Facilities management services in the case study entity

Among the list of the 29 FM services indicated, please tick those currently being outsourced / provided in-house and rate the quality of services using the scale of 1 = highly unsatisfactory, 2 = unsatisfactory, 3 = moderate, 4 = satisfactory and 5 = highly satisfactory. Kindly elaborate on your answers where possible.

A list of facilities management services drawn from the literature review is presented, it consists of twenty-nine (29) services classified into four (4) main categories.

Please tick the applicable box for your hospital by indicating 1 for “not applicable” at all, 2 for those done by in-house staff and 3 for those currently being outsourced as follows:

If there are other services applicable to the hospital, kindly indicate them.

1	2	3
Not applicable	In-house	Outsourced

	Facilities management services			
	Real estate/ property management			
1	Real estate/ property portfolio management	1	2	3
2	Leasing and sub-letting services	1	2	3
3	Retail outlets and space renting	1	2	3
4	Extensions and alterations	1	2	3
5	Demolitions	1	2	3
	Maintenance and repairs			
6	Facility refurbishmnet and signage	1	2	3
7	Plant maintenance and repairs	1	2	3
8	General cleaning services	1	2	3
9	Waste disposal and environmental management	1	2	3
10	Housekeeping	1	2	3
11	Pest control	1	2	3
12	Health and safety management	1	2	3
13	Landscaping maintenance	1	2	3
	Administration management and office services			
14	Security	1	2	3
15	Courier services	1	2	3
16	Storage distribution of medical supplies	1	2	3
17	Reception and telephone operator	1	2	3
18	Public relation / liason services	1	2	3
19	Travel arragements	1	2	3
20	Car park maintenance	1	2	3
21	Purchasing and contract control and negotiation	1	2	3
22	Office furniture and stationery provision	1	2	3
23	Human resource management	1	2	3
	Support services			
24	Child nursery administration	1	2	3
25	Recreations	1	2	3
26	Food catering / restroom management	1	2	3
27	Residential accomodation	1	2	3
28	Community affairs	1	2	3
29	Management of employees with special needs	1	2	3

Thank you for sparing you time despite the demanding schedule of your work!

PART 4: IDENTIFICATION AND IMPACT OF FACTORS INFLUENCING THE DECISION TO OUTSOURCE OR PROVIDE IN-HOUSE FACILITIES MANAGEMENT SERVICES

Service strategy factors are the factors that motivate the hospital administration to outsource or provide in-house facilities management services. Thirty-one (31) factors classified into six (6) broad categories have been identified from the literature.

Please indicate by ticking the appropriate box as to the degree to which you believe the factors have influenced the decision to out-source or provide in-house facilities management services in the hospital, using a 5-point Likert scale of:

1 = strongly disagree 2 = disagree 3 = slightly disagree 4 = neutral

5 = slightly agree

	Outsourcing decision factors					
	Cost related factors					
1	To make cost transparent	1	2	3	4	5
2	To reduce investment in assets	1	2	3	4	5
3	To reduce invested capital funds in non-core functions	1	2	3	4	5
4	To assess vendor's cost efficient system	1	2	3	4	5
5	To achieve cost reduction with enhanced performance of services	1	2	3	4	5
	Strategy related factors					
6	To focus on core competencies	1	2	3	4	5
7	To improve strategic positioning	1	2	3	4	5
8	To increase flexibility	1	2	3	4	5
9	To multiply sourcing in case of uncertainties	1	2	3	4	5
10	To handle varying demand more effectively	1	2	3	4	5
11	Restricted by insufficiency in own resources	1	2	3	4	5
12	To compare performance of in-house staff with vendors' workers	1	2	3	4	5
13	To play along with the trend of privatization	1	2	3	4	5
14	To share risks	1	2	3	4	5
15	To limit the size of staff	1	2	3	4	5

	Innovation factors					
16	To gain access to new products, services and technologies	1	2	3	4	5
17	To obtain skills, expertise and ideas	1	2	3	4	5
18	To obtain technologies not available in-house	1	2	3	4	5
19	To stimulate innovation among personnel	1	2	3	4	5
20	To permit quicker response to new needs	1	2	3	4	5
	Quality related factors					
21	To improve performance standard	1	2	3	4	5
22	To improve quality of service to users	1	2	3	4	5
23	To improve mutual trust between hospital and customers	1	2	3	4	5
	Time related factors					
24	To improve timely delivery of service	1	2	3	4	5
25	There is not enough time to acquire tools and techniques in-house	1	2	3	4	5
26	To improve process responsiveness and cycle times	1	2	3	4	5
	Service to community					
27	To improve on stakeholders' satisfaction	1	2	3	4	5
28	To improve customer relation	1	2	3	4	5
29	To improve labour relations	1	2	3	4	5
30	To improve on corporate social responsibility of the hospital	1	2	3	4	5
31	To create jobs for local communities	1	2	3	4	5
	Overall outsourcing decision	**1**	**2**	**3**	**4**	**5**

	In-house decision factors					
	Cost related factors					
1	To make cost transparent	1	2	3	4	5
2	To reduce investment in assets	1	2	3	4	5
3	To reduce invested capital funds in non-core functions	1	2	3	4	5
4	To achieve cost reduction with enhanced performance of services	1	2	3	4	5
	Strategy related factors					
5	To focus on non - core competencies	1	2	3	4	5
6	To improve strategic positioning	1	2	3	4	5
7	To increase flexibility	1	2	3	4	5
8	To handle varying demand more effectively	1	2	3	4	5
9	Restricted by insufficiency in resources	1	2	3	4	5
10	To compare performance of in-house staff with vendors' workers	1	2	3	4	5
11	To play along with the trend of public sector requirements	1	2	3	4	5
12	To share risks	1	2	3	4	5
13	To maximise the size of staff	1	2	3	4	5
	Innovation factors					
14	To obtain skills, expertise and ideas	1	2	3	4	5
15	To stimulate innovation among personnel	1	2	3	4	5
16	To permit quicker response to new needs	1	2	3	4	5
	Quality related factors					
17	To improve performance standard	1	2	3	4	5
18	To improve quality of service to users	1	2	3	4	5
19	To improve mutual trust between hospital and customers	1	2	3	4	5
	Time related factors					
20	To improve timely delivery of service	1	2	3	4	5
21	There is not enough time to acquire tools and techniques in-house	1	2	3	4	5
22	To improve process responsiveness and cycle times	1	2	3	4	5
	Service to community					
23	To improve on stakeholders' satisfaction	1	2	3	4	5
24	To improve customer relation	1	2	3	4	5
24	To improve labour relations	1	2	3	4	5
26	To improve on corporate social responsibility of the hospital	1	2	3	4	5
27	To create jobs for local communities	1	2	3	4	5
	Overall in-house decision	**1**	**2**	**3**	**4**	**5**

	In-house decision factors					
	Cost related factors					
1	To make cost transparent	1	2	3	4	5
2	To reduce investment in assets	1	2	3	4	5
3	To reduce invested capital funds in non-core functions	1	2	3	4	5
4	To achieve cost reduction with enhanced performance of services	1	2	3	4	5
	Strategy related factors					
5	To focus on non - core competencies	1	2	3	4	5
6	To improve strategic positioning	1	2	3	4	5
7	To increase flexibility	1	2	3	4	5
8	To handle varying demand more effectively	1	2	3	4	5
9	Restricted by insufficiency in resources	1	2	3	4	5
10	To compare performance of in-house staff with vendors' workers	1	2	3	4	5
11	To play along with the trend of public sector requirements	1	2	3	4	5
12	To share risks	1	2	3	4	5
13	To maximise the size of staff	1	2	3	4	5
	Innovation factors					
14	To obtain skills, expertise and ideas	1	2	3	4	5
15	To stimulate innovation among personnel	1	2	3	4	5
16	To permit quicker response to new needs	1	2	3	4	5
	Quality related factors					
17	To improve performance standard	1	2	3	4	5
18	To improve quality of service to users	1	2	3	4	5
19	To improve mutual trust between hospital and customers	1	2	3	4	5
	Time related factors					
20	To improve timely delivery of service	1	2	3	4	5
21	There is not enough time to acquire tools and techniques in-house	1	2	3	4	5
22	To improve process responsiveness and cycle times	1	2	3	4	5
	Service to community					
23	To improve on stakeholders' satisfaction	1	2	3	4	5
24	To improve customer relation	1	2	3	4	5
24	To improve labour relations	1	2	3	4	5
26	To improve on corporate social responsibility of the hospital	1	2	3	4	5
27	To create jobs for local communities	1	2	3	4	5
	Overall in-house decision	**1**	**2**	**3**	**4**	**5**

APPENDIX D: PATIENT QUESTIONNAIRE SURVEY

Dear Sir/Madam,

PATIENT QUESTIONNAIRE SURVEY

This survey section is part of a research on the service strategies of facilities management services and the impact thereof on the end user in selected hospitals in Johannesburg. It is aimed at developing an FM strategy of non-core services in the hospital with the view of enhancing the end - user satisfaction as part of measures targeted by the value adding component of facilities management.

The following working definitions are provided for your ready reference:

Facilities management outsourcing: is the contracting out of all or part of facilities management services in the hospital to an external provider for a fee over a given period**. Facilities management services**: are the services that support the core or primary activities of a hospital. Such include repairs and maintenance, cleaning, security services and others. **Customer**: is the end- user (hospital staff or patient) that obtains or is directly/ indirectly impacted services from an external service provider or internal member of staff while **Vendor** is the external service provider or organisation that carries out the services.

We would therefore appreciate if you could spare us 20 minutes of your time to respond to the questionnaire. Be assured that your participation is highly valued and necessary, while precautions have been put in place to protect your privacy and anonymity.

Thank you in anticipation.

Regards

Mosha Senyolo

Patients Survey on Service Quality of Facilities Management in CMJAH

This survey aims to identify the service gaps (if any) of Facilities Management (FM) in hospitals with a focus on patient – impacting services such as catering, housekeeping, security, etc. Your responses will contribute to the future improvement in the facilities management level in hospitals.

In this survey, kindly score each attribute according to your perception (actual experience).

Please adopt the following evaluation standards:

Patients' Perception represents the actual service level received for each attribute:

Patients' Perception				
1	2	3	4	5
Very poor	Poor	Neutral	Good	Very good

PART 1: GENERAL INFORMATION (Please tick the relevant boxes):

Age: 18 - 20 ☐ 21 - 35 ☐ 36 - 50 ☐ 51 - 65 ☐ Above 66 ☐

Gender: Male ☐ Female ☐

Race: Black ☐ White ☐ Coloured ☐ Indian ☐ Other ☐

Educational Background: Below Lower Secondary ☐ Secondary ☐ Diploma ☐ University and above ☐

No. of days in hospital (if applicable):

No. of beds in ward (if applicable):

	Service Attributes		Patients' Perceptions				
1	Clarity of signage (e.g easy to spot)		1	2	3	4	5
2	Attractiveness of the public landscape		1	2	3	4	5
3	Condition of elevators		1	2	3	4	5
4	Cleanliness of public areas (eg. Floors, walls, seating)		1	2	3	4	5
5	Performance of pest control in the hospital		1	2	3	4	5
6	Adequacy of security prevalent in hospital		1	2	3	4	5
7	Cleanliness of overall environment in ward (including bathrooms)		1	2	3	4	5
8	Cleanliness of bedding in ward		1	2	3	4	5
9	Provision of patient privacy (e.g. curtains and blinds)		1	2	3	4	5
10	Performance of lighting systems in ward / general public areas		1	2	3	4	5
11	Performance of ventilation systems in ward / public areas (e.g odour)		1	2	3	4	5
12	Performance of bedside nurse call system in ward		1	2	3	4	5
13	Performance of drinking water supply systems		1	2	3	4	5
14	Performance of non-drinking water supply systems (e.g. at sink, toilet)		1	2	3	4	5
15	Choice and availability of food and drinks provided by hospital		1	2	3	4	5
16	Quality of food and drinks provided by hospital		1	2	3	4	5
17	Quantity of food and drinks provided by hospital		1	2	3	4	5

Thank you for your patience and kind assistance, wishing you a speedy recovery!

Additional comments:

APPENDIX E: LIST OF KPI SCORES

Standards by Risk (Make appendix - refer to summary)	Weighted Score	Actual			
		X	V	E	D
1.1.1 Patient are treated in a caring and respectful manner by staff with the appropriate values and attitudes	71.44%	N/A	71.44%	N/A	71.44%
1.1.2 Patient opinions inform quality improvements in the health establishment	0/0	N/A	0/0	N/A	0/0
1.1.3 Health establishment meets the patients' expectations of cleanliness / hygiene / accommodation	29.41%	N/A	29.41%	N/A	29.41%
1.2.1 Patients are provided with information to enable them to make informed decisions regarding their care	0/0	50%	0/0	50%	0/0
1.2.2 Patients have access to information on the services provided by the health establishment	2/4	18.18%	2/4	18.18%	2/4
1.3.1 All patients in the designated catchment area can access the facility and its services	2/11	N/A	2/11	N/A	2/11
1.4.1 Management of referrals preserves the quality of patient care	0/0		0/0		0/0
1.5.1 Waiting times in busy areas are managed to improve patient satisfaction and care	87.73%	93.17%	87.73%	93.17%	87.73%

1.5.2 Waiting times for patients to access elective care are managed to improve efficiency in the delivery of healthcare	5.59/6	N/A	5.59/6	N/A	5.59/6
1.6.1 The management of emergency patients arriving at or referred from the health establishment preserves the quality of patient care	0/0	92.75%	0/0	92.75%	0/0
1.7.1 The package of services offered at the health establishment are in accordance with national guidelines or licensing specifications	11.13/12	25%	11.13/12	25%	11.13/12
1.8.1 Patients' complaints are managed systematically and to patient's satisfaction	1/4		1/4		1/4
1.8.2 Complaints are used to improve service delivery	85.71%	N/A	85.71%	N/A	85.71%
2.1.1 The basic care and treatment of patients contributes to positive health outcomes	0/0	N/A	0/0	N/A	0/0
2.2.1 The establishment provides clinical care so as to ensure positive outcomes in identified priority initiatives including meeting the Millennium Development Goals	0/0	100%	0/0	100%	0/0
2.3.1 Health professionals in the establishment champion improvements in patient centred / quality care	1/1	83.33%	1/1	83.33%	1/1
2.4.1 There is a structured approach to the management of clinical risk in the establishment	10/12		10/12		10/12
2.4.2 The care rendered to patients with special needs	78.57%	N/A	78.57%	N/A	78.57%

contributes to their recovery and well-being					
2.4.3 Specific safety protocols are in place for patients undergoing high risk procedures	0/0	100%	0/0	100%	0/0
2.5.1 Adverse events are identified and promptly responded to reducing patient harm and suffering	76%	N/A	76%	N/A	76%
2.5.2 Adverse events are analysed and managed in order to prevent recurrence and reduce patient harm	0/0	100%	0/0	100%	0/0
2.6.1 An Infection Prevention and Control Programme to reduce healthcare associated infections is implemented	1/1	72.73%	1/1	72.73%	1/1
2.6.2 Specific precautions are taken to reduce or prevent respiratory infections	8/11	N/A	8/11	N/A	8/11
2.6.3 Universal precautions are applied to prevent health care associated infections	0/0		0/0		0/0
2.6.4 Strict infection control practices are observed in the designated feed preparation areas to prevent infection	81.82%	N/A	81.82%	N/A	81.82%
3.1.1 Pharmaceutical services are legally compliant	0/0	100%	0/0	100%	0/0
3.1.2 The provision of medicines and medical supplies (including disposables) supports the delivery of care	1/1	66.67%	1/1	66.67%	1/1
3.1.3 Medicines and medical supplies are managed in compliance with relevant	2/3	100%	2/3	100%	2/3

legislation and principles of medicine supply management					
3.1.4 The prescribing and dispensing of medicines comply with relevant regulations and protocols and promote the quality use of medicine	2/2		2/2		2/2
3.1.5 An effective pharmacovigilance and monitoring system ensures adverse drug reactions are reported and appropriate actions taken timeously	85%	N/A	85%	N/A	85%
3.2.1 Accessible and effective laboratory services enhance patient diagnosis	0/0	100%	0/0	100%	0/0
3.2.2 Accessible and effective radiology services enhance patient diagnosis	3/3	80%	3/3	80%	3/3
3.3.1 Accessible and effective blood and blood product services enhance patient management and outcomes	12/15	100%	12/15	100%	12/15
3.3.2 Therapeutic support services contribute to the holistic care and rehabilitation of patients	1/1		1/1		1/1
3.4.1 Medical equipment for safe and effective patient care is available and functional	89.47%	100%	89.47%	100%	89.47%
3.4.2 Staff are trained in the correct use of medical equipment	6/6	N/A	6/6	N/A	6/6
3.4.3 Medical devices are maintained to ensure safety / availability / functionality	0/0	71.43%	0/0	71.43%	0/0

3.5.1 The health establishment has an effective decontamination process in place	68.71%	N/A	68.71%	N/A	68.71%
3.6.1 The health establishment`s mortuary is compliant with legal requirements	0/0	50%	0/0	50%	0/0
3.7.1 Efficiency management systems ensure that the entire patients clinical event is managed in such a manner that they receive adequate safe quality healthcare	2/4	82.75%	2/4	82.75%	2/4
4.1.1 Public participation and intersectoral collaboration support service planning and delivery to improve population health	6.62/8	N/A	6.62/8	N/A	6.62/8
4.1.2 Effective partnerships and collaboration between different health authorities enhance service delivery to a defined catchment population	0/0		0/0		0/0
4.2.1 The importance of health promotion and disease prevention as part of patient care is actively promoted and practiced	80.95%	N/A	80.95%	N/A	80.95%
4.2.2 Opportunities to advocate for the promotion of healthy lifestyles and prevention of disease and complications are pursued to improve the health of the population	0/0	N/A	0/0	N/A	0/0
4.3.1 Emergency plans protect public safety in the event of	0/0	80%	0/0	80%	0/0

significant disease outbreaks or other health emergencies					
4.4.1 Environmental controls are implemented to limit environmental damage and public health risks	8/10	100%	8/10	100%	8/10
5.1.2 A functional governance structure is in place at the health establishment	1/1		1/1		1/1
5.1.3 The governance structure provides appropriate oversight to assure the quality / accountability / good management of all business processes	88.24%	N/A	88.24%	N/A	88.24%
5.2.1 The health establishment`s management structure and delegations of authority is at the appropriate levels to ensure efficient service delivery at the establishment	0/0	N/A	0/0	N/A	0/0
5.2.2 Strategic and operational plans support the delivery of services according to clear objectives	0/0	100%	0/0	100%	0/0
5.2.3 Strategic plans align with national / provincial / parent company priorities	5/5	71.43%	5/5	71.43%	5/5
5.2.4 Operational plans support the delivery of services according to clear objectives	5/7		5/7		5/7
5.2.5 Resources are allocated to meet the strategic and operational plans to ensure service delivery	50%	N/A	50%	N/A	50%

5.2.6 Senior managers monitor and evaluate operational plans to ensure targets are met	0/0	N/A	0/0	N/A	0/0
5.3.1 An effective risk management system ensures risks identified are management effectively	0/0	50%	0/0	50%	0/0
5.4.1 An active programme to assure and improve quality is implemented and its effectiveness is monitored and evaluated	2/4	N/A	2/4	N/A	2/4
5.5.1 The senior managers are held accountable for implementing the service delivery objectives of the health establishment against the strategic and operational plans	0/0		0/0		0/0
5.5.2 Senior managers display the leadership values of the health establishment	100%	N/A	100%	N/A	100%
5.6.1 Internal communication activities facilitate staff involvement in the health establishment's aims and improvement initiatives	0/0	N/A	0/0	N/A	0/0
5.6.2 Public relations are actively managed to provide accurate and appropriate information on the health establishment's services / programmes / policies	0/0	100%	0/0	100%	0/0
6.1.1 Human resources are managed in accordance with documented human resource policies to ensure safe and effective service provision	4/4	N/A	4/4	N/A	4/4

6.1.2 Staff performance is reviewed against defined roles and responsibilities to ensure agreed outputs are delivered	0/0		0/0		0/0
6.1.3 Labour Relations policies are supported by sound employee relations to protect employee and employer rights	100%	N/A	100%	N/A	100%
6.1.4 A comprehensive programme is implemented to support staff training and continuing professional development	0/0	N/A	0/0	N/A	0/0
6.2.1 Staff health and welfare is actively promoted to improve working lives	0/0	100%	0/0	100%	0/0
6.2.2 Staff are protected from exposure to workplace hazards through effective Occupational Health and Safety systems	1/1	N/A	1/1	N/A	1/1
6.3.1 Expenditure is managed and monitored to ensure efficiency within legal frameworks	0/0		0/0		0/0
6.4.1 All procedures for the acquisition of assets are transparent and reflect planned needs and budgets	100%	N/A	100%	N/A	100%
6.4.2 Assets are managed effectively and efficiently to maximise use / maintain adequate levels / reduce losses	0/0	100%	0/0	100%	0/0
6.4.3 Contracts for the supply of goods and services are managed and monitored to ensure performance / quality / value-for-money	1/1	100%	1/1	100%	1/1

6.4.4 Efficient management of stock ensures that supplies meet planned service needs at all times	2/2	N/A	2/2	N/A	2/2
6.5.1 The availability and safety of vehicles are assured through effective fleet management	0/0		0/0		0/0
6.6.1 A health management information system collects / stores and provides data to meet the needs of management	67.25%	N/A	67.25%	N/A	67.25%
6.6.2 Data is processed and analysed to provide reports used by management for decision-making and planning	0/0	0%	0/0	0%	0/0
6.6.3 Policies and legislation on data protection ensure confidential information is properly handled	0/1	82%	0/1	82%	0/1
6.7.1 Individual patient information is accurately and completely recorded according to clinical / legal / ethical requirements	4.92/6	92%	4.92/6	92%	4.92/6
6.7.2 An efficient system exists to archive and retrieve medical records or patient files	0.92/1		0.92/1		0.92/1
7.1.2 Available infrastructure is appropriately used according to level of care	100%	N/A	100%	N/A	100%
7.1.3 Waiting areas are appropriately located and provide adequate shelter and seating for patients	0/0	N/A	0/0	N/A	0/0
7.1.4 Buildings are maintained to provide safety and promote a	0/0	100%	0/0	100%	0/0

positive image of the establishment					
7.1.5 The establishment is organised / furnished / equipped to meet patient needs and comfort	4/4	N/A	4/4	N/A	4/4
7.1.6 Grounds are maintained to be safe and orderly	0/0		0/0		0/0
7.2.1 Electrical power / water / sewerage systems are functional and adequate for the needs of the establishment	60%	N/A	60%	N/A	60%
7.2.2 Operational plant / machinery / equipment is well maintained and fully functional according to the needs of the health establishment and complies with all regulatory requirements	0/0	N/A	0/0	N/A	0/0
7.2.3 The telephone system enables reliable internal and external communication for routine communication and emergency back-up	0/0	75%	0/0	75%	0/0
7.2.4 A functional public communication system allows communication throughout the establishment in the event of an emergency	3/4	0%	3/4	0%	3/4
7.3.1 People and property are actively protected to minimise safety and security risks	0/2		0/2		0/2
7.4.1 The buildings and grounds are kept clean and hygienic to maximise safety and comfort	52.94%	N/A	52.94%	N/A	52.94%
7.5.1 Waste management in the establishment and surrounding environment complies with legal	0/0	0%	0/0	0%	0/0

requirements / national standards / with good practice					
7.5.2 Health care risk waste (HCRW) is handled / stored / disposed of safely to reduce potential health risks and to protect the environment	0/2	100%	0/2	100%	0/2
7.5.4 General waste (office / kitchen / garden / household waste) is managed according to protocols to protect the safety of staff and patients	4/4	33.33%	4/4	33.33%	4/4
7.6.1 Linen and laundry services are managed to meet the needs of the health establishment and legislative requirements	1/3		1/3		1/3
7.7.1 Food services are provided to meet the needs of patients	46.43%	N/A	46.43%	N/A	46.43%

APPENDIX F: CRONBACH ALPHA RELIABILITY

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Clarity of signage	69.41	26.878	.042	.429	0.656
Attractiveness of the public landscape	68.95	27.047	.170	.378	0.618
Condition of elevators	68.82	27.154	.208	.317	0.613
Cleanliness of public area	68.81	26.023	.375	.388	0.593
Performance of pest control in hospital	68.79	25.801	.356	.370	0.593
Adequacy of security prevalent in hospital	68.75	26.978	.264	.345	0.607
Cleanliness of overall environment in ward	68.83	26.246	.285	.262	0.602
Cleanliness of bedding in ward	68.90	26.165	.244	.246	0.608
Provision of patient privacy	68.73	27.304	.286	.375	0.607
Performance of lighting systems in ward	68.79	27.017	.249	.356	0.608
Performance of ventilation systems in ward	68.77	26.978	.313	.332	0.604
Performance of bedside nurse call system in ward	68.86	25.414	.479	.417	0.581
Performance of drinking water supply systems	68.95	26.537	.284	.359	0.603
Performance of non-drinking water supply systems	69.12	25.200	.397	.478	0.586
Choice and availability of food and drinks provided by hospital	69.65	24.712	.307	.385	0.597
Quality of food and drinks provided by hospital	70.59	26.448	.094	.361	0.642

Quantity of food and drinks provided by hospital	71.31	27.004	.092	.187	0.635