

**DETERMINING A SOURCING APPROACH
TO INFRASTRUCTURE ASSET MAINTENANCE: A
CASE STUDY IN THE CITY OF CAPE TOWN
*Assessing the Insourcing and Outsourcing
Approach***

by
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DECLARATION

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ABSTRACT

The purpose of this study is to determine a sourcing approach to infrastructure asset maintenance in the City of Cape Town. A favoured sourcing approach is largely influenced by the underlying aims surrounding insourcing or outsourcing. The sourcing approach is usually concerned with resource capacity, technical expertise, changes in infrastructure technology and response to risks in the asset maintenance environment. The sourcing decision for asset maintenance services considers factors such as increasing capacity, time saving, gaining technical expertise and mitigating exposure to risks, and can be based on an acceptable method of procuring services. This study explores key sourcing factors that influence the sourcing decision to insource or outsource asset maintenance services and suggests how theoretical perspectives influence sourcing decision-making that responds to risks to infrastructure in the City of Cape Town.

The case study focuses on four asset maintenance branches in the City of Cape Town municipality. The asset maintenance unit's maintenance portfolio and services enabled the researcher to explore similarities in operating environments and the strategic sourcing approach in the City of Cape Town municipality. The research sample observed is relatively small, and therefore primary data was collected through interviewing asset maintenance experts using questionnaires, as well as through a comprehensive literature review exploring qualitative data and the application of thematic analysis against the research findings.

The study concluded that, if properly structured, the sourcing decision can effectively combine key factors such as business strategy, capacity, competency and contractual risks to inform the optimal sourcing approach. The study maintains that the sourcing approach is an integral part of the business strategy and departmental structure of the asset maintenance branches. From the results it is established that a structured sourcing approach will provide proper guidance for the decision to insource or outsource services. It was also found that an increasing reliance on outsourcing key maintenance services leads to increased exposure to uncertain events in the contract environment, which explains why the evaluation of risks during the sourcing decision is a critical process. This places emphasis on evaluating the best sourcing approach against the degree of risks in the procurement environment when entering into a

sourcing relationship. The study contributes towards identifying gaps in knowledge in the area of decision making in the sourcing approach when maintaining and procuring services during asset maintenance in the City of Cape Town municipal environment.

The study recommends that asset maintenance departments improve their sourcing approach and decision making and look to implement a more structured asset lifecycle management approach which integrates ISO 55001 into the asset maintenance sourcing approach throughout the asset lifecycle. Incorporating knowledge-based decision-making applications and business processes will provide a strategic and systematic approach to decision making against related risks in the lifecycle of any asset and can inform the relevant sourcing approach in a strategic framework.

Keywords: Sourcing approach, sourcing decisions, asset maintenance environment, lifecycle management.

OPSOMMING

Die doel van hierdie studie is om 'n verkrygings benadering tot instandhouding van infrastruktuur bates in die Stad Kaapstad te bepaal. 'n Begunstigde verkrygings benadering word grootliks beïnvloed deur die onderliggende doelwitte rondom inkontraktering of uitkontraktering. Die verkrygings benadering is gewoonlik gemoeid met hulpbronskapasiteit, tegniese kundigheid, veranderinge in infrastruktuur tegnologie en reaksie op risiko's in die bate-instandhoudings omgewing. Die verkrygings besluit vir bate-instandhoudingsdienste oorweeg faktore soos die verhoging van kapasiteit, tydbesparing, die verkryging van tegniese kundigheid en die versagting van blootstelling aan risiko's, en kan gebaseer word op 'n aanvaarbare metode om dienste te verkry. Hierdie studie ondersoek sleutel verkrygings faktore wat die verkrygings besluit beïnvloed om bate-instandhoudingsdienste in te kontrakteer of uit te kontrakteer, en stel voor hoe teoretiese perspektiewe verkrygings besluitneming beïnvloed wat op risiko's vir infrastruktuur in die Stad Kaapstad reageer.

Die gevallestudie fokus op vier bate-instandhoudings takke in die Stad Kaapstad-munisipaliteit. Die bate-instandhoudings eenheid se instandhoudings portefeulje en dienste het die navorser in staat gestel om ooreenkomste in bedryfsomgewings en die strategiese verkrygings benadering in die Stad Kaapstad-munisipaliteit te ondersoek. Die navorsing steekproef wat waargeneem is, is relatief klein, en daarom is primêre data ingesamel deur onderhoude te voer met bate-instandhoudings kundiges met behulp van vraelyste, asook deur 'n omvattende literatuuoroorsig wat kwalitatiewe data en die toepassing van tematiese analise teen die navorsingsbevindings ondersoek.

Die studie het tot die gevolgtrekking gekom dat, indien behoorlik gestruktureer, die verkrygings besluit sleutelfaktore soos besigheidstrategie, kapasiteit, bevoegdheid en kontraktuele risiko's effektief kan kombineer om die optimale verkrygings benadering in te lig. Die studie hou vol dat die verkrygings benadering 'n integrale deel van die besigheidstrategie en departementele struktuur van die bate-instandhoudings takke is. Uit die resultate word vasgestel dat 'n gestruktureerde verkrygings benadering behoorlike leiding sal gee vir die besluit om dienste te inkontrakteer of uit te kontrakteer. Daar is ook gevind dat 'n toenemende afhanklikheid van die uitkontraktering van sleutel instandhoudingsdienste lei tot verhoogde blootstelling aan onsekere gebeure in die kontrak omgewing, wat verduidelik waarom die evaluering van risiko's tydens die verkrygings besluit 'n kritieke proses is. Dit plaas klem op die evaluering van die beste verkrygings benadering teenoor die graad van risiko's in die verkrygings omgewing wanneer 'n verkrygings verhouding aangegaan word. Die studie dra by tot die identifisering van gapings in kennis op die gebied van besluitneming in die verkrygings benadering by die instandhouding en verkryging van dienste tydens bate-instandhouding in die Stad Kaapstad munisipale omgewing.

Die studie beveel aan dat bate-instandhoudings departemente hul verkrygings benadering en besluitneming verbeter, en daarna streef om 'n meer gestruktureerde bate-lewensiklus bestuur-benadering te implementeer wat ISO 55001 in die bate-instandhouding verkrygings benadering deur die hele bate-lewensiklus integreer. Die insluiting van kennisgebaseerde besluitnemings toepassings en besigheidsprosesse sal 'n strategiese en sistematiese benadering tot besluitneming teen verwante risiko's in die lewensiklus van enige bate verskaf en kan die relevante verkrygings benadering in 'n strategiese raamwerk inlig.

Sleutelwoorde: Verkrygings benadering, verkrygings besluite, bate-instandhoudings omgewing, lewensiklus bestuur.

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LIST OF ACRONYMS AND ABBREVIATIONS

CoCT	City of Cape Town
CMF	Contract Management Framework
LG	Local Government
MATR	Municipal Asset Transfer Regulations
MFMA	Municipal Finance Management Act
MTEF	Medium-Term Expenditure Framework
SAEF	South African Excellence Framework
U-AMP	User Asset Management Plan

CHAPTER 1

INTRODUCTION AND BACKGROUND

1.1 Introduction

The purpose of this research is to examine sourcing approaches against decision-making factors that support infrastructure asset maintenance in the City of Cape Town Metropolitan Municipality. This chapter provides a background to the research and motivation for the study. The research problem, research design and methodology are discussed, and the objective of the research explained.

1.2 Background

The public often expresses dissatisfaction surrounding the condition of infrastructure assets and lack of effective strategies to adequately maintain these assets. Viewing infrastructure assets as “strategic tool[s] to promote improved service delivery” emphasises the importance of decision making in the maintenance environment for continuity of services (Republic of South Africa, 2006:5). The National Infrastructure Maintenance Strategy, which is recognised by National Government, explains:

“Infrastructure maintenance must be regarded as a strategic tool to promote improved service delivery, to unlock funding to extend infrastructure to the historically disadvantaged communities, and to support the nation’s economy. Maintenance of existing infrastructure should not be seen as of secondary importance to the apparently more attractive prospect of new infrastructure.”

(Republic of South Africa, 2006:5)

This statement emphasises the importance of infrastructure asset maintenance and identifies key objectives that prioritise change in the perspectives and prioritisation thereof. Embracing the concept of ‘delivery’ shifts traditional public sector thinking to a strategic focus (Ibid., 3). Pressure on conventional methods of in-house service delivery has made space for outsourcing partnerships as an alternative sourcing approach to

ensure delivery of services and infrastructure support. Whilst outsourcing services is common practice, insourcing is also used to ensure public sector infrastructure asset management and service delivery. This study closely reviews infrastructure asset maintenance, and the concepts of outsourcing and insourcing in conjunction with legislative frameworks that inform decision making.

1.3 Problem Statement and Research Objectives

1.3.1 Research problem

There are various approaches when sourcing services to maintain infrastructure assets within the private and public sectors. The predominant method implemented by municipalities is to insource and/or outsource services within the maintenance environment. The increase in dependency on external service providers is often associated with outsourcing key services in municipalities since, according to Arendse (2002) and Molaba (2008), the sourcing approach does not take into consideration the loss of internal core competencies. Loader (2006) emphasises the possible increase in non-compliance and negative impact on customer service delivery associated with outsourcing in support of this view. The alternative approach to provide maintenance services using in-house maintenance staff poses its own set of challenges and risks, such as adapting to changes in technology, ensuring an adequate mix of resource capacity and delivering on service performance expectations in a municipal environment (Thompson & Stickland, 2003; Loader, 2006). The sourcing approach therefore exposes municipalities to risks when maintaining their infrastructure assets to fundamentally support service delivery operations. The primary focus of the research will determine a sourcing approach for infrastructure asset maintenance within the City of Cape Town.

1.3.2 Research question

The research attempts to the following research question: How can the City of Cape Town determine a sourcing approach for maintaining infrastructure assets to support service delivery objectives?

1.3.3 The research aim and objectives

The research aims to determine a sourcing approach to infrastructure asset maintenance that will inform decision making about which services to insource or outsource. The aim of this thesis is therefore not to motivate for outsourcing rather than insourcing, or to suggest a superior method to ensure efficient and effective service in the City of Cape Town. The intent is also not to advocate for insourcing as superior to an outsourcing strategy, or vice versa. Rather, the study looks to achieve greater responsiveness, higher performance and ease of meeting social and financial commitments.

The primary objectives of the research study are to:

- a) Understand the relationship between sourcing approaches and the maintenance environment;
- b) Identify key factors that influence a sourcing approach decision; and
- c) Establish a decision-making framework that guides the selection of a sourcing approach.

The aim of this research is to develop an effective sourcing approach for decision making which can be applied systematically when choosing to insource or outsource a service. When assets require maintenance, the sourcing decision – be this to use internal resources or outsourcing – requires an evaluation of the complexity of the situation. An inefficient sourcing decision can significantly increase the risk of asset failure, decrease quality of workmanship and negatively impact on service delivery.

1.3.4 Importance of the research problem

Outsourcing and insourcing maintenance services are regarded as strategic tools for effective and efficient management of infrastructure and assets that support service delivery. However, risks are present in each sourcing approach. Increased reliance on outsourcing contracts has led to challenges in municipalities, such as sourcing risks, workforce capability, capacity, labour contracts, and procurement frameworks whilst facing pressure to achieve service delivery targets. The sourcing approach therefore requires analysis that considers key factors in the sourcing approach, as well as potential risks and responses to these.

1.4 Ethical Implications of the Research

The study focusses on an evaluation study design using qualitative data-collection of maintenance units within the municipal environment. Research methods such as semi-structured and unstructured interviews containing explorative and descriptive questions were used with subject experts. Written consent and information letters were signed by the research participants as a formal agreement to partake in the research. Permission to conduct the research was obtained and approval granted from the relevant municipality on condition that the research participants remain anonymous and no financial information be included in the research. Ethical clearance was obtained from Stellenbosch University.

1.5 Delimitations of the Study

Cost comparison between insourcing and outsourcing remains a primary consideration in sourcing decisions (Gottfredson, Puryear & Phillips, 2005). However, the researcher was not permitted to include actual financial information in the study. This limitation was imposed by the municipality within which the research was conducted.

1.6 Research Design and Methodology

Preselected research methodologies were used to examine the case study of the City of Cape Town municipality. The proposed research design will collect qualitative data to identify a cluster of factors that influence decisions to insource or outsource services and interpret results. The following qualitative data will be explored to determine a sourcing approach to infrastructure asset maintenance:

- a) Literature reviews;
- b) Semi-structured interviews with descriptive questions;
- c) Explorative unstructured interviews;
- d) Questionnaires conducted with experts; and
- e) Secondary data collection from the maintenance unit's documents, relevant to the research study.

Qualitative data-gathering is inductive, exploratory and rational and involves researchers working relatively closely with participants (Bryman & Bell, 2011). Qualitative analysis research methods, such as thematic analysis, assist the researcher in applying a low level of interpretation (Vaismoradi, 2013). Perspectives and data themes were gathered to further an understanding of relations between the sourcing concepts present in the infrastructure maintenance units (Bryman & Bell, 2011).

1.6.1 Data collection and sampling

The research design's data-collection techniques support the research objectives. Qualitative data was collected through personal interviews and self-administered questionnaires with the research sample of four asset management branches within the City of Cape Town. The researcher focused on a non-probability sample design with a non-random selection which is direct and specific, and is therefore purposive sampling (Saunders, Lewis & Thornhill, 2009:237).

The explorative study facilitates empirical research of a qualitative nature to obtain an in-depth understanding of a process, event, or situation (Morra-Imas & Rist, 2009:271). Thematic analysis of identified data led to the development of research themes across the data set to interpret meaning within the content (Bryman, 2017).

Objectives were achieved and supported through:

- a) Literature reviews;
- b) Semi-structured interviews;
- c) Questionnaires; and
- d) Secondary data.

The primary objective of the study is supported by thematic analysis applied to analytically examine qualitative data, thereafter, relating the analysis back to the research question and objective of the study. Developing the sourcing approach to infrastructure assets maintenance is the final objective of the study. The use of personal details, names and designations of individuals partaking in the study were not permitting within the study, nor was financial expenditure against these categories and resource costs.

1.7 Chapter Outline

The chapters for this research study are as follows:

Chapter 1: Introduction and Background

Chapter 1 provides the background and context of the study. It explains the motivation, research problem, elaborates on the aim and objectives of the study and provides insight into the research design and methodology.

Chapter 2: Literature Review: Theoretical Perspective of Sourcing Strategies and Infrastructure Asset Maintenance

Chapter 2 provides a theoretical perspective of sourcing strategies and infrastructure asset maintenance. Sub-components in the chapter elaborate on the City of Cape Town's service delivery environment. Infrastructure maintenance is defined, and strategic sourcing, outsourcing and insourcing are explained. The chapter further elaborates key factors that guide the sourcing approach, identifies risk factors that influence decision making and discusses outsourcing contracts.

Chapter 3: Literature Review: The Legislative and Policy Framework

Chapter 3 presents a literature review on the legislative frameworks; discusses relevant acts, regulations and policies; and conducts a content analysis of literature that will inform and influence the study.

Chapter 4: Research Findings

Chapter 4 conveys the findings and analysis within the manifest structures of the City of Cape Town, referring to the literature review to support the study.

Chapter 5: Recommendations and Conclusions

Chapter 5 recommends the best sourcing approach, including factors that guide the decision making and taking into consideration the threats and risks in the infrastructure asset maintenance environment. This chapter also offers a conclusion to the study.

1.8 Summary

This chapter outlined the research objectives, types of data and data-collection methods that will respond to the research problem, which was also specified. The aim of this research is to develop an effective and systematic decision-making approach for deciding when to insource or outsource a service. The next chapter will review literature relevant to the research question and objectives.

CHAPTER 2

LITERATURE REVIEW: THEORETICAL PERSPECTIVE OF SOURCING STRATEGIES AND INFRASTRUCTURE ASSET MAINTENANCE

2.1 Introduction

The purpose of this chapter is to assess existing literature on strategic sourcing and to elaborate on key factors that affect outsourcing and insourcing within the sourcing approach of infrastructure asset maintenance. This aligns with the primary focus of the research to determine a sourcing approach to infrastructure asset maintenance.

To achieve its primary objective, this study will attempt to:

- a) Understand the relationship between sourcing approaches and the maintenance environment;
- b) Identify factors that influence a sourcing approach decision; and
- c) Establish a decision-making framework that can determine the sourcing approach to be taken.

The sourcing approach requires analysis against a decision-making framework that incorporates key factors into the sourcing decision. In addition, elements of risk will be explored in order to evaluate their impact on the sourcing approach when maintaining infrastructure assets.

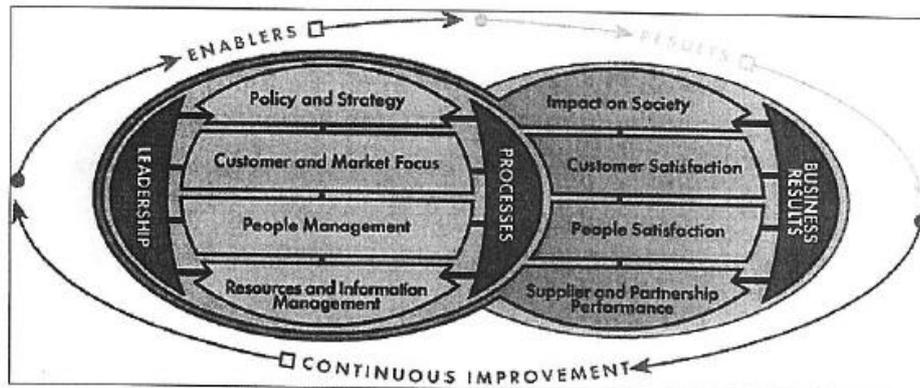
Since the Industrial Revolution, organisations have evolved to adapt to competition in global markets and influences. Porter (1980) and Thompson and Strickland (2003:81) list the competitive forces that influence the business environment as “competing sellers, entry of new competitors, substitute products, supplier-seller and seller-buyer collaboration and bargaining”. The authors suggest that these forces create a competing environment and influence organisational structures, processes and procurement strategies. These forces have influenced and changed legislative frameworks, regulations and policies in the public sector (Thompson & Strickland, 2003:81). In certain cases, these have been positive changes; however, the ineffective management of “public funds, adequate budgets, problems with aging infrastructure assets and in adequate skills” in the public domain is yet to be addressed (CSIR, 2006:10).

Municipalities such as the City of Cape Town, Tshwane and Nelson Mandela have adopted significant changes to their organisational structures and management principles to achieve excellence in service delivery. Adaptation of any operating environment requires changes to systems, procuring methods and re-alignment of core services and resources to achieve the organisation's objectives. This literature review attempts to evaluate a cluster of factors that influence the organisation's business objectives and transformational processes of operations, while weighing these against the risks and sourcing strategies within the infrastructure asset maintenance environment of the City of Cape Town. Within the context of outsourcing and insourcing, the integration of operations, competencies, contracts and risks which supports an effective operating model will be evaluated. The next section discusses the City of Cape Town sector environment and the key factors that influence service delivery, infrastructure asset maintenance and the strategic sourcing environment.

2.2 The City of Cape Town Metropolitan Municipality

The City of Cape Town Metropolitan Municipality's decision making is governed by policies, regulations and service delivery mandates. These legislative frameworks place emphasis on elements of good governance in operations, procurement strategies, infrastructure management and risk frameworks. Current government's vision places emphasis on the "creation of a people centred, and people driven public service which is characterised by equity, quality, timeousness and strong code of ethics", as stipulated in the White Paper on Transforming Public Services Delivery (Republic of South Africa, 1997). The ruling party requires an elevated strategic approach to achieve excellence in the service environment. The SAEF model in Figure 1 introduces a holistic approach that produces a "culture of organizational excellence throughout South Africa to enhance overall competitiveness and promote the well-being (quality of life)" for all citizens (Koegelenberg, 2005:61).

The SAEF model identifies key enablers relevant to the City of Cape Town's internal organisational environment which influence the external environment consisting of people, customers and the market. The effective implementation and co-ordination of these key enablers can promote service delivery excellence and create an environment of continuous improvement.

Figure 1: South African excellence model

Source: Koegelenberg (2005)

The City of Cape Town's business environment and processes consist of enablers, and the legislative framework consists of conduits created to achieve the objective of excellence in service delivery within the public environment. If the enablers are adequately aligned with the correct policies that support excellence in service delivery, the City of Cape Town Metropolitan Municipality will achieve this objective of excellence. Reviewing the enablers against policies will align the City of Cape Town Metropolitan Municipality with principles that promote good governance and promote continuous improvement in the public environment (Koegelenberg, 2005:61).

In the case of the enabler of 'Policy and Strategy', elevated services delivered by public servants will emulate efficient, effective and people-orientated service delivery which will result in customer satisfaction and the effective implementation of the Public Administration Management Act (No. 11 of 2014) (Koegelenberg, 2005:61). Considering the enabler 'Customer and Market Focus', an aggressive and creative focus on public participation processes will achieve 'Customer Satisfaction', in particular if this adheres to the Batho Pele principles of "consultation, service standards, access, courtesy, information, openness and transparency, redress, value for money" (Koegelenberg, 2005:61; Republic of South Africa, 1997:12).

The effective implementation of the 'People Management' enabler will require effective monitoring and control strategies, which will lead to confidence and 'People Satisfaction' if it underpins responsible financial management and eliminates "unauthorised, irregular or fruitless and wasteful expenditure" (Koegelenberg, 2005:61; Republic of South Africa,

2003b). The enabler of 'Resource and Information Management' could facilitate a structured elevated standard of 'Supplier and Partnership Performance' if resources and procurement strategies within the Framework for Supply Chain Management SCM, Gazette No. 25767 (2003) are effectively implemented (Koegelenberg, 2005:61).

It can therefore be stated that Koegelenberg's model (20015:61) places emphasis on good governance and internal processes with a targeted customer-focused approach that supports an environment of continuous improvement. The alignment of enablers, results and continuous review of Koegelenberg's model (20015:61) must respond to The City of Cape Town Metropolitan Municipality's integrated development plan (IDP). The IDP is regarded as the strategic plan that sets out development objectives, operational strategies and informs all planning and development against resources and capacity in the municipality. (Republic of South Africa: 1998a) The IDP gives effect to key action plans for the implementation of strategies identified and influences the organisations business objectives, to ensure effective service delivery for the municipality. The next section will continue to evaluate infrastructure asset management with a specific focus on the concept of asset maintenance and introduce factors and guiding principles that are unique to the function and services provided in the public sector.

2.3 Infrastructure Asset Management: Asset Maintenance

To deliver on their promise to the people they serve, municipalities must develop a strategic approach towards maintaining infrastructure assets such as water, roads, public facilities and housing, which directly impact people's livelihood. An infrastructure asset management strategy directs and strategically classifies the municipality's assets, aligns focus on the adequate approach to maintaining these and informs the correct response to reduce risk and avoid loss of services that will hinder service delivery. The Republic of South Africa (2006:3) emphasises the entirety of the cycle of infrastructure asset maintenance, stating the delivery should be understood as "embracing not just constructing the infrastructure but appropriate operation and maintenance thereafter for the whole design life cycle of the asset". To understand the importance of infrastructure asset maintenance and provide context, concepts will be defined in the following sections.

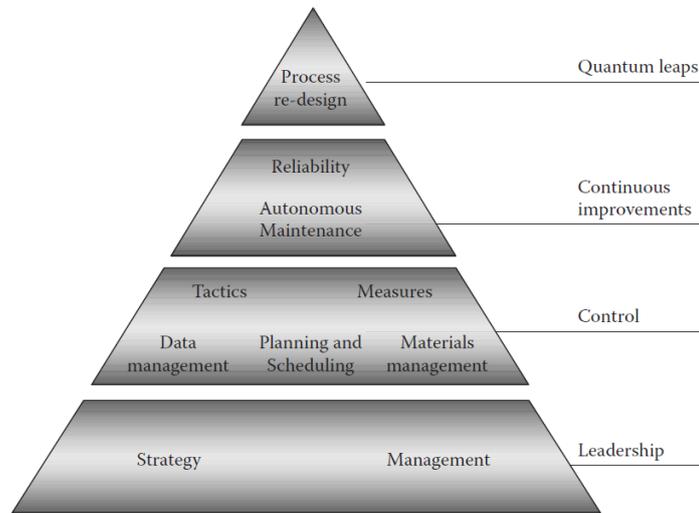
2.3.1 Definition of infrastructure asset management

Ismail and Paquin (2012:1) define asset management as “the methodical planning and control of assets through its lifecycle, including design and construction operation, maintenance, upgrades, and eventual disposal or decommission”. Mhlongo (2010:8) emphasises that asset management should evolve to improve in “condition, performance and operational cost requirements”. Campbell, Jardine and McGlynn (2011) add that companies must strive to achieve asset management excellence and that an optimal solution can be achieved through a balance of performance, risk, and cost. Infrastructure asset management can therefore be considered as a holistic approach that sustains the intent the asset was designed for throughout its lifecycle. However, ensuring that the asset performs optimally requires an effective maintenance strategy and plan that maximises the output but reduces the risks to operations, as will be closely evaluated in the next chapter.

2.3.2 Definition of infrastructure asset maintenance

According to Campbell, Jardine and McGlynn (2011:25), infrastructure asset maintenance is “focussed on sustaining the manufacturing or processing assets’ productive capacity”. Operational efficiency is closely linked to the maintenance strategy of assets and can maximise “the ability to produce quality output at demonstrated levels” (Campbell, Jardine & McGlynn, 2011:25).

The Municipal Finance Management Act (No. 56 of 2003) emphasises the importance of a strategic approach to maintain municipal infrastructure assets. If effectively and efficiently implemented, “maintenance enhances production capacity and reduces future capital output” (Campbell, Jardine & McGlynn, 2011:27). In sum, an effective maintenance strategy is essential in the asset management environment and the lack thereof poses risks to operations, cost to the organisation and operations. Avoiding premature loss of critical infrastructure will require a strategic approach towards achieving maintenance excellence in operation and infrastructure. In Figure 2 below, Campbell, Jardine and McGlynn (2011:28) introduce the maintenance excellence pyramid, which they believe will achieve maintenance excellence on a strategic and operational level.

Figure 2: Maintenance excellence pyramid

Source: Campbell, Jardine and McGlynn (2011:28)

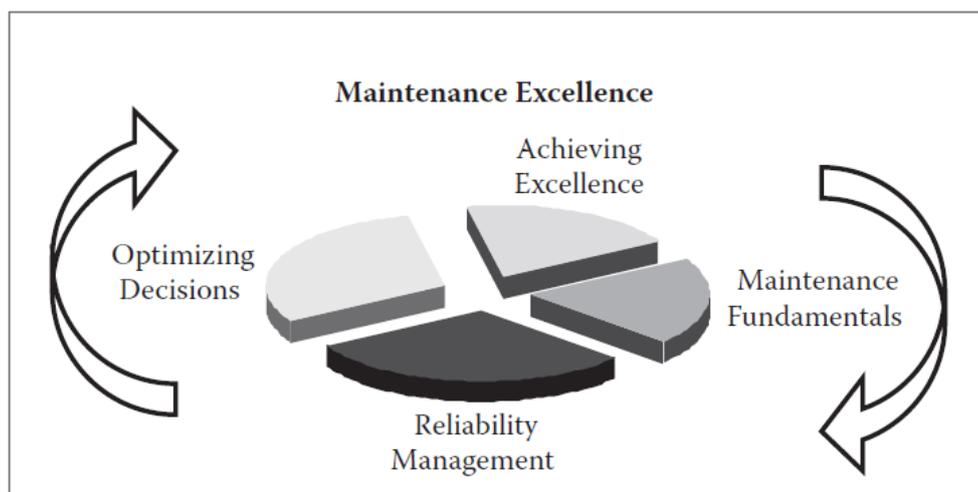
Campbell, Jardine and McGlynn (2011:28) state that “understanding where an organization is in its maintenance maturity can act as the baseline for where it wants to be”. The model in Figure 2 can therefore be considered as depicting building blocks to achieve excellence with a holistic ‘bottom-up’ approach (Ibid., 28). Campbell, Jardine and McGlynn (2011:28) are of the opinion that “a maintenance system and processes operating within such an environment can be optimised effectively”. Furthermore, principles of continuous improvement can provide competitive advantage, and this maintenance can provide strategic advantage (Ibid., 27). Emphasis is placed upon the importance of leadership implementing change, the need for a controlled operational environment and continuous improvement, which increases the ability to predict when an asset is likely to fail (Ibid., 28). Principles of continuous improvement, and optimising operations and systems are of utmost importance in public and private organisations. These principles support profitability in the private sector, and the ability to meet service delivery standards in the public sector. However, the model does not sufficiently elaborate on how organisations can achieve efficiency in their operations. Evaluating the strategic objective of infrastructure asset maintenance and the factors that influence its operations can provide a framework of excellence in the asset management strategy.

2.3.3 Strategic objectives of asset maintenance

Meredith and Shafer (2002:15) state that “as business became increasingly globalised and competition grew fierce, organizations were forced to become even more efficient and effective”. Campbell, Jardine and McGlynn (2011:7) explain that an effective asset maintenance management system seeks to “reduce interruption in production or service, unplanned allocation of resources to breakdowns, additional expenses for hiring of equipment, sourcing of material [and/or] additional cost for overtime”, the avoidance of which benefits the operation. A study by Ismail and Paquin (2012:5) adds that companies in the asset intensive industry face two competing pressures: (1) the need to reduce operational and maintenance budget; while (2) maximising on return on assets (RoA).

According to Meredith and Shafer (2002:3), increasing productivity and improving quality are primary objectives of operations management as they directly impact on the company’s profitability. To achieve these primary objectives, the failure rate of critical operational assets and production downtime must both be reduced. More production time equates to greater ability to control cost and quality, which in turn increases efficiency of the operational environment.

Figure 3: Components of maintenance excellence



Source: Campbell, Jardine and McGlynn (2011:5)

To achieve maintenance excellence, as illustrated in Figure 3, Campbell, Jardine and McGlynn (2011:27) emphasise the importance of implementing a maintenance strategy

that enhances production capacity. From this perspective, the maintenance strategy must increase production availability and standard quality levels, reduce costs by reducing throughput time of production, and effectively mitigate production risks and their exposure to operations, employees and customers (Campbell, Jardine and McGlynn, 2011:27).

Overall, if asset availability and reliability can reduce operational costs, an effective asset maintenance strategy can provide strategic advantage to the company. Lowering the frequency of disruption to operational equipment and infrastructure can increase productivity and production. This in turn can reduce risks in the operation's environment. With less emphasis on profitability, the public sector aims to deliver goods and services at the best value for money. An optimum system and strategy that promotes excellence in maintaining public infrastructure at a low cost is a primary objective of municipalities. Continuity of operations and availability of infrastructure that supports service delivery are fundamental. To ensure continuity of service requires an effective sourcing strategy throughout an asset's lifecycle, which will be discussed in the next section.

2.4 Sourcing and Decision Making

Johnson (2005:1) defines strategic sourcing within government as a “collaborative and structured process of critically analysing an organization's spending and using this information to make business decisions about acquiring commodities and services more effectively and efficiently”. Else (2002:33) explains strategic sourcing as defining, planning and managing “how an enterprise deploys internal and external resources and services to ensure the continuous fulfilment of its business objectives”. Whittaker (2013:1) add to this their understanding of strategic sourcing as “a comprehensive process aimed at extracting maximum advantage on cost, value, technology, process and quality by leveraging an organisation's buying power with selected suppliers, conducting best price evaluations, sourcing appropriately and conducting joint process improvements”. Yagoob and Ting (2015:40) further describe strategic sourcing as “the process of crafting and organising networks of supply in line with the strategic and operational performance objectives of an organisation”.

The above-mentioned authors' approach to strategic sourcing – aside from Johnson (2005) – contrasts with the City of Cape Town's interpretation of strategic sourcing that calls for a structured, albeit collaborative, process and seems synonymous with the

private sector sourcing approach that leverages practices that produce return on investment. Else (2002) and Whittaker (2013) note that strategic sourcing methodology is, however, silent on the aspects of resource capacity, availability and competency which are enablers in the strategic sourcing environment in the City of Cape Town. The next section will evaluate the sourcing environment.

2.4.1 The sourcing environment

Mahapatra, Narasimhan and Hult (2020) and Williamson (1991) describe the sourcing environment as governance mechanisms referring to a set of formal and informal arrangements that regulate deviant behaviours, facilitate goal adaptation, and help distribute rewards and responsibilities among concerned parties. According to research by Mahapatra, Narasimhan and Hult (2020:3), governance mechanisms are characterised as discrete market transactions, arm's length contracts, relational contracts and partnerships or alliances (Williamson, 1996; Ring & Van de Ven, 1992). However, the effectiveness and ineffectiveness of the sourcing approach and mechanisms are not adequately contextualised. Bradach and Eccles (1989) and Sako, Chondrakis and Vaaler (2016) place emphasis on firms using multiple governance mechanisms (e.g., price-based, open market or contractual transactions, trust-based inter-firm alliances and/or hierarchy-based in-house sourcing) simultaneously for the same product. According to De Jongh (2003:18), strategic sourcing is an outcome-based sourcing approach used to procure goods or services using multiple suppliers through contracts. Mahapatra, Narasimhan and Hult (2020), Williamson (1996) and Ring & Van de Ven (1992) contextualise the strategic sourcing environment as a governance environment consisting of various contractual transactions and arrangements which influence the decision-making process and sourcing strategies. The context of governance environment is synonymous with the City of Cape Town regulatory environment which influences the sourcing strategy and decision making described in detail in Chapter 3.

Bradach and Eccles (1989) and Sako, Chondrakis and Vaaler (2016) raise the importance of focusing on and evaluating the internal environment, described as "hierarchy-based in-house sourcing" in the decision-making process. Thawiwinyu and Laptaned (2009:20) elaborate: "firms that implement strategic sourcing experience significant improvement in their supply chain performance management, specifically in terms of responsiveness and satisfaction of customer". Yagoob and Ting (2015) state

that “in an era of budget cuts, multiple efforts, and overall economic uncertainty, the public sector should focus its efforts mightily on how to properly implement strategic acquisition practices so its customers can experience increased customer satisfaction, however that might be defined (e.g., increased savings, better service or decreased delivery times)”. Although the importance of strategic sourcing in a governance mechanism environment is emphasised, the approach or ‘how to’ choose a sourcing strategy is not elaborated upon. The next section explores how strategic sourcing models can provide insight into implementing a strategy approach in a governance contract environment.

2.4.2 Sourcing approaches and contracts

Decisions pertaining to strategic sourcing outline a combination of factors that promote cost savings and increase performance. The correct sourcing approach ensures an appropriate procurement method is implemented to produce cost savings and mutually beneficial contractual relationships delivered at the expected level of service. Arendse (2002:20) and Maloba (2008:20) note five different types of sourcing approaches:

- 1) Contracting out of activities: Calculated decisions are made by the company to contract out low-level services. The sourcing approach is used to address a problem without necessarily calculating the risk and the company’s strategic objectives. The solution and sourcing relationship is often short term.
- 2) Outsourcing the service: Specialised service providers are selected to deliver predefined services. The external service providers’ expertise, capacity and the agreed level of service contributes to the company’s strategic objectives. This agreement enables the organisation to focus on gaining competitive advantage in the market. However, the sourcing approach does not necessarily take into consideration the loss of core competencies.
- 3) Insourcing: This approach assists in retaining skills, effective utilisation of assets and optimised operations with low unit costs, whilst improving productivity in the company. The introduction of new technology is facilitated through a skills development approach.

- 4) Co-sourcing: It is the responsibility of both parties to supply resources to perform activities. The host will supply staff with specialised knowledge in the organisation as per the contract.
- 5) Benefit based relationship: The company and contracting company enter into a joint agreement with upfront investment and sharing of benefits within a pre-agreed contractual arrangement.

Several sourcing approaches have been identified as relative to the functions and objective the organisation wishes to achieve. Certain functions inform the sourcing process relative to the best suited function, services and core competencies in the organisation. When procuring a service, the sourcing process takes into consideration the contractual relationship and the benefits it poses to the organisation. This process must consider the degree of risk that will be incurred against the financial viability and expenditure to procure goods and services (Hugo, Bandehorst-Weiss & Biljon, 2006:72).

According to Hugo, Bandehorst-Weiss and Biljon (2006:72), the correlation between the degree of risk and expenditure is directly linked to the volatility of supply and demand in the market. The most effective sourcing strategy responds to the motivation for sourcing, the risks in the sourcing relationship and further establishes a balance around critical skills and the sourcing approach, taking into consideration the financial and competing markets. The decision to insource references the use of in-house resources to provide a function or service. Outsourcing refers to the use of external resources and/or organisations within a contractual framework to provide a function or service. The purpose of this study is to establish the most effective sourcing strategy for utilising an outsourcing or insourcing approach and evaluate the degree to which each is beneficial to the organisation.

2.4.3 Definitions of outsourcing and insourcing

2.4.3.1 Definition of outsourcing

Buchanan (2008:87) defines outsourcing as the “act of transferring services or manufacturing activities, which the organization previously performed ‘in-house’, i.e., with its own employees, to one or more external organizations”. According to Lankford and Parsa (1999), “outsourcing is the procurement of products or services from sources that are external to the organization”. Meredith and Shafer (2002:27) hold the view that outsourcing “involves subcontracting out certain activities or services”, where “activities that are not strategic are candidates for outsourcing.” PriceWaterhouseCoopers (2010) highlights the growing trend by companies of choosing outsourcing as a means to obtain strategic advantage in the industry. However, Greaver (1999:4) cautions that transferring services could result in inadvertently transferring decision-making powers when outsourcing. Greaver (1999:4) further advises that the decision and the contractual basis on which outsourcing is entered into must be clearly defined and benefits identified.

2.4.3.2 Definition of insourcing

Thompson and Strickland (2003:122) consider a company’s internal resources as “key ingredients of a core competence and a firm’s competitive capacity” due to knowledge, skills and expertise developed over time. Insourcing is defined as when services or products are produced or services performed by these in-house resources (Buchanan, 2008:87). According to Loader (2006:223), organisations motivate insourcing decisions for services or products based on the ability, capacity, infrastructure and technology available to sustain performance and production levels.

2.4.3.3 The benefit of outsourcing

PriceWaterhouseCoopers (2010) highlights a benefit of outsourcing as allowing directors of a business to focus on their strengths in terms of core activities. Loader (2006:213) and Buchanan (2008:88) both consider outsourcing services as a viable method for companies to reduce costs, effectively measure performance and reduce operational risk. This view is supported by Deloitte and LLP (2015:2) who state that “utilizing an outsourcing arrangement for elements of service delivery is a common method to reduce

operational costs and to help improve process maturity while allowing the company to focus on core business lines”.

Outsourcing can therefore provide companies with a strategic advantage but does pose potential pitfalls (Deloitte & LLP, 2015). Clemons and Hitt (1997:3) and Greaver (1999:83) state that outsourcing provides an opportunity to reduce operating costs and focus on core competencies, as well as the ability to improve quality of services or products and gain access to knowledge and skills linked to new technology and innovation without extensive financial commitments and loss of profitability. Greaver (1999:6) is of the opinion that the decision to outsource will “improve performance, technological innovation and employment development without increasing capital requirements and costs” with significant benefit to any company. Loader (2006:224) views outsourcing as holding great advantage to an organisation; however, the associated risks must be meticulously evaluated. An outsourcing strategy therefore has advantages for organisations but should only be embarked upon after evaluating the benefits and extent to which it will impact in-house support areas. The decision to outsource must therefore take under consideration the motivation of outsourcing, alongside the disadvantages and the sourcing risks to which it exposes the organisation – factors that are relevant to the public environment.

2.4.3.4 The benefits of insourcing

Operations are largely concerned with factors that influence the “efficiency and effectiveness of domestic production compared with outsourcing” (Meredith & Shafer, 2002:46). Within a labour-intensive organisation such as the City of Cape Town sector, Meredith and Shafer (2002:46) consider the collaboration of factors such as efficiency, effectiveness, capacity, quality and flexibility as key elements which optimise operations and sustain maximum quality products or service. Thompson and Strickland (2003:119) state that collectively “a company’s skills and expertise, its intellectual capital, its competitive capabilities, its uniquely strong competencies, its collection of strategically valuable assets, and its market achievements determine the complement of resources with which it competes”. The effective collaboration of core competencies and physical assets is therefore at the cornerstone of company operations.

2.4.3.5 Disadvantages of outsourcing

A study by Deloitte and LLP (2015:3) lists contributing factors to outsourcing failure as including the “initial outsourcing strategy, the implementation/transition effort, the ability for the contract to affect or incentivize the client’s and provider’s strategic intent, the ability of the retained organization to mature into a managed services model, or a combination of these areas”. Loader (2006:216) believes the organisation’s dependency on service providers “may impact on the ability of regulated entities to manage their risks and monitor their compliance with regulatory requirements”. The transition of introducing outsourcing into an insourcing operating model requires a focus on “integrating the contractual and transition elements with the broader view of the new operating model that results from outsourcing or insourcing, the development and enablement of the retained organization, and the execution of organizational change management” (Deloitte & LLP, 2015:3). Thompson and Strickland (2003:185) consider that outsourcing the wrong or too many key activities increase the probability of losing control of the company’s objectives. Loader (2006:216) emphasises that the increased dependency could lead to non-compliance and negatively affect customer satisfaction.

According to Deloitte & LLP (2015:4), the failure of the outsourcing initiative is frequently due to:

- Outsourcing initiatives only focusing on contractual elements.
- Transition management caters to contracting efforts and deprioritises other work elements such as how people will work together.
- Outsourcing elements operate in silos, unaware of or neglecting dependencies.
- Service focus stops at service launch without a structured program for continuous improvement in place.

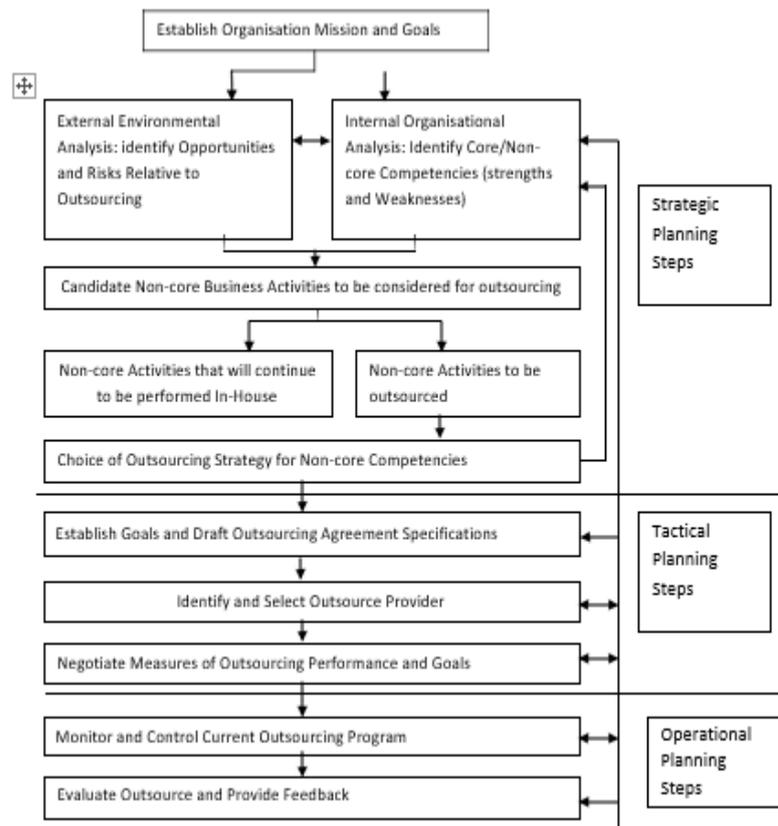
Strategically analysing the factors that contribute to schedule delays, cost overruns, service shortfalls, compliance failures, and an adverse employee experience – all of which contribute to the failure of outsourcing contracts – will positively influence the outsourcing relationship (Deloitte & LLP, 2015:3). Buchanan (2008:96) recommends that insourcing certain functions be considered to minimise the organisation’s risks of contract failure and loss of competencies associated with outsourcing. The concept of insourcing must be evaluated against the benefits and risks to which it exposes organisations.

2.3.4.6 Disadvantages of insourcing

The greatest challenge to insourcing is sustaining the “right culture, having a committed and energetic workforce, enjoying the trust of suppliers of customers and suppliers” (Thompson & Strickland, 2003:184). Sustaining an adequate mix of resource capacity and competency is associated with high overhead costs and labour relation problems when appointing and reducing capacity (Thompson & Strickland, 2003:184). Loader (2006:223) cautions that “workflow, resourcing/people issues, technology development and service delivery” challenge an organisation’s ability to maintain operation levels, increase capacity and to consistently achieve measurable performance. Insourcing in the public sector comes with a unique set of challenges. A study by Deloitte Consulting LLP (2014:19) states that there is an “insufficient municipal capacity due to lack of scarce skills, high vacancy rates, and lack of performance management, training and career paths (dysfunctional HR function)”. If the sourcing strategy is solely focussed on insourcing, attempts to sustain capacity and continuity in levels of service increase the risks to the organisation. The degree of risk of the approach adds to the organisation’s ability to meet its objective and must be taken into consideration and analysed, with an adequate response plan taking outsourcing contracts into consideration as an alternative means to supplement capacity.

2.4.4 Sourcing decision-making

An effective sourcing decision takes into consideration the motivation for sourcing in relation to the benefits it poses to the organisation. The insourcing and outsourcing approach each hold risks. Greaver (1999:4) cautions that when an outsourcing approach is chosen the decision must be carefully analysed against the element of risks. To mitigate risks, the motivation and nature of the service must be strategically analysed.

Figure 4: Schniederjans SWOT Analysis – sourcing model

Source: Schniederjans, Schniederjans and Schniederjans (2010:149)

Schniederjans, Schniederjans and Schniederjans (2010:149) propose a sourcing model that systematically analyses the organisation's ability to insource or outsource activities based on strengths, weaknesses, opportunities and threats within the operational environment. The sourcing model in Figure 4 illustrates that core business activities of strategic importance must be identified and insourced (Schniederjans, Schniederjans & Schniederjans, 2010:149). Non-core business activities can be outsourced but must consider the organisation's long-term goals.

2.4.5 Factors that influence the sourcing decision

According to Meredith and Shafer (2002:4), organisations exist to "create value, and operations [that] involve tasks that create value". Campbell, Jardine and McGlynn (2011:26) state that an effective sourcing strategy "improves profitability, sales, customer

satisfaction and increases competitive advantage". The decision to source is often influenced by the motivation for sourcing, proposed benefits, the best flexible sourcing approach for the chosen functions and risks associated with the aim to reduce cost and improve efficiency of service (Kremic & Tukul, 2003:5). Campbell, Jardine and McGlynn (2001), and Kremic and Tukul (2003) consider the organisation's corporate objective and strategy as key factors influencing the sourcing approach. According to Greaver (1999) and Thompson and Strickland (2003) the sourcing strategy should consider the impact of key factors such as the organisation's internal capability, capacity and the core competencies in the sourcing strategy. Molaba (2008), Buchanan (2008) and Loader (2006) present a combination of risks to which the operational and sourcing environment is exposed. Risks in the operational environment can include loss of competency to meet compliance, whilst in the sourcing environment a risk is contract failure which will eventually affect service delivery. Shah (2009) emphasises the consideration and evaluation of these key risk against strategic mitigations. These key factors must be observed in the sourcing environment to understand how they influence decision making against sourcing approaches in the maintenance environment.

2.4.5.1 Organisational corporate objectives and strategy

An effective sourcing decision takes into consideration the motivation for sourcing in relation to the benefits it poses to the organisation. Kurdia, et al. (2011) state that outsourcing allows the business or organisation to be more competitive by staying focused on its core competencies. Focusing on primary activities is essential for success (Kurdia, et al., 2011). Smith (2012) recommends "to keep maintenance in-house on critical assets when possible" since this influences asset efficiency and effectiveness. Therefore, a key factor when considering the sourcing decision is:

- The organisation's corporate objective and strategy focusing on the level of efficiency and effectiveness of operations of core and non-core business activities.

Greaver (1999:4) cautions that the decision must be carefully analysed against the element of risks when an outsourcing approach is chosen. The insourcing and

outsourcing approach are flawed with risks, which can be mitigated through strategic analysis of the motivation and nature of the service.

The organisation must take various factors into consideration concurrently, such as technology, demand trends and core activities, whilst evaluating strategy and cost analysis of activities including non-cost factors during their decision making (Hugo, Bandehorst-Weiss & Biljon, 2006:76). The type of relationship between these factors must respond to the strengths and weaknesses within the organisation which can largely be informed by the resource capacity and competency.

2.4.5.2 Resource capacity and competency

Buchanan (2008:88) identifies factors at operational level that influence the organisation's competitive strategy as "Financial, Customer service, Confidentiality, Quality and Innovation". Buchanan (2008:88) adds to this with a benefit analysis that takes into account factors such as cost, capacity, flexibility, risks and the nature of the services procured. Each factor influences the sourcing approach and informs decision making regarding the best suited strategies in the following ways:

- If the organisation is financially unable to invest in increasing the capacity of in-house operations and future growth requirements it may require activities to be outsourced.
- If customer satisfaction can be achieved within a shorter timeframe using internal resources (insourcing), there is no need to outsource these services.
- If confidentiality agreements are in place the option to outsource these services cannot be considered.
- When the level of quality of service cannot be achieved and maintained by in-house operations, the option of outsourcing these activities can be considered if it will yield a sustainable quality service.
- If the financial investment in innovation is not possible the decision to outsource the services will benefit the company.

The literature review considered the benefit of sourcing approaches and how these influence the decision to insource or outsource. The decision to insource or outsource must take into consideration the different effects it will have on operations, employee morale, operational performance and transactional costs. Outsourcing is often associated with high transaction costs and challenges of monitoring, while insourcing often reflects a lack of capacity, availability and competency to fulfil the internal infrastructure service portfolio and provide oversight to management of outsourced services. The importance of core competencies is discussed in the following section to offer perspective on the influence these have on the sourcing decision and the organisation.

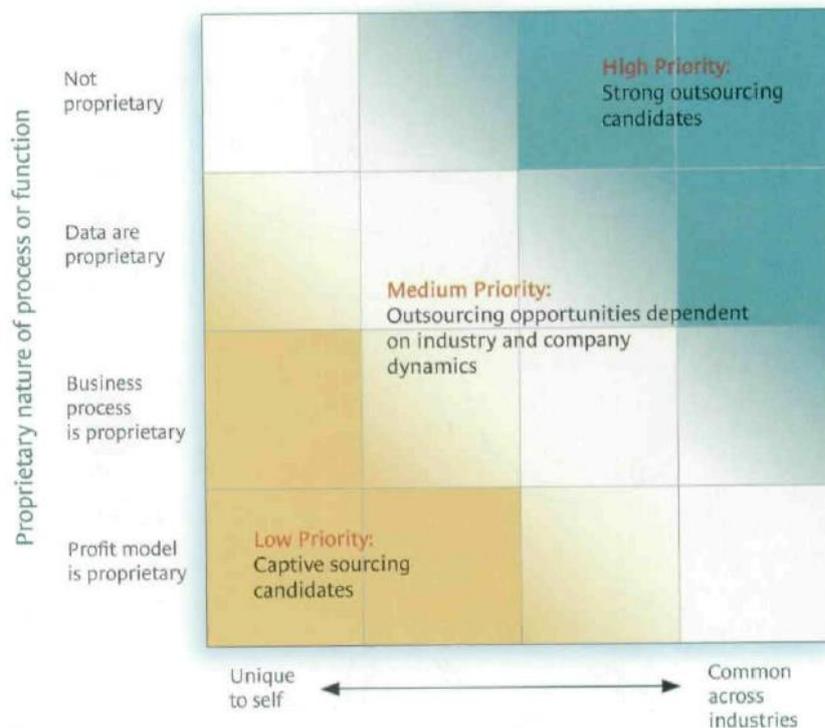
2.4.5.3 The influence of core competencies

This section discusses the three concepts of core competencies when considering an effective sourcing approach. The perspectives presented illustrate key factors which influence the strategic sourcing decision and the impact of core competencies on the organisation's ability to achieve its objectives. According to Greaver (1999:87), "any organization's core competencies are a unique combination of knowledge, special skills, proprietary technologies, information, and unique operating methods". As suggested by Thompson and Strickland (2003:122), "a core competence gives a company competitive capability" which can produce value for money and ensure customer satisfaction. Prahalad and Hamel (1990), Greaver (1999:92), and Thompson and Strickland (2003:122) believe organisations must match their strategy to their unique combination of competencies, which consist of skills, service or product. Prahalad and Hamel (1990), Greaver (1999:94) and Thompson and Strickland (2003:125) address the connection between core competencies and strategic sourcing in terms of the internal capability and the sourcing strategy to acquire a service through external service providers.

The model by Gottfredson, Puryear and Phillips (2005:138) in Figure 6 evaluates the degree of uniqueness of services or function against the proprietary nature of the service provided by the company. The model allows decision makers to classify trademark services in the business and identifies potential risks associated with loss of ownership or copyrights. The more unique a process or function is compared to others in the industry, the higher the profitability margin. It is recommended to keep these functions in-house to retain ownership and confidentiality of data or processes that contribute to its

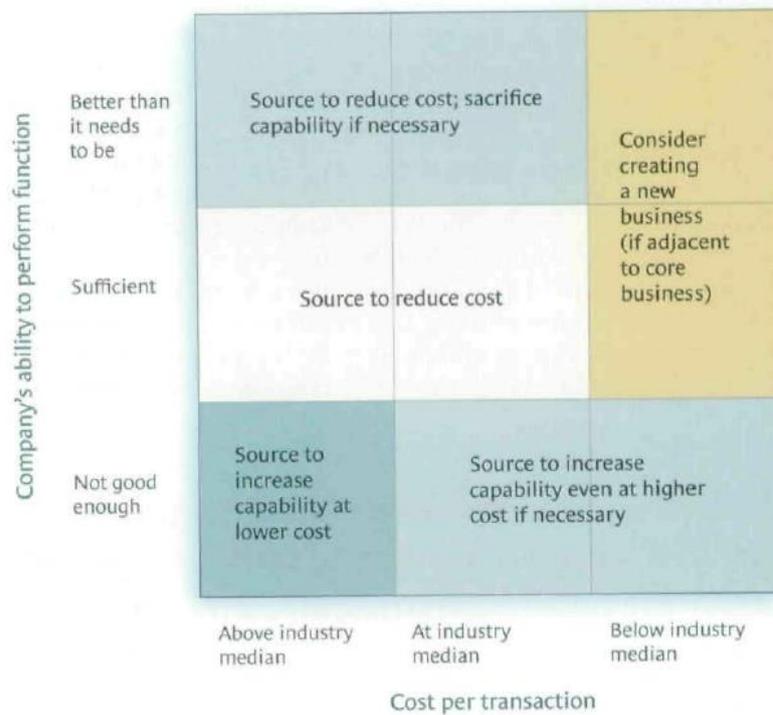
uniqueness. For processes and functions that are duplicated within the industry an outsourcing approach can be considered.

Figure 5: Keiretsu Model: Proprietary nature vs. uniqueness of business



Source: Gottfredson, Puryear and Phillips (2005:138)

The uniqueness of the business, service or function takes into consideration the risks, cost and capacity of the company within its respective industry. In the case of FedEx, the company identified their core service portfolio and focused on developing it into a unique service (Gottfredson, Puryear & Phillips, 2005:139). The quality and uniqueness of the service enabled FedEx to focus on core competencies and eliminate competition in the market. Proprietary rights over the functions and service ensured that a successful insourcing model was developed which enabled them to become leaders in their field and to perform their function for other companies. The decision to outsource or insource services must therefore be evaluated against the uniqueness and the proprietary nature of the service or function in an organisation. Gottfredson, Puryear and Phillips (2005:138) introduces an alternative model in Figure 6 which strategically evaluates the relationship and correlation between the organisation's core capabilities and cost of operations.

Figure 6: Keiretsu Model: Capability vs cost

Source: Gottfredson, Puryear and Phillips (2005:138)

The model by Gottfredson, Puryear and Phillips (2005:138) in Figure 6 evaluates the sourcing strategy against the company's capability to produce the quality of service or function against the cost of production to the company and compares this to acquiring the same service or product in the industry. Thompson and Strickland (2003:122) identify core competence as "central to a company's competitive and profitability" which adds perspective to the financial and strategic priority it takes to ensure sustainable organisational growth. Gottfredson, Puryear and Phillips (2005:138) consider the highest degree of competency at the lowest cost as the deciding factor to insource or outsource services or functions. The potential sourcing strategy and capabilities (core competencies) is then benchmarked against top performing companies and industry standards within the relevant industry. The model demonstrates that where in-house functions or products are of low quality and cost of production is high the service can be considered for outsourcing. In turn, where the company provides a service or product at a lower cost of production in-house of a high quality that is equal to or higher than industry norms with a high degree of profitability, the capability can be kept in-house.

In principle, services, produces or functions that are insourced will yield the highest profits and ensure competitiveness in the market if production costs are kept low and quality sustained equivalent to benchmarks in the market. Should production costs be high and profitability low, outsourcing should be considered to avoid loss of customers, if it will yield an advantage to the company.

A further study by Clemons and Hitt (1997:10) introduces the concept of ‘keepers’ and ‘non-keepers’ as a means to determine the best sourcing strategy for the organisation, as depicted in Figure 7. A portfolio of activities is presented as unique to the organisation and evaluated against the degree of risk, vulnerability and impact the activity will have should the outsourcing strategy fail. The decision to outsource is based on a set of competencies and the level of risk and vulnerability it poses to the organisation. Clemons and Hitt (1997) define a ‘keeper’ as an activity that poses a high risk and high level of vulnerability if outsourced. a ‘non-keeper’ is the opposite: an activity with low risk and low vulnerability if outsourced. Clemons and Hitt (1997) recommend that an activity considered a ‘keeper’ be retained in-house. This activity is therefore regarded as the organisation’s unique competencies and classified as ‘strategic competencies’.

Figure 7: Strategic and incompetency-based model

	Keeper	Non-Keeper	
	<p>Strategic Competence</p> <p>Don't attempt to outsource!</p>	<p>Non-Strategic Competence</p> <p>Can outsource, though there is no need. Can operate an outsourcing business as vendor</p>	Competence
	<p>Strategic Incompetence</p> <p>Don't attempt to outsource fix deficiency!</p>	<p>Non-Strategic Incompetence</p> <p>Should outsource to remedy a strategic deficiency</p>	

Source: Clemons and Hitt (1997:10)

If the organisation does not consider an activity as a competency but it is classified as a 'keeper', it is considered a 'strategic incompetence'. Clemons and Hitt (1997:10) recommend that the degree of incompetence be evaluated and rectified to provide the service in-house. Should the activity be a competence but present as a 'non-keeper' due to the low level of risk, it is considered a 'non-strategic competence'. The activity could be outsourced but consideration must first be to keep it in-house. If the activity is a 'non-keeper' with a high degree of incompetence in the organisation, it is regarded as a 'non-strategic incompetence' and must be outsourced.

Greaver's (1999:94) conventional theory cautions that "core competencies must not be outsourced but remain in-house" (insourced). Greaver (1999:94) considers non-core competencies as potential targets for outsourcing. Thompson and Strickland (2003:123) support this view and state that when a company "has a valuable strength, asset, capability, or achievement with the potential to produce competitive advantage" outsourcing must not be considered. Municipalities are prevalent with intergovernmental regulations, policies, labour contracts and agreements with an extensive workforce. The decision to outsource must evaluate the risks to the organisation's operations and infrastructure delivery commitments and the functions or services that best suit the approach must be identified. The decision to outsource must not be made in hindsight due to the loss of competency and exposure of risk it will have for the public environment. However, McIvor (2000) and Jennings (2002:26) pose opposing theories that suggest even core competencies can be outsourced if:

- Suitable suppliers are able to provide the product or service at a lower cost; or
- The use of suppliers does not negatively impact on the organisation's competitive advantage.

To obtain strategic advantage, Thompson and Strickland (2003:117) consider a "perceptive understanding of a company's resource capabilities and deficiencies, its market opportunities, and the external threats" as key. Both sourcing approaches rely on capability and competencies within the organisation to ensure effective implementation of organisational strategic sourcing objectives and contractual relationships.

Key factors for consideration that influence the sourcing decision are:

- The influence of the organisation's resource capacity and competency when deciding on the sourcing approach;
- To achieve a level of efficiency and effectiveness in operations; and
- To reduce vulnerability and impact on the organisation's operations and infrastructure by evaluating strategic competency against 'keepers' and 'non-keepers' in the organisation.

However, this theory does not elaborate on or evaluate the degree of risk to which an organisation is exposed if following an insourcing or outsourcing strategy which outsources core competencies. These advantages and disadvantages will be discussed later in the chapter.

2.4.6 Sourcing decision-making framework

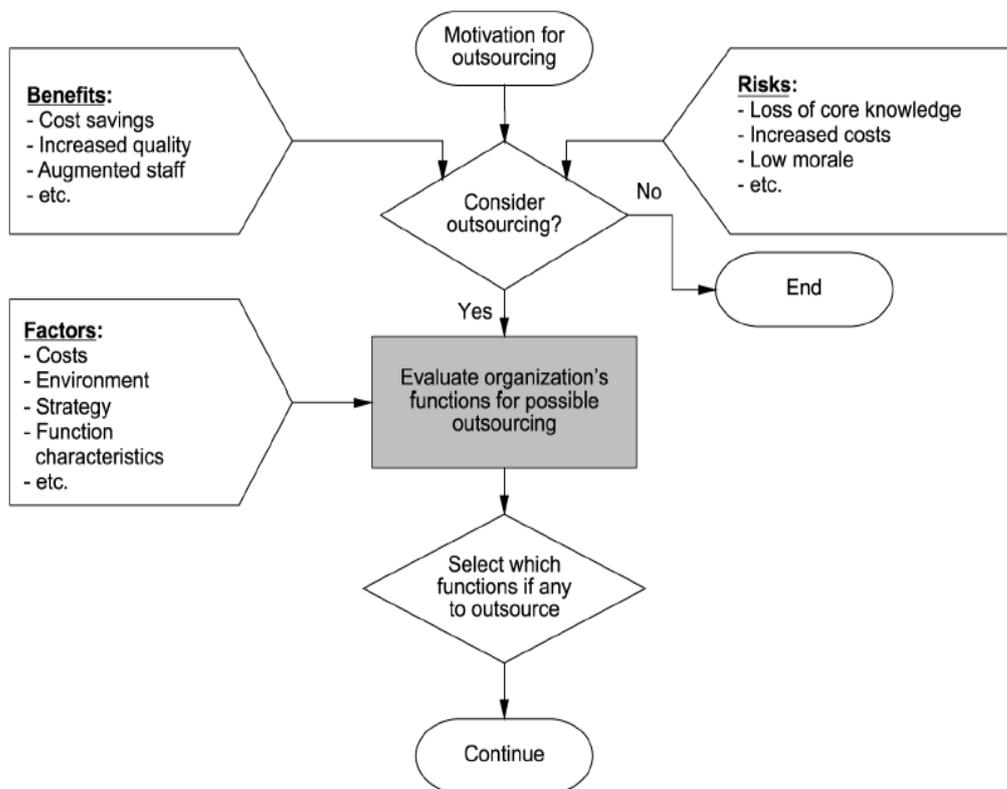
Burnett and Vlok (2014) state that "effective decision making is a vital task that enables an organisation to function appropriately", while helping use available resources to achieve set objectives". Fernandez and Marquez (2012) emphasise the need for a process-driven decision-making process to be a "deeper rational decision-making process" that enables strategic decision-making. Thus, the decision-making process discussed above forms an integral part of the proposed sourcing decision-making framework that influences the sourcing approach in the asset maintenance environment.

It can therefore be inferred that a decision-making framework can serve as a guide for the decision maker against influencing factors and key factors that assist the sourcing approach. It is thus necessary to evaluate the various influencing factors informed by key factors identified in the literature when selecting the optimal combination of activities required to achieve specific objectives that support the insourcing / outsourcing decision.

2.4.7 Sourcing decision-making model and factors

Kremic and Tukul (2003:5) present a decision model which identifies a cluster of factors that can be considered as influencing factors that guide decision making. Kremic and Tukul's (2003) combination of factors are presented in Figure 8, whilst Šeba's (2018) model in Figure 9 illustrates a decision-making tree analysing sourcing factors against decision-making factors to insource or outsource.

Figure 8: Kremic and Tukul's Model: Outsourcing decision framework



Source: Kremic and Tukul (2003)

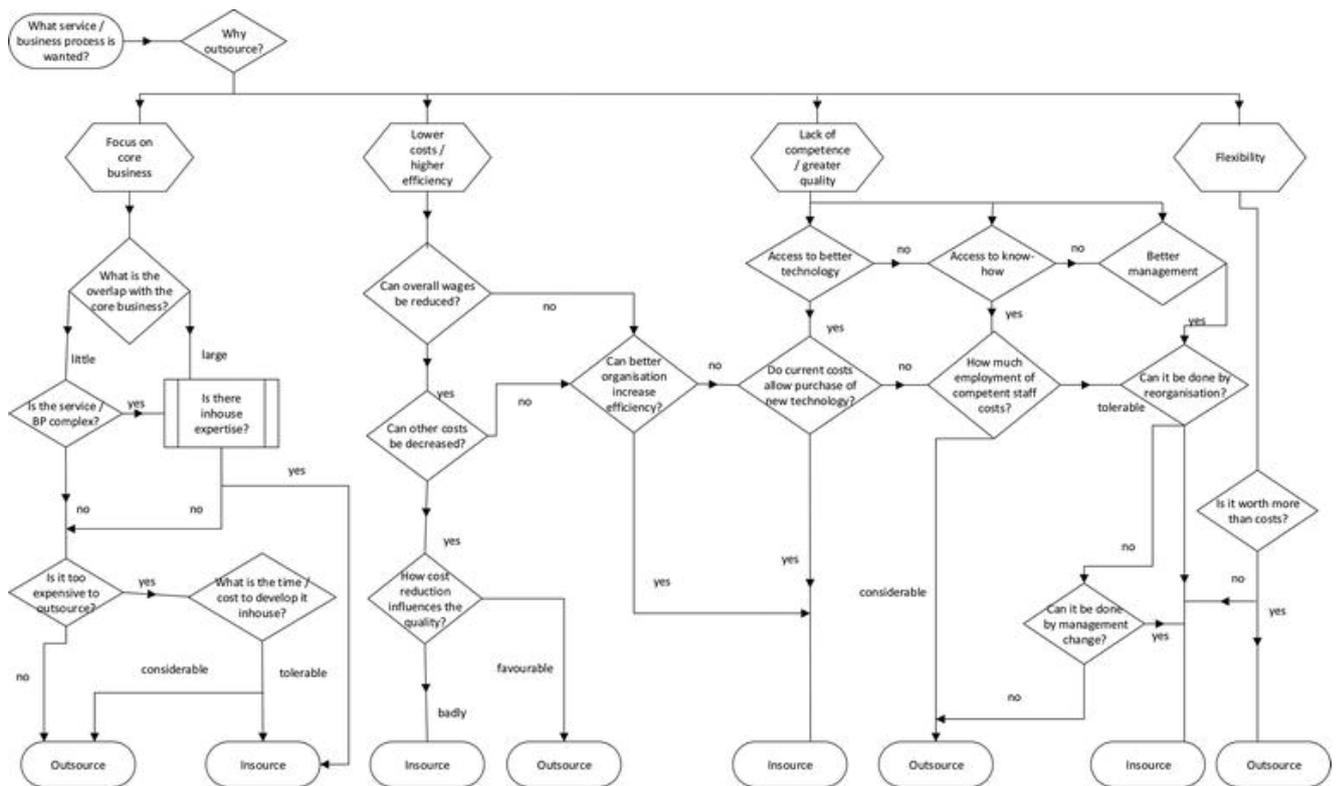
The sourcing approach in the maintenance environment presents a number of factors which will be explored with specific focus on the insourcing and outsourcing approach identified in the literature. In Section 2.4.5 the key factors are identified that influence sourcing decisions. Further exploration of associated risks as key factors in the decision-making framework in Section 2.5 enable determination of a decision-making process

sourcing approach that will influence the decision to insource and or outsource in the asset maintenance environment.

Kremic and Tukul (2003:5) present a combination of factors in Figure 8, which illustrate that the decision to outsource starts with the motivation as to why outsourcing should be considered and the benefits it will yield against the risks it presents to the internal organisation. The author classifies benefits as cost savings, increased quality, augmented staff, while risks consist of loss of core knowledge, increased costs and low morale (Kremic & Tukul, 2003:5). Should the decision be to outsource, the best functions to outsource must be identified and evaluated against key factors such as cost to the organisation, impact on the internal environment and whether or not these functions meet the businesses' strategic objective (Kremic & Tukul, 2003:5) The function that yields the most benefits, at the lowest risk to the organisation, can be outsourced. The most suitable sourcing method which provides the greatest benefit to achieve the strategic objective against the lowest of risk the organisation is thus systematically chosen.

2.4.8 Sourcing decision-making tree

In Figure 9, Šeba (2018) illustrates a decision-making tree for outsourcing and uses a deductive approach by applying a set of questions to the sourcing decision against a set of factors with focus areas. Kremic and Tukul's (2003) model in Figure 8 identifies key factors to substantiate the motivation to outsource, whereas Šeba's (2018) decision tree (Figure 9) identifies key focus areas in the outsourcing approach with a "set of check questions on the reason behind the outsourcing decision".

Figure 9: Decision-making tree for outsourcing

Source: Adapted according to Šeba (2018)

In Figure 9 Šeba (2018) presents the decision-making framework against the objective to determine which key factors in the organisation's sourcing environment to outsource or insource. Identification of each factor is followed by an evaluation process against explorative questions to navigate the constraints and risks specific to the organisation's landscape, focusing on the organisation's core business, efficiency, in-house competency, capacity and flexibility to substantiate the sourcing decision of what to insource or outsource.

2.5 Risk Evaluation

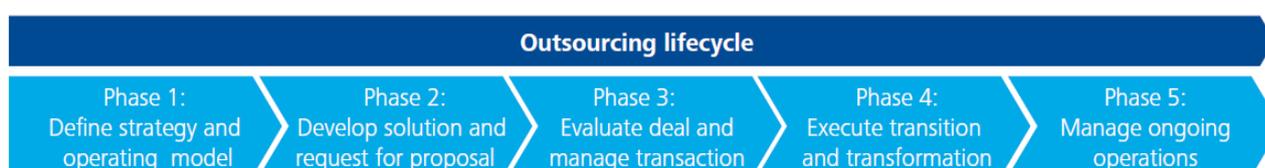
2.5.1 Risks associated with strategic sourcing

The strategic sourcing of functions or services that integrally flow through the organisation must be evaluated against the acceptable level of risk to operations and how it supports the objectives of the company. The sourcing strategy must mitigate the risks that

influence the management of operations and infrastructure assets within the organisation. The risks associated with the sourcing and infrastructure asset maintenance environment should be reviewed and the impact of the potential absence of a risk strategy when needed should be considered.

A tactical approach must take into consideration the risks associated “throughout an outsourcing or insourcing lifecycle to develop and manage plans” (Deloitte & LLP, 2015:6). Clemons and Hitt (1997:3) state that “strategic sourcing decisions are fraught with risk for both the buyer and the seller”. In Figure 10, Deloitte’s (2013:8) report introduces an ‘outsourcing lifecycle’ concept that identifies the importance of defining the relevant risks associated with the service and outsourcing strategy. Furthermore, it emphasises the importance of evaluating the risks and approach in each phase of the outsource lifecycle (Deloitte, 2013:8). These risks are seldom well understood or even clearly articulated but include elements such as “product or service quality, transition efforts, end-user acceptance, business disruption, short and long-term viability of partners, performance standards, customer satisfaction, and compliance” (Deloitte & LLP, 2015:6).

Figure 10: Outsourcing lifecycle model



Source: Deloitte (2013:8)

Negotiating a smooth transition from phase to phase reduces transition costs, vulnerability and risk to the organisation. Deloitte’s (2013:8) report emphasises that the risk strategy must “help align business objectives and internal and external resources, implement sound governance and controls, and address all relevant regulatory and compliance matters.” Any sourcing strategy used by an organisation must thus evaluate cost-saving benefits and perceived risks within decision making.

The element of risk in arguments by Molaba (2008:39) and Buchanan (2008:19) are formulated around the impact the sourcing strategy will have on the nature of the services, the organisation's strategic objectives and risks to which it is exposed. According to Loader (2006:221), Buchanan (2008:19) and Greaver (1999:39), unpredictable business environments produce specific risks such as:

- Strategic risks
- Compliance risks
- Operational risks
- Exit strategy risks

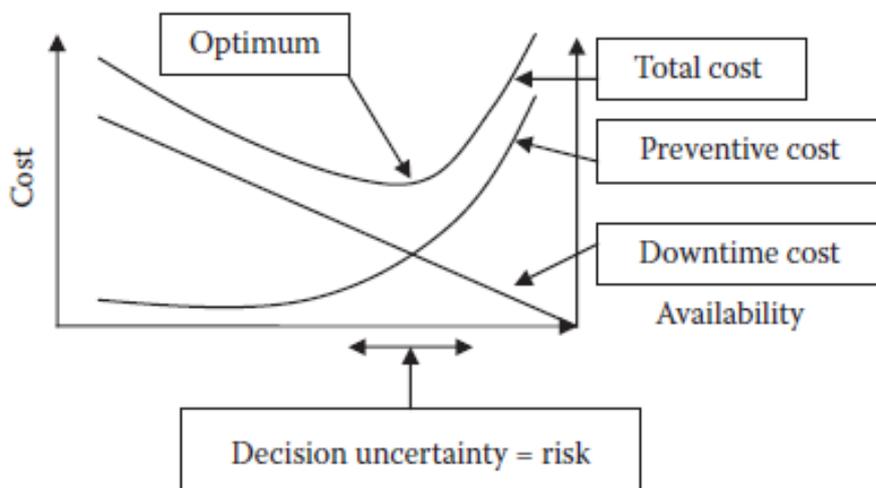
Loader (2006:221), Buchanan (2008:19) and Greaver (1999:39) present a combination of risks to which the operational environment is exposed, often due to lack of experience and acceptable controls at acceptable levels. They identify the risk of non-compliance with legislative and regulations applicable to the operational environment, alongside inadequate systems to monitor or control the environment to ensure delivery of services by service providers. Another risk is the lack of an exit strategy in cases of premature termination or completion of contracts, as these will have supplemented skills within the company and led to a high level of dependency on outsourcing.

Clemons and Hitt (1997:4) further highlight the importance of deciding how both 'buyer' (client) and 'seller' (vendor) rationally approach sourcing decisions, manage their risks, reach mutually acceptable decisions, and achieve stable and mutually beneficial relationships. The decision to outsource must take into consideration the acceptable level of risk and how it will support the objective of the company. Precautionary measures to minimise the legal risk must be engraved in sourcing contracts to effectively structure liabilities and indemnities to the company's advantage and avoid the impact that loss of services will have on critical infrastructure assets and operations.

2.5.2 Risks associated with infrastructure asset maintenance

Shah (2009:6) states that “reducing risks require a combination of strategic actions, organizational capabilities and enabling technologies”. Within the operations environment, failure of a critical asset, environmental disasters and non-compliance with health and safety rank highly in the companies’ risk matrix. In Figure 11 Shah (2009:165) introduces a ‘Preventative maintenance optimization’ model which represents the infrastructure asset maintenance environment and illustrates the correlation between the impact of decision making on cost and the degree of uncertainty which informs availability of assets to the company.

Figure 11: Preventative maintenance optimization curve



Source: Shah (2009:165)

The focus on managing risks within the asset maintenance environment requires a standardised process. A risk strategy could be formulated around the standardised process to manage inherent risks in the infrastructure asset maintenance environment which could mitigate asset failure, establish controls and reduce the cost of disruption of operations. The risks associated with the environment must continuously be evaluated against mitigating actions and an effective response must be prepared for those that present the highest impact on operations.

2.5.3 Risk consideration and mitigating strategies in the sourcing and asset maintenance environment

Deloitte, et al. (2013:9) state that an effective risk mitigate strategy must “identify, evaluate, and prioritize risks and mitigation strategies, and then implement those strategies” after defining the sourcing strategy. The report emphasises the importance of risk identification, evaluation and response planning as fundamental elements that must respond to operations and the organisational strategy (Deloitte, 2013:9). Loader (2006:216) and Greaver (1999:38) add that mitigating strategies can be implemented after establishing the degree of risk to the company. Adequate actions can therefore be taken to minimise the impact of risks.

Effective risk mitigating strategies can provide comfort when functional systems are established throughout the operation environment, following these steps:

- 1) Identify the potential risk and classify the degree to which each will impact on operations and infrastructure.
- 2) Assess risks and evaluate the process of “quantify or qualify the level of risk associated” against the impact of exposure to operations, infrastructure and procurement systems.
- 3) An adequate response must consider “risks throughout the operations and value chain when procuring goods and services” in order to reduce or eliminate the impact of risk on the institution.
- 4) Monitor the identified risk strategies and consistently evaluate responses to unforeseen risks.

(Republic of South Africa, 2010)

Furthermore, according to Greaver (1999:149), Norman and Lindroth (2004:22) and Moosa (2007:19), the organisation can take mitigating steps to respond to elements of risks by deciding to: (1) avoid these; (2) reduce their impact or severity; (3) transfer risks to the service provider or external entity; or (4) retain or absorb the risk. Deloitte, et al. (2013:9) state that an organisation can mitigate risks and an effective response strategy if they implement:

“A clear, prioritized outsourcing objectives; a cohesive, enterprise-level operating model; a specific scope, requirements, and constraints for the overall solution; present a business case analyses that include costs and impacts of risk mitigation plans; implement an effective change management program that addresses the risks and requirements associated with organizational changes around the outsourcing initiative; and iterative process to revalidate the strategy and operating model in light of changing needs.”

Greaver (1999:38) and Loader (2006:216) emphasise the importance of analysing sourcing risks against the impact on the contractual relationship. Any disruption caused by equipment and infrastructure directly impacts on reliability and quality of production (Campbell, Jardine & McGlynn, 2011:27). This can lead to an increase in cost and decrease the quality produced. An effective risk mitigation strategy in the infrastructure asset maintenance environment can streamline operational processes and increase reliability, lifespan and quality of the operational asset and achieve outcomes that meet customer satisfaction. A risk response requires the implementation of effective control measures to mitigate the negative impact on private and public organisations. Each sourcing approach poses unique risks and requires an appropriate response to mitigate the impact to operations and assets.

2.5.4 Benefits and risks in the contractual relationship

PriceWaterhouseCoopers (2010) emphasises the importance of structuring a contract correctly and ensuring effective management throughout its lifecycle. Assigning the right resources and governance processes will yield desired results and benefits to the organisation. Failure to implement adequate risk mitigation and sourcing strategies will derail the contractual relationships and loss of service delivery. Buchanan (2008:91) considers the outsourcing agreement as a legal contractual relationship central to the “provision of services by the vendor, and supporting contracts, such as an asset and employee transfer agreement, a transactional agreement, project agreements, and potentially also a financial or parent company agreement”. Determining the appropriate contract and agreements is a crucial foundation for a successful contractual relationship.

Aylott's (1997) study reveals that "contract flexibility and [organisations'] inability to exercise control over their suppliers" are vital components which contribute to contract failure. To ensure monitoring and control, effective governance must be clarified in the contractual relationship prior to awarding it to the successful bidder (Deloitte & LLP, 2015:4). The contractual relationship and agreements with external vendors increase regulatory and reputational risks to the organisation. Campbell, Jardine and McGlynn (2011:334) caution that before entering into a contract the following factors must be evaluated:

- How much of the risk the organisation wants to defer within the contract;
- The type of contract into which it is willing to enter;
- The contract duration and the ability to extend it if acceptable service is provided;
- The supply and demand market within the earmarked area; and
- Competitiveness and trends in the market.

Aylott (1997) reveals that "an astounding 41% of outsourcing contracts fail to make any transition or transfer provision for either the supplier or customer to exit the contract when due for termination". A survey by Deloitte, et al. (2013:7) reveals that 52% of outsourcing contracts are terminated due to quality of service. Buchanan (2008:118) elaborates that the premature termination of contracts can be contributed to: the vendor's failure to meet contractual requirements, which reduces quantity of output required; loss of vendor's key staff, which reduces the standard of service provided; and "major difference in actual demand from forecast demand", which negatively impacts the quality of service provided. Aylott (1997) advises that "both customers and suppliers must prepare contracts much more effectively if they are to reap the full benefits that outsourcing can bring". The transactional costs and benefits of outsourcing must increase flexibility, performance standards and operational efficiency. The cost of re-introducing the services in-house must be calculated should agreements be terminated due to poor contract performance, resolution of disputes, or transition and termination of contracts (Greaver, 1999:246). It is therefore imperative to consider the impact of risks and mitigating strategies on the organisation as key factors in the sourcing decision-making environment. It has become imperative that responses to risks and challenges associated be adequately clarified

when outsourcing vendors. Deloitte, et al. (2013:12) state that identifying “potential risks related to vendor in outsourcing” can empower an organisation to test the impact of the potential failure of the strategy, relationship and contract on the organisation.

Yagoob and Ting (2015) emphasise the need for the public sector to implement strategic sourcing practices that promote good governance, strategic acquisition practices and adhere to a customer experience that support the public sector’s principles of value for money, and service delivery mandates as set in the City of Cape Town’s legislation and regulations. The practice of accountability and responsibility in partnership agreements is contextualised by Mahapatra, Narasimhan and Hult (2020) and Williamson (1991) in the environment of sourcing. Bradach and Eccles (1989) and Sako, Chondrakis and Vaaler (2016) recommend a multiple governance mechanism sourcing approach (e.g., price-based, open market or contractual transactions, trust-based inter-firm alliances and/or hierarchy-based in-house sourcing) when procuring goods and services of the same type. Loader (2006), Buchanan (2008), Greaver (1999) and Norman and Lindroth (2004) emphasise that the organisation’s evaluation of risks and mitigation strategies in the sourcing environment requires appropriate responses to mitigate the impact to organisation, operations and with control measures in response to contractual risks to reduce the impact on services and infrastructure that support service delivery.

2.6 Summary

Understanding public sector’s strategic sourcing practices that promote good governance and the outsourcing objective will enable the organisation to classify the potential risk areas and adequately respond with effective mitigating strategies. In response, the impact of risks and mitigation strategies in the organisation, operations and contractual environment will be evaluated. The influence of the sourcing approach in the insource or outsource decision will be further reviewed in Chapter 3, which will also discuss the legislative framework, sourcing decision-making and identify the key factors in the public sector environment that influence decision making and service delivery.

CHAPTER 3

LITERATURE REVIEW: THE LEGISLATIVE AND POLICY FRAMEWORK IN THE SOURCING ENVIRONMENT

3.1 The Legislative and Policy Framework

The purpose of this chapter is to review literature on legislation and policy that influences the decision-making approach to strategic sourcing, their impact on infrastructure maintenance, and provide insights on key risk factors that must be taken into consideration within the regulatory environment. The legislative framework consists of various legislation, regulations, policies and standards which emphasise the principles of good governance within the three spheres of government. These principles include the duty to deliver services ensuring socio-economic rights. The legislation and policy have an impact on various processes, systems and strategies that influence decision making around strategic sourcing, infrastructure asset maintenance and risks associated with the public environment in the following legislation and policies:

- The Government Immovable Asset Management Act (No. 19 of 2007)
- Local Government: Municipal Finance Management Act (No. 56 of 2003)
- The White Paper on Municipal Service Partnerships (1998)
- The White Paper on Local Government (1998)
- The Public Sector Risk Management Framework (2010)

Collectively the list of acts and policies assert focus on principles of excellence in service delivery expected from public servants, advocate good financial governance, provide a framework for the effective management of infrastructure assets and expand on risk management, mitigation and control strategies. This section will detail the influence of each legislative framework on the City of Cape Town's environment with emphasis on strategic sourcing and infrastructure asset management.

3.2 Government Immovable Asset Management Act (No. 19 of 2007)

The Government Immovable Asset Management Act (No. 19 of 2007) (GIAMA) focusses on the “effective and efficient maintenance of infrastructure assets throughout its life cycle” (Republic of South Africa, 2007). The GIAMA promotes responsible, accountable practices and standards applicable to all spheres of government and outlines the principles of immovable asset management maintained by government. The GIAMA objective is as follows:

“The Government Immovable Asset Management Act, No. 19 of 2007 (GIAMA), seeks to introduce measures to ensure a uniform framework for the management of immovable assets that are used by (or is reserved for) a national or a provincial department in support of its service delivery objectives.”

(Republic of South Africa, 2007)

According to the GIAMA framework, immovable asset management means “those management processes, which ensure that the value of an immovable asset is optimised throughout its lifecycle” (Department of Public Works, 2008:4). The guidelines set out by the Department of Public Works in their Immovable Asset Management Plan (U-AMP) incorporates the GIAMA principles for implementing a strategic approach to maintaining these assets to promote “best value for money and positively impact on the social development and socio-economic initiatives of government” (Republic of South Africa, 2007). This strategic approach requires effective immovable asset management principles which ensures continuity of infrastructure and operations to support service delivery.

3.2.1 Immovable asset management principles

The GIAMA outlines a framework of basic principles which national and provincial government departments must implement to manage their immovable assets, and which supports service delivery. Section 63 of the Municipal Finance Management Act (No. 56 of 2003) mandates municipalities to implement good governance against municipal

immovable assets, as set out in the GIAMA outlining principles of immovable asset management, by:

- a) Providing a uniform immovable asset management framework to promote accountability and transparency within government;
- b) Ensuring effective immovable asset management within government;
- c) Ensuring alignment of use of immovable assets with service delivery objectives of a national or provincial department and the efficient utilisation of immovable assets;
- d) Optimising the cost-of-service delivery through prudent allocation of limited state resources in relation to:
 - i The accountability for capital and recurrent works;
 - ii The acquisition, re-use and disposal of an immovable asset;
 - iii The maintenance of existing immovable assets;
 - iv Protecting the environment and the cultural and historic heritage; and
 - v Improving health and safety in the working environment.

(Department of Public Works, 2008:6)

Responsibilities of immovable asset management include ensuring continuity of operational functions, best value for money and infrastructure improvements that support service delivery objectives in all spheres of government.

3.2.2 User Immovable Asset Management Plan (U-AMP) objectives

The User Immovable Asset Management Plan (U-AMP) compiled by the Department of Public Works is a strategic response to principles set out in the GIAMA, ensuring strategic planning for immovable assets to ensure availability and service delivery objectives. The Plan therefore integrates immovable asset planning with an effective sourcing approach

and effective maintenance strategies to give best effect to operations and functions. The U-AMP's focus is to align with the department's strategic planning with to ensure:

- a) "Accountable, fair and transparent management of immovable assets;
- b) Effective, efficient and economic use of immovable assets;
- c) Reduced overall cost of service delivery; and
- d) Reduced demand for new immovable assets".

(Department of Public Works, 2008:7)

The legislative and financial dimension of immovable asset planning must incorporate the strategic planning, integrating the Medium-Term Expenditure Framework (MTEF) to achieve good financial planning. Aligning decision-making by identifying appropriate delivery strategies on immovable assets against programmes linked to the Medium-Term Expenditure Framework (MTEF) will improve government's strategic objectives of good governance. The implementation of an effective sourcing strategy, infrastructure strategy, strategic planning framework and incorporation of the MTEF will collectively ensure that critical assets that support service delivery operate optimally, as well as reduce disruptions and risks to operations and services while ensuring adequate funding for immovable asset infrastructure improvements (Republic of South Africa, 2003b).

3.3 Local Government: Municipal Finance Management Act (No. 56 of 2003)

Local Government: Municipal Finance Management Act (No. 56 of 2003) (MFMA) has the objective to ensure "sustainable fiscal, auditable financial management and systems" of public funds (Republic of South Africa, 2003b). It promotes a framework of financial accounting practices for municipalities as set out by the National Treasury which must be "measurable, transparent promotes competitive and cost effective" (Republic of South Africa, 2003b). Local municipalities must implement the guiding principles set out in Chapter 11 of the MFMA within their Supply chain management policy. Of importance to this study are sections 168, 60, 63, 112, 116 and 120 of the MFMA, as is the assessment of asset management, supply chains, contracts and public-private partnership dimensions in the municipal sector environment.

Section 168 of the Local Government: Municipal Finance Management Act, (Act No. 56 of 2003) (MFMA) contains the Municipal Asset Transfer Regulations (MATR). The MATR provides a regulatory framework applicable throughout the lifecycle of the municipal asset applicable during:

- a) *“the transfer and disposal of capital assets by municipalities and municipal entities; and;*
- b) *the granting by municipalities and municipal entities of rights to use, control or manage capital assets”* (Republic of South Africa, 2003b).

Furthermore, Section 60 of the MFMA emphasis the role of the accounting officer in ensuring regulations and internal controls that ensure principles and accountable governance of municipal capital assets. The accounting officer, with delegated powers, is identified as responsible and accountable to ensure application and adherence to municipal asset transfer regulations throughout the decision making process when managing municipal capital assets.

Section 63 of the Municipal Finance Management Act (No. 56 of 2003) highlights:

- The importance of responsible asset and liability management when procuring assets;
- Budgeting for replacement of assets by the accounting officer of a municipality; and;
- The importance of standards and practices that will ensure safeguarding and maintenance of critical assets that support service delivery.

(Republic of South Africa, 2003b)

The principles for developing this strategic approach and implementing guidelines towards assets are set out in this chapter for municipalities to adhere to as detailed under the GIAMA, MATR and MFMA. To ensure implementation of legislative, regulatory requirements and their service mandate, municipalities can consider various contractual

arrangements between a municipality and the private sector, should assistance be required to achieve their service delivery commitments as set out in sections 112, 116 and 120 of the MFMA.

Section 112 of the MFMA provides that the supply chain management policy of a municipality or a municipal entity must be “fair, equitable, transparent, competitive and cost-effective and comply with a prescribed regulatory framework for municipal supply chain management” (Republic of South Africa, 2003b). The Act makes provision for municipalities to enter into contracts to procure goods and services through tenders and contracts following competitive bidding whilst adhering to supply chain management processes (Republic of South Africa, 2003b). Furthermore, Section 112 of the MFMA sets out key factors that must be incorporated in any municipalities supply chain management policy framework when procuring goods and services.

Contract Management Framework (CMF) by National Treasury and Section 116 of the MFMA focusses on requirements that promotes good governance and management practices relating to contracts by implementing effective management policies, processes and procedures throughout the contract lifecycle. The Contract Management Framework (CMF) by National Treasury also stipulates the importance of performance agreements with performance measures linked to service delivery commitments. Municipalities must continuously evaluate contracts and services against the performance evaluation criteria, and benchmarks which responds to a contract risk mitigating strategy that redress non-performance and disputes. (Republic of South Africa, 2010a:13)

Section 116 of the MFMA contains provisions relating to contracts and contract management which apply to a service delivery agreement between a municipality and private external entity. This section outlines the narrative of what constitutes a contract or agreement with the municipality, ensuring compliance to the CMF by National Treasury as well as:

- a) Adherence to the supply chain management policy of the municipality with intent to ensure procurement processes are properly enforced;
- b) Conditions of the contract;

- c) Process for dispute resolution;
- d) Principle of contract agreements being for a duration of no longer than three years or;
- e) If longer than three years, prescribed conditions are met.

(Republic of South Africa, 2003b).

As outlined in Section 116 of the MFMA, municipalities can therefore enter into contracts or agreements with the private sector through a competitive process, contracting for a period of three years, called the Medium Term Revenue Expenditure (MTREF) period, to achieve their service delivery commitments. Should municipalities intend to have financial expenditure beyond the 3-year MTREF period, Section 33 of the MFMA contracting and compliance obligations must be implemented prior to the end of the contract. The conditions for partnering through contracts with the private sector are elaborated on in Section 120 of the MFMA under the conditions for public-private partnerships.

Section 120 of the MFMA deals with the provision and conditions for public-private partnerships whereby municipalities must demonstrate that the agreement will:

- a) Provide value for money to the municipality;
- b) Be affordable for the municipality; and
- c) Transfer appropriate technical, operations and financial risks to the private party.

(Republic of South Africa, 2003b).

Compliance with the public-private framework for municipalities and Chapter 8 of the Municipal Systems Act is mandatory. The Public-private partnerships agreement must demonstrate feasibility, and strategic, operational and financial benefit realisation of the partnership agreement with the municipality (Republic of South Africa, 2003b). The benefits realisation of the PPP agreement must provide “value for money”, transfer of risks to the private entity” with adherence to the regulatory framework for PPP contracts. (Republic of South Africa, 2003b). Furthermore, municipalities must experience additional benefits entering into appropriate partnership arrangements that increases

capacity and invite capital investment to ensure adherence to immovable infrastructure asset regulatory requirements, redress infrastructure backlogs or upgrade services in communities.

Section 168, 60, 63, 112, 116 and 120 of the MFMA and National Treasury's CMF provides an array of regulatory frameworks to assist and provide guidance to municipalities relating to contracts, roles and responsibility around accountable governance of municipal capital assets, financial planning, provision for procurement through partnerships as set out in each section. The respective partnership, contract or agreement procured through the supply chain management policy within the municipality is further detailed within the White Paper on Municipal Service Partnerships (MSPs) (1998b), and the White Paper on Local Government (1998a) (Republic of South Africa, 2003b).

3.4 The White Paper on Municipal Service Partnerships (1998)

The White Paper on Municipal Service Partnerships (MSPs) (1998b:3) sets guiding principles for municipalities to provide municipal services through “partnerships between municipalities and the public sector, the private sector and community and non-governmental organisations (CBOs and NGOs) [which] are a key option that municipalities should consider in their efforts to rectify infrastructure deficits and disparities”. Municipalities must comply with legislation and regulations whilst fulfilling their constitutional obligation to provide basic services to communities. The MSPs provides core principles for the provision of services through partnerships that can be practically applied to achieve “fair, equitable, transparent, competitive and cost-effective” services delivered efficiently (Republic of South Africa, 1998b).

The MSPs encourages the implementation of various sourcing partnerships explained in detail in the section under the White Paper on Municipal Service Partnerships. These various partnerships include building on internal capacity (insourcing), or outsourcing contracts partnering using “corporatisation, public-public partnerships, partnerships with community-based organisations and non-governmental organisations, contracting out, leases and concessions” all of which increase municipal capacity by partnering with the private sector to meet public interests (Republic of South Africa, 1998b:75). These

service contracts and partnership agreements provide an opportunity for municipalities to gain access to specialist knowledge and expertise, capital for infrastructure development and integration of new technology by strategically collaborating with the private sector. The extent to which this benefits municipalities and their service delivery mandate is further elaborated on in the following section on the White Paper on Local Government (1998a).

3.5 The White Paper on Local Government (1998)

The White Paper on Local Government (LG) (1998a) promotes the use of mixed delivery partnership agreements for municipalities to achieve their service delivery and socio-economic objectives. The White Paper on Local Government (Republic of South Africa, 1998a:82) states that:

“In assessing the appropriateness of different service delivery mechanisms, the choice is not between public and private provision. Rather the real issue is finding an appropriate combination of options which most effectively achieves their policy objective.”

Service delivery partnerships that enter into contract agreements (outsourcing) are proposed by municipalities to enhance their capacity, increase their resource base and gain access to expertise outside of the municipality. The White Paper on Local Government (Republic of South Africa, 1998a:75) promotes viable sourcing partnerships that municipalities can use, such as:

- Building on existing capacity (insourcing)
- Corporatisation
- Public-public partnerships
- Partnerships with community-based organisations and non-government organisations
- Contracting out

- Leases and concessions (public-private partnerships)
- Transfer of ownership (privatisation)

In summary, these creative sourcing partnerships utilise insource and outsource mechanisms detailed in the White Paper on Local Government (Republic of South Africa, 1998a:75). These mechanisms benefit municipalities by enhancing their capacity to achieve their service delivery objectives whilst adhering to legislation and will be discussed further in the following sections.

3.5.1 Service partnerships: insourcing mechanism

Building on existing capacity focuses on retaining internal capacity, including redress of levels of existing capacity, the need to evaluate skills and potential to improve service delivery using internal capacity within municipalities. The reform approach focuses on improving and empowering core frontline capacity as encouragement to motivate staff. This sourcing approach gives no consideration for contracting out (outsourcing) core services provided by internal municipal staff. Section 120 of the MFMA sets out principles for a feasibility evaluation of any partnerships with the private sector against the strategic, operational and financial benefit for the municipality before entering into such partnership agreements if internal capacity is possible. Outsourcing mechanisms are proposed to municipalities as an alternative approach where there is no commitment, value for money and results with no financial benefit utilising existing capacity by implementing the “contracting out” sourcing approach (Republic of South Africa, 1998a:76).

3.5.2 Service partnerships: outsourcing mechanisms

Corporatisation is regarded as “the separation of service delivery units from the Council”, a service unit that operates independently as a management agent for and on behalf of the municipality (Republic of South Africa, 1998a:76). Corporatisation can be considered as a corporatised entity administering and implementing municipal objectives independently; however, the service unit is subject to municipal “policy, service standards, reporting and accountability measures” (Republic of South Africa, 1998a:76). The corporatised services provided are specific, funded by the municipality, mobilising energy, capacity and resources outside the municipality. Monitoring and evaluation of

performance of the corporatised service unit are incorporated into agreements. Corporatisation provides greater flexibility to implement corporate practices and strategic sourcing in the commercial market and are therefore not subject to the City of Cape Town's supply chain management requirements to deliver a service.

Public-public partnerships are considered as partnerships with "individual organisations and through local government associations" (Republic of South Africa, 1998a:77). The partnership agreement can be between municipalities as a joint venture to improve service delivery objectives, or between government organisations at national, provincial and/or local level. Collaboration between the municipality and public partners holds benefits through fundamentally increasing the municipal capacity in joint ventures with public entities already providing a service to communities.

Partnerships with community-based organisations and non-governmental organisations is classified as "non-governmental organisations and community-based organisations in partnerships with other public or private institutions" (Republic of South Africa, 1998a:77). The advantage of the partnership agreement with municipalities is that it will assist with:

- "Effective ways of gaining access to external expertise and experience;
- Stimulating local economic development; and
- Close linkages with community groups who can act as effective intermediaries in development initiatives".

(Republic of South Africa, 1998a:77)

The White Paper on Local Government advises municipalities on considering "three-way public-private community-based organisation partnerships" (Republic of South Africa, 1998a:77). The partnership consists of three parties collectively contributing to the partnership: the municipality, the private sector and a community-based organisation. The collaboration between these parties is supplemented with each partner's respective abilities and functions to projects which enables "the transfer of skills, creates

employment and provides an effective service whilst increasing the municipalities' capacity" (Republic of South Africa, 1998a:77).

Contracting out is a partnership with private companies through a contract agreement to provide specialist services. "Specialist companies can sometimes provide economies of scale and specialist expertise and experience more efficiently than in-house capacity" (Republic of South Africa, 1998a:78). Contracting out can be classified as:

- Contracts that are specific in nature;
- Contracting out a specific service or part of services; and
- A process of tendering through a competitive tendering process for the delivering of a service.

The evaluation process of contracts, apart from price and adherence to contract specification, includes "the financial standing of the contractor, their commitment to providing training and good employment conditions, willingness to use local labour, technical capacity to undertake the contract, environmental and health and safety record, and commitments regarding service tariffs, quality standards, quality control systems and customer relations" and are equally important to divide the risks associated with the contract out partnership (Republic of South Africa, 1998a: 78).

Leases and concessions are "public-private partnerships that are most common for services where large-scale capital investment is required" (Republic of South Africa, 1998a:82). They typically differ from contracting out in three important respects:

- "The duration of the contractual relationship between the municipality and the contractor is usually longer (often between 20 and 30 years);
- The contractor is accountable, and management of the asset is part of the agreement with the municipality when entering into a lease or concession agreement; and
- The inherited risk is transferred to contractor infrastructure development and management of the asset".

(Republic of South Africa, 1998a:78).

The contractor will “take responsibility for the development of new or rehabilitation of existing infrastructure” for the duration of the contractual relationship with the municipality. (Republic of South Africa, 1998a:78). The lease and concession partnership agreement context and conditions can be: (Republic of South Africa, 1998a:78).

- Build-operate-transfer (the contractor builds the asset, operates it for a period, and then ownership of infrastructure is transferred to the municipality)
- Build-own-operate-transfer
- Build-operate-train-transfer

(Republic of South Africa, 1998a:78)

Further principles of the partnership are the transfer of ownership to the municipality at the end of the contract agreement period. This partnership primarily promotes capital investment from the private sector utilising private sector capacity in infrastructure development projects that will be transferred back to the municipality. The White Paper on Local Government (1998a) reviews the mixed sourcing mechanisms and service delivery partnerships proposed to assist municipalities in achieving their service delivery mandate by strategically increasing their capacity through partnerships. The proposed sourcing partnerships provide mechanisms to utilise internal capacity (insource) with a focus on building on existing capacity, with alternate outsourcing contracts using corporatisation, public-public partnerships, partnerships with community-based organisations and non-governmental organisations, contracting out, leases and concessions. These harness the private sector’s capacity to meet public interests. Service delivery partnerships develop within the framework of the City of Cape Town legislation, regulations and policies, taking into consideration risks to which municipalities are exposed when entering into contracts as set out in the MFMA, MSPs, White Paper on Local Government and Public Sector Risk Management Framework (2010).

3.6 The Public Sector Risk Management Framework (2010)

The Public Sector Risk Management Framework (2010b) was developed by the National Treasury in response to the requirements in the Public Finance Management Act, No. 1 of 1999 and the Municipal Finance Management Act (No. 56 of 2003). The Public Sector Risk Management framework (Republic of South Africa, 2010b) states that:

“Risk management is a valuable management tool which increases an institution’s prospects of success through minimising negative outcomes and optimising opportunities”

The intent of the risk management framework is to provide principles and systems of risk management “to protect against adverse outcomes and optimise opportunities” (Republic of South Africa, 2010b). The responsibility, as outlined in Chapter 21(2) of the Public Sector Risk Management Framework (2010), includes the development of “a risk management policy, strategy and implementation plan” to “implement and maintain effective, efficient and transparent systems of risk management and control” in municipalities (Republic of South Africa, 2010b).

Chapters 4 and 10 of the Public Sector Risk Management Framework (Republic of South Africa, 2010b) recognises the responsibilities of municipalities to develop risk management strategies in the institution’s procurement, performance and infrastructure management systems. To ensure compliance and focussed implementation by accounting officers, the framework stipulates the following:

- a) Sections 62(1)(c)(i) and 95(c)(i) of the MFMA, which require the Accounting Officers to ensure that their municipalities and municipal entities have and maintain effective, efficient and transparent systems of risk management.

(Republic of South Africa; 2010b)

The risk management approach aims to provide an enabling institutional environment through effective identification, evaluation and management strategies to mitigate the impact of risks on service delivery (Republic of South Africa, 2010b:28). Through a developed and adopted integrated risk management framework the organisation incorporates directives which categorise institutional risks in each dimension of the organisational structure and operations. In addition, they identify an effective response to positively influence decision making and mitigation strategies by implementing:

Focus points of risk identification – (1) To ensure comprehensiveness of risk identification the Institution should identify risk factors through considering both internal and external factors, through appropriate processes of:

- a) Strategic risk identification - to identify risks emanating from the strategic choices made by the Institution, evaluating the weakness and strengths of the organisation.
- b) Operational risk identification - to identify risks concerned with the Institution's operations which includes new emerging risks in the environment.
- c) Project risk identification - to identify risks inherent to particular projects.

(Republic of South Africa, 2010b)

Evaluation and consideration must be against risks in the organisation's associated outsourcing contracts and the variation of partnership agreements outlined in the White Paper on City of Cape Town (1998), the White Paper on Municipal Service Partnerships (1998) and the MFMA (No. 56 of 2003). Furthermore, these risks are identified in the procurement and contract environment in these acts respectively and if not carefully identified with mitigation response and controls can place the municipality at financial risk and loss of service delivery.

The risk management approach must underpin principles, standards, and practices adopted by the organisation at corporate level formalised in an integrated risk management policy and plan for the municipality to respond to risks in a way that has been proven to support and sustain effective risk management. The principles, standards and practices in the integrated risk management plan must incorporate risk identification and mitigate response strategies aimed at:

- a) **Avoiding the risk** by, for example, choosing a different strategy or terminating the activity that produces the risk;
- b) **Treating the risk** by, for example, implementing or improving the internal control system;
- c) **Transferring the risk** to another party more competent to manage it by, for example, contracting out services, establishing strategic partnerships and buying insurance;
- d) **Accepting the risk** where cost and strategy considerations rule out alternative strategies; and
- e) **Exploiting the risk** factors by implementing strategies to take advantage of the opportunities presented by such risk factors.

(Republic of South Africa, 2010)

The legislative framework encapsulates regulations, acts and policies, but does not provide detail on how to approach risks within the municipal environment. The risk strategy for the municipality is imperative and must produce an integrated risk management plan identifying the strategic approach to risks within the municipality, integrating principles of the Public Sector Risk Management Framework (2010). Institutional risks of municipalities must be recorded on a risk register incorporated into the integrated risk management plan. The institutional risks identified on the risk register must have effective internal controls and accountability measures to mitigate risks against operations, assets and procurement strategies. Monitoring, evaluation and response strategies must be developed and implemented to minimise the impact on service delivery.

3.7 Summary

The above literature review evaluated the legislative frameworks and presented acts, regulations and policies that influence the sourcing approach, competencies, contractual agreements, which are evaluated against the element of risks associated with the approach unique to the function and services provided in the public sector. The Government Immovable Asset Management Act (No. 19 of 2007) (GIAMA) focuses on the principles of managing immovable assets in government which support service delivery objectives. Local Government: Municipal Finance Management Act (No. 56 of 2003) focuses on Section 63 of the MFMA, which governs municipal public assets; and Section 116 of the MFMA, that Act (No. 56 of 2003), which contains provisions relating to contracts and contract management. Section 120 of the MFMA, the White Paper on Municipal Service Partnerships (MSPs) (1998) and the White Paper on Local Government (1998) discuss contracts and mixed partnerships between municipalities and public-private entities, setting out guiding principles for municipalities. The Public Sector Risk Management Framework (2010) provides insight into risks within the procurement and municipal environment which must effectively respond with control measures and mitigation strategies. Emphasis is on implementing an effective risk-based approach that directs the strategic sourcing response and elevates delivery in line with the vision and objectives of the infrastructure asset maintenance framework in the City of Cape Town.

CHAPTER 4

RESEARCH FINDINGS

4.1 Introduction

This research revolves around municipal infrastructures in the City of Cape Town and explores challenges in the sourcing approach when maintaining infrastructure that supports service delivery. The research study features a case study in the City of Cape Town Metropolitan Municipality against four asset management branches. The study is explorative as it gathers findings utilising a qualitative method to propose a more structured decision-making framework that guides the sourcing approach. The research analysis is instrumental in developing key factors that influence decision making in the sourcing approach when maintaining municipal infrastructure. It further explores key contributors to improved decision making in the sourcing approach in response to challenges in the maintenance environment. For the sourcing approach to be successful, the process of service delivery and maintenance of municipal infrastructure is instrumental in the ability of the City of Cape Town municipality to deliver on their core mandate. The research setting, data collection and analysis is included in the findings discussed in this chapter.

4.2 Background and Setting: Case Study of the Organisation of the City of Cape Town Metropolitan Municipality

The City of Cape Town Metropolitan Municipality is a Category A municipality with internal resources ensuring implementation of the municipalities' plans, objectives and service delivery responsibilities. Whilst focusing on their core service delivery mandate officials must ensure equitable and sustainable municipal services within municipal boundaries. The four asset maintenance units that form part of the case study provide essential services to infrastructure that support service delivery objectives outlined in the municipality's integrated development plan. The maintenance managers together with their teams are accountable for instrumental roles in developing an improved approach to sourcing decision-making in the asset maintenance area of the study.

4.3 Research Setting, Data Collection and Analysis

This section provides an overview of the research setting, collection of data and thematic analysis of qualitative data gathered in the case study organisation of the City of Cape Town Metropolitan Municipality. The research study explores a selected population in four branches that provide maintenance and management in the City of Cape Town Metropolitan Municipality. Fundamental principles of a case study approach are implemented, and analysis of qualitative data is generated against the setting of the research question and objectives of the study.

4.3.1 Qualitative analysis

The aim of the research is to respond to the research problem identified in Chapter 1. Qualitative data was gathered from semi-structured and unstructured interviews and questionnaire responses. The qualitative data in the form of a set of responses from participants was first analysed, thereafter the data was coded, and a thematic framework created for the data set involving thematic analysis. Throughout the analysis the focus was on the participants' response as a whole rather than on individuals within the group (Krueger, 1994). The analysed data can therefore be regarded as a collective set, rather than a reflection of individual perspectives (Smithson, 2000). Thematic analysis of the responses focussed particularly on how individual participants contribute to this common ground (Överlien, Aronsson & Hydén, 2005). The analysis thus focussed on the content of the qualitative data when analysing the emerging themes.

4.3.2 Qualitative interviewing and sampling

The research study consists of a case study of the City of Cape Town Metropolitan Municipality against four asset management branches. Qualitative interviewing was selected as a data-collection tool to explore the research problem. The interviewees are classified as subject experts and strategic drivers in the maintenance environments in their fields. The interviews were targeted at operational managers and strategic drivers in maintenance environments which determine the nature of sourcing. The interviews are semi-structured against a data set classified for asset managers and maintenance heads and unstructured in the plenary panel with middle contract managers that maintain

infrastructure building in the municipality. Interviewees were allowed to express their views and perspectives to support to a deeper exploration of their views.

4.3.3 Semi-structured and unstructured interviews

When conducting qualitative interviews, unstructured and semi-structured interview methods can be used for the research study. This study focussed on both methods to ensure that the research objectives were addressed. To ensure that the research objective was clear, semi-structured interviews were conducted with four participants. Unstructured interviews were conducted with a plenary panel of three participants with an explorative objective. All participants have relevant and extensive experience in the research area, as indicated in Table 1. The population is relatively uniform as it comprises of individuals with identical or similar levels of authority within the organisation. The participant recruitment strategy entailed inviting strategic drivers in the maintenance environments that are responsible to maintain building infrastructure in the City of Cape Town Metropolitan Municipality, as well as the middle management team in the plenary session. The semi-structured interviews and unstructured plenary panel participants were candidates with specific experience and knowledge who were involved in the operational maintenance management strategy.

The study used a sample of seven operational maintenance managers and participants representing candidates with specific experience and knowledge of the research matter. As indicated in Table 1, the seven participants represented an average related experience of approximately 17 years. This experience refers to that gained in maintenance and contract management in the maintenance management environment.

Table 1: Research participants

Demographics	Average	Range
Related experience in years CoCT Maintenance Environment	17 years	6–30
Gender	Female	40%
	Male	60%
Education	Engineering	40%
	Construction	60%
Level in Organisation	Operational	40%
	Strategic level	60%

[The research participants hold positions such as Managers, Head, Senior Professional Officers in Facilities and Maintenance Management]

The participants' experience in Table 1 indicates that 40% obtained engineering qualifications, while 60% obtained construction management qualifications. The participants represented in Table 1 have gained related experience of 40% on an operational level, and 60% on strategic level in the organisation. Research participants were formally invited on e-mail or Skype to partake in the interviews. This invite included an interview guide (see Annexure B), interview questions, and a research questionnaire to be completed by the participants. Interviews were conducted in-person and virtually with a brief description of the research offered prior to the interview.

4.3.3.1 Semi-structured interviews

Structured interviews provide a focused data-collection approach and, according to Bryman and Bell (2011), assist with answering research questions. The structured interview guide assists with the analysis of the qualitative data against the objective of the research. The interview guide attached in Appendix B focuses on three research themes relevant to the data-collecting objectives of the study as stated in Chapter 1. The following themes presented itself during analysis of qualitative data:

- The relationship between the organisation's corporate objective and sourcing strategy are explored in the business unit's decision-making approach against factors that influence their sourcing strategy;
- The influence of resource capacity and competency on service delivery evaluating the influence of the organisation's resource capacity and competency to achieve the level of efficient and effectiveness in operations; and
- The impact of the contractual environment on operations through identification and analysis of key factors in the contract procurement environment and the influence on operations.

Campbell, Jardine and McGlynn (2011:27) elaborate on the importance of implementing a maintenance strategy that enhances production capacity. From this perspective the maintenance strategy must increase production availability, quality standard levels, reduce costs by reducing throughput time of production, and effectively mitigate production risks and exposure to operations, employees and customers (Campbell, Jardine & McGlynn, 2011:27).

4.3.3.2 Unstructured interviews

The plenary panel discussion was conducted using generic statements relevant to the research objective. Indirect questions were posed to the panel, which consisted of three experts in maintenance and contract management. The objective of the discussion was to explore whether similar evident challenges exist in the resources, procurement and contract environment surrounding strategic sourcing. The unstructured interview approach provided similar results as the findings in the semi-structured interview data analysis.

a) Resource capacity

Expected findings

There are capacity constraints due to professional registration to fulfil all tasks required by professions. Capacity is a huge constraint and is needed to have mechanisms in place to meet deadlines. Capacity challenges must be evaluated separately against contract management, tender procuring and the contract implementation function.

Unexpected findings

Complexity is the one driver for which there is a capacity constraint due to professional registration to fulfil all tasks in the profession. Staff are not working towards professional registration, and it is not considered a requirement by the City.

b) Technical competencies

Expected findings

There is not enough technical expertise across the professional disciplines. Resources are expected to have experience in all disciplines, despite not being trained in that specific discipline. Staff are expected to put together the tender without relevant experience in the discipline and technical knowledge to do so. Project managers or contract managers are expected to handle 7-10 tenders per person, per year. Considering the huge responsibilities that come with serving on this many committees, managers and directors

must ensure future appointments to these positions account for core competencies required within the team.

Unexpected findings

The correct appointments are not being made against the changes in contracting in the business. The municipality has not adapted to changes in its core function. Qualified people are present; however, there is no professional registration in the City. This is a grey area due to no emphasis on obtaining registration from staff.

c) The procurement environment

Expected findings

The approach of the procurement strategy is stipulated, i.e. the framework agreement type, and therefore primarily used. There is no discussion around procurement strategies and procurement methods to interrogate the various guidelines set out by National Government as an alternative way of procuring and tendering. The tender requirements are not reviewed against an alternative procurement strategy, rather one type of procurement is used across the board.

Unexpected findings

The tender requirements are not reviewed against an alternative procurement strategy, rather one type of procurement contract is used across the board. There is merit to interrogating the procurement strategies for alternative approach. The current way of sourcing does not equate to gaining the best candidates.

d) The contract environment

Expected finding

In the current procurement method, the professional framework contract – where the technical quality is stipulated – is not necessarily reviewed. The evaluation of the contractor against functionality does not assist with evaluating the quality of the contractor. With the technical evaluation, the quality of the contractor's abilities and expertise can be evaluated through their contracts; however, contractors merely meeting

the minimum requirement does not lend itself to the best candidates and does not equate to the best contractor for the job.

Unexpected finding

The procurement system does not necessarily look at quality procurement; however, the system does look for price and preference. The technical approach must be reviewed before prices are reviewed.

4.3.3.3 Questionnaire results

a) Maintenance services and competency skills

Maintenance services and competency skills consist of a combination of electrical, mechanical and civil services based on the business need identified in each business unit in the case study. Where services are insourced and outsourced an average of 94% of the internal resources are aligned to core services. An average of 6% internal resources are assigned to the outsourcing portfolio providing services through contracts.

An average of seven resources are assigned to the outsource portfolio providing services through contracts identified in each business, whether a hybrid sourcing or singular sourcing approach is applied. Summary of the questionnaire data findings demonstrates that the decision to outsource maintenance services was based on resource capacity, professional and specialised technical skills in the contract environment.

b) Sourcing approach

The decision to outsource repair and maintenance services is also due to a shortage of skills and risk factors relating to size and complexity of infrastructure and changes in the regulatory requirements in the maintenance environment. Factors such as specialised skills and competencies to provide oversight ensure adherence and implementation of quality, safety and compliance to legislative and regulatory frameworks. However, what could not be established is whether the decision to insource or outsource maintenance services was evaluated against a structured sourcing framework.

c) Risks in the environment

Interviewees indicate that there is importance in evaluating risks in the maintenance environment. Prevalent risks and challenges experienced in the procurement environment have caused:

- Delays in response to service delivery;
- Contract experience; and
- Termination of contracts.

When in-house resources are utilised to provide services, the following risks are experienced:

- Delays in responses to work requests due to capacity;
- Loss of internal skills; and
- Lack of contract management experience.

The response to risks in the interviewee's sourcing environment suggests an absence of formalised evaluation of the impact of risks and mitigating strategies in the operations.

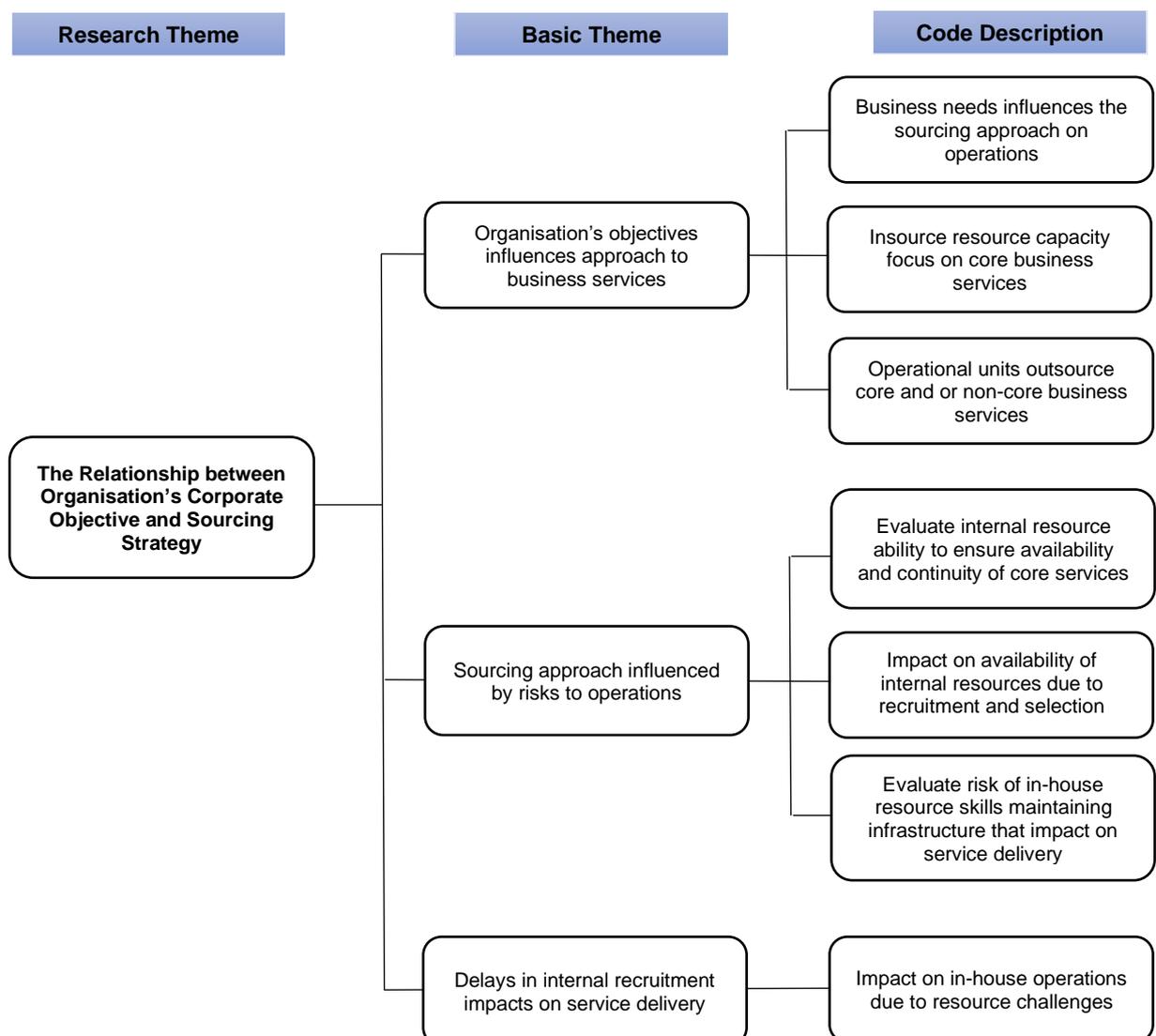
4.4 Outcome of Thematic Data Analysis

The thematic analysis of the qualitative data that was collected reveals 22 codes as a result of seven interviews. The interview coding sheet is represented under Appendix A.1, with a systematic approach used throughout the coding process to analyse data. The analysis process produced codes that were clustered and presented as basic themes. Further analysis identified three research themes, which are depicted in figures 12, 13 and 14.

Research Theme 1: The relationship between the organisation’s corporate objective and sourcing strategy

The interview process reveals three basic themes associated with the relationship between the organisation’s corporate objective and sourcing strategy setting. The themes were built from seven codes, as indicated in Figure 12. The interviews revealed consensus that the organisation’s business objective influences the sourcing approach against core and or non-core services provided. The first two respondents confirmed that it is a business decision to appoint internal capacity against core services. Two departments implemented a hybrid model by insourcing core and outsourcing non-core services. The remaining two departments’ business decision was to outsource all services with internal capacity focussing on managing the outsourced service providers.

Figure 12: Basic Theme: The relationship between an organisation’s corporate objective and sourcing strategy



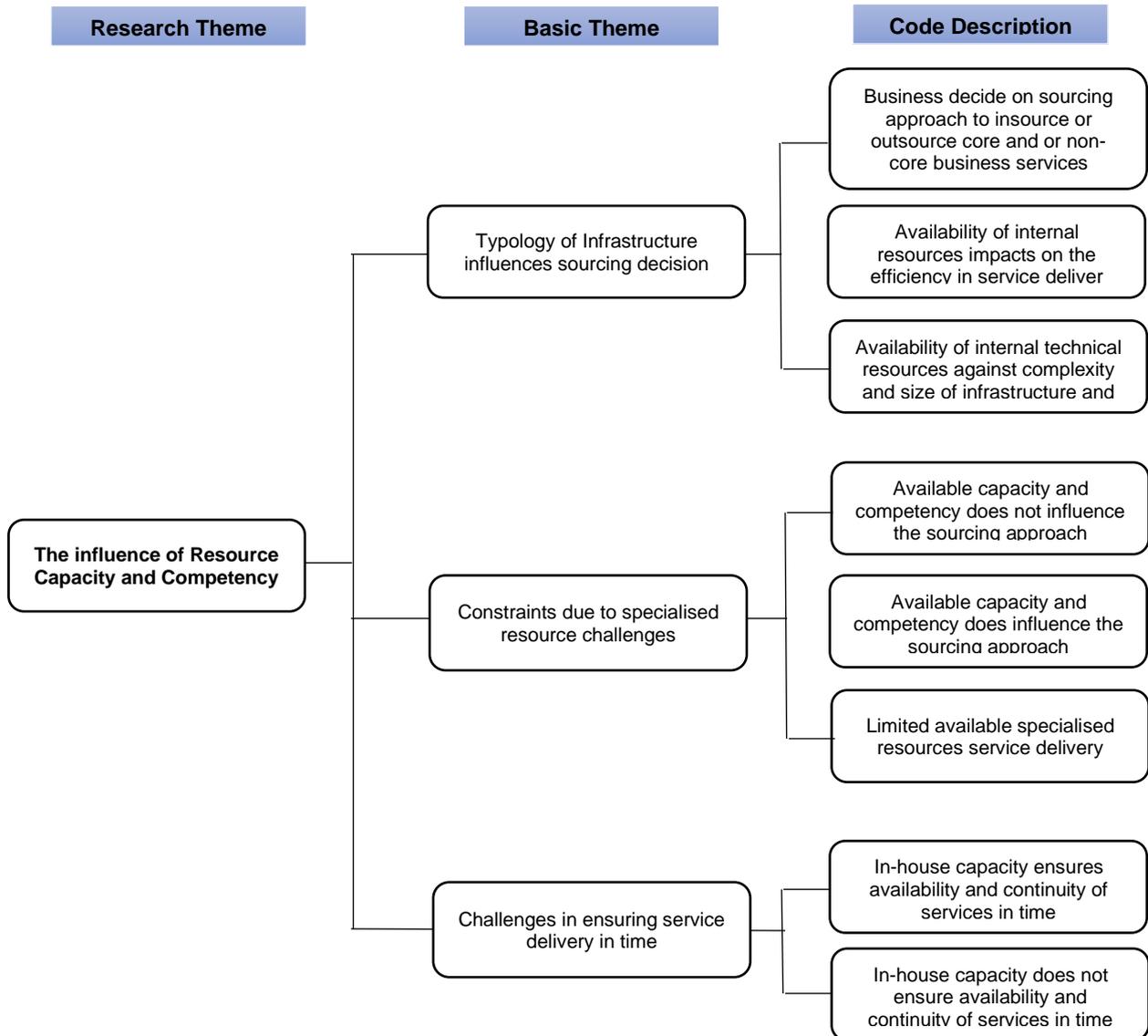
Source: Author's own (2021)

The department's evaluation of risks against the sourcing approach when outsourcing all core and non-core services is not evident in the research. However, in the hybrid sourcing approach there is consensus that the feasibility evaluation is the driver when deciding which services to outsource or insource. Respondents agree that availability of resources are affected by delays in the internal recruitment processes. Thus, it is recognised that core business activities supported by critical infrastructure in the business are subjected to risks in ensuring service delivery. Where the current sourcing approach is still largely insourcing of core-services, respondents report on the vulnerability of, and impact on, operations when internal resources are not available. This suggests that the sourcing approach must be aligned with the maintenance capability, skills and available resources to execute maintenance. The impact of resource competency challenges against critical infrastructure in the business are discussed in the next section.

Research Theme 2: The influence of resource capacity and competency on service delivery

The interview process revealed three basic themes that outline the influence of resource capacity and competency on service delivery. The themes are built out of eight codes, as indicated in Figure 13. Respondents highlight that the business decision to insource or outsource core and or non-core business services takes into consideration the complexity and size of infrastructure and technology. Even though listing the topology of critical infrastructure is not discussed, respondents confirm that there is infrastructure that impacts on the ability to ensure service delivery and continuity of service.

Figure 13: Basic themes related to the influence of resource capacity and competency on service delivery



Source: Author's own (2021)

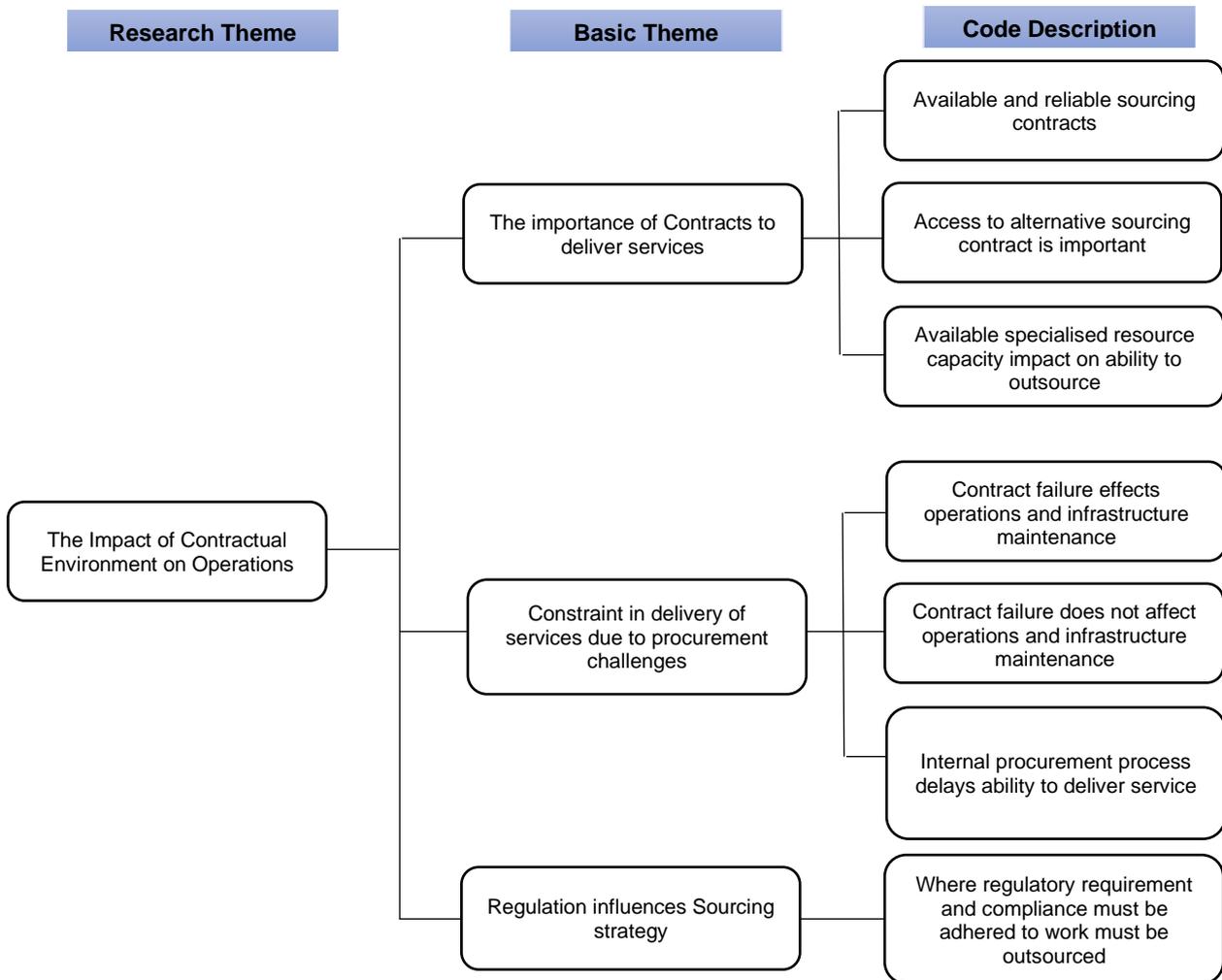
There was a coherent response on the influence the complexity of infrastructure that support service delivery has on the decision to insource or outsource of maintenance services. Where services are insourced, respondents recognise that availability, competency and capacity against day-to-day maintenance is aligned with low maintenance activities and risks. In addition, there is equipment with high maintenance intensive activities where failure poses a high risk to service delivery. Respondents agree that the limited availability of in-house specialised skills forces the organisation to outsource through contracts to maintain critical high-maintenance intensive infrastructure.

The coherent response across the interview sample is that capacity, competency and resources with specialised skills influence the ability of the organisation to ensure continuity of services. Interviewees emphasise that where critical infrastructure is listed, specialised resource criteria must be determined against available skills and physical resources. Further evaluation must be done against the organisation's capability, available competency and capacity of resources to execute maintenance. There is no consensus as to whether the hybrid sourcing or complete outsourcing approach is ideal. However, there is consensus that the contract environment poses its own set of risks that must be evaluated against the sourcing approach.

Research Theme 3: The impact of the contractual environment on operations

The analysis of the research theme identified three basic themes as a result of seven codes, as described in Figure 14. This research theme focuses on the impact of contractual environment on operations. Furthermore, the analysis explored underlying themes of focused contracts, procurement, resource challenges and regulatory influences when executing through contracts. Participants emphasise the impact of procurement of contracts on executing services and availability of resources due to recruitment processes. In a contract environment, where the organisation outsources core and non-core services, regulatory requirements in the procurement processes, contract failure and human resource availability negatively impact on the ability to deliver services. According to respondents, where a hybrid sourcing approach is used, this has an impact on the infrastructure that supports service delivery and continuity of services.

Figure 14: Basic themes: Impact of contractual environment on operations



Source: Author's own (2021)

Ensuring service delivery and mitigating risk to infrastructure pose challenges to the procurement processes in the contract environment. Contract delays or failures require a mitigation approach realigned with the current operational focus areas, which include critical infrastructure and adherence to regulatory requirements.

4.4.1 Thematic analysis summary

The thematic map in Figure 15 represents the relationship between interview codes identified across the analysed data set. Each code is referenced to the respective research theme and clustered to its closest relationship and dependencies. The codes in Figure 12 underline the relationship between the organisation's sourcing decision where core services are provided in the hybrid sourcing approach. The related content of the associated codes within figures 12 and 13 describes the relationship between the business decision in the sourcing approach, which must take into consideration the internal resource capacity and competency identified across the data mass.

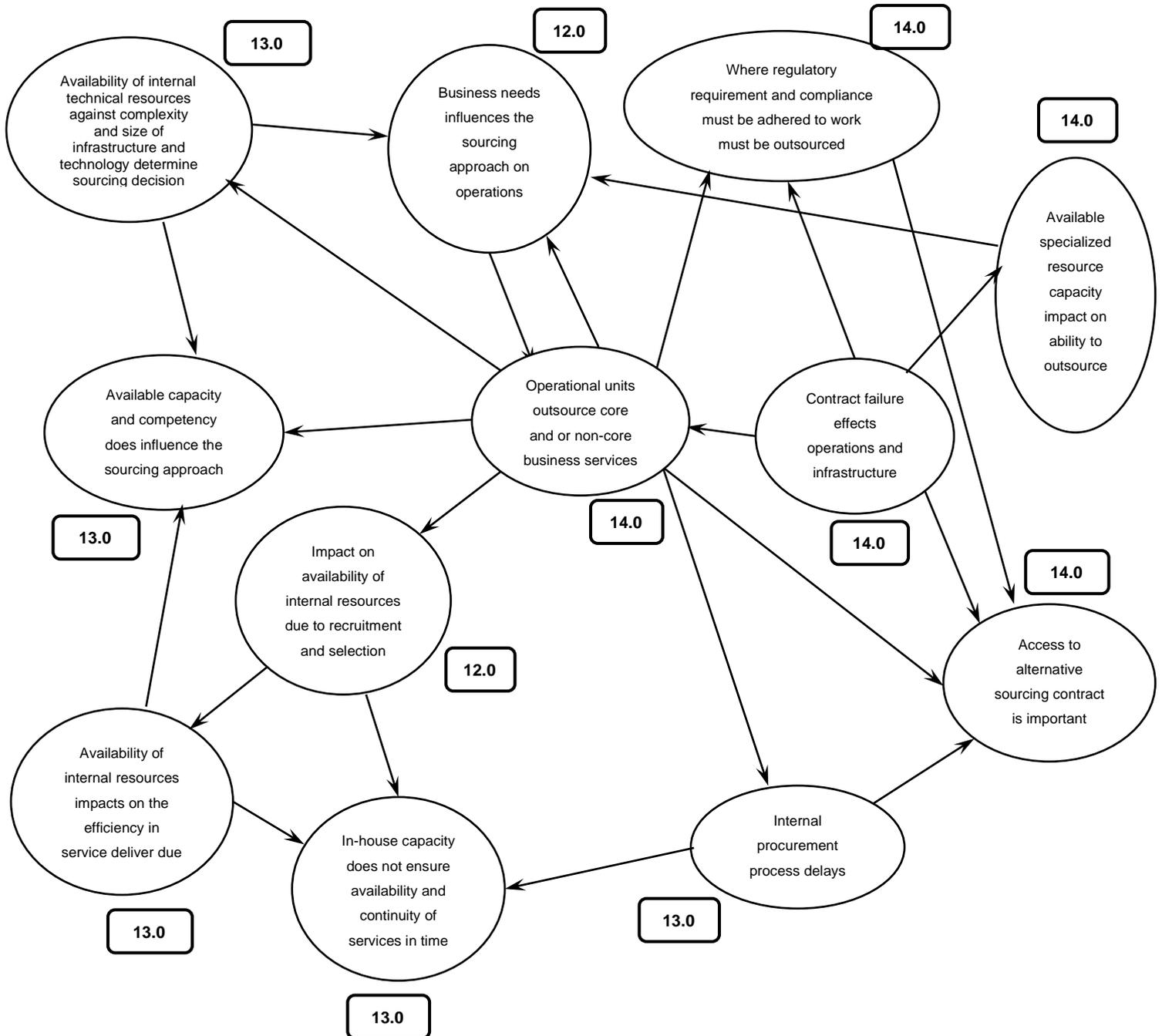
The content codes in figures 13 and 14 illustrate the relationship and impact where the sourcing approach of the organisation relies on outsourcing services. There is evidence of vulnerability in the ability to deliver services, particularly where risk of contract failure and procurement challenges are rated high from the related identified codes. The associations between interview codes identify that delays in procurement directly impact service delivery ability even if the organisation has the necessary capacity and competency. The codes associated with figures 12, 13 and 14 describe the impact of the business decision against the sourcing approach and the relationship between capacity and competency in the environment whether insourced or outsourced. Codes associated with figures 13 and 14 predominantly describe the contract and procurement environment against the element of risks in the sourcing decision.

The interview process identified principal themes, such as:

- 1) The business need influences the sourcing approach;
- 2) Procurement challenges directly impact the ability to provide services regardless of whether the organisation has the required capacity and competency;
- 3) Increased vulnerability in providing services where reliance is solely on an outsource approach;
- 4) The contract environment must incorporate an effective response to contract failure; and
- 5) The overall presence of risks against the interview codes identified across the data mass.

The thematic map in Figure 15 illustrates the dominant basic themes gathered through explorative research.

Figure 15: Thematic map



Source: Author's own (2021)

The business organisation's need determines the sourcing approach within the maintenance division of the City of Cape Town. The resources, procurement and contract-related variables further influence decision making against key factors, such as: (i) business core services and vulnerability to operations; (ii) in-house core business activities analysis; (iii) evaluating technical competency and risks exposure; and (iv) contracting and procurement risk considerations. The interconnected relationships of the key factors are further explored to develop a sourcing decision tree, as set out in section 5.3, introducing principles of a systematic sourcing approach.

4.5 Summary

In this chapter the research findings explore the relations experienced by maintenance managers when ensuring service delivery in the case study organisation. Analysis of the data highlights that decisions by the organisation must take under consideration key factors identified in the study within the maintenance environment. The factors that influence sourcing decision-making are further structured to develop a systematic sourcing approach that influences decision making through a proposed decision-making model. Conclusions to the research study and recommendations will be elaborated upon in the next chapter.

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

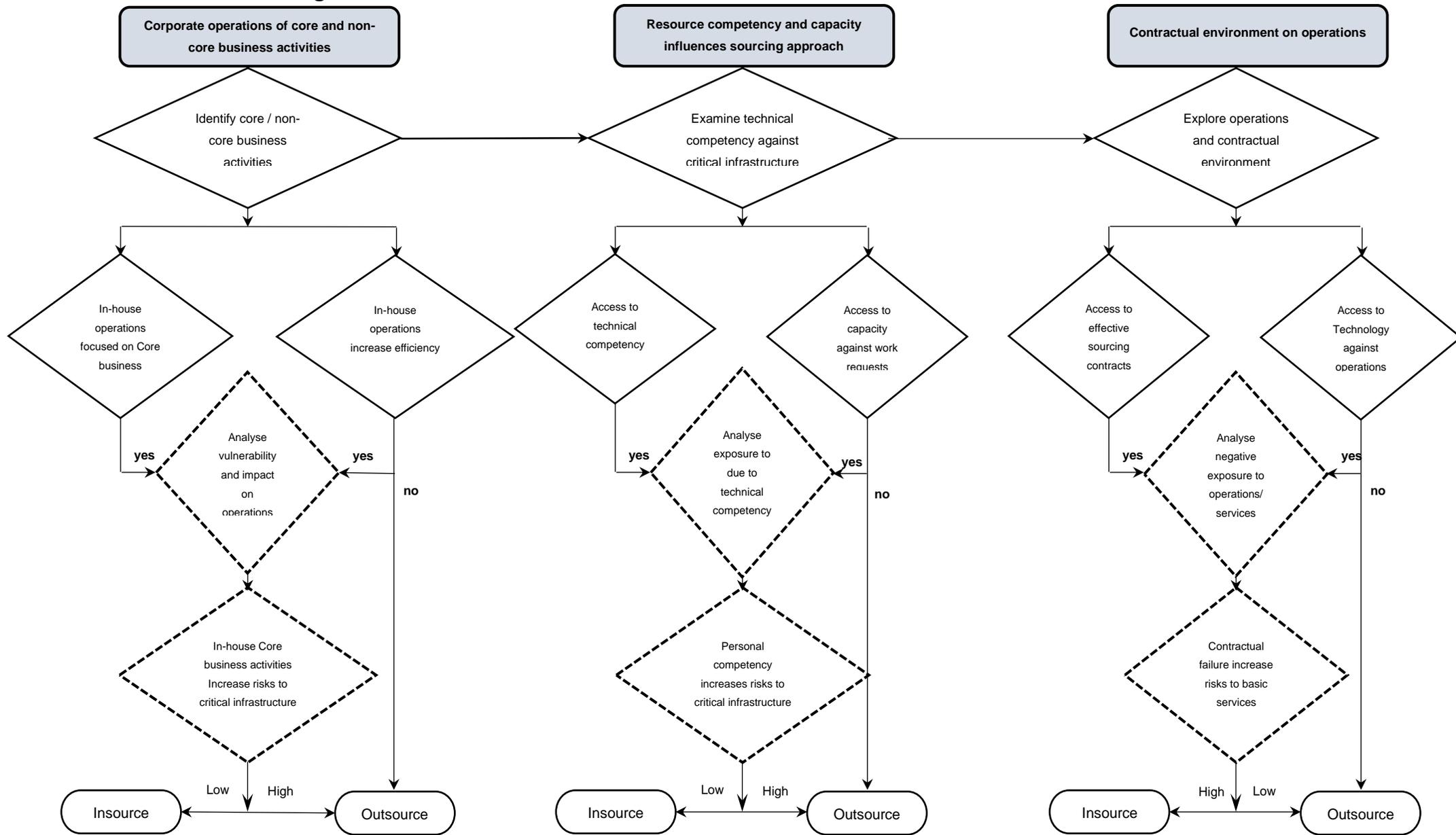
This chapter looks to determine a sourcing approach that addresses when to insource or outsource when maintaining infrastructure assets within the City of Cape Town. The recommended strategy is informed by the literature review in Chapter 2 with the added context of the City of Cape Town landscape in Chapter 3. Chapter 2 elaborates on strategic sourcing and key factors of the outsourcing and insourcing approach, clustering factors that influence the organisation's business objectives, operations and sourcing strategies against risks in the infrastructure asset maintenance environment. The advantages and disadvantages of insourcing and outsourcing, the integration of operations, competencies, contracts and risks which support an effective operating model were evaluated against relevant regulatory, legislative and policy frameworks.

This chapter details the semi-structured interviews with maintenance managers, as well as data from the self-administered questionnaires, which collect information on sourcing strategies, operations and the decision-making environment. Chapters 2 and 3 contribute further to the recommendations made for the sourcing approach through the literature.

5.2 Developing a Sourcing Approach

The recommendation is for the sourcing decision to be established using a decision-making tree to motivate the insourcing or outsourcing decision. The motivation for sourcing is established through a deductive approach applied using explorative questions focusing on the organisations core business, efficiency, in-house competency, capacity, and risks, all of which establish whether the organisation should insource or outsource.

5.3 Recommended Sourcing Decision-Tree



Source: Šeba's (2018)

Šeba's (2018) decision tree identifies key focus areas when deciding to insource or outsource activities introduced in the recommended sourcing decision making model under 5.3, which can systematically be analysed within the operational environment. These factors are also presented by Kremic and Tukul (2003), Fernandez and Marquez (2012), Schniederjans, Schniederjans and Schniederjans (2010) and Šeba (2018), and discussed in Chapter 2.

5.4 Recommended Sourcing Decision Making

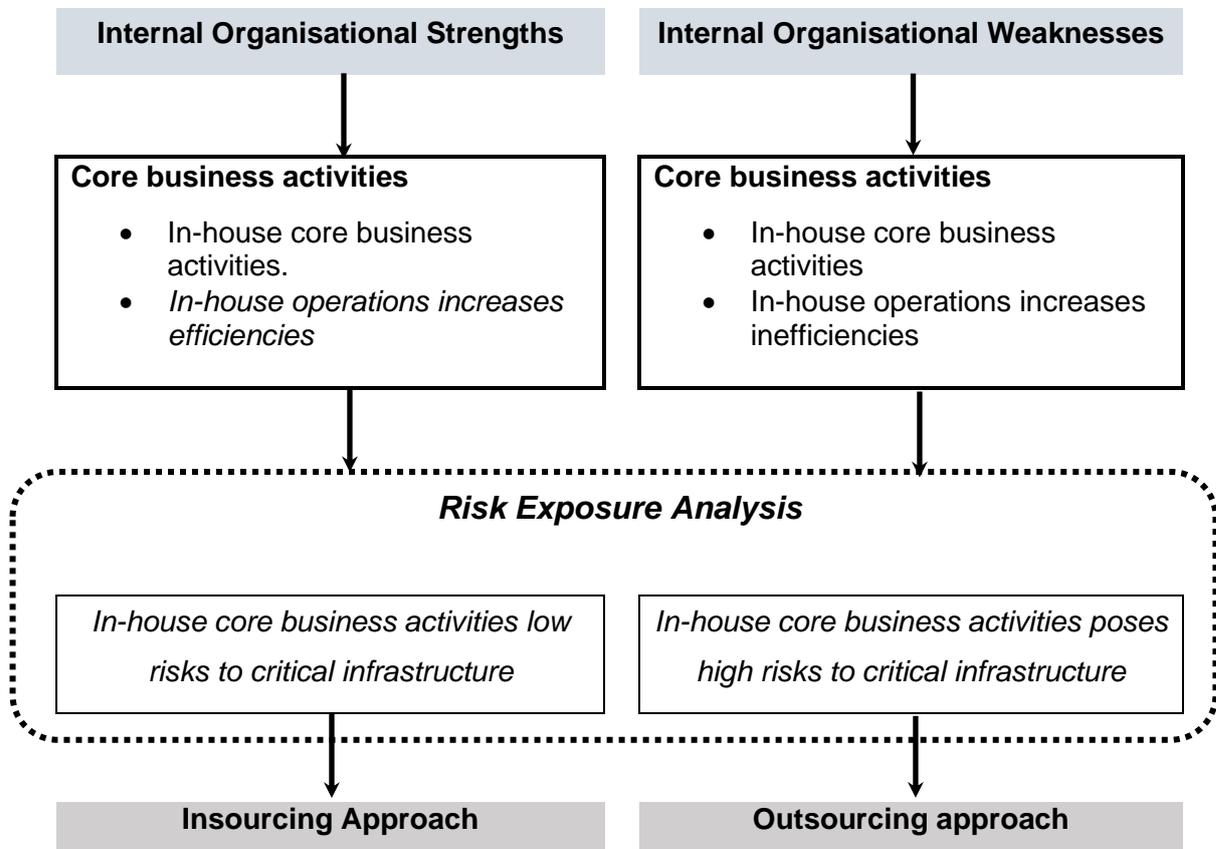
The research explored the element of risks against the key factors as recommended by Greaver (1999:4) that influence the sourcing decision. This is depicted in the recommended Sourcing Decision-Tree. The key focus areas set out in 5.3 incorporates research themes 1, 2 and 3 were identified, and a decision-tree created for decision making through the analysis of identified factors in Chapter 2 and 3. Recommendations are made based on the outcome of the data and information generated through the literature review, interviews, questionnaires and secondary data. Key recommendations from the study are represented in the following sections.

5.4.1 The organisation's corporate objective and strategy

The focus of the organisation's corporate objective and strategy should be on identifying in-house abilities against critical infrastructure that supports core and non-core business activities through identification and analysis of:

- In-house operations increase in/efficiencies;
- Vulnerability and impact on operations due to inefficiencies; and
- In-house core business activities increased risks to critical infrastructure.

Recommendations are based on an analysis of the internal environment and considers key decision-making factors through a deductive approach which informs the motivation to insource or outsource. This is depicted in the following Figure 16.

Figure 16: Sourcing Decision-Tree: Decision Making Factor 1

5.4.1.1 Recommended sourcing approach

Insourcing approach

- Identify core business activities against critical infrastructure; and
- Develop a profile of internal resources for core business activities against critical infrastructure that supports service delivery with risk identification and mitigation responses.

Outsourcing approach

- Develop risk identification and mitigation responses against core business activities relevant to the sourcing challenges and environment should the decision be to outsource these activities.

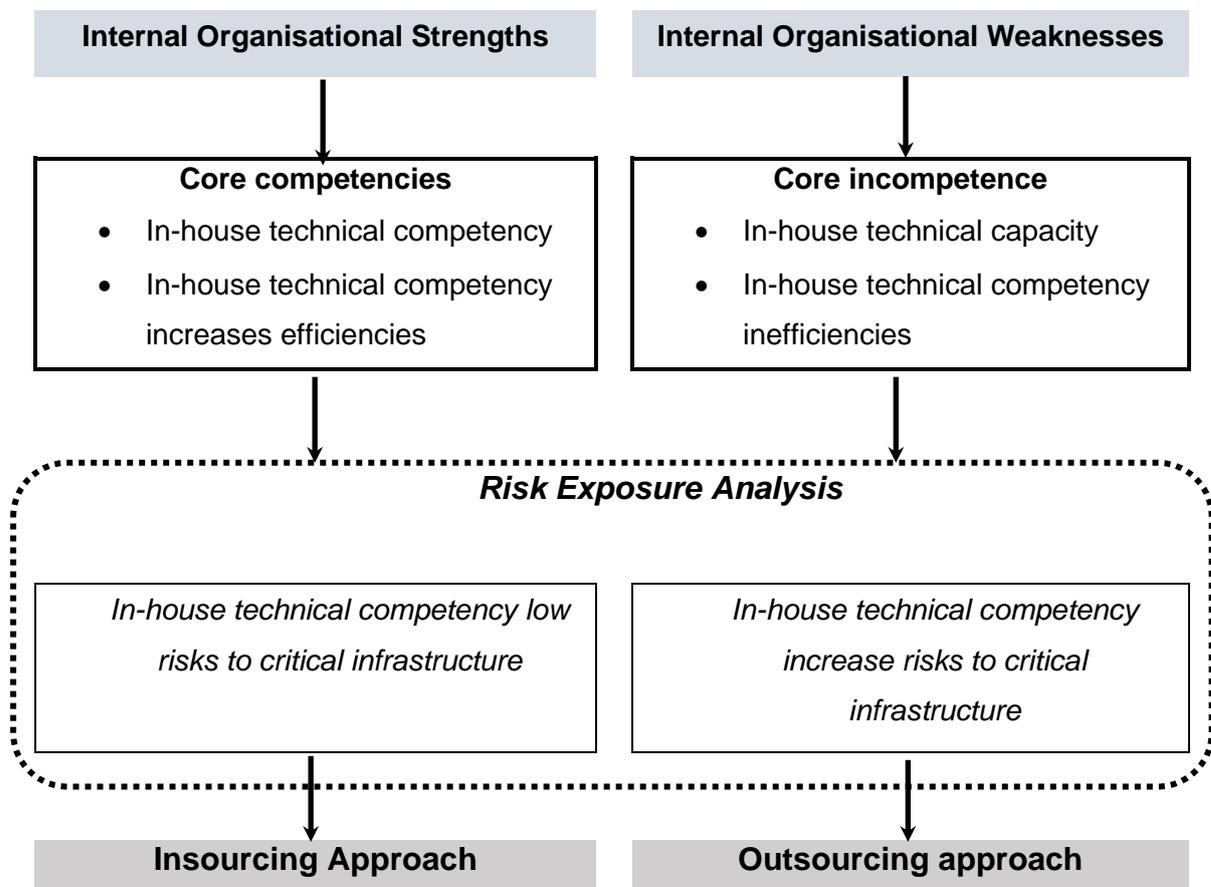
5.4.2 Resource Capacity and Competency

Explore the influence of the organisation's resource capacity and competency to achieve an efficient and effectiveness level of operations by:

- Analysing exposure to effectiveness due to technical competency and;
- Exploring the degree of risks exposed to considering the organisations' technical competency capacitated by critical infrastructure.

Recommendations are based on the analysis of the resource capacity and competency, against the degree of risks exposure considered as key decision-making factors using a deductive approach which informs the motivation to insource or outsource. This process is depicted in the following Figure 17.

Figure 17: Sourcing Decision-Tree: Decision Making Factor 2



5.4.2.1 Recommended sourcing approach

Insourcing approach

- Identify competency requirements for critical infrastructure that supports service delivery; and
- Develop a competency profile of internal resources for core business activities against critical infrastructure that supports service delivery.

Outsourcing approach

- Obtain technical expertise to reach regulatory compliance;
- Transfer risks to external service providers;
- Access latest technology; and
- Increase competency levels in expertise.

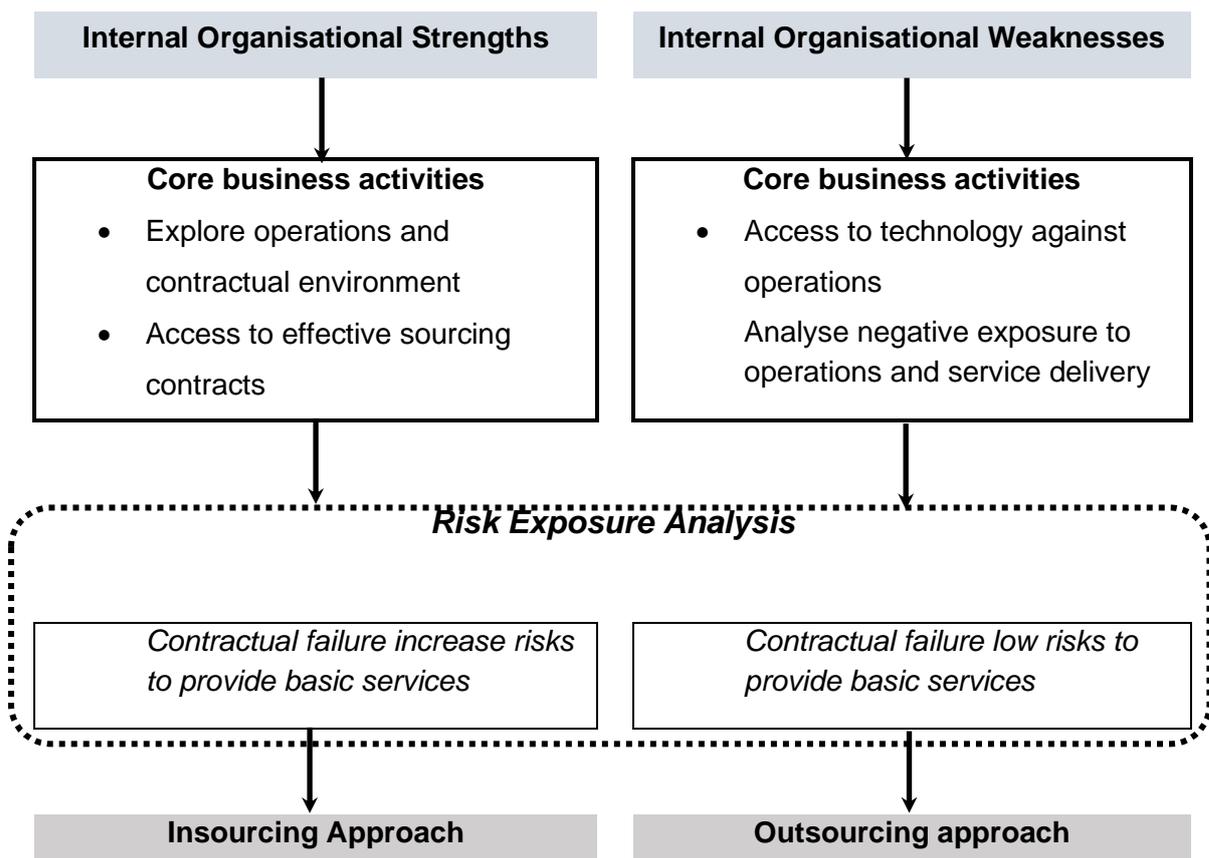
5.4.3 Contractual environment on operations

The exploration of the operations and contractual environment is considered a key factor, as set out in chapters 2 and 5. This exploration influences the sourcing decision to determine the impact of risks and mitigating strategies by:

- Accessing the effect of sourcing contracts;
- Accessing the availability of technology in-house to upgrade critical infrastructure that impacts on service delivery ;
- Reviewing negative exposure to operations and service delivery and;
- Exploring the degree of risks if there is contractual failure.

Recommendations are based on the analysis of the internal environment and consider the key decision-making factors through a deductive approach which informs the motivation to insource or outsource. This is depicted in the following Figure 18.

Figure 18: Sourcing Decision-Tree: Decision Making Factor 3



5.4.3.1 Recommended sourcing approach

Insourcing

- Identify core business activities for critical infrastructure;
- Develop a profile of internal resources for core business activities against critical infrastructure that supports service delivery with risk identification and mitigation responses; and

- Build capacity to take a structured and formalised approach when evaluating strategic keepers and non-keepers for core business activities that support service delivery requests.

Outsourcing

- Develop a contract risk evaluation process in the procurement and contract environment with mitigation strategies should contracts fail; and
- Explore and document risk capacity against mitigation strategies in the environment.

5.5 Research Recommendation

The main recommendation is to develop a structured systematic approach that analyses the sourcing approach throughout the asset management lifecycle, implementing principles of a PAS 55, ISO 55000 Asset Management System. This approach aligns with the following process described by Ouertani, Parlikad and McFarlane (2008):

“... the process of organizing, planning and controlling the acquisition, use, care, refurbishment, and/or disposal of physical assets to optimize their service delivery potential and to minimize the related risks and costs over their entire life through the use of intangible assets such as knowledge based decision-making applications and business processes.”

The asset lifecycle management approach (ISO 55001) also covers organisational culture, leadership, planning, support, operation, performance operation and improvement within an asset management system (Minnaar, Basson & Vlok, 2013). This provides a strategic and systematic approach to decision making against related risks identified in each category in the asset lifecycle and even informs the maintenance approach that will inform the relevant sourcing approach in a strategic framework.

5.6 Conclusion and Recommended Future Works

The research study is a representation of information gathered in the asset maintenance unit environment to evaluate the current operations and sourcing approach independently. Each asset maintenance unit presents an array of data and information that confirms that services are delivered against their core mandate. The study identified key factors to consider when making a sourcing decision applicable to all three units. The research confirms that both insourcing and outsourcing present a set of benefits and disadvantages in the maintenance environment. The study identified that there was not a structured form of decision making in the sourcing environment. However, the sourcing approach that enables continuity in service delivery influences the decision making.

One department made the business decision to outsource all services without evidence of evaluation of the risks posed by outsourcing. The decision to outsource presents an array of challenges therefore business decisions to completely outsource services must be considered against a criterion of risks and mitigation strategies in the department. Where there is a hybrid sourcing approach each department must be independently evaluated to determine the degree of exposure and focused mitigating responses. The research presented a holistic view of the implementation approach to sourcing in the maintenance environment in these units.

The researcher recommends that further study be done incorporating the asset lifecycle management approach, integrating ISO 55001, into the asset maintenance unit environment towards an asset lifecycle approach strategically implementing, aligned with the definition adopted by Ouertani, Parlikad and McFarlane (2008) as, “the process of organizing, planning and controlling the acquisition, use, care, refurbishment, and/or disposal of physical assets to optimize their service delivery potential and to minimize the related risks and costs over their entire life through the use of intangible assets such as knowledge based decision-making applications and business processes.”

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APPENDICES

APPENDIX A: THEMATIC ANALYSIS DATA

Table A.1: Coding schedule

Research Theme	Code	Code Description
The relationship between organisation's corporate objective and sourcing strategy	Bus>>Op	Business needs influences the sourcing approach on operations
	Cap_Bus	Insource resource capacity focus on core business services
	Op_Serv	Operational units outsource core and or non-core business services
	Res_Serv	Evaluate internal resource ability to ensure availability and continuity of core services
	Res>>Recr	Impact on availability of internal resources due to recruitment and selection processes
	RiskB	Evaluate risk of in-house resource skills maintaining infrastructure that impact on service delivery
	Op>>Res	Impact on in-house operations due to resource challenges
The influence of resource capacity and competency on service delivery	Bus_Sour	Business decide on sourcing approach to insource or outsource core and or non-core business services
	Res=Avail	Availability of internal resources impacts on the efficiency in service deliver due to response time
	Tech=Avail	Availability of internal technical resources against complexity and size of infrastructure and technology determine sourcing decision
	Comp≠Sour	Available capacity and competency does not influence the sourcing approach
	Comp>Sour	Available capacity and competency does influence the sourcing approach
	Lim_Res	Limited available specialised resources
	Cap=Avail	In-house capacity ensures availability and continuity of services in time
	Cap≠Avail	In-house capacity does not ensure availability and continuity of services in time
The impact of contractual environment on operations	Rel_SourC	Available and reliable sourcing contracts
	SourC	Access to alternative sourcing contract is important
	Res>>Outs	Available specialised resource capacity impact on ability to outsource
	ContF>>Op+Inf	Contract failure effects operations and infrastructure maintenance
	ContF≠Op+Inf	Contract failure does not affect operations and infrastructure maintenance
	IntPro<Ser	Internal procurement process delays ability to deliver service
	Reg+Comp=Outs	Where regulatory requirement and compliance must be adhered to work must be outsourced

APPENDIX B: THE INTERVIEW GUIDE

To explore the current sourcing strategy that is used by the asset maintenance branches who provide maintenance services to work request on building infrastructure.

- What maintenance services, within the building trades, do your department provide?
- What type of maintenance work do you insource?
- What type of maintenance work do you outsource?
- What is your current capacity when insourcing or outsourcing work?
- How do you decide what work request you insource or outsource?
- What are your current reasons for outsourcing?
- Does outsourcing yield the intended/desired effect?
- How does your decision to insource or outsource take into consideration the risks in the sourcing environment?
- How does your decision to insource or outsource take into consideration the risks in the asset maintenance environment i.e. infrastructure?
- What type of formal training did the staff that utilise outsource services receive?

To evaluate the factors that can be considered when developing a sourcing strategy.

- What are the advantages or disadvantages of maintenance work you insource?
- What are the risks associated with maintenance work you insource?
- What are the advantages or disadvantages of maintenance work you outsource?
- What are the risks of maintenance work you outsource?
- When outsourcing a service and the sourcing contract fails/are terminated what measures are put in place to ensure continuity of services?

To developing a sourcing strategy that can be used by maintenance branches in the asset maintenance environment.

- Under what circumstances do you recommend that the asset maintenance environment insource their repairs and maintenance and why?
- Under what circumstances do you recommend that the asset maintenance environment outsource repairs and maintenance and why?
- What are the key advantages of outsourcing repairs and maintenance to that of insourcing?
- What measures must be put in place in order for the outsource service to be effective?
- What are the key advantages of doing repairs and maintenance in-house to that of outsourcing?
- What measures must be put in place in order for the insource service to be more effective?
- What risk factors be included in the decision to insource a service?
- What extent must risk factors be included in the decision to outsource a service?

APPENDIX C: ETHICS COMMITTEE APPROVAL



APPROVED WITH STIPULATIONS

REC: Social, Behavioural and Education Research (SBER) - Initial Application Form

18 November 2019

Project number: SPLPAD-2019-10989

Project title: DETERMINING A SOURCING APPROACH TO INFRASTRUCTURE ASSET MAINTENANCE IN THE LOCAL GOVERNMENT SECTOR: Assessing the balance between Insourcing and Outsourcing at The City of Cape Town

Dear Miss Ronel Meyer

Your REC: Social, Behavioural and Education Research (SBER) - Initial Application Form submitted on 17 September 2019 was reviewed by the REC: Humanities and approved with stipulations.

Ethics approval period:

Protocol approval date (Humanities)	Protocol expiration date (Humanities)
18 November 2019	17 November 2022

PLEASE RESPOND TO THE FOLLOWING STIPULATIONS:

The researcher may proceed with the envisaged research provided that the following stipulations, relevant to the approval of the project are adhered to or addressed:

1) The researcher works for the City of Cape Town and gives her position as Head - Facilities Management & Maintenance. She clearly says that there is no conflict of interest between her position at work and her role as a researcher. She intends to approach three maintenance experts in three different directorates. 1) Home Ownership Transfer, Tenancy Management and Staff Housing, 2)

Centralised Facilities Management and Maintenance, 3) Leased Out Improved Property Portfolio Maintenance. The question is whether the people whom she calls subject experts are in a subordinate role to her or not? If not, then there is no potential for coercion. If they are, the situation will have to be managed to make sure the experts do not feel coerced into participating. Even if managed, the question arises as to whether the subject heads will feel free to give answers that are as uninhibited as they would if not subordinates. As said, this may not be a problem, the organizational hierarchy in maintenance is not known to the reviewer. The researcher is requested to clarify.

2) Given that there are only three units are to be approached, if the units are named it may be difficult to maintain anonymity as each unit would be expected to have a limited number of senior people

who could give an opinion on maintenance strategy of the type being sought. The researcher should confirm if this will be the case.

3) Both questions 3 and 4 of the research questionnaire lack a noun. The noun 'functions' is present in questions 5 and 6. A noun such as 'services' or something similar should be added after 'repair and maintenance' in questions 3 and 4. Also, in questions 18 and 19 of the questionnaire (option A in both cases). The word 'Corrupt' should be used in place of 'Corruption'.

HOW TO RESPOND:

Some of these stipulations may require your response. Where a response is required, you must respond to the REC within **three (3)** months of the date of this letter. Your provisional approval will be withdrawn automatically should your response not be received by the REC within 3 months of the date of this letter.

For instructions on how to respond to these stipulations, please download the FAQ on how to edit your application and follow the steps carefully: [HOW TO RESPOND TO REC FEEDBACK](#).

Where revision to supporting documents is required, please ensure that you replace all outdated documents on your application form with the revised versions.

Please take note of the General Investigator Responsibilities attached to this letter. You may commence with your research after complying fully with these guidelines.

If the researcher deviates in any way from the proposal approved by the REC: Humanities, the researcher must notify the REC of these changes.

Please use your SU project number (10989) on any documents or correspondence with the REC concerning your project.

Please note that the REC has the prerogative and authority to ask further questions, seek additional information, require further modifications, or monitor the conduct of your research and the consent process.

FOR CONTINUATION OF PROJECTS AFTER REC APPROVAL PERIOD

Please note that a progress report should be submitted to the Research Ethics Committee: Humanities before the approval period has expired if a continuation of ethics approval is required. The Committee will then consider the continuation of the project for a further year (if necessary)

Included Documents:

Document Type	File Name	Date	Version
Research Protocol/Proposal	19.09_MPA_Ronel_Desiree_Meyer_Research_Report_Final_rev01_Proposal	31/07/2019	01
Informed Consent Form	SU HUMANITIES Consent form template_Written 1	05/08/2019	01
Data collection tool	19.01_MPA_RDM_Research_Questions_Final_rev00	05/08/2019	01
Data collection tool	19.01_MPA_RDM_Research_Questions_Final_rev00	05/08/2019	01
Request for permission	CCT_ED Research Requests Approval 2019_	11/09/2019	01

Default	19.09.09_MPA_EthicsResponse	11/09/2019	1
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If you have any questions or need further help, please contact the REC office at cgraham@sun.ac.za.

Sincerely,

Clarissa Graham

REC Coordinator: Research Ethics Committee: Human Research (Humanities)

National Health Research Ethics Committee (NHREC) registration number: REC-050411-032.

The Research Ethics Committee: Humanities complies with the SA National Health Act No.61 2003 as it pertains to health research. In addition, this committee abides by the ethical norms and principles for research established by the Declaration of Helsinki (2013) and the Department of Health Guidelines for Ethical Research:

Principles Structures and Processes (2nd Ed.) 2015. Annually a number of projects may be selected randomly for an external audit.