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A Comparative Analysis between Outsourced and Insourced Public Infrastructure Projects’ Performance in a Provincial Department of Public Works

By

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Declaration

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Abstract

Procurement and subsequent delivery of infrastructure projects by a Provincial Department of Public Works and Infrastructure (PDPWI) can be achieved through two ways, namely: outsourcing or insourcing (in-house). Outsourcing is a widely used method for transferring non-core activities of the firm to external service providers. It is used across different industries in both public and private sectors globally. Conversely, insourcing is regarded as the opposite of outsourcing. The delivery of PDPWI projects is always late, incurring extra costs and often of average quality.

The purpose of this paper is to investigate reasons behind the decision to either outsource or insource public infrastructure projects and to subsequently propose a comparative analysis for outsourcing versus insourcing in Department of Public Works and Infrastructure at a Provincial level. A Grounded Theory research design will be deployed for data collection. Accordingly, relevant project-centric documents spanning a duration of five (5) years was reviewed whilst semi-structured interviews were conducted concurrently, with a purposively selected sample of interviewees. The data emerging from the deployment of both data collection techniques enabled an understanding of the attributes of projects which were either outsourced or insourced and the performance of such projects thereof. The data was analysed according to the procedures associated with the grounded theory method research design. As such, open coding, axial coding and pattern matching were carried out at several intervals to develop categories and themes. Besides highlighting the usefulness of the grounded theory methodology for such study, the study’s findings established the absence of a properly structured approach to decision making within the PDPWI as it pertained to the choice of either outsourcing or insourcing construction projects. Yet, it was furthermore observed that the nature of outsourced projects differed from insourced projects. On performance of these projects, the study found both the procurement pathways yielded the same poor results, and the study indicated that outsourced projects performed slightly better in comparison to insourced projects in terms of cost certainty. These findings culminated in the evolution of a comparative analysis which is expected to guide effective decision making within PDPWI on which projects to be outsourced or insourced. The proposed comparative analysis of performance of in-house versus outsourced can be used as a guideline in future for procurement of public infrastructure projects by decision makers in public sector.
Definitions of terms

**Insourcing**- The utilisation of internal resource, like labour, personnel and other resource to achieve the firm’s objectives

**Outsourcing**- The allocation of business activities from an organisation’s internal sources to an external organisation, and it has become a key component of supply chain management strategies

**Procurement**- The action taken to procure or obtaining something.

**Public Procurement**- the acquisition of goods, works, services and supplies by public bodies.

**Grounded theory method**- The discovery of theory from data, systematically obtained and analysed.

**Quantitative research**- The collection of numerical data and, it presents the relationship between theory and research as deductive.

**Qualitative research**- The emphases of texts or words rather than quantities

**Theoretical sampling**- A purposive sampling approach where researchers collect events related to the key concepts emerging from their ongoing analysis so they can compare those events for similarities and differences.

**Constant comparative Analysis**- An on-going process to compare data with data, data with code, code with code, code with category, category with category, and category with concept.
Abbreviations

AEC- Architecture, Engineering and Construction
AISC-American Institute of Steel Construction
BIM- Building Information Modelling
DPWI-Department of Public Works and Infrastructure
EXCO-Executive Council
FEA-Finite-Element Analysis
FIRR-Financial Internal Rate of Returns
GDP- Gross Domestic Products
GTM-Grounded Theory Method
ICT-Information and Communication Technology
IT-Information Technology
PAL-Premier Automobiles Ltd.
PDOE-Provincial Department of Education
PDOH-Provincial Department of Health
PDPRT-Provincial Department of Police, Roads and Transport
PDPWI-Provincial Department of Public Works and Infrastructure
PDPW-Provincial Department of Public Works
PDSACR-Provincial Department of Sports, Arts, Culture and Recreation
PDSD-Provincial Department of Social Development
PIC-Public Investment Commission
QTM-Total Quality Management
RBV-Resource-Based View
SMEs- Small and Medium-Sized enterprises
TCE-Transaction Cost Economics
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CHAPTER 1

RESEARCH BACKGROUND

1.1 Introduction

The outsourcing and insourcing concepts have continued to gain prominence in the corpus of contemporary purchasing and supply literature across a variety of sectoral facets such as the built environment. This rise in attention has been attributed to the continued quest for operational efficiencies by organizations in the marketplace. Outsourcing is defined as the allocation of business activities from an organisation’s internal sources to an external organisation, and it has become a key component of supply chain management strategies (Chase et al., 2004: Lankford & Parsa, 1999: Kroes & Ghosh, 2010). Conversely, Sikula et al (2010) define insourcing as the utilisation of internal resource, like labour, personnel and other resource to achieve the firm’s objectives. Insourcing is implemented by management to get control of the company’s core activities. It is widely adopted in cases whereby outsourcing has failed.

In recent years, outsourcing has been observed as a key business trend that is steadily increasing, unlike in the past whereby outsourcing was just regarded as procurement of non-core components and services to an organisation (Kroes & Ghosh, 2010). Factors such as market unpredictability, costs, competitive environment and globalizations of trends has caused an increase in the incidence of outsourcing (D’Aveni et al, 1995, Kroes & Ghosh, 2010). McCue (2006) argues that even though outsourcing is often regarded as the most cost-effective solution, insourcing will continue to evolve as businesses seeks to reverse bad outsourcing decisions and regain more control over operational costs and efficiencies.

The study intends to investigate reasons behind the decisions to either outsource and/or insource infrastructure projects at a Provincial Department of Public Works and Infrastructure. It aims to propose a comparative analysis to guide implementers towards making suitable decisions on with outsourcing or insourcing. At PDPWI number of projects being procured through PDPWI have always ended up late and over budget. This observation makes an investigation into the reasons behind the chosen procurement pathway outsourcing or insourcing, to determine the factors which have influenced the choice as well as the impact of the choice made concerning the adoption of either of the two platforms on project outcome.
1.2 Research Problem Statement
Due to the constant late delivery of public infrastructure projects with over-cost, and projects of average quality, there is a need for intervention to improve these conditions. The Provincial Department of Public Works and Infrastructure (PDPWI) happens to be the custodian of infrastructure projects and assets in the province. As such, PDPWI is tasked with the implementation of new infrastructure projects whilst maintaining the inventory of existing assets for the provincial government. The organization has the singular responsibility of deciding the procurement approach to be deployed for project delivery of new projects or renovation/upgrades. Under this regime, infrastructure projects are either outsourced or procured through in-house (insourcing). However, poor project delivery performance persists despite a plethora of interventions introduced at PDPWI over the years. These interventions have been adopted from a combination of scholarly report, policy reports and peer-to-peer analysis. Yet, an investigation into the relationship between outsourced and insourced projects still yields the same results, which is average quality, late delivery of projects and over-costs. Therefore, this study seeks to compile a comparative analysis for enabling optimal decision-making on outsourcing or insourcing public sector projects in the provincial government. Using a grounded theory method, this study focuses on decision making on the procurement pathway taken to undertake public sector projects.

1.3 Research Question(s)
Main question
- How has the decision to outsource or source through in-house channels impacted upon infrastructure project performance in the public sector?

Sub-questions
- What is the difference between outsourcing and in-house sourcing of projects?
- Why are some projects outsourced and others procured in-house?
- How can the decision towards either outsourcing or insourcing be facilitated optimally?
- How has the decision to either outsource or procure projects in-house impact on project performance?

1.4 Research Objectives
The study will endeavour to achieve the following objectives.
• To develop an understanding of the concept outsourcing and insourcing in the context of a public sector infrastructure delivery implementer.
• To identify performance factors influencing the decision to outsource and/or insource infrastructure project delivery.
• To appraise the performance of outsourced and insourced public sector projects
• To compare in-house and outsourced infrastructure projects in public sector using a Provincial Department of Public Works and Infrastructure exemplar.

1.5 Research Methodology
The purpose of the study was to investigate the reasons behind the decision to outsource compared to insourcing public infrastructure projects and propose a comparative analysis of the reasons to either outsource or insource. This qualitative study used semi-structured interviews and documents reviews and followed the grounded theory design approach to guide the researcher to collect data. Theory was developed through emerging categories identified during the data coding process. In line with the grounded theory methodology, the researcher used several ways to collect data. Firstly, both soft copies and hardcopies of relevant documents were sourced and reviewed from the Provincial Department of Public Works and Infrastructure were reviewed and interviews were conducted with key personnel within the department and client departments. Constant comparison analysis of data was conducted throughout the course of the study, and data was the driving force for generating categories and theory with the expectation that a new definition of a new category or a comparative analysis would altogether emerge as a final product.

1.6 Significance of the Research
Provincial Department of Public Works and Infrastructure’s mandate is to accelerate the delivery of infrastructure at provincial government level. Due to large construction projects the departments is required to deliver world class infrastructure to South Africa people from poor and disadvantaged backgrounds to meet the socio-economic objectives. The adoption of public sector outsourcing is now a well-established mechanism for government service provision.

The project organisational core competence can be increased, which subsequently usually lead to both long term financial and operational sustainability by the application of insourcing of construction services. The outsourcing of construction services on large and complicated
projects can produce short-term profitability but can have negative impacts upon the project and organisational sustainability (Lisse, 2013).

The significance of this study is to determine the difference between in-sourcing and outsourcing in Provincial Department of Public Works and Infrastructure. The study aims to compare the use of in-sourcing and outsourcing by proposing a comparative analysis with reasons to determine if there is a need to outsource and what type of projects can be outsourced and which ones can be insourced, depending on their value, time, cost and client satisfaction.

Governmental departments at both provincial and national level will benefit tremendously from this study, as it will outline the benefits and challenges of outsourcing versus in-house. The research will form part of a larger investigation due to the fact that national and provincial departments will be able to compare which is more beneficial between in-house versus outsourcing, also in construction, a project is successfully completed if it’s on time and within budget and it will serve its intended purpose. Therefore, performance, time and costs are important aspects of any construction project.

The importance of the study is the results of the exploration of the public sector’s procurement pathway for construction projects at Provincial Department of Public Works, also their differences in the output of their work. The study aims to fill gaps about the success/failures of implementing each procurement pathways selected by decision makers in executing infrastructure projects at the department. All government departments will benefit from this study as it was intended.

1.7 Limitations of the Study
Access to information of projects dating to back to ten years ago limited the study to work with only the projects information from the previous five years (2014-2019). Due to few research studies conducted with grounded theory research design in AEC sector, the study was limited to access prior studies of this methodology in this sector.

1.8 Outline of the Study
Chapter 1: Background - This chapter presents and introduction of the thesis, the background, the research questions and objectives. A brief overview of the context of the study, the outlining of the thesis and the finally the summary of the chapter.

Chapter 2: Literature review part I- This chapter solely focuses on the concept of outsourcing. It highlights the origin of outsourcing, outsourcing in different industries like
Automobile, IT and logistics for outsourcing. The study will also look at implementation of outsourcing in the context of (AEC) which is the Architectural, Engineering and Construction in two developed countries and two developing countries. These sections of the study will also focus on outsourcing in South African context for both AEC and the public sector. Performance of projects procured through outsourcing will be also be observed, success and failure factors for outsourcing will be looked at as well and lastly the factors that influences the decision to outsource will be observed.

**Chapter 3: Literature review part II**- This chapter will focus on the insourcing part of the literature. The study or chapter will focus on insourcing, starting at the origin of insourcing, insourcing in different industries like Automobile, IT, ICT and logistics for insourcing. The chapter will also look at implementation of insourcing in the context of (AEC) which is the Architectural, Engineering and Construction in two developed countries and two developing countries. This chapter will also focus on insourcing in South African context for both AEC and the public sector. Performance of projects procured through insourcing will be also be observed, success and failure factors for insourcing will be looked at as well, and lastly the factors that influences the decision to insource will be observed.

**Chapter 4: Research Methodology**- This chapter will focus on the methodology applied in the study and how it was applied to achieve desired results. Grounded theory method was adopted foe this study. GT methodological procedures are followed then presented to support the application of this qualitative research method.

**Chapter 5: Presentation of findings and discussions**- This chapter presents the findings from the analysed data from documents reviewed and semi structured interviews conducted. The findings are also discussed in this chapter.

**Chapter 6: Summary, Conclusion and Recommendations**- This chapter focuses on the reflection of the findings, and the whole study is summarized, and the recommendations are highlighted in relation to the literature review part I and II. Implications of the study’s findings is also included in this chapter.
1.9 Summary of the chapter

The chapter provided a background to the study as well as the justification for the study. The study’s aims and objectives were identified, and the brief introduction of the underpinning concepts were discussed. Also, the methodology to be adopted in the study was introduced in this chapter. The study’s outline is explained, the significance of the study and lastly the limitations of the study were also elucidated. The next chapter will explain in detail, the concept of insourcing and outsourcing.

CHAPTER 2

LITERATURE REVIEW-THE NATURE OF OUTSOURCING IN PUBLIC SECTOR INFRASTRUCTURE PROCUREMENT

2.1 Introduction

This chapter consists of a review of extant literature focusing on thematic areas which will serve to further enrich knowledge concerning the phenomenon which this study seeks to address. Of interest in this chapter are areas focusing on the concept and application of outsourcing. These areas include: the origin of outsourcing, the nature of outsourcing, the advantages and disadvantages of outsourcing. Benefits and challenges of the concept will also be outlined in this chapter. The review will also extend to highlight the performance of projects as well as chronicling the factors influencing the decision to outsource in an organisation or projects. The practise of the concepts of outsourcing across different contexts like information and communications technology, automobile and logistics. The chapter will explore the body of knowledge concerning the implementation of the concept within the realm of (AEC) Architectural, Engineering and Construction, within the realm of developing and developed countries.

2.2 Origin of Outsourcing

Outsourcing can be defined as the strategy used by external service providers to perform activities traditionally performed internally (Handfield 2006). Also, the concept has been defined as the transfer of non-core activities and the firm’s control from internal organizational structures to external companies or service providers (Brege, et al.,2010). There have been several discussions amongst scholars as it pertains to the evolution of outsourcing (Bluyse & Ugne,2015). According to Corbett (2004), outsourcing was first witnessed in the United States of America (USA) during the 1970s. Corroborating this view, Amiti and Wei (2004) reiterate that the term “outsourcing” was first mentioned in the context
of the automobile industry in 1979 in the *Journal of the Royal Society of Arts, Vol. CXXVII, 141/1*. Other scholars have argued that outsourcing evolved from the Information Technology (IT) industry in 1980, whilst others have traced its origin to the manufacturing and service industries respectively (Bluyste and Ugne, 2015). A lot of factors influence the decision of companies to outsource but the most common factor has always been cost-related (Brege et al, 2010).

### 2.3 Nature of Outsourcing

Outsourcing in an organisation is regarded as a strategic move by management and it is becoming more popular in the business sector, it is also used as way of cutting costs, developing a competitive advantage and increasing performance within an organisation (Doval, 2016). Outsourcing can be classified in different terms such as, professional outsourcing, manufacture outsourcing, multisourcing, process-specific outsourcing, business process outsourcing and project outsourcing (www.nearshore-technology.com). Professional outsourcing includes accounting, purchasing, legal, IT and other specialised services, while manufacturing outsourcing facilitates the transfer of highly classified factors such as expertise, human capital, marketing time and cost factors. Multisourcing is applicable across most business areas but is mostly used in IT outsourcing, and process-specific outsourcing refers to a specific kind of a operation-related field, and business process outsourcing is found in manufacturing sector specifically to different stages across the manufacturing of a product. Lastly the project outsourcing relates to the functions of project management or the entire project development (Doval, 2016).

### 2.4 Advantages of Outsourcing

Ahamed et al, (2013) indicates an advantage of outsourcing from a business perspective is that outsourcing has a positive business approach to functions that have been operated on a traditional line for a long time, thereby introducing new ideas such as, technology and new findings will provide new possibilities to new and existing staff with appropriate skills, will assist with upgrading assets and services, and as well as providing cost reduction through specialisation and large-scale economies. Advantages of outsourcing can be concentrated into four factors, namely; reduction of costs, increase in production, balancing of jobs and the management flexibility and risk avoidance (Doval, 2016).
2.5 Disadvantages of Outsourcing

Wongleede (2016) conducted a study in regards with advantages and disadvantages of outsourcing and he mentioned that those advantages are, (1) risk of exposing confidential data and technology—which then means that if he organisation is to outsource key activities such as Human Resource, payroll and recruitment services, therefore a risk of revealing confidential company information as well as technology to external service providers. (2) Synchronizing the deliverables-meaning if the organisation selects a wrong or unsuitable method of outsourcing, common problems areas such as stretched delivery time frames, sub-standard quality of work, defects and inappropriate categorisation of responsibilities, therefore these problems areas will be encountered. (3) Hidden costs- the main aim of outsourcing is regarded as cost-effective but hidden costs involved in contracts signing for international outsourcing contracts pose a threat. (4) Lack of customer focus- service providers outsourced could be involved with several firms at a time, therefore the firm’s ability to focus primarily on your company or organisation may be lacking.

2.6 Outsourcing: Benefits and Challenges

2.6.1 Benefits

According to Ahamed et al., (2013), they listed the benefits which outsourcing confers on organizations as: (I) achieve cost reduction, (II) expand their services and increase expertise in the organisation, (III) improve employee productivity and morale. Fill and Viser (2000) in a previous study mentioned that an organisation through outsourcing can achieve great potential towards sharpening corporate image. Wise (2007) suggests that outsourcing allows organisations to select vendors based on a criterion ranging from experience, quality, speed and as well as the performance efficiency.

2.6.2 Challenges

According to a number of authors, outsourcing would fail in any organisation due to the incidence of any or a combination of any of the following. Firstly, the inability of the outsourcing vendor to deal with the volume of activities allocated to them. Secondly the variance in work ethic between organisation and outsourcing vendor. Thirdly the outsourcing vendor might not be able to perform the task at the given time and fail to meet the contractual obligations between the two parties. Also inadequate contract performance measures and penalties may hinder with outsourcing, lack of capability to deal with time management when
dealing with the outsourcing vendor, lack of flexibility and lastly contracts solely focused on cost cutting measures could be detrimental to the organisation (Collings, 2007; Mcgray & Clark, 1999).

2.7 Outsourcing and organisational/project performance

In a study carried out by Akewushola and Elegbede (2012) within the Nigerian manufacturing sector, it was revealed that outsourcing conferred operational advantages for project performance. For instance, they established that there was increased efficiency due to activities being carried out by specialized firms, and reduction in permanent staff, which then became variable costs related to the level of activity. In the same study however, Akewushola and Elegbede (2012) highlighted the demerits of outsourcing. Notable among these demerits are: the loss of control over outsourced activities loss of control over the transfer of sensitive information, the possibility of price increases by suppliers at a future date, along with fluctuations in quality.

But, Mulama (2012) argues that some organisations had implemented outsourcing as an interim plan for averting rigidities that resulted from labour legislation. Notwithstanding the fact that outsourcing of manufacturing and architecture to competent providers may culminate in a coherent pool of more professionally designed work product and motivated engineers, firms in Nigeria were found to limit themselves by regarding outsourcing as a get-away tactic in order for them to prevent committing to staff in the long-term and the subsequent legislative demands that follow permanent specialised staff (Akewushola & Elegbede, 2012).

Nordin (2008) argues that outsourcing of a corporation’s value chain activities has the capacity to create operational efficiency by generating a lean capital investment and commitment together with ensuring the full application of the available resources in a manner that produces the most desirable project results using just a few inputs in the manufacturing process. Thus, if it is effectively applied, outsourcing can result in increased project efficiency. The corporations that operate in the global economy are faced with developing new products and services in a short period of time but in an economically sound manner as well (Brown, 2005)

Outsourcing allows for organisational projects to achieve greater novelty and customer appeal at the same time which becomes an easy task compared to the historic challenges of the past (Mulama, 2012). Allred and Swan (2014) argue that outsourcing brings in better
operational efficiencies that are subsequently instrumental in the development of new techniques that innovate the industry. Nordin (2008) argues that the type of open innovation that emanates from outsourcing positively impacts the performance of projects because outsourcing helps with acquisition of new knowledge, retention and knowledge exploration both within and outside of the organisation’s influence during the whole process of innovation.

The type of open innovation that outsourcing brings allows projects to consolidate the input from global consumers, suppliers, competitors and research institutions who can contribute to better project performance. Mulama (2012) posits that outsourcing allows for partnering with a diverse set of external actors thus increasing the likelihood of gaining access to valuable new knowledge and complementary assets, thereby boosting their innovative performance. Rothaermel, Hitt and Jobe (2006) observed that the capability of outsourcing to generate product innovation requires both internal and external investments, leading firms to engage in a variety of strategic alliances. This resultant synergy of both internal and external technological knowledge allows an organization to build a larger and broader portfolio of related projects in order to gain and maintain competitive advantage or to achieve at least competitive parity.

2.8 Factors influencing the decision to outsource within organizations and/or projects

According to Sattineni (2008), the decision of firms to outsource certain activities is usually premised on plethora of factors. Firms in the AEC are no exceptions to this notion. However, prior to an engagement with the factors influencing the decision to outsource in firms, Sattineni (2008) opines that certain structures need to be put in place within the organization to engender effective decision-making. Firstly, Sattineni (2008) posits that training should be regarded as an important factor to consider for companies looking to venture into outsourcing or offshoring. Continuing, the author he highlights the need for firms to establish and identify business models and/or processes that are suited to outsourcing before taking the decision to outsource.

Speaking from a public sector perspective, Griffis (2016), maintained that apart from cost reduction, decision makers within different public sector departments take the following factors into consideration when deciding to outsource engineering designs to private firms:
**Decision based on staffing capacity**

The public sector cannot afford to hire staff to only handle peak workloads. If public sector organizations hire staff that will only handle peak workloads, then when there is no lot of work, such organizations will be expected to pay these employees even if they are redundant. However, if the project is outsourced, the company will hire employees to undertake the work for that project and once the project is completed, the employees will be excused accordingly.

**Decision based on schedule constraints**

This factor is concerned with time, capacity, expertise and attitude which all should be addressed to complete critical aspects of the projects within the specified project time and budget. Private companies are expected to have more flexibility and time to meet projects deadlines than government departments.

**Decision based on lack of special expertise**

Often departments must outsource the design phase to private sector due to lack of expertise within their respective departments. Departments sometimes lack adequate skills within to execute some of the tasks, thereby outsourcing is applied in this case. An example is in a case whereby a Provincial department of Public Works does not have Professional Construction project manager; those services will be outsourced to consultants.

**Decision based on the need for innovation**

The private sector does go to great lengths to encourage innovation among their employees when compared to government departments. The use of incentives such as bonuses and sharing of knowledge-based assets within these organizations serves to buttress this perspective.

**Decision based on improving quality**

Within the context of the AEC, previous performance of projects serves as an important key aspect in the appointment of consultants. Therefore, companies cannot afford to submit poor-quality designs due to stiff competition occasioned by the number of firms looking to secure a job. The Qualifications-based Selection approach uses this principle as a core function during the procurement process of consultants. Also, this approach is most commonly used by national, provincial and local governments to procure engineering services for public infrastructure projects in South Africa and beyond.
**Decision based on cost effectiveness**

Concerning the aspect of cost effectiveness, cost saving methods are applied by comparing the outsourcing of engineering services versus the appointment of in-house engineering services. Such comparisons will indicate the cost effectiveness of these options. The cost saving technique used by Griffis, (2016) study when engineering services are outsourced which is supported by other factors which will drive the decision makers to outsource these services, is to support the relationship that the government has with the private sector.

**2.9 Outsourcing in different contexts**

**2.9.1 Outsourcing in IT Industry**

Information Technology (IT) has been described as the management of information using computers and software. As a concept, IT has been around since 1958 (Leavitt & Whisler, 1985). IT consists of three basic concepts, namely: computer data processing, software and decision making (Leavit & Whisler, 1985). A 2010 report by EconomyWatch suggests that the IT industry has become one of the robust industries globally alongside being considered as one of the key drivers of economic growth. Due to easy access to information, the industry plays a major role of e-governance (Economywatch, 2010). The IT industry possesses the capabilities required to enhance operational efficiencies whilst improving transparency standards in the services sector.

According to Jarvenpaa et al. (2010), IT services outsourcing can be defined as the act of “turning over to a vendor, some or all of the (IS) Information Systems functions”. These functions can be regarded as software development, network management, help desk and maintenance. Both the public and private sector have greatly utilised the services of outsourcing IT services for engendering regimes of low-cost operations with high quality services and flexibility in different environments (Lacity & Willcocks 2009). According to Koh et al (2004), the significance of successful IT outsourcing is determined by adequate knowledge transfer between the client and the vendor. Cong and Patric (2012) posit that ever since IT service was adopted by Kodak about two centuries ago, the concept of IT outsourcing has seen tremendous growth. Harris et al (2009) stated that by 2013 at a compound annual growth rate or around 5%, the worldwide IT outsourcing market would enjoy a significant increase from US$268 billion in 2009 to US$ 325 billion by 2013. The Asian region has been identified as one of the growth leaders in the industry as compared to other regions. In China alone, the IT outsourcing market has seen a rapid growth since 2004.
Clearly, the concept of IT outsourcing is growing significantly globally at a remarkable speed and in various forms (Chen and Bharadwaj 2009). Despite the impressive increase in growth of IT outsourcing, such growth has been saddled with inherent challenges (ComputerWorld 2007). According to the report, a low percentage of partnerships are considered successful, however at least 50% of contracts have been terminated earlier than expected. Problems are encountered everywhere, even in China where the nature of IT outsourcing appears to be different from other countries. In most cases within the Chinese context, when it comes to decision making regarding IT outsourcing, decision makers lack adequate experience in selecting the rightful service providers and they are also immature in contracts negotiations and maintaining a good relationship with service providers (Cong & Patric 2012).

A study by Brčar and Bukovec (2013) analysis arguments from different authors on IT outsourcing. Gonzalez et al. (2009) mentioned 10 arguments for IT outsourcing deployment, and this factors are, (1) focus on strategy, (2) increased IS (Information Systems) departmental flexibility, (3) improved IS quality, (4) elimination of troublesome, everyday problems, (5) increased access to technology, (6) decrease obsolescence risk, (7) staff cost savings, (8) providing alternatives to in-house IS, (9) technology cost savings, and lastly (10) following the fashion.

2.9.2 Outsourcing in India’s Automobile Industry

A report in 2017 by United Global Sourcing defines outsourcing in manufacturing as the process of employing people outside a company to assemble parts of or build the entire product (United Global Sourcing, 2017). Furthermore, cost cutting is regarded as the main driving force behind the reason for outsourcing by most manufacturing companies. A report by (United Global Sourcing, 2017) reiterated that a significant decline in production cost has been observed due to outsourcing of some of the work.

The automobile industry has been acclaimed as possessing the highest outsourcing rates among peer industries (Sahu & Roy, 2016). The automobile industry in India began with small start-ups when assembly plants were established in Mumbai, Calcutta and Chennai in India during the years between wars (Sahu & Roy 2016). Towards the end of wars, the importance of establishing an Indian automobile industry was realized when two companies, Premier Automobiles Ltd (PAL) and Hindustan Motors started their own manufacturing factories in mid-40’s instead of assembling imported parts. Sahu and Roy (2016) suggest that
in 1958, a decade after the establishment of the automobile industry in India, local manufacturers focused on import exchanges and indigenization. This in turn resulted in minimal model changes. Later on, international car-makers rushed to enter the industry right after the de-licencing of the industry in 1993. A couple of years later, the industry was booming and growing at a steady rate to meet the demand, with other sectors like IT and service booming, the middle class demanded for more vehicles thereby increasing the demand, which led to local and international companies entering the market and prospering, thereby ending the monopoly shares of Maruti (the Indian indigenous car brand) in the market shares (Sahu & Roy, 2016). With the automobile industry in India growing significantly, the sector started to spend more on R and D in order to sell outside Indian borders.

According to Sahu and Roy, (2016) there are determinants used to outsource in the manufacture industry. They further mentioned these determinants as, firm size, firm age, R&D intensity, export intensity, technology import intensity, technical efficiency, and lastly FIRR (Financial Internal Rate of Return).

### 2.9.3 Logistics Outsourcing in SMEs in Kenya

According to DTDC (2016) outsourcing in logistics is defined as an engagement with a logistics service provider to carry out and manage a particular company’s logistics operations. Logistics can further be categorized into a few activities: customised services, warehousing, transportation, and delivery. Due to the complexity of the logistics sector, not all companies are equipped to handle all segments of this business.

Small and Medium Scale Enterprises (SMEs) play a crucial role in the Kenyan economy. Yet despite this significance, small and medium-sized enterprises (SMEs) involved in Kenya’s manufacturing sector have been performing awfully over the years (Government of Kenya 2012, Papadavid, 2016). This has been attributed to the changes in business environment, high production costs and the lack of efficient transportation operations which have ultimately affected the movement of materials and product to and from the market (Chege et al., 2016, Kimuyu, 2010). According to Liu et al (2015) and Pratap (2014), researchers within the logistics outsourcing have been using the application of RBV and TCE theories extensively, to observe their effect on SMEs in Kenya and the firm performance. RBV refers to resource-based view of the firm and TCE means transaction cost economies. Obviously, the use of these theories will enable an assessment of applied model’s development processes in
logistics. As supply chains have become increasingly complicated, it is now imperative to look at the importance of logistics across the world whilst determining the firm’s performance (Konig & Spinler 2016).

An increase in customer service improvement and spending levels is a sign that there is significant growth of logistic-based outsourcing among SMEs (Langley & Capgemini, 2016). This allows firms to focus on the core functions of the business due to improved logistics performance culminating from the decision to outsource non-core aspects (logistics-related) logistics aspects to be outsourced by an external logistic expert service provider (Konig & Spinler 2016, Rahman & Wu 2011). The utilization of external logistics experts implies that the firm would have access to non-core functions which they currently do not possess within the firm while they are left to focus on the core functions of the firm to enhance the firm’s performance (Konig & Spinler 2016, Langley & Capgemini, 2016).

Stojanovic (2012) states that one of the key drivers of outsourcing is companies needs to focus on their core activities. Wilding & Juriado (2004) in an attempt to identify activities frequently outsourced in logistics outsourcing, a literature review was provided of emphirical studies on outsourcing. They further mention that activities are that frequently outsourced and reasons behind those decisions are; driven by the need to save on costs, service improvement, operational flexibility, or business focus. The major reasons cited mostly that inhibits firms to outsource logistic services is loss of control over the third party (Langley, 2010).

2.10 Outsourcing in the Architectural, Engineering and Construction in two developing countries

2.10.1 Outsourcing in the AEC Sector for Malaysia and India

According to Nanajkar (2014), it was deduced that the Indian construction industry was responsible for the creation of numerous job opportunities not just within the sector in itself but also across different sectors related to the industry. In the years between 2011-2012, the author explained that the country’s Gross Domestic Products (GDP) increased significantly as a result of activities which take place within the construction industry. Although the Indian construction industry is considerable large when compared to other countries, it is mainly made up of small and medium sized companies that often undertake sub-contracting jobs, thereby creating about 35 million jobs for unskilled labourers (AnythingResearch India, 2014).
Mohamad and Khaidzir (2014) noted that the evolution of the present day Malaysian building and construction industry can be traced to the early days of Federation of Malaya in 1948. The industry began with carpenters who initially built their homes in various forms without any designs and later evolved to more complex structures that required architectural designs (Tajuddin, 2008).

A study by Dave et al., (2006) observed that firms in Malaysia were open and exclusive to outsourcing services within the architectural industry. Accordingly, some architectural firms employed about 250 or more persons directly whereas some existing boutique and start-up firms only employ as few as two to five employees. In furtherance to this, Dave et al (2006) observed that the presence of free agents operating overseas, who are responsible for brokering connections between firms in need of services on the global market and service providers in India constituted another factor which was responsible for outsourcing in the Indian architecture context. Most of these firms outsourced architectural services on a project basis where they could utilise satellite staff in the long-term or delegate staff to overseas offices.

They can be found in central city areas to suburban offices ranging from the most upmarket environments to cramped surroundings. While cities such as New Delhi, Mumbai, Kolkata, Pune, Chennai, Bangalore, and other major urban cities appear to be primary bases for these service provider firms, it is not unusual to also find them located in medium to smaller cities as well. The anecdotal data suggests a degree of mobility among mostly young staff (Dave et al., 2006). It is not unusual for some firms to also invest time and resources in professional development of staff. Many firms operate three shifts a day to respond to the volume of work as well to align office hours with three different time zones across the globe.

2.11 Outsourcing in the Architectural, Engineering and Construction industry in two developed countries

2.11.1 Outsourcing in the Netherlands AEC sector

The rise in the demand for architectural support, the unavailability of qualified engineers and the weakening importance of engineers in the building design process among others contribute to the plethora of challenges confronting the engineering and the construction industry in the Netherlands

Mulder and Heintz (2007) observed that offshore outsourcing in the Dutch engineering and
construction industry offered many benefits to the architectural firms but it was also historically characterized by strict reviews of internal operations, commitment to specialization and effective knowledge management and knowledge transfer. The adaptations required for successful offshore outsourcing could be significant for many Dutch firms. However, they admit that those accustomed to distinguishing between design and drafting or who are already working globally with architects will find these barriers to be of less importance. Dutch architects are poised to secure some advantages in implementing offshore outsourcing within the engineering and construction industry (Mulder & Heintz 2007). Long term collaboration with offshore service providers employing staff from the client’s country has been recommended to bridge professional and social cultural issues such as compliance to building standards and communication in the event that outsourcing of such services is adopted as a delivery mode (Mulder & Heintz 2007).

Mulder and Heintz (2007) indicate that outsourcing of lower-drafting activities in the construction industry would prove more fitting for offshoring hence providing some opportunities for Dutch engineering skills within the global village. Through this, globalization, as it relates to engineering and construction could impact positively on service delivery and lead to better opportunities for engineers in the building design process, but this only can be realized within a well-managed context. Some of the opportunities that have emerged from outsourcing in the Dutch engineering and construction industry is as a result of the establishment of offshore drafting which is tailored to be consistent with Dutch construction practices.

2.11.2 Outsourcing in Engineering and Manufacturing in USA

Sattineni (2008) mentioned that certain services and/or processes within the Architecture, Engineering and Construction (AEC) industry have been outsourced over the past decades. Several companies in the US have utilized this business model for outsourcing their services. A number of outsourcing models are available to clients and contracting organizations within the AEC sector. An example of such models can be the design by a structural engineer, in which the structural design is conducted in the US. Once the design is complete, a detailed drawing will be required to be sent to the manufacturer to manufacture the material (Patwardan, 2004). This specialized work is done by a specialist referred to a ‘detailer’. The detailing work is usually outsourced to developing countries such as India.

Brown (2005) argues that US multinational engineering and manufacturing companies have moved operations whereas upcoming and medium sized corporations have begun to recruit
engineering talent from beyond their borders. Technology has had a significant impact in making offshoring an economically reasonable option to the local US engineers and in some regard, highlighting a need for patronage of upcoming and smaller businesses in the short-term.

Drauz (2014) has identified possible motives for outsourcing in manufacturing industry. These motives are mentioned as; reduction of operational costs, focus on core competence, reduce capital invested, improve measurability of costs, gain access to external competencies and improve quality, transform fixed costs in variable costs, regain control internal departments. (Drauz, 2014) further enlist barriers or factors that are against outsourcing as; loss of know-how and unexpected outsourcing costs.

2.12 Outsourcing in the AEC in South African context

The goal of outsourcing was more concentrated on accomplishing efficiencies of operations in organisations. However, in post-1990s South Africa, the importance of rapid growth in outsourcing to industries such as manufacturing, product development, public infrastructure and innovation has been realised. Maku and Iravo (2013) argue that the mainstreaming of outsourcing has shifted the target to the longer-term focusing on the overarching rewards be it improving the performance of projects or enhancing the position of an organisation within the market.

Cox (2014) opines that although outsourcing in South Africa was viewed as just a mere tactic aimed at reducing costs, it has since evolved into a strategic management technique. The growth of the outsourcing market has been significant in the 21st century and there are indications that the trend will continue in future (Cox, 2014). As a developing economy, South Africa has been facing increasingly intensified competition in the international markets which has made some of the architectural, engineering and manufacturing companies in the country to consider outsourcing some of its operations to be able to survive.

Kiongera, Wanyinyi and Masinde (2014) argue that economies in sub-Saharan Africa have been facing an increasingly turbulent operational environment and this has pushed manufacturers and stakeholders in the AEC sector exploit better ways through which they can gain a competitive edge. Contract manufacturing for instance, has been employed by South African corporations in order to maintain a sustainable competitive edge.

Brown (2005) observed that the turbulent business environment coupled with an almost insatiable degree of customer demands for tailored services and products has forced
companies to over time evaluate, improve and re-engineer their operations. As Insinga and Werle (2000) noted, these reengineered processes have made significant contributions to the efforts by organisations to satisfy customer needs and wants. Cox (2014) asserts that every firm engages in outsourcing to some extent. Most South African corporations outsource logistics and manufacturing while others outsource ancillary operations such as customer care, sales and technical support, product development and design. Cox (2014) argues that whereas architectural, manufacturing and construction companies in a country such as South Africa may be reluctant to outsource activities that are above the value chain (business model that describes the full range of activities needed to create a product), there seems to be a trend whereby some parts of the organisational functions such as auditing, accounting, and staffing and administration end up being outsourced. Insinga and Werle (2000) argue that the decision over which of these functions will be outsourced and which ones will remain as an internal responsibility of companies, differ from company to company.

Maku and Iravo (2013) noted that South Africa’s manufacturing industry has been increasingly focused on consistent improvement, manufacturing processes that are lean, redirection in the business processes and a networked supply chain. This is seen in the increasing number of firms utilizing strategic tools such as Japanese Gemba Kaizen, Total Quality Management, and Business Process Reengineering (Manning, 2013). As Maku and Iravo (2013) noted, over the past two decades, there has been a growing recognition of the vital contribution of outsourcing strategy on the performance of organizations.

2.13 Outsourcing in the South African Public Infrastructure Context

The procurement and delivery of public infrastructure in South Africa is mainly funded and managed by the Central government through the National Treasury. The parastatals in the country are involved in infrastructure development in some parts of the country. Other initiatives such as the South African government’s expanded public works programme (EPWP) which symbolizes collaborative partnerships with the private sector also contribute to the success of the delivery process (Manning, 2013).

In addition to this, the government has opened the infrastructure development agenda to foreign developers due to, in large part, the foreign direct investment and the technology that foreign investors bring. The government has courted foreign direct investment to lure investors into areas that need infrastructure, and foreign companies often build, own and operate facilities. The government has introduced a policy of broad-based black economic
empowerment (BBBEE), which requires foreign companies to go into partnership with local businesses, shifting company ownership patterns.

According to Cox (2014) the infrastructure in parastatals such as Transnet and the power utility Eskom was earmarked to receive foreign investment and technical support from foreign construction companies. Over R84 billion investments from foreign developers was allocated on infrastructure for energy generation, transmission and distribution. Foreign developers also invested skills and technology worth R40 billion in the harbours, ports, pipelines as well as the railways (Cox, 2014).

In 2006, South Africa’s revealed its plans to outsource public infrastructure construction through a continent wide 25-year equity fund that would fund raise local and global investment for infrastructure development. Kiongera, Wanyinyi and Masinde (2014) argue that the outsourcing of the construction of new infrastructure remains a powerful growth driver for South Africa’s construction industry, as its infrastructure spending plans was attracting growing interest from the investment community.

2.14 Chapter summary
This chapter reviewed literature on the origin of outsourcing. In addition, the chapter also reviewed literature on the nature of outsourcing, advantages and disadvantages of was discussed. Outsourcing benefits and challenges are highlighted in this section as well. The influence of outsourcing on project performance in an organisation was discussed together with factors influencing the decisions to outsource. Outsourcing in different context such as automobile, IT and manufacturing or logistics industries. In addition, outsourcing in the architectural, engineering and construction in the developed and developing worlds was discussed. The literature further discussed outsourcing in architectural, engineering and construction in South African context. Outsourcing in South African public infrastructure also formed part of the discussion. The literature highlighted the success factors and failure factors affecting the implementation of projects through outsourcing. The following chapter consists of the review of the literature review part ii and it will be based on in-house sourcing or insourcing in depth.
CHAPTER 3
THE NATURE OF INSOURCING IN PUBLIC SECTOR INFRASTRUCTURE PROCUREMENT

3.1 Introduction

This chapter covers several sections and sub-sections broaching on the nature of insourcing or in-house procurement. Specifically, this chapter focuses on the origin and nature of the concept of insourcing, advantages and disadvantages and benefits and challenges of insourcing. Insourcing in organisational or project performance is also highlighted and factors influencing the decision to insource in a project or organisation, insourcing in different industries like Automobile, IT, ICT and logistics for insourcing. The chapter will also look at implementation of insourcing in the context of (AEC) which is the Architectural, Engineering and Construction in two developed countries and two developing countries. This chapter will also focus on insourcing in South African context for both AEC and the public sector. Influence of insourcing on project performance will be also be observed, success and failure factors for insourcing will be looked at as well, and lastly the factors that influences the decision to insource will be observed.

3.2 Origin of Insourcing

Insourcing and outsourcing have always been under close monitoring, they are regarded as resource-based decisions. Outsourcing has increased tremendously in the past three decades, however, due to unhappy clients and customers, things started to change during the early years of the 21st century (Sikula et al 2010). Due to factors such as, lack of control on company operations, speed to market and increase in transportation costs forced companies to revert to the old ways of accomplishing tasks. Thereby increase the insourcing trend and observing a decline in outsourcing strategy (Sikula et al 2010).

3.3 Nature of Insourcing

According to Sikula et al (2010: 3-9) insourcing can be described as having taken place when “an organisation uses internal labour and personnel, but other resources as well, to supply the operational needs of its enterprise”. They further explain that insourcing is a decision taken by management of the firm or organisation to take control of the critical activities of the firm relying solely or mainly on internal structures and/or resources. It is regarded as the reverse of outsourcing which is defined as shifting work outside the borders of the company or firm.
(Sikula, et al., 2010). Corroborating this viewpoint, Marc et al. (2005, p5) defines insourcing as the “internal sourcing of business activities”. It can also be referred to as the reallocation of a company’s resources. Olausson et al (2009) believe that insourcing can also be referred to as “set of activities that the firm performs itself, internally organised to improve efficiency”. According to Ok (2011), there are two types of insourcing which are determined by the location. Domestic insourcing is the allocation of activities in-house within the perimeters of the home country whilst international insourcing is referred to as a situation wherein activities occur within one company albeit delegated abroad to foreign subsidiaries. Due to the fact that insourcing is referred to as the reverse of outsourcing, therefore outsourcing and insourcing are considerably related, but insourcing mainly depends on outsourcing which then means that key factors of insourcing should be considered and properly handled during the outsourcing process, if not, insourcing will be a challenge to implement (Al-Ahmad and Al-Oqaili, 2013)

3.4 Advantages of insourcing

Bringing activities back or internally that was previously outsourced can be benefit the company and (Sentoft et al., 2015) lists advantages of insourcing as, (I) improved quality of work, (II) reduced long lead time, (III) the increase in the level of production, (IV) more focus on core activities, (V) gain control of the firm’s activities. These advantages can assist the firm improve the overall performance.

3.5 Disadvantages of Insourcing

Some of the disadvantages of bring back the activities are regarded as, (I) lack of resources-which could be the employees and tools, (II) hasty insourcing process-if through check are not completed prior the implementation of insourcing, then it could hamper with the organisation’s performance, (III) lack of competence among own staff in a firm, (IV) lack of information or communication in the organisation regarding the insourcing process, (V) lack of insourcing process management-can be detrimental to the firm.

3.6 Insourcing: Benefits and Challenges

3.6.1 Benefits

The first and the most success factor to insourcing is the control a company has over the activities. Outsourcing by its nature leaves the company at the mercy of their suppliers. While there are steps a company, can take to ensure some accountability from its supplier base, they
can never be as effective as retaining these functions internally. Even if every supplier delivers on time and executes perfectly, a system can still be hung up by one or two suppliers that did not (Heaton, 2004). Another success factor to insourcing is the cost advantages. Suppliers are in business to make profit. While the specialization theoretically allows them to give service at less cost, they are also adding a profit margin to improve their bottom line.

### 3.6.2 Challenges

Factors such as, lack of technology and new findings, lack of innovative opportunities for new and existing staff with appropriate skills, long-term fluctuation of production costs due to limited specialised human resources and new technology hinders with successful execution of insourcing. Sentoft et al., (2015) suggests there are certain barriers that prohibits the success of insourcing production in Denmark. The mentioned the first barrier as lack of resources allocation during insourcing which then hampers with the outcomes of production in the factory, the second barrier is regarded as the firm size in this instance, which mean the smaller the firm the smaller the resources allocation to that firm, the third barriers they mention is that the original decision process hurried therefore impacting negatively on production.

### 3.7 Insourcing and organisational/project performance

Insourcing allows much greater control of costs that could have been excessive when service is outsourced. The streamlined communication advantage made possible by insourcing offers cost advantage that may not be visible at first glance. When engineers, designers and technicians are working in a close environment, opportunity arises to devise and incorporate simple changes to a part that improve efficiency and lower the costs (Heaton, 2004). As the companies ramp up the production the availability of capacity becomes essential. When supplier resources are strained, priority becomes an issue. Unless you are one of the major players, doing volume business with that supplier can lead to longer lead-time. The longer lead-time can have a negative consequence to your production (Heaton, 2004:95).

McCue (2006) argue that even though outsourcing is regarded as the solution in cost reduction, but insourcing will continue to emerge as new trend as business seek to reverse bad outsourcing decisions and regain more control over IT costs and operations. Some IT chiefs believes that even if one can have a good outsourcing service level agreement, change
control and contracts, but insourcing gives them the flexibility to change direction very quickly, without a consensus being reached in some cases, and at known risk.

3.8 Factors influencing the decision to insource within organizations and/or projects

Sikula et al (2010) lists different determinants of insourcing as, communication-employees communicate between when they are next to each other, employee morale-workers are motivated and dedicated when they know that their efforts are appreciated and rewarded accordingly, control-its easier to monitor your company when all your resources and labour are under your control, security-is regarded as an extension of control and monitoring, transportation-product transportation and delivery time is reduced through insourcing, customer satisfaction- management of a firm should ensure customers are satisfied with the end product, if not the company should seek to improve their services, innovation-introduction of new ideas and products is encouraged, and lastly, the speed to market-market marketing is a crucial part of product success and if implemented internally can increase the speed of marketing.

According to Al-Ahmad and Al-Oqaili (2013) The pre-outsourcing stage has to do with the firm’s decision to outsource. This stage focuses on the factors to consider by the firm when a decision to outsource must be taken and factors that will affect insourcing as well when a decision is to be made by the firm at any time after the outsourcing process is initiated. The firm’s thinking will result in a decision to start a project, but before a project can start, the firm needs to study the project in detail in order to achieve positive implementation results when considering the desired goals and the availability of resources that the firm has (Al-Ahmad & Al-Oqaili, 2013).

The pre-outsourcing stage is divided into the phases, namely analysis, Design and Implementation. The analysis phase is focusing on what is needed to translate inputs to task, and identifies based on the tasks, factors that affects outsourcing and reversibility processes. The design phase is focusing on the steps taken by the firm in order to implement tasks applied in the analysis phase and again to identify factors affecting outsourcing and insourcing processes. The last phase which is the implementation phase, mainly focuses on factors affecting outsourcing and insourcing processes as a result of implementing those decisions taken during the design and analysis phases (Al-Ahmad & Al-Oqaili, 2013). According to Sentoft et al., (2015) there are different drivers that influences the decision to insource production in Denmark. Firstly quality issues are regarded as the major driver for
insourcing especially for medium size companies, the second driver is avoiding long lead time, if the supplier is situated far away then the delivery time due to transportation could cause build-up of inventories to reduce the risk of unstable deliveries, the third driver influencing insourcing is the increase in the level of automation in Denmark (e.g. robots), which could be a vital factor in maintaining jobs in production industry in Denmark. The fourth driver is the focus of core activities in the production line, to reduce the risk of losing core production tasks, and the fifth driver is the high demand of bringing production closer to research and development.

3.9 Insourcing in different contexts

Insourcing in Different Industries (ICT, Automobile, IT and Logistics)

3.9.1 Insourcing ICT in Malaysian Government

In information systems, there are three different procurement approaches which is; insourcing, outsourcing and co-sourcing. However, outsourcing the preferred approach as it is believed to be cost efficient and can reduce risk related to business. (Ahonen et al., 2009). While several studies have been conducted on outsourcing (Freytag et al., 2012), surprisingly there are few studies addressing insourcing. Chou and Chou (2009) stated the risk associated with outsourcing can be complicated and carries a huge risk of increasing operational costs, devalue software quality, delay project and runs the risk of project failures of outsourced project if the risk is not properly managed. Raisinghani et al., (2008) emphasized the complexity of IT/IS projects, therefore outsourcing of such projects need close monitoring. Insourcing of these functions minimises the risk associated with outsourcing as they will be closely monitored, and the company has fully control of these functions and the company will also be accountable for all the firm’s functions

Although IT was the premier example of outsourcing, given its evolutionary characteristics, the industry still has to retain some if its in-house IT activity. Most likely due to the near-decade old introduction of the PC and the leveraging of LAN technology. With the introduction of the LAN, the client-server form of processing began to gain popularity, removing some of the need to use main frames. Still, the new form of networking came with a few security issues, readily addressed in main-frame environments, they remained important considerations in 1991 (Korzeniowski, 1991). These too contributed to the continuation of outsourcing for those critical business systems.
Another area that corporations can perform IT in-house was with simulations. IT engineers at their Technical Centre have been using computers from concept, through design and engineering. Then with main frames, feeding calculations and acting on data required much time to produce results. The introduction of simulation software into product development, then permitted engineers to anticipate problems. Additionally, while in years prior to 1992, computer scientists and data processing people were involved, the size and speed of smaller computers permitted the industrial engineers to work alone on problems (Vasilash, 1992).

Heeks (2002) indicates that changes within the public sector departments are needed in order to improve the performance of the government. Therefore, the way in which the ICT is designed in the public sector systems, should make it easy and gave an impact on individuals and departments performance (Gupta, et al., 2008). However, the public sector information systems are subjected to ever changing administrations due to political circumstances which influences the legal and formal constraints (Omar et al., 2016). Due to the complex demanding compliance needs of the government IS systems, means that the implementation of the overall development systems needs to be thoroughly handled. There are three types of ICT projects development and implementation, which are insourcing (internal stuff); outsourcing (External services); and co-sourcing (external services with an internal expert) (Ahmad, et al., 2012). The use of internal IT personnel to continue the development and maintenance of the Information Systems is called Insourcing (Omar, et al., 2016). A few studies have been conducted on Malaysia as noted by Khadaroo et al (2013) which explained a model of e-governments partnerships and, David et al (2007) further highlighted that most departments did not gain the expected desired results in outsourcing. Aris et al (2008) Suggested that the examination of risk management in IT outsourcing projects should utilise the conceptual framework in Malaysia.

3.9.2 Insourcing in motor vehicle Industry

The 2007 financial crisis had a major impact globally which caused an economic downfall for many industries and the automobile was affected as well (Drauz, 2014). The increase in fuel prices and the global financial crisis also caused a decline in car sales. This in turn had automobile companies to re-think and re-strategies their outsourcing decisions in order to stabilise their businesses. Drauz (2014) further mentioned that activities that were outsourced had to be re-insourced, which made companies to have their independence to the economic
crisis the world was facing, as well as to avoid losing their skilled employees they had to re-insource.

3.9.3 Logistics Insourcing in Italy

Insourcing is the business strategy in which the function of the firm that would be outsourced or performed by an external service provider are performed in house. Medium size companies are adopting insourcing logistics management by using advanced and capable software systems to save for mark ups and third-party logistics providers (Taylor, 2017).

Traditionally, scholars describe Italian industrial districts as closed manufacturing systems of small and medium size enterprises (SMEs) embedded in local contexts, able to interact with the outside only at the two ends of the value chain and where well-identified firms were in charge of managing the relationships with final markets (Becattini, 2002). At the end of the nineteen-eighties and during the nineties, even local systems of SMEs perceived the importance of increasing their contacts with firms outside the local district area. The emerging insourcing process carried out by Italian district SMEs highlights their abilities to globalize not only by selling products manufactured locally in international markets (export-based perspective), but also in terms of the international re-organization of local supply chains, which promotes the transition of the industrial district from productive to logistics distributive platform (Mazzarino, 2006).

The insourcing of production, independently by the modes in which it is carried out (export, foreign direct investments, subcontracting and joint-ventures), produces an impact on the logistics sector because it increases the flows of goods to be moved and leads to a more expensive and complex logistics system. The expansion into large international markets, consequently, brings about not only more supervision, coordination and control over geographically dispersed activities, but also the extension of activities and functions that are generally centralized at the headquarters level, such as logistics and marketing (Mariotti et al., 2003). Such activities, and specifically logistics, can be either developed within the multinational company (insourced) or left to third party providers (outsourced). In the first case, we can talk about direct effects that is on the company undertaking the foreign initiative; in the second case of indirect effects that is on the company’s supply chain and on the broader business environment in which it operates.
3.10 Insourcing in the Architectural, Engineering and Construction Industry in Two Developing Countries

3.10.1 Insourcing in the AEC in Nigeria and Indonesia

Havemann (2007) argues that consultants in construction are accountable for the technical risks in a conventional project. They are responsible for developing the requirements of project clients, setting targets, deadlines and establishing standards for meeting these requirements, preparing project documents that describe the targets, deadlines and standards set and sometimes monitoring the activities of contractors that execute a project to ensure that the targets, deadlines and standards are achieved. It suffices to say that a project cannot be successfully executed without the services of consultants.

In Nigeria, insourced professionals are often responsible for most pre-design services and they are fully involved in both design and construction activities. In organisations where project delivery is fully internalised, in-sourced consultants perform all the activities relating to design and construction of a project. Idoro (2006) described the in-house project delivery process as direct labour approach. In Indonesia, clients use in-sourced consultants for some services while engaging external consultants for others. In projects where outsourced consultants are involved, client’s professional staff serve as intermediaries between the external consultants and the client who often seek their advice on every matter relating to a project (Boes and Doree, 2009). Boes and Doree (2009) opined that the preparatory activities in traditional contract are either carried out in-house or outsourced to consulting engineering firms and that outsourcing to consulting engineering firms requires in-house control measures. They maintained that reducing staff by outsourcing tasks to engineering consultants creates new issues of quality control, risks and staffing.

3.11 Insourcing in the AEC in South African Context

The interface between insourcing and construction is one of the most critical interfaces in the construction project environment. Where design information is communicated clearly, in a timely fashion and is understood, construction is more efficient (CII, 2003). Performing selected design activities onsite to bridge this interface gap is a common practice. However, the degree and scope of insourcing varies widely based on project complexity, scope, team composition, execution strategy, location and other factors. In a study on insourcing, the Construction Industry Institute (2003) has found conclusive evidence that insourcing is beneficial and contributes to project success. The study also proposes a computer-based
decision support tool that permits users to identify the specific activities that should be performed onsite to improve project performance given the specific attributes of the project.

3.12 Insourcing in South African Public Infrastructure

In 2002, the semi-privatised Airports Company of South Africa (ACSA) was formed to upgrade standards at the country’s airports and improve productivity. Its capital expenditure to this end was R800-million in 2003, and a total of R2.6-billion by the end of 2004. In preparation for the demands of the 2010 World Cup, ACSA allocated R5.2-billion to an infrastructure expansion programme for the three main airports at Johannesburg, Cape Town and Durban International, as well as at seven smaller airports. In 2006, OR Tambo International Airport announced that R3.4-billion would be spent on upgrading security and facilities by 2010, and another R8-billion on building a new terminal, to be completed by 2012.

The upgrades ensured that the airport was ready for both handling the giant Airbus A380 and accommodating the Gautrain rapid rail link. A new R8-billion terminal was built, as well as a R1.8-billion central terminal building. A further R218-million was spent on nine new aircraft stands, and a R512-million “international pier” development which allowed for a substantial increase in the number of passengers boarding and disembarking via air bridges. About R81-million was also be spent on expanding the international departures concourse, and a second multi-storey parkade was built. Security at the airport had already been improved with the construction of a 25-kilometre perimeter wall and strengthened access control at the gates, costing R52.5-million.

At Cape Town International Airport, ACSA spent R900-million on a new central terminal building as well as building a R160-million multi-storey parkade with 2 500 parking bays, to add to the R100-million, 2 000-bay parkade recently completed.

Durban International had started with construction of a R90-million, 1 500-bay multi-storey parkade, and plans were in place to expand the airport’s existing terminal. In 2007 construction began on a new airport north of the city, the King Shaka International Airport, which will be managed by Dube Tradeport. The airport which was due to be completed in 2009, at an estimated cost of R2-billion. In 2006 the Eastern Cape Transport Department unveiled the Blue Skyway Aviation Strategy, in an effort to maximise the potential of the Bhisho and Mthatha airports in the Eastern Cape. In 2007, Bhisho airport underwent a R100-
million upgrade, making it suitable for international flights. The South African Police Service Air Wing was to relocate to the Bhisho Airport, while the Port Alfred-based 43 Air School had declared its intent to expand to the airport and had started assisting in recommissioning refuelling facilities. Air BP had also started refurbishing the fuel depot at own cost. A new R5-million fire tender was brought in from overseas, with a view to increasing the emergency capacity of the airport and improve its grades from two to four.

3.13 Chapter summary

This chapter reviewed literature on the nature of insourcing or in-house procurement. In addition, the chapter also reviewed literature on the origin and nature of insourcing, the advantages and disadvantages of insourcing. The chapter also focused on the benefits and challenges of insourcing. The influence of insourcing on project performance was discussed together with factors influencing the decisions to insource or in-house procurement. In addition, the literature further discussed insourcing across different sectors including public infrastructure insourcing. The next chapter will focus on the methodology applied to the study. Grounded theory research is the research design of choice applied to the study.
CHAPTER FOUR

RESEARCH METHODOLOGY

4.1 Introduction

The purpose of the study was to investigate the reasons behind the decision to outsource compared to in-house and conduct a comparative analysis of the impact of insourcing versus outsourcing decisions at a Provincial Department of Public Works and Infrastructure on public sector infrastructure delivery performance. The study seeks to guide implementers towards making optimal decisions on whether to outsource or insource. This qualitatively driven study relied extensively on the grounded theory method research design. As such, data was collected through a juxtaposition of document reviews and semi-structured interviews. The chapter rationalizes the choice of the grounded theory methodology as an appropriate research design for this study. To do this effectively, a comparison of this research design and other qualitative research designs of note is carried out within the remit of this chapter. The peculiar style of carrying out data analysis under the auspice of the grounded theory method research design was succinctly rendered.

4.2 Research Approach:

There are three types of research approaches available to the contemporary researcher: qualitative, quantitative and the mixed method.

4.2.1 Qualitative Research

Qualitative research is a research approach that emphasizes texts or words rather than quantities (Bryman, 2012). As a research approach, qualitative research consists of features like; constructionist, inductivist and interpretivist but does not always conforms to these three features. Qualitative researchers need to be authentic in their research, to ensure that their findings are considered credible (Telles-langdon 2011). According to Marshall and Rossman (1999), qualitative research is a complex-combination of inductive and deductive reasoning styles, but grounded-theory is primarily inductive (Feeler 2012). Qualitative researchers are interpreters and look at interpretation as one of the factors that determines the shape of the reality that is emerging instead of attempting to record external objectively as mentioned by Feeler (2012).
4.2.2 Quantitative Research

Quantitative research is described as the collection of numerical data, and, it presents the relationship between theory and research as deductive (Bryman, 2012). In this research approach, data was used to measure the occurrence of phenomena and generating results therefrom. This approach is formal, objective and follows a systematic process. In general, quantitative research is usually supported by the positivist paradigm which leads the researcher to regard the world as made up of observable and measurable facts (Glesne & Peshkin, 1992). Quantitative research allows the researcher to familiarise themselves with the concept to be studied, and perhaps, generate hypotheses to be tested (Golafshani, 2003). In this research approach, the data collection information is in a form of numbers that can be quantified and summarised.

4.2.3 Mixed Methods

Mixed method research has been named as the third methodological movement (paradigm), with quantitative and qualitative approaches represented as the first and the second movement research approaches (Ridenour & Newman, 2008; Tashakkori & Teddlie, 2003a). Mixed method research involves a combination of both qualitative and quantitative methods. The mixed method research either uses this method concurrently or independent of each other or sequentially to understand the phenomenon under investigation (Venkatesh, et al., 2013). According to Creswell (2003) mixed methods approach is whereby the researcher bases his/her “knowledge claims on pragmatic grounds” which can be consequences-orientated, problem-centred, and pluralistic. Creswell further explains that this approach adopts data collection strategies of both numeric information (instruments) and textual information (interviews) so that the final analysis reflects both the quantitative and qualitative information. Interviews are qualitative data collection approach, due to the fact that they can provide depth in a research study which allows the research to gain deep insights from different perspectives and rich narratives, and in a case of quantitative data collection, surveys are used and they can bring a breadth to a research study by helping the researcher to gather data regarding different aspects of a phenomenon from a lot of participants (Creswell, 2003), therefore mixed methods research approach does provide a greater complementary views (Tashakkori & Teddlie, 2003a). Mixed methods research approach assists the researcher to find different conclusions from the quantitative and qualitative perspective (Venkatesh, et al., 2013).
4.3 Rationale behind the choice of qualitative approach for the present study

The phenomenon being investigated happens to be considered as underdeveloped due to the paucity of studies conducted on it within the context of developing countries as well as construction industry based literature. This necessitates the adoption of an approach that allows for theory development. According to Graebner et al., (2012) qualitative data is useful for generating new theory or when the phenomenon under investigation is underdeveloped or no prior studies exists or when the existing theory is insufficient. Therefore, the study intends to contribute to the development of new theory using the grounded theory method. This presupposes the need to adopt the qualitative research strategy. Qualitative data is utilised in this study due to the fact that the study is keen on contributing towards the theory development by proposing a criterion to be utilised by decision makers in PDPWI when deciding on an appropriate procurement pathway for public sector projects as well as comparing the influence of these decisions on project performance. The study also adopted a qualitative data due to allow participants to express their own views in relation to the phenomenon under investigation. Participants could express their own views based on their previous experience within respective client departments.

4.4 Research Design

4.4.1 Case Study

Case study research consists of an “intensive study of a single unit for the purpose of understanding a larger class of (similar) units, observed at a single point in time or over some delimited period of time” (Gerring, 2004, p342). The case study research design provides the researcher with an opportunity to gain a deep and comprehensive view of the research problem (Baskarada, 2014). Apart from the wide usage of this research design in academia, it is favoured by practitioners as a tool for evaluation and organisational learning (Baskarada 2014). Although this method has been used extensively, the case study method is still misunderstood by most people (Barrat, et al., 2011; Dooley, 2002; Flyvbjerg, 2006; Gerring, 2004; Stuart, et al., 2002). Misunderstandings regarding the implementation and the aim of the case study research design can be detrimental and the validity of the results can be affected negatively (Baskarada, 2014). In the academic context, any misunderstandings of this method during the peer-review procedure, could invalidate the entire study that will lead to wasted time and effort by the researcher and the participants (Baskarada, 2014). Also, in
the practise context, any misunderstandings arising, could potentially result in dysfunctional or superstitious organisational learning (March, et al., 1991).

4.4.2 Ethnography

It is important for researchers to consider using ethnography to understand the various types of investigations that may potentially form the framework for analysis. Ethnography can be described fully or partially, as a means of identifying common threads, whether its religion, social relationships or management style (Goulding, 2005). Ethnography is associated with social anthropological research, whereby researchers visits a foreign place and meets the people and aim to uncover people’s culture, conversations, behavioural patterns and their language (Brayman, 2012). They may be structured on the basis of dimensions, by language, by theory, or in any number of different ways (Goulding 2005). An important feature of ethnography is that it is labour intensive as it always involves direct contact with group members to look for rounded, comprehensive explanations. Ethnography is well known for its reliance on fieldwork, working with people in their natural settings. Participants’ voices play a crucial role in the written end-product. Therefore, they are considered an important source of data and should be coherent, fluent and readable (Boyle 1994). According to Arnold (1998) there are some useful summary of the roles of ethnography in consumer research, which includes:

- Ethnography’s aim should be to explain ways that culture is constructed by behaviours and experiences of the members of that culture.
- Ethnography includes the extended participation within a certain culture.
- Ethnography has potential to apply multiple data collection methods in a single study; it can be from surveys to observational data, video tapes, photographs and recordings of speech in action.
- Certain tactics in ethnography are required for presentation of research findings, this representation should be aimed at unravelling the layered meanings that marketing activities hold for the customer.

4.4.3 Phenomenology

A phenomenological approach can be regarded as both a philosophy and a methodology and it has been used in organisational and consumer research in order to develop an understanding of a complicated issue that may not be immediately implicit (Goulding 2005). In the marketing sector, A lot work has been done to highlight the nature of phenomenology
as a research design and its application to various research situations (Thompson 1997). Regarding the development and the application of the phenomenology approach, Goulding (2005) believes that it has had a long, controversial and more often confusing history within the social science sector. Furthermore, phenomenology depends on an individual’s epistemological and ontological positions to be considered as a philosophy, for those who adhere to the thinking of Husserl, (1962) and Heidegger, (1962) or it’s considered a methodology for those who adopt the position explained by Schutz (1967).

Phenomenology is a philosophy, methodology or an approach used to research or conduct a study (Sloan & Bowe, 2014). There are other diverse types of phenomenology that overlap philosophy and methodology (Langdridge, 2007), that should be known throughout the explanation of the development of phenomenology over the years (Sloan & Bowe, 2014). Phenomenology is a qualitative research design which focuses mainly on people’s perception of the universe or the perception of appearance of things (Langdridge, 2007). In terms of the study at hand, phenomenology is defined as people’s experiences (Langdridge, 2007). As a methodology, the researcher needs to follow a certain pattern that is required to collect data, analyse them and report on the findings. The outcome of this type of methodology is a collection of descriptions of meaning for individuals of their lived experiences or concepts or phenomena (Creswell, 2007). The descriptions will usually appear as written phrases or statements that represents the meaning an individual or participants has attributed to the study to a related experience (Smith, Flowers et al. 2009). In essence phenomenology reduces a human subject’s experiences with a phenomenon to a description written down, usually, and so a qualitative researcher will identify a phenomenon as an ‘object’ of human experiences and give voice to it (Creswell 2007).

4.4.4 Grounded Theory Method

In 1967, Glaser and Strauss proposed, a new kind of qualitative research design named grounded theory. This was described as involving “the discovery of theory from data-systematically obtained and analysed” (Feeler 2012). In one of the interviews in 1994, Strauss spoke about the meeting with Glaser and their developing grounded-research theory during a study they did together in 1960 (Legewie & Schervier-Legewie 2004). This new method is described in their 1967 publication which consisted of two-fold effort to maximise the discovery process and to generate a theory mapped closely to the data. Grounded theory was aimed at improving the conduct of research in general, by linking theory and data more thoroughly. Furthermore, they sought to improve qualitative research, firstly moving its overt
emphasis upon a description into what they saw as the more useful realm of theory and, by making it more rigorous through a more systematic methodology. Their purpose of developing this method was to introduce rigorous new methods of qualitative research that would enable systematic collection of data, coding and data analysis. Glaser and Strauss (1967) further mentioned that their methods were user friendly but also, focused on qualitative research due to the suitability of deriving theory from data. The key elements of the discovery process stated by Glaser and Strauss (1967) included, the systematic obtaining of data, the constant comparative method of quality analysis, and the generation of theory. The prime purpose was the generation of ideas throughout the process and ending with a theory emerging from data collected and closely linked to, or grounded in, data-as oppose to the kind of verification of ideas sought in quantitative research. They argued that a theory emerging from and grounded in such a systematic discovery process is so” intimately linked to data” that it is” destined to last despite its inevitable modification and reformulation”.

There are two kinds of grounded theory, substantive and formal. Formal grounded theory involves a larger, formal area of study such as power roles, gender issues, or deviant behaviour, while substantive involves a specific area of study e.g., nursing care, coach-player relationships or as in the case of this study decision making of in-house versus outsourcing within the confines of a Provincial Public Works infrastructure projects (Feeler, 2012). Both types of theory should be grounded in data, according to Glaser and Strauss (1967). They emphasized that it’s necessary for researchers to conduct a study “without any preconceived theory that indicates, prior to the research, ‘relevance’ in concepts and hypotheses”. Firstly, researchers need to avoid applying formal theories before collecting data and to generate substantive theory from the data itself (Feeler, 2012). To avoid the dangers of trying to force the data to fit into preconceived theories, the researcher needs to be open to the deriving of hypotheses and observation that might not be in consonance with established theory. Furthermore, the researcher must be as open as possible in apprehending the data, must remained unbiased by theory, and above all, must be faithful to the data.

4.5 Rationale for using Grounded Theory Method in the present study

According to Clarke (2005), grounded theory was initially conceptualised and remains to date as a suitable research method for the discovery or generation of new theory from data, as opposed to methods that aim to extend existing theories. Grounded theory has also developed arguments amongst researchers that it is an appropriate research method used to explore an
unknown topic which has seen limited research in the past as described by Holton (2007). It is a unique type of methods in a sense that it has the potential to go beyond exploring and describing to explaining complex phenomena in applied contexts that have not yet been discovered or fully captured by theory (Birks & Mills, 2015). The purpose of the current study was to investigate the reasons behind decisions taken by decision-makers in provincial Department of Public Works and Infrastructure to outsource compared to in-house and to compile a comparative analysis between outsourced and insourced to propose reasons that can be used to either outsource or insource in provincial Department of Public Works and Infrastructure. This topic is related to decision making which is considered complex and there has been limited research on this topic to date. Grounded theory was considered appropriate for this study to address the reasons behind the decisions taken to either outsource or insource Public Infrastructure projects by a Provincial Department of Public Works and Infrastructure and to compare the performance of projects procured through either route. Grounded theory is suitable for the development of theory (Charmza & Belgrave, 2012), hence the methods were adopted for this research study, as the study intends to appraise the performance of in-house projects versus outsourced projects.

4.6 Data collection and analysis protocol for the study

The general procedure that explains the process of data collection and the data analysis respectively.

![General procedure for grounded theory](image)

**Figure 4.1. General procedure for grounded theory**

*Source: Based on Strauss and Corbin (2008)*

Data collection is a process of gathering data that the researcher will utilise to elicit information relevant to the study (Kolb, 2012). The study utilized data collection technique of documents analysis by observing hard copy documents and soft copy documents in the
PDPWI for the past five years, to assess the project performance. The researcher later analysed gathered data and thereby identifying important information required from observed data. Open coding was conducted according to predetermined and emergent headers and used in the development of a spread sheet. Once these headers were identified, then a spread sheet was compiled and data was captured as per headings. The spread sheet was observed and a constant comparison was implemented whereby, common trends or patterns were identified from the captured data in the spread sheet.

The application of axial coding throughout the process of developing semi-structured interview questions from the list or observed trends and patterns from the developed spread sheet was adhered to. Participants were selected based on their positions within their respective departments. Six departments participated in the study with participants holding key positions for decision making. Axial coding processes continued by comparing responses from interviews conducted with patterns observed from the captured data in the spread sheet. Theoretical sampling took place in a case of second round of interviews conducted with project managers at PDPWI. The final stages of coding which is the selective coding process ensured that core categories such as Table 5.1.1 was compiled. The table was developed through the observation and comparison of views from participants and the status quo of observed projects in the spread sheet. Saturations occur when no further theory can be developed, hence theoretical saturation was reached after development of core categories was reached.

4.7 Research Techniques

4.7.1 Sampling: Purposive Sampling

The idea behind qualitative research is to purposefully select participants that will best help the researcher understand the problem and the research question (Creswell 2003). The number of participants selected to participate in the study is subjected to the purpose of the study (Patton 2002). According to Strauss and Corbin (1990) and, Miles and Huberman (1994) the sampling items in a grounded theory study are events rather than individuals. Purposeful selections criteria denote an attempt to achieve a similarity in settings and participants (Creswell, 2003). This approach involves extensively studying a small number of participants. The researcher anticipated that around nine participants would initially take part in the study although more participants were identified. The participants were selected from client departments that has an infrastructure unit within their departments in the province, not
all provincial client departments have infrastructure units. Participants were told that the study was designed to document their experiences as they made crucial decisions. The participants were engaged in a dialogue about their experiences in decision making in the procurement of projects and expressed their opinions about documents set out by the government regarding the infrastructure projects. The process of developing the sample for this study was guided by theoretical sampling (Glaser 1978) to select suitable candidates with adequate experience for in-depth study. Theoretical sampling is a purposive sampling approach where researchers collect events related to the key concepts emerging from their ongoing analysis so they can compare those events for similarities and differences (Charmaz, 2006; Glaser & Strauss, 1967). Theoretical sampling is a strategy unique to grounded theory where participants are selected based on their knowledge in a particular field related to the study than for other reasons such as randomness (Telles-langdon 2011). Although theoretical sampling was used for final selection of participants, aspects of intensity sampling were also used to help identify potential participants for the research. This included experienced projects managers and deputy directors, and chief directors with moral reasoning.

4.7.2 Sample Size

According to Zafeiriou (2017) there have been various suggestions for what is an appropriate sample size for grounded theory studies. It has been argued, however, that none of these suggestions appears to be empirical, but they rather tend to be recommended guidelines by different theorists (Mason 2010). Grounded theory has been found to use as few as six participants (Hirschfeld, Smith et al. 2005). Some experts in qualitative research methods (including grounded theory) argue that the sample size of the study is relevant and dependent on the purpose and a few further factors, therefore being precluded from being predetermined (Baker & Edwards, 2012). Research questions that refer to a focused area of practise in an applied field have been thought to justify a small number of data gatherings (Charmza 2012). Since the current research focuses on the small area of practice, the small sample is seen as appropriate.

4.8 Data Collection

Data collection is a method a collecting data for the study at hand. In classic grounded theory, data collection is not restricted to specific methods and cannot be predetermined at the outset of the study (Breckenridge 2010). Data are drawn from any source deemed relevant to the
emerging theory, responding to leads as they arise in the data and selecting data collection methods that will best answer emerging questions.

For the purpose of this study, data collection methods involved the review of site meeting minutes, monthly regional reports and hardcopies files, soft copies of projects files and some of close-out reports (Document reviews/analysis). Secondly, an initial semi-structured interview was conducted with major decisions makers for infrastructure projects in provincial government departments. A second round of semi-structured interviews was conducted with provincial Department of Public Works project managers who are responsible for implementation of Infrastructure projects on behalf of client-departments.

**Interviews with provincial department representatives**

<table>
<thead>
<tr>
<th>Interviewees</th>
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<tbody>
<tr>
<td>4</td>
<td>Provincial Department of Public Works and Infrastructure</td>
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<tr>
<td>1</td>
<td>Provincial Department of Education</td>
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<td>1</td>
<td>Provincial Department of Health</td>
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<td>Provincial Department of Social Development</td>
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<td>1</td>
<td>Provincial Department of Sports, Arts and Culture</td>
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<tr>
<td>1</td>
<td>Provincial Department Police, Roads and Transport</td>
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</tbody>
</table>

**Table 4.1**

**4.8.1 Document Reviews/Analysis**

This refers to written documents which can be in a form of textbooks, articles, notes, minutes of meetings, archives, etc. (Robson, 2011). It may also include other additional material such as photographs, drawings, pictures, television programmes etc. for educational research it may be relevant to review course documentation and timetables. Fundamental to the analysis of documents is the identification of the context of the document, establishing the author and
the purpose for the document (Robson, 2011). In this study, regional monthly reports of the past 12 months were reviewed to check the current projects currently running in the Provincial Department of Public Works and Infrastructure, for both for in-house and outsourced projects. Site meeting reports, minutes and close-out reports were utilised for data elicitation. Preparatory to the review of the aforementioned documents, the researcher developed an excel spread sheet with the headings provided in Table 4.2 for ease of analysis. These heading were created according to what the study intends to achieve, therefore key elements on projects had to be highlighted to check the performance, cost, time and quality of completed projects and currently running projects. Following the development and population of the excel spread sheet with relevant data sets under the headings, interview questions were evolved from the observations deduced by the researcher from the spread sheet. The purpose of the interview sessions was to compare the views of relevant stakeholders involved with the outsourcing/insourcing decision at the PDPWI against the evidence available from the review project document pertaining to the performance of projects which had either been insourced or outsourced.

4.8.2 Semi Structured Interviews
The interviewing process during a qualitative study, allows researchers a chance to access the perspective of participants and their views on the phenomenon under study (Kolb, 2012). Interviews are used extensively in qualitative research studies as a method of collecting data. Interviews can be structured, semi-structured or unstructured (Robson 2011). The semi-structured interview is designed to focus on the phenomenon being studied but flexible enough to allow individual’s perspectives into areas common to the study based on their experiences in the field or sector (Lancaster, 2005). Interviews can be carried out face-face, by telephone, or via internet. Individual interviews are useful when the researcher wants to explore in-depth the experiences or views of individuals.

Semi-structured interviews appear to be the commonly used form of data collection in qualitative research (Willig 2013). Also, it is often used by grounded theory researchers (Birks & Mills 2015). Various types of analysis, including grounded theory, with its flexibility and adaptability has caused semi-structured interviews popular in qualitative research (Robson 2011). In this study, semi-structured interviews were adopted to find out the individual’s perspective and their personal experience concerning the topic.
An interview schedule (Appendix C) was developed by the researcher with questions were created from the spread sheet developed from the reviewed documents/report/site meeting minutes and soft copies of files and lastly from some of the close-out reports. The interview schedule was used as a guide. Although many of the questions were asked to all participants, a flexible stance was maintained, and additional information was allowed which arose from the questions in the interview schedule. The flexibility of the interview encouraged by the approach of intensive interviewing, which allows interviewers to discover new ideas or concepts and to pursue new theory immediately that emerge during the interview process (Charmaz 2014).

The total number of interviews conducted for both the first and the second round of interviews is eight (8). The first round of interviews was conducted with decision makers at PDPWI and clients departments in the province and the duration of interviews was ranging from 45 minutes to 1 hour and 30 minutes. Participants in the first round of interviews was chief directors, directors, deputy directors and senior project manager from different client departments. The second round of interviews took place within the PDPWI with project managers in the department to get their perspective on the issue at hand for both insourced and outsourced infrastructure projects in the province. Duration of the interviews took 40 minutes to 1 hour.

4.9 Data Analysis

Data analysis is defined as the interplay between researchers and data (Corbin and Strauss, 1990). Although Corbin and Strauss (1990) did offer general procedures for analysis in grounded theory, such rendition did not imply overt-reliance on these procedures by researchers but rather to encourage grounded theory researchers to show creativity (Telles-langdon 2011). Data analysis in grounded theory involves three types of coding, namely: open coding, axial coding and selective coding. According to Strauss and Corbin, (1998), data coding represents the model in which data is broken down, conceptualised, and rearranged to reveal theory. Coding simply indicates the process of converting data from raw and unstructured data to form theory (Strauss & Corbin, 1998). For this to be achieved interview transcripts were analysed using constant comparison to build categories and the categories were coded accordingly (Strauss & Corbin, 1990). Accordingly, open coding, axial coding, selective coding and constant comparison was adopted holistically in this study to ensure that the emerging theory can be explored.
4.9.1 Coding

Strauss and Corbin (2008) explained that the process of data analysis is regarded as coding. This analysis method involves three levels, namely; (I) open coding, (II) axial coding and (III) selective/focused coding. They further explain that these codes are used to highlight a complete picture of information obtained during data collection stage.

4.9.1.1 Open Coding

Open coding has been described as the breaking down of data into different parts, surveying closely, comparing, and asking questions (Corbin & Strauss, 2008). According to (Strauss 1987) the basis of grounded theory is the idea-gauge model that “directs the conceptual coding of a set of empirical indicators”. Open coding uses “indicators”-words, phrases, statements from the data, or observations-to develop “concepts” or ideas (Feeler 2012). Indicators are constantly compared with each other as the researcher works towards identifying new ideas until theoretical saturation is achieved. The researcher investigates terms used by the study (Strauss 1987), in order to move into coding of more general concepts. The more detailed the analysis is the less chances of missing developing categories and the greater the chance of discovering appropriate categories and reaching theoretical saturation (Strauss 1987).

After the observation of documents from PDPWI, initial codes were developed by identifying headings required to develop a spread sheet to capture the past and current running projects within PDPWI. Open coding took place during the examination of the project documents and the identification of information, within these documents based on the hitherto revealed headings. See Table 4.2. This information was subsequently transferred to the spread sheet. Thereafter, the researcher developed the spread sheet with the initial codes. The contents of the spread sheets was used to identify any trends which may be present in the data. During this review, certain trends were observed. In this study, initial categories identified through open coding is referred to as trends observed in the spread sheet and they are attached as Appendix B.
Table 4.2

4.9.1.2 Axial Coding

Axial coding refers to “categories to subcategories, specifies the properties and dimensions of a category, and reassembles the data you have fractured during initial coding to give coherence to the emerging analysis” (Charmaz, 2006, p.42-71). Axial coding follows the development of a major category, even though it may be in the early stages of the development, this is due to the views of (Strauss, 1987) of axial coding which he viewed as building ‘a dense texture of relationships around the “axis” of a category’. The prime purpose of axial coding is to arrange, sort, synthesize, and organise large amount of data and re-arrange them in new ways after open coding (Strauss 1987).

Therefore, axial coding process is applied during the collection of data process from observed documents in PDPWI for the past five years and arranged them in the spread sheet. Initial codes were developed in open coding process, in order to explore the performance of
captured projects from the perspective of cost, time and quality of the delivery of those projects procured through in-house or outsourced in PDPWI. After the observation of trends, interview questions were created, which sought the views of key decision makers in different client departments across the province including PDPWI decision makers. Interview’s responses and recorded projects performance was compared. Table 5.1.1 was developed through the comparison of views from participants with trends developed from the spreadsheet to assess what characterized or influenced projects to be outsourced or insourced in PDPWI. Another example of the application of axial coding in the study is the process of relating subcategories to a category, which is the formation of table 5.1.2-5.1.5 which are developed from table 5.1.1 which serves as the main category.

4.9.1.3 Selective Coding/Focused Coding

According to Charmaz (2006), focused coding is the essential second major step of coding. This coding refers to codes which are more directed, selective, and conceptual than open coding (Glaser 1978). Once you have established strong codes from open coding, you can now start with focused coding redirect and explain larger segments of data. Charmaz (2006) further explains that “focused coding means using the most significant and/or frequent earlier codes to shift through large amounts of data”. Focused coding requires the researcher to be able to make decision based on initial codes, that makes sense with the topic in hand and therefore categorise them accordingly, incisively and completely (Charmaz, 2006).

This study applied selective coding through the process of identifying similarities and differences from views of decision makers and the captured information on the spreadsheet to develop a core category such a table 5.1.1. The table was further refined to connect it to other sub-categories by developing more categories. These categories developed from coding processes assisted by guiding the data collected and analysis process to theoretical sampling.

4.9.1.4 Constant Comparison Analysis

Comparative analysis is an important aspect of grounded theory, intensively working with data to develop a conceptual idea of rooted social processes within a phenomenon (Strauss & Corbin 1998). Another definition of constant comparative method as defined by (Charmaz 2014) as an on-going process to compare data with data, data with code, code with code, code with category, category with category, and category with concept. Comparison establishes each stage of analysis, with the researcher concurrently collecting data, coding, and analysing data (Strauss & Corbin, 1998; Charmaz, 2006). Through simultaneous analysis and data
collection, the constant comparative method determines, incorporates and clarifies theoretical categories whilst ensuring findings remained grounded in data (Charmaz 2014). The application of constant comparison analysis was identified during the observations of common trends emanating from the spreadsheet, and the responds from interviews conducted was compared with the list of trends observed. Thereby developing new theory grounded in data in table 5.1 which outlines characteristics of insourced and outsourced infrastructure projects at provincial department of Public Works and Infrastructure.

4.10 Chapter summary
This qualitative study adopted the grounded theory research design method. The chapter also highlighted different research approaches and the rationale behind choosing qualitative research approach, also different research designs was investigated and the rationale for adopting grounded theory research designs. Grounded theory research method was applied, and its techniques in the study. The chapter also looked at the data collection techniques such as documents reviews and semi structured interviews. Data analysis techniques in grounded theory such as open coding to axial coding and moving back, and selective coding was also used in the study. Constant comparison was explained and the way it was used back and forth throughout the study. Grounded theory procedure for data collection and analysis was explained in this section. The next chapter will present the study’s findings and discuss those findings.
CHAPTER FIVE

PRESENTATION AND DISCUSSION OF FINDINGS

5.1 Introduction

This chapter examines and present the findings for decision making processes pertaining to the procurement of projects through insourcing and outsourcing in the Provincial Government by the DPWI. The first section of the chapter focuses on the role of client departments and their views in this study. The findings are presented in a form of tables whereby different characteristics of both procurement pathway, performance of projects in terms of cost, time and quality and if the desired results were achieved by different stakeholders. This chapter will be sub-divided into two parts, firstly the presentation of the findings and the second part will be the discussion of the findings in details. Finally, the summary of the chapter will be outlined as well.

5.2 An overview of the study context

The provincial Department of Public Works and Infrastructure (PDPWI) serves as the custodian or the implementing agent of infrastructure projects at provincial level. The department implements infrastructure projects on behalf of client departments in the province. Client departments in the province are listed as; (1) PDOE-Provincial Department of Education, (2) PDOH-Provincial Department of Health, (3) PDSACR-Provincial Department of Sports, Arts, Culture and Recreation, (4) PDPRT-Provincial Department of Police, Roads and Transport and finally (5) PDSD-Provincial Department of Social Development. The provincial government does not only consist of five departments, however the study only focused on these departments due their nature of work or their nature of infrastructure projects and availability of participants from other departments also influenced the decision to utilize these selected departments.
5.3 Perceptions of client organisations representatives on the performance of outsourced versus insourced infrastructure projects

Client departments were consulted, and a request was compiled and completed to interview decision makers from different client department, to understand their views based on their experiences regarding the delivery of projects by the implementing agent. The provincial executive council took a resolution that PDPWI will execute projects of value of more than ten million rand and upwards, and that projects with the value of less than ten million can be executed by client departments accordingly.

PDOE emphasized the issue of undertaking projects of value less than 10 million as per the executive council resolution and they reiterated that the project scope of these projects in mainly; renovations, upgrades or additions to existing facilities. The department was not entirely happy with delivery of projects by the implementing agent and they highlighted reasons for that was due to, (I) cost overrun on their projects, secondly, (II) their concern was based on the way projects are handled by projects managers at PDPWI, and lastly (III) they assumed that there is lack of technical ability and lack of staff by the implementing agent, hence the delivery of projects is not satisfactory.
PDSD agrees with PDOE that there is lack of staff from the implementing agent to undertake all infrastructure projects in the province due to project managers handling lot of projects and not attending of giving attention to each project, thereby mismanaging some of their projects due to excessive workload unto employees at PDPWI. They also questioned the issue of technical ability of inspectors at PDPWI and their competence. Inspectors are supporting stuff to the project managers at PDPWI and they attend meetings on site and check the quality on site of projects.

However, PDPRT have decide to take a different route from other client departments, the department of Police, Roads and Transport was previously joined with DPWI but later was separated by the provincial executive at that time. PDPRT requested from the provincial executive to execute their own projects due to skills and expertise required by departmental projects, permission was granted, and the department in source most of their functions within the department, excluding that of contractors. The department reiterated that savings on appointments of consultants contributes positively to the department, financially and in accordance with time taken to procure consultants. They further mention the benefits of in-sourcing, as cost saving, equip graduates with adequate experience within the design, supervision and the procurement realm. A challenge they assume delays projects within the public sector as a whole is the government policies in regard to the signatures required on documents and the strict policy of accounting officers required to sign every document that leaves their offices, and in their absences, documents have to wait, thereby causing delays on site.

PDOH and PDSACR shared similar views on the delivery of projects by the implementing agent. These departments are not entirely happy, but somehow satisfied with the delivery of projects, but they believe things can be improved within PDPWI to accelerate delivery of projects. PDSACR explained that they also made a request to implement their own projects up to the value of 40 million rand, and the request was granted. This could be due to lack of skills or enough employees in the provincial Department of Public Works. They also believe that projects are not properly managed by government official from both departments. The representatives also emphasized that government is too lenient on contractors and consultants, and that no consequences or punishments are in place for contractors and consultants who are not complying or delivering expected results. Lack of knowledge on construction contracts seems to be a problem also for government officials. Poor planning during the design phases is also mentioned as one of the factors contributing to never ending variation orders.
5.4 Presentation of findings from document review

A spread sheet was developed by the researcher with headings that would enlighten the researcher as to why projects are outsourced or either insourced, the following list of initial codes was used as a yardstick to direct the researcher on the desired results:

<table>
<thead>
<tr>
<th>Initial codes used to develop a spread sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project name</td>
</tr>
<tr>
<td>Project type</td>
</tr>
<tr>
<td>New project/upgrades/renovations/additions</td>
</tr>
<tr>
<td>Planned project value</td>
</tr>
<tr>
<td>Anticipated final project value</td>
</tr>
<tr>
<td>Actual final project value</td>
</tr>
<tr>
<td>Site handover date</td>
</tr>
<tr>
<td>Planned project time frame</td>
</tr>
<tr>
<td>Revised project time frame</td>
</tr>
<tr>
<td>Final/anticipated/completion time achieved</td>
</tr>
<tr>
<td>Project outsourced/insourced</td>
</tr>
<tr>
<td>Consultants outsourced</td>
</tr>
<tr>
<td>Problems encountered during the project</td>
</tr>
<tr>
<td>Current progress on site</td>
</tr>
<tr>
<td>Contractor appointed</td>
</tr>
<tr>
<td>Extra costs/savings</td>
</tr>
</tbody>
</table>

These headings are used to identify to code different projects (open coding) in such a manner that allowed for axial coding (category building), focused coding and constant comparison.

**Table 5.1.1: Characteristics of Insourced versus Outsourced Project**

<table>
<thead>
<tr>
<th>Categories</th>
<th>Insourced Projects</th>
<th>Outsourced Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope (nature of works)</td>
<td>Renovations/Upgrades/Additions</td>
<td>New projects/Specialised</td>
</tr>
<tr>
<td>Scope (Type of building/project)</td>
<td>Office buildings/ Community halls/</td>
<td>Schools/ Hospitals/</td>
</tr>
<tr>
<td></td>
<td>Schools/Hostels/Prisons</td>
<td>New office buildings/</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stadiums/</td>
</tr>
</tbody>
</table>
Table 5.1.1 highlights the characteristics of outsourced and insourced projects from the developed spreadsheet. See appendix B. These characteristics were observed as attributes which were inherent in either outsourced or insourced project and in some instances commonly shared between projects across both sides of the divide based on the information emanating from the spreadsheet as well as excerpts from the information gathered during the initial semi-structured interviews with different decision makers in various departments and the PDPWI.

The first characteristic of both insourced and outsourced project which identifies the scope of work (nature of works), the researcher assumed that decision makers consider the scope of work before a decision is made to outsource or either insource but in this case the only difference is that no new projects are insourced but renovations/additions and upgrades can both be outsourced or insourced. This is in line with what the chief director for Construction, Maintenance and Works at PDPWI mentioned during the interview with the researcher. He concurred that most of renovations are mostly done in-house unless the works require specific set of skills of which the departmental artisans or skilled labours do not possess, and he further reiterated that new projects are all outsourced as PDPWI does not enough labour capacity to undertake projects of such magnitude.
Table 5.1.2 Scope of Outsourced Projects (Based on specialised work)

<table>
<thead>
<tr>
<th>Type of Project</th>
<th>Scope of Project</th>
<th>Outsourced/Insourced</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prison</td>
<td>Specialised</td>
<td>Outsourced</td>
</tr>
<tr>
<td>Prison</td>
<td>Specialised</td>
<td>Outsourced</td>
</tr>
<tr>
<td>Primary School</td>
<td>Specialised</td>
<td>Outsourced</td>
</tr>
<tr>
<td>Secure Centre</td>
<td>Specialised</td>
<td>Outsourced</td>
</tr>
<tr>
<td>Primary School</td>
<td>Specialised</td>
<td>Outsourced</td>
</tr>
<tr>
<td>Office Building</td>
<td>Specialised</td>
<td>Outsourced</td>
</tr>
<tr>
<td>Community Hall</td>
<td>Specialised</td>
<td>Outsourced</td>
</tr>
</tbody>
</table>

Table 5.1.2 indicates the scope of work for projects outsourced but the projects were either additions/renovations or upgrades. According to the chief director of Construction and Maintenance at PDPWI, he mentioned that only renovations or upgrades projects that need special skills or specialised work are outsourced by the PDPWI.

Table 5.1.3 Scope of Insourced Projects (Renovations/Additions/Upgrades)

<table>
<thead>
<tr>
<th>Type of Project</th>
<th>Scope of Project</th>
<th>Outsourced/Insourced</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community Hall</td>
<td>Renovations</td>
<td>Insourced</td>
</tr>
<tr>
<td>Community Hall</td>
<td>Upgrades</td>
<td>Insourced</td>
</tr>
<tr>
<td>Community Hall</td>
<td>Upgrades</td>
<td>Insourced</td>
</tr>
<tr>
<td>Community Hall</td>
<td>New Project</td>
<td>Insourced</td>
</tr>
<tr>
<td>Office Building</td>
<td>Renovations</td>
<td>Insourced</td>
</tr>
<tr>
<td>Complex</td>
<td>Renovations</td>
<td>Insourced</td>
</tr>
<tr>
<td>Clinic</td>
<td>New Project</td>
<td>Insourced</td>
</tr>
</tbody>
</table>

Table 5.1.3 shows the scope of work and the type of projects undertaken by in-house or projects that are insourced by PDPWI. According to the chief director at PDPWI projects that are undertaken by the in-house team are renovations/addition or upgrades due to the availability of in-house artisans for different trades.
Table 5.1.4 Scope of Outsourced Projects (New Projects)

<table>
<thead>
<tr>
<th>Type of Project</th>
<th>Scope of Project</th>
<th>Delivery time</th>
<th>Quality of Project</th>
<th>Outsourced/Insourced</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secondary School</td>
<td>New Project</td>
<td>Late</td>
<td>Acceptable</td>
<td>Outsourced</td>
</tr>
<tr>
<td>Secondary School</td>
<td>New Project</td>
<td>Late</td>
<td>Acceptable</td>
<td>Outsourced</td>
</tr>
<tr>
<td>Full Fledged School</td>
<td>New Project</td>
<td>Late</td>
<td>Good</td>
<td>Outsourced</td>
</tr>
<tr>
<td>Primary School</td>
<td>New Project</td>
<td>Late</td>
<td>Good</td>
<td>Outsourced</td>
</tr>
<tr>
<td>Primary School</td>
<td>New Project</td>
<td>Late</td>
<td>Acceptable</td>
<td>Outsourced</td>
</tr>
<tr>
<td>Stadium</td>
<td>New Project</td>
<td>Late</td>
<td>Fair</td>
<td>Outsourced</td>
</tr>
<tr>
<td>Substance Treatment</td>
<td>New Project</td>
<td>Late</td>
<td>Good</td>
<td>Outsourced</td>
</tr>
<tr>
<td>Centre</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary School</td>
<td>New Project</td>
<td>Late</td>
<td>Acceptable</td>
<td>Outsourced</td>
</tr>
<tr>
<td>Secondary School</td>
<td>New Project</td>
<td>Late</td>
<td>Acceptable</td>
<td>Outsourced</td>
</tr>
<tr>
<td>Primary School</td>
<td>New Project</td>
<td>Late</td>
<td>Acceptable</td>
<td>Outsourced</td>
</tr>
<tr>
<td>Primary School</td>
<td>New Project</td>
<td>Late</td>
<td>Acceptable</td>
<td>Outsourced</td>
</tr>
<tr>
<td>Primary School</td>
<td>New Project</td>
<td>Late</td>
<td>Acceptable</td>
<td>Outsourced</td>
</tr>
<tr>
<td>Primary School</td>
<td>New Project</td>
<td>Late</td>
<td>Good</td>
<td>Outsourced</td>
</tr>
</tbody>
</table>

Table 5.1.4 shows the scope of work for new projects and their performance in terms of delivery and quality. The projects in this table are all outsourced as indicated in the last column, and the third column indicates the delivery time which shows that they are late, meaning that they were completed late or still in progress but they have surpassed the initial time allocated per project. Most of these projects indicate the quality level is average “acceptable” and only a few of them indicate “good” quality.

Quality of projects for insourced and outsourced projects.

<table>
<thead>
<tr>
<th>Good</th>
<th>Acceptable</th>
<th>Fair</th>
</tr>
</thead>
<tbody>
<tr>
<td>Above average</td>
<td>Average</td>
<td>Below Average</td>
</tr>
</tbody>
</table>

The above table is a criterion the study has taken to define the quality according to the PDPWI standards. The PDPWI monthly reports from all the regions in the province classified
the quality of projects as “acceptable” if the quality in a project is considered average. They further labelled it “good” if the quality of projects considered above average and that of which the client is satisfied with the quality, and lastly project quality that is not satisfactory or below average is labelled “fair” by PDPWI. Table 5.1.3 and 5.1.4 highlights the quality of projects for both insourced and outsourced projects, and most of projects utilised in this study indicates that majority of projects are considered “acceptable” which can be considered average by the monthly reports form PDPWI. Detailed explanation on the quality of the projects will be further highlighted in the discussion section.

Table 5.1.5.1 Cost Performance of Insourced projects

<table>
<thead>
<tr>
<th>Project type</th>
<th>Expenditure to date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hall</td>
<td>R 2 272 618.50</td>
</tr>
<tr>
<td>Hall</td>
<td>R 1 836 696.80</td>
</tr>
<tr>
<td>Hall</td>
<td>R 4 311 725.00</td>
</tr>
<tr>
<td>Hall</td>
<td>R 1 553 016.1</td>
</tr>
<tr>
<td>Office Building</td>
<td>R 2 124 887.54</td>
</tr>
<tr>
<td>Complex</td>
<td>R 6 410 632.48</td>
</tr>
<tr>
<td>Clinic</td>
<td>R 12 196.161.11</td>
</tr>
<tr>
<td>Clinic</td>
<td>R 6 830 757.37</td>
</tr>
</tbody>
</table>

Table 5.1.5.1 is a cost performance of insourced or in-house projects, an observation with in-house projects is that they do not have a fixed project cost.

Table 5.1.5.2 Cost Performance of Outsourced projects

<table>
<thead>
<tr>
<th>Outsourced Projects</th>
<th>Project type</th>
<th>Initial Value</th>
<th>Final Value</th>
<th>Extra/Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prison</td>
<td>R 2 447 969.60</td>
<td>R 2 647 789.43</td>
<td>-R 199 820.17(8.16%)</td>
<td></td>
</tr>
<tr>
<td>Prison</td>
<td>R 349 442.82</td>
<td>R 420 776.20</td>
<td>-R 71 333.38 (20.41%)</td>
<td></td>
</tr>
<tr>
<td>Primary School</td>
<td>R 939 588.82</td>
<td>R 1 598 321.87</td>
<td>-R 658 733.05 (70.1%)</td>
<td></td>
</tr>
<tr>
<td>Secure Centre</td>
<td>R 1 342 668.00</td>
<td>R 2 042 140.00</td>
<td>-R 699 472.00 (52.09%)</td>
<td></td>
</tr>
<tr>
<td>Building Type</td>
<td>Initial Indicated Project Value</td>
<td>Final Value of Project</td>
<td>Cost Performance</td>
<td></td>
</tr>
<tr>
<td>------------------------</td>
<td>---------------------------------</td>
<td>------------------------</td>
<td>------------------</td>
<td></td>
</tr>
<tr>
<td>Primary School</td>
<td>R 7 114 301.95</td>
<td>R 9 489 560.95</td>
<td>-R 2 375 259.00 (33.39%)</td>
<td></td>
</tr>
<tr>
<td>Office block</td>
<td>R 2 224 197.84</td>
<td>R 3 451 333.12</td>
<td>-R 1 227 135.28 (55.17%)</td>
<td></td>
</tr>
<tr>
<td>Primary School</td>
<td>R 57 074 091.44</td>
<td>R 57 418 759.96</td>
<td>-R 344 668.52 (0.60%)</td>
<td></td>
</tr>
<tr>
<td>Primary School</td>
<td>R 53 140 239.98</td>
<td>R 66 099 254.95</td>
<td>-R 12 959 014.97 (26.39%)</td>
<td></td>
</tr>
<tr>
<td>Community Hall</td>
<td>R 2 047 551.15</td>
<td>R 2 518 631.51</td>
<td>-R 471 080.36 (25%)</td>
<td></td>
</tr>
<tr>
<td>Full Fledge School</td>
<td>R 59 189 200.09</td>
<td>R 62 320 788.10</td>
<td>-R 3 131 578.01 (5.29%)</td>
<td></td>
</tr>
<tr>
<td>Primary School</td>
<td>R 52 990 555.96</td>
<td>R 58 161 092.49</td>
<td>-R 5 170 536.53 (9.76%)</td>
<td></td>
</tr>
<tr>
<td>Primary School</td>
<td>R 57 074 091.44</td>
<td>R 59 757 403.52</td>
<td>-R 2 683 312.08 (4.70%)</td>
<td></td>
</tr>
<tr>
<td>Stadium</td>
<td>R 56 329 065.54</td>
<td>R 58 467 456.78</td>
<td>-R 2 138 391.24 (3.80%)</td>
<td></td>
</tr>
<tr>
<td>Special School</td>
<td>R 5 593 717.97</td>
<td>R 8 670 230.50</td>
<td>-R 3 076 512.53 (54.99%)</td>
<td></td>
</tr>
<tr>
<td>Substance Abuse Treatment centre</td>
<td>R 69 419 085.49</td>
<td>R 53 524 094.22</td>
<td>+R 15 894 991.27 (22.91%)</td>
<td></td>
</tr>
<tr>
<td>Primary School</td>
<td>R 48 643 181.57</td>
<td>R 45 300 420.00</td>
<td>+R 3 342 761.57 (6.87%)</td>
<td></td>
</tr>
<tr>
<td>Primary School</td>
<td>R 58 007 453.19</td>
<td>R 65 071 970.70</td>
<td>-R 7 064 517.5 (12.18%)</td>
<td></td>
</tr>
<tr>
<td>Secondary School</td>
<td>R 53 857 400.00</td>
<td>R 64 843 128.03</td>
<td>-R 10 985 728.03 (25.40%)</td>
<td></td>
</tr>
<tr>
<td>Primary School</td>
<td>R 48 245 000.00</td>
<td>R 58 554 760.74</td>
<td>-R 10 309 760.74 (21.37%)</td>
<td></td>
</tr>
<tr>
<td>Primary School</td>
<td>R 43 536 190.27</td>
<td>R 54 689 581.16</td>
<td>-R 11 153 390.89 (25.62%)</td>
<td></td>
</tr>
<tr>
<td>Primary School</td>
<td>R 44 003 073.84</td>
<td>R 45 400 661.93</td>
<td>-R 1 397 588.09 (3.18%)</td>
<td></td>
</tr>
<tr>
<td>Primary School</td>
<td>R 46 006 082.81</td>
<td>R 52 838 760.17</td>
<td>-R 6 832 677.36 (14.85%)</td>
<td></td>
</tr>
<tr>
<td>Primary School</td>
<td>R 437 44248.84</td>
<td>R 40 469 577.93</td>
<td>+R 3 274 670.91 (7.5%)</td>
<td></td>
</tr>
<tr>
<td>Library</td>
<td>R 12 540 373.00</td>
<td>R 14 135 247.70</td>
<td>-R 1 594 874.70 (12.72%)</td>
<td></td>
</tr>
<tr>
<td>Hostel</td>
<td>R 26 245 640.04</td>
<td>R 30 337 182.19</td>
<td>-R 4 091 542.15 (15.59%)</td>
<td></td>
</tr>
</tbody>
</table>

Table 5.1.5.2 show results of the cost performance of outsourced projects in the past 5 years in PDPW projects. The table shows the initial indicated project value and compare it to the final value or anticipated final value of the project, once the project is complete, then an indication of whether the project had a saving or extra cost were incurred in the project is also indicated.
Table 5.1.6 Delivery time of Outsourced projects

<table>
<thead>
<tr>
<th>Project type</th>
<th>Site handover</th>
<th>Anticipated practical completion</th>
<th>Achieved practical completion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prison</td>
<td>12 January 2018</td>
<td>12 April 2018</td>
<td>Completed on time</td>
</tr>
<tr>
<td>Prison</td>
<td>18 April 2018</td>
<td>18 May 2018</td>
<td>Completed on time</td>
</tr>
<tr>
<td>Secure Centre</td>
<td>9 January 2016</td>
<td>22 December 2018</td>
<td>Time overrun</td>
</tr>
<tr>
<td>Primary School</td>
<td>10 November 2017</td>
<td>10 May 2018</td>
<td>Time overrun</td>
</tr>
<tr>
<td>Community Hall</td>
<td>12 Months</td>
<td>24 Months</td>
<td>Time overrun</td>
</tr>
<tr>
<td>Full Fledge School</td>
<td>15 April 2016</td>
<td>18 January 2018</td>
<td>Time overrun</td>
</tr>
<tr>
<td>Primary School</td>
<td>7 February 2017</td>
<td>30 August 2018</td>
<td>Time overrun</td>
</tr>
<tr>
<td>Stadium</td>
<td>1 March 2017</td>
<td>1 March 2019</td>
<td>Completed on time</td>
</tr>
<tr>
<td>Special School</td>
<td>27 November 2017</td>
<td>27 May 2018</td>
<td>Time overrun</td>
</tr>
<tr>
<td>Substance Abuse</td>
<td>23 February 2016</td>
<td>23 November 2016</td>
<td>Time overrun</td>
</tr>
<tr>
<td>Treatment centre</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary School</td>
<td>21 July 2015</td>
<td>21 July 2017</td>
<td>Time overrun</td>
</tr>
<tr>
<td>Primary School</td>
<td>3 March 2015</td>
<td>3 March 2017</td>
<td>Time overrun</td>
</tr>
<tr>
<td>Secondary School</td>
<td>6 June 2015</td>
<td>07 June 2016</td>
<td>Completed</td>
</tr>
<tr>
<td>Primary School</td>
<td>23 March 2016</td>
<td>23 March 2018</td>
<td>Time overrun</td>
</tr>
<tr>
<td>Primary School</td>
<td>15 July 2015</td>
<td>21 July 2017</td>
<td>Time overrun</td>
</tr>
<tr>
<td>Primary School</td>
<td>24 February 2015</td>
<td>31 November 2017</td>
<td>Time overrun</td>
</tr>
<tr>
<td>Primary School</td>
<td>25 February 2015</td>
<td>30 November 2017</td>
<td>Completed</td>
</tr>
<tr>
<td>Library</td>
<td>13 February 2013</td>
<td>13 August 2014</td>
<td>Time overrun</td>
</tr>
<tr>
<td>Hostel</td>
<td>8 April 2016</td>
<td>11 April 2017</td>
<td>Time overrun</td>
</tr>
</tbody>
</table>

Table 5.1.6 is an indication of the performance of the outsourced projects in terms of time. The table shows the site handover date to indicate the beginning of the project and the anticipated practical completion time show when the projects was completed or when will the project be complete as some projects are still on going. The table clearly shows that several projects are either still going or were completed later than the expected date. The table further indicates that majority or almost all outsourced projects are delivered late.
Table 5.1.7 Delivery time of Insourced projects

<table>
<thead>
<tr>
<th>Project type</th>
<th>Site handover</th>
<th>Anticipated practical completion</th>
<th>Achieved practical completion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hall</td>
<td>12 Months</td>
<td>No site handover date registered on the report.</td>
<td>Time overrun</td>
</tr>
<tr>
<td>Hall</td>
<td>18 April 2017</td>
<td>16 March 2018</td>
<td>Completed on time</td>
</tr>
<tr>
<td>Hall</td>
<td>19 March 2018</td>
<td>19 September 2018</td>
<td>Time overrun</td>
</tr>
<tr>
<td>Hall</td>
<td>1 August 2017</td>
<td>31 March 2018</td>
<td>Completed on time</td>
</tr>
<tr>
<td>Office Building</td>
<td>1 April 2017</td>
<td>31 March 2019</td>
<td>Time overrun</td>
</tr>
<tr>
<td>Complex</td>
<td>15 September 2015</td>
<td>14 April 2016</td>
<td>Time overrun</td>
</tr>
<tr>
<td>Clinic</td>
<td>20 January 2016</td>
<td>20 November 2018</td>
<td>Time overrun</td>
</tr>
</tbody>
</table>

Table 5.1.7 also indicated the performance of insourced projects in terms of time. Most of insourced are also delivered later than the anticipated practical completion time.

Table 5.1.8: Performance criterion for cost and quality of outsourced projects versus insourced projects

<table>
<thead>
<tr>
<th>Performance criteria</th>
<th>Insourced Projects</th>
<th>Outsourced Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost</td>
<td>Project cost escalation:</td>
<td>Project cost escalation:</td>
</tr>
<tr>
<td></td>
<td>• Greater than 25%</td>
<td>• Greater than 25%</td>
</tr>
<tr>
<td></td>
<td>• Greater than 50%</td>
<td>• Greater than 50%</td>
</tr>
<tr>
<td></td>
<td>• Greater than 75%</td>
<td>• Greater than 75%</td>
</tr>
<tr>
<td></td>
<td>• Less than 25 %</td>
<td>• Less than 25%</td>
</tr>
<tr>
<td>Quality</td>
<td>Quality of projects is defined as:</td>
<td>Quality of projects is defined as:</td>
</tr>
<tr>
<td></td>
<td>• Not acceptable=Below average</td>
<td>• Not acceptable=Below average</td>
</tr>
<tr>
<td></td>
<td>• Acceptable=Average</td>
<td>• Acceptable=Average</td>
</tr>
<tr>
<td></td>
<td>• Good= Above average</td>
<td>• Good= Above average</td>
</tr>
</tbody>
</table>
The fact that the study is investigating the performance of projects procured either through outsourcing or insourcing, means that the study had to look at the time, cost and quality as performance measures to determine the success or failure of projects. Although the objectives of public infrastructure projects differ compared to private sector objectives but delivery of projects on time, within budget and of good quality remains a common goal for both sectors. The criteria set in Tables 5.1.8 and 5.1.9 was developed for this study to assess the performance of a combination of time, cost and quality for both procurement pathways. The criteria measure the time taken to complete and how much longer did projects take to be completed for both pathways.

Table 5.1.9: Projects performance based on cost and quality

<table>
<thead>
<tr>
<th>Performance Criteria</th>
<th>Insourced projects</th>
<th>Outsourced projects</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&gt;25%</td>
<td>&gt;50%</td>
</tr>
<tr>
<td>Project escalation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Acceptable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not acceptable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

What are the major reasons behind why client departments decide to outsource and insource? What factors are considered during the decision-making process on whether to outsource a project or insource it? These are important questions that the study intends to answer. The spreadsheet was used to collect data available within the PDPWI and semi structured interviewees with decision makers in PDPWI and client departments was also used as a tool of collecting data. Table 5.1.10 shows a list of possible reasons or factors that could be influencing decision makers to decide on the procurement suitable of each type of projects. The composition of table 5.1.10 is extracted from findings the study had investigated, firstly an analysis of projects collected and categorised in the initial spread sheet was conducted to observe the performance of completed projects of both insourced and outsourced projects.
Views from projects manager at Provincial Department Public Works and Infrastructure

Annexure E highlights views from project managers at PDPWI which represents different client department on project all over the province. The project managers also states that infrastructure project in the province are late and incur extra costs, and they have mentioned possible causes of delays of projects and extra costs, from their own point of view. They have listed some of this problems as: 1). New developing technology in the industry affects the initial designs thereby causing constant variation orders. 2).Number of signatures (Red tape) needed for approvals for VO, EOT and payment certificates, as per national treasury rules delays approval of documents from the client’s side. 3).Lack of accountability to consultants for errors in their designs. 4).The need to scrutinize the drawings as much as possible before the inception of the projects. 5). Miscommunications and breakdown in communication between client departments and PDPWI officials. 6).Transition at the end of financial year to new financial year affects the payment process from the client and thereby causing delays on site. 7).Constant changes of accounting officer by government departments. 8). Delays by municipalities and electrical companies to connect services. 9). Inconsistency by contractor to have the projected cash flow and programme of action for the projects due to the fact that in government funds are insourced from Department of treasury and treasury seeks a financial plan before funds are made available, therefore this process does delay payments. 10). Retention money paid to terminated contractors also increase the overall cost of the project at the end of the project, as that should not be the case. They believe all stake holders play a role in the delays and therefore everyone should take accountability moving forward to eliminate this problems in the near future.

5.5 Discussions of Findings

The aim of the study was to find reasons behind the decision to either outsource or insource projects in Provincial Government projects. The provincial Department of Public Works & Infrastructure serves as the custodian or the implementing agents of majority of projects for different client departments within the province. However, projects are outsourced or either insourced by the PDPWI, hence the researcher’s aim of the study is to investigate the reasons behind the decision to either outsource or insource PDPWI’s project. The review of projects delivered by PDPW over a five-year period (2014-2019) was observed, analysed and compared to see if any motivating factors influenced the decision to either outsource or
insource infrastructure projects at this level and to also ascertain if the reasons for outsourcing or insourcing was met with sufficient performance as expected.

Table 5.1.10 shows possible reasons behind the decision to decide which project to outsource or insource.

### 5.5.1 Trends observed from data collected through documents, records, site minutes etc. (Theme A)

<table>
<thead>
<tr>
<th>Trends observed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The Department is satisfied with the quality of work as being on projects as “Acceptable” instead of good quality, both insourced and outsourced.</td>
</tr>
<tr>
<td>2. When a project is outsourced, even all other aspects are outsourced (QS, Architects, Engineers, Project managers and etc.)</td>
</tr>
<tr>
<td>3. Majority of In-sourced projects in the department doesn’t have any consultants and therefore a question arises regarding the implementation of.</td>
</tr>
<tr>
<td>4. The role of in-house professionals is different from outsourced consultants.</td>
</tr>
<tr>
<td>5. All the projects are always late and behind schedule and extensions of time is always requested by contractors.</td>
</tr>
<tr>
<td>6. About 80% of outsourced projects incur extra costs compared to the initial stipulated contract sum.</td>
</tr>
<tr>
<td>7. Mainly renovations and upgrades are in-sourced unless it’s specialized work to be executed but new projects are always outsourced.</td>
</tr>
<tr>
<td>8. New projects have different contracts although it’s the same type of infrastructure, like (primary schools, secondary schools)</td>
</tr>
<tr>
<td>9. Some other outsourced projects are considered “Capital projects” and others are referred to “Turnkey”</td>
</tr>
<tr>
<td>10. Other outsourced projects awarded to certain contractors are on hold.</td>
</tr>
<tr>
<td>11. Monthly reports suggest that major delays for projects are late payments by the client and delays in approvals of documents submitted to the clients.</td>
</tr>
<tr>
<td>12. Poor attendance of site and technical meetings by professionals from PDPWI also is a concern from contractors as there is always a communication breakdown.</td>
</tr>
<tr>
<td>13. In-sourced projects major delays are caused by the delays in procurement of adequate resources to execute works on time.</td>
</tr>
<tr>
<td>14. Change of scope during the constructions also hinders progress on site and causes delays.</td>
</tr>
</tbody>
</table>
15. Redesigning due to change of scope also causes delays on both insourced and outsourced projects.

16. Changing of consultants in “Turnkey” outsourced projects also causes delays.

17. There are budgets cuts in other outsourced projects by the client.

18. Majority of in-sourced projects doesn’t have a contract sum but a budget every year is allocated to those projects.

19. In-sourced projects don’t have a clear timeline.

20. In most of in-sourced projects no site or technical meetings are being held.

21. Delays by the municipality and Electric companies to connect both sewer and electricity delays projects.

22. Disputes arising on site due to unclear instructions or clarifications of documents is also a problem.

The above is a list of common trends observed during the past five years for projects both outsourced and insourced in the PDPWI.

Findings from coding

From the list of trends observed above, there is a clear indication that there a lot of challenges that could be possible reasons behind the poor performance of PDPWI projects for both procurement pathways. These trends are findings for observed documents about the status quo of past and current projects. According to these trends a lot of challenges are emanating from the client’s side in this case which is the PDPWI. Issues of late payments are a major factor for contractors on site, however the client has defended the issue by stating that government policies play a significant role that may cause these challenges when it comes to payments. PDPWI officials also mentioned that according to government policies all accounting officers needs to sign documents that requires their attentions, and this issue has caused a lot of delays regarding the approval of submissions that includes: Extensions of time claims (EOT), variation orders, payment certificates and other documents submitted to the client for approval. According to PDPWI officials, most of submission requires a lot of signatures from a lot of high-profile officials within the department and if those officials are unavailable due to whatever reasons then nobody has authority to sign in their absence, therefore delaying the processes. Another issue delaying projects from the client’s
perspective is the change in the scope of work, which subsequently causing excess variation orders on projects.

For insourced projects most delays arising from this list of trends are late procurement of materials, lack of enough skilled artisan if the department has a lot of projects, flexible scope of work.

- **Quality of projects upon delivery**

<table>
<thead>
<tr>
<th>Good</th>
<th>Acceptable</th>
<th>Fair</th>
</tr>
</thead>
<tbody>
<tr>
<td>Above average</td>
<td>Average</td>
<td>Below Average</td>
</tr>
</tbody>
</table>

According to the common trends on projects, the researcher assumed that the above table reflects the terms or reference used for quality of projects. Therefore “acceptable” is regarded as “average” and “good” is assumed to be “above average” and “fair” is “below average”. Griffis (2016) mentioned that one of the factors influencing the decision to outsource public infrastructure projects is based on to improve quality. He further explained that due to past performance and the success of the completed projects, it becomes a yardstick used select service providers, to achieve improved quality on projects. Table 5.1.2 to 5.1.4 clearly shows that most of projects in the department whether insourced or outsourced are performing on average in terms of quality and only a single project is regarded as above average.

### 5.5.2 Characteristics of insourced and outsourced versus (Theme B)

One of the study’s objectives is to develop an understanding of the concept outsourcing and insourcing. According to Handfield, (2006), he described outsourcing as the strategy to utilize external resource to perform function that would normally be performed internally. Insourcing is defined as the reallocation of activities within the firm that was previously outsourced (Mark et al., 2005). The Department of Public Works & Infrastructure in provincial level serves as the implementing agent for infrastructure projects in the province. The study is set to investigate reasons behind decisions on whether to outsource and insource projects within the department. Collected data from documents observation and semi structured interviews played a significant role in assisting the researcher to develop table 5.1.1 which outlines and compares the characteristics of outsourced projects and insourced projects. Table 5.1.1 highlights different attributes associated with outsourced projects and insourced projects in PDPWI. These attributes are results analysed from the data collected.
• **Nature of work**

Nature of work in this study will be defined as the scope of work for the project at hand. According to the decision makers in PDPWI and observed documents that decide on the procurement pathway for each project, and there are guidelines used to outsource projects. The nature of the project was used as a determinant to outsource projects. Documents observed clearly indicates that new projects are outsourced by PDPWI and the chief director also agreed that new projects are outsourced by the department and the entire project team is outsourced, from contractor to consultants, he mentioned that consultants are fully outsourced due to lack of skills within the department and he further reiterated that the professional team that the department has currently in-house is not sufficient enough to undertake the entire province’s projects. Griffis (2016) suggests that one of the reasons to outsource could be based on the need for innovation, which would then concur with decision makers that outsourcing new projects would bring about new innovations, due to private sector being in a better working environment to promote innovation.

Therefore, in-house projects are adopted based on the nature of work being renovations, upgrades or additions, as the department believes that they have enough capacity (Artisans) to undertake such work and the works does not require any specialised activities. In the literature, insourcing is regarded as the new trend and therefore it allows the firm to have more control of the activities but allows little innovation. Renovations have little room for innovation due to the existing structure or building.

• **Nature of Structure/Buildings**

Nature of structure or Building is the type of building the researcher is referring to in this study. Al-Ahmad and Al-Oqaili, (2013) mentioned in the literature review that before a decision is taken to outsource a firm needs analyse the need for the project and a pre-outsourcing stage need to be conducted which namely consist of: analysis, design and implementation. According to documents observed it was found that big and complex buildings are outsourced due to their nature as they need the expertise of specialists to design and implement them, of which that is something PDPWI lacks in-house. Schools, hospitals, stadiums and etc., are huge projects that needs special close monitoring during the implementation of projects, therefore specialised expertise are required. Insourcing buildings in the department could be regarded as projects with normal buildings and not so complicated like outsourced projects.
• **Value of projects**

Value of the project in this study is mentioned as the cost of undertaking a project or the cost incurred to deliver a project. Previous studies always mention the most common driver for outsourcing is cost reduction or costs. The observed value for outsourced projects ranges from 10 million rand to 70 million rand and for insourced projects are just under 10 million rand. Decision makers from DPW and client departments in the province all concur with the written documents that the value of a project plays a significant role in choosing the procurement pathway for a project. They also highlighted that this is due to the Executive Council of the Province (EXCO) that took a resolution that projects below 10 million would be insourced and above 10 million would be outsourced. Outsourcing is mainly a cost saving strategy but in the public sector outsourcing could be driven by project value, which is also influenced by scope of work, but in the private sector it’s a totally different scenario. Therefore, outsourcing based on value in DPW is solely based on the EXCO resolution and project value but in private sector it is mainly based on saving money. An important observation that the researcher came across was that at implementation level it’s very difficult to pinpoint the project value for insourced projects. Documents observed indicates the expenditure for insourced projects but initially no project value is allocated to the project. According to the chief director at PDPWI he emphasized the complexity of handling in-house projects as they are not normally handled like normal projects due to government policies that requires considerations during implementations of in-house projects. The chief director further mentioned that in-house projects are funded on a yearly basis should the project overlap to more than 12 months, meaning that if the project was late therefore more funding will be allocated during the following year from the departmental budget.

• **Time**

Time is regarded as the duration of the project, as to how long it took to deliver a project and, in this case, it will be regarded as time frame. In the logistics sector, Sentoft et al., (2015) regards avoiding long lead time as one of the factors considered to insource logistics services, which means that due to geographical area of a supplier or the distance it takes to deliver a product could affect production if the activity is outsourced therefore insourcing would be suitable. Records and documents clearly indicate the time taken to deliver all projects outsourced and insourced is longer than expected. According to the characteristics of both these procurement pathways, it was observed that projects less than 12 months are insourced, and more than 12 months are outsourced. Table 6.1.2 shows that only one outsourced project
was completed on time and all others were late, table 6.1.3 and 6.14 for insourced projects shows that only 2 projects were completed on time and others are late. Therefore, the researcher concluded that although time is a factor considered for either outsourcing or insourcing but however majority of projects are delivered late and subsequently affect the delivery and hence extra costs will be incurred in that project. In manufacturing time is an important factor as products must be delivered in time to counter act the high demand in the industry.

The comparative analysis of the performance of delivered projects (Theme C)

The provincial department of public works as the implementing agent in the province has delivered several infrastructure projects, however time, cost and quality upon delivery of projects remains key challenges for the department. The department utilized two procurement pathways for delivering provincial projects but they both produced equal results. From the findings presented no difference can be observed from insourced or outsourced projects. Although insourced projects are not handled like a traditional project should be and for outsourced projects, that have professionals registered with different councils in the CBE (Councils of Built Environment) within the department and from the consultants, their projects are disappointing. The comparative analysis developed for this study clearly indicates that all projects in PDWPI produce the same results upon delivery.

Rationale behind decision by DPW to outsource or insource and client departments

Table 5.1.10: Rationale behind decision by DPW to outsource or insource

<table>
<thead>
<tr>
<th>Reason to either outsource or insource</th>
<th>DPW (insourced Projects)</th>
<th>(insourced Projects)</th>
<th>DPW (Outsourced Projects)</th>
<th>(Outsourced Projects)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Performance related</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Time related</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Availability of skills</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Cost related</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Type of projects</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Scope of the project</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Availability of materials</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Lack of skilled professionals within department</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>
Table 5.1.10 indicates reasons why PDPWI outsourced projects and why they insourced other projects. The table indicates possible reasons from the data collected from documents reviewed and interviews conducted with decision makers in PDPWI.

**Table 5.1.11: Rationale behind the decision by client departments to outsource**

<table>
<thead>
<tr>
<th>Reason to either outsource or insource</th>
<th>Client Departments</th>
<th>(Outsourced Projects)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Performance related</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>2. Time related</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>3. Availability of skills</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Cost related</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>5. Type of projects</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>6. Scope of the project</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>7. Availability of materials</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Lack of skilled professionals within department</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>9. Accountability, responsibilities and Policy</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>10. Empowerment of contractors and consultants?</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

Table 5.1.11 shows a possible criterion used client departments when deciding on the procurement pathway for infrastructure projects within their respective departments. The right-hand side column indicates reasons that are applicable to client department’s decision-making process. These reasons were extracted from the data collected through interviews conducted with decision makers in their respective departments.

**5.6 Chapter summary**

The chapter presented the findings of the study. The first part of the chapter focused on the overview of the implementing agent and views from client’s departments. The second part of the chapter is the discussions of the presented findings and how the findings were achieved.
The chapter also highlighted the correlation between the methodology and the literature. The next chapter will summarize the whole study and elaborate on the objectives and the study’s aim and observe if they were achieved, the study will also recommend future research that can be conducted to improve on the concept.

CHAPTER SIX

SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

This chapter will focus on the entire summary of the study. The chapter will also investigate the recommendation from the discussions and findings presented in the previous chapter. The study aimed to investigate the decision to outsource or source through in-house channels achieved in provincial public infrastructure sector and compile a comparative analysis between outsourced and insourced public infrastructure projects. The chapter will then highlight the achieved objectives of the study.

6.2 Summary and Conclusion

6.2.1 To develop an understanding of the concept outsourcing and insourcing.

The difference between outsourced projects and insourced projects is complemented in the literature review. A distinction between outsourcing and insourcing is explained as vice versa. Outsourcing is the utilisation of external resources to perform non-core activities of the firm. (Handfield, 2006). However, insourcing is referred as bringing back those outsourced activities that was previously outsourced to be performed internally (Sikula et al 2010).

McCue (2006) argues that even though outsourcing is regarded as the solution in cost reduction, but insourcing will continue to emerge as new trend as business seek to reverse bad outsourcing decisions and regain more control over IT costs and operations. Outsourcing as a strategy is applied across different sectors in both the private and public sector and insourcing is only a trend that is constantly growing, due to insourcing regarded as the reverse of insourcing therefore a conclusion could be suggested that in a case where outsourcing fails insourcing could be utilised to remedy or try to rectify the situation caused by outsourcing. Both strategies work well under different circumstance depending on the organisation’s prime purpose or objectives. The major difficulty of studying these concepts is lack of data (Van Biesebroeck, 2006) as outsourcing decisions are considered highly confidential by firms taking those decision. These concepts are further explained in the
literature review across different sectors and therefore their applicability in those sectors and some of the reasons influencing the decide on a procurement pathway. According to the data collected and the findings presented in chapter five, outsourcing and insourcing are used for different reasons in the case of PDPWI. Outsourcing concept in the public infrastructure projects differs but entirely with the application of outsourcing across different sectors and also has some similarities as well.

6.2.2 To identify performance factors influencing the decision to outsourcing and/or insourcing.

Akewushola and Elegbede (2012) study within the manufacturing sector in Nigeria showed that outsourcing had operational advantages for project performance. For instance, it was found that there was increased efficiency due to the activities being carried out by specialized firms, and reduction in permanent staff, which then became variable costs related to the level of activity. Insourcing allows much greater control of costs that could have been excessive when service is outsourced. The streamlined communication advantage made possible by insourcing offers cost advantage that may not be visible at first glance. When engineers, designers and technicians are working in a close environment, opportunity arises to devise and incorporate simple changes to a part that improve efficiency and lower the costs (Heaton, 2004). Some IT chiefs believes that even if one can have a good outsourcing service level agreement, change control and contracts, but insourcing gives them the flexibility to change direction very quickly, without a consensus being reached in some cases, and at known risk.

In PDPWI case there are several factors identified in the study that influence the decision to outsource or either to insource. Table 5.1.1 shows the characteristics of outsourced and insourced projects. This table was created from interviews and the trends analysed from the excel spread sheet create to assess the performance of the PDPWI projects. From the spread sheet common trends amongst projects were observed and identified. Semi structured interviews were also conducted and 6 key decision makers within client departments and PDPWI were identified and were interviewed. Their answers were recorded and transcribed and compared to what was already observed from the trends emanating from the spread sheet. Therefore, table 5.1.1. Shows factors influencing the decision by PDPWI to outsource or insource based on what is on record from observed documents and interviews conducted. Therefore, the intended objective to identify factors influencing the decision to insource or outsource was achieved in this study.
Table 5.1.1: Characteristics of Insourced versus Outsourced Project

<table>
<thead>
<tr>
<th>Insourced Projects</th>
<th>Outsourced Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Renovations/Upgrades/Additions</td>
<td>2. New projects/Specialised</td>
</tr>
<tr>
<td>3. Office buildings/ Community halls/ Schools/Hostels/Prisons</td>
<td>4. Schools/ Hospitals/ New office buildings/ Stadiums/ Clinic/ Prisons</td>
</tr>
<tr>
<td>5. Project value of less than 10m</td>
<td>6. Project value more than 10m</td>
</tr>
<tr>
<td>7. Project time of less than 12 months</td>
<td>8. Project time more than 12 months</td>
</tr>
<tr>
<td>9. Availability of skilled labour (e.g.; Artisans)</td>
<td>10. Outsourced Consultants</td>
</tr>
<tr>
<td>11. Availability of materials/Resources</td>
<td>12. Specialised type of projects</td>
</tr>
<tr>
<td>13. Young and upcoming contractors to supply materials</td>
<td>14. Experienced contractors</td>
</tr>
<tr>
<td>15. Project scope is flexible, and it is determined</td>
<td>16. Scope of the project is fixed but changes are</td>
</tr>
<tr>
<td>by the availability of funds from departments</td>
<td>allowed as per client specifications.</td>
</tr>
</tbody>
</table>

6.2.3 To assess the performance of outsourced and insourced public sector projects

The performance of PDPWI projects were assessed by the researcher based on three factors, namely: cost, time and quality. Successful completed projects are according to the researcher are those projects completed on time, within budget and of good quality. The tables in chapter six clearly indicates that projects procured both externally and in-house does not have much differences in terms of time, cost and quality. The quality of projects for both insourced and outsourced has an average quality across all of them. Out of all the projects utilised in the study only a single project was considered good quality and majority of projects were recorded as average with others below average. The client always has high expectations when it comes to quality on projects, but public infrastructure projects are not of good quality but rather average and this should be a concern to the department as well client departments.

Good quality projects could be sustainable for a period of a long time. Therefore, according to the findings, the study found the performance of projects in terms of quality as average.

Time is a crucial part of any construction project. Time frame is set out by the project team at the beginning of the project in accordance with the activities that is expected for the entire duration of the projects. In this case as well and for both procurement pathways, almost all projects have exceeded the initial time frame set out for them. Many challenges have been recorded and can be observed from the list of trends observed from the spreadsheet. In every
construction project there are challenges and in PDPWI projects there is no exception. However, challenges that hinder the progress on site especially to activities that are on a critical path should be attended to as soon as possible and with caution due to risks involve. Challenges have emanated from client to contractor which has caused delays on projects. The execution of insourced projects allows for flexible scope and therefore that will always cause delays in any project. Due to poor performance of project and only a single or two projects completed on time, the study therefore found that PDPWI projects have performed dismally poor in terms of time.

Cost is the most important factor in a construction project. The study found lot of projects to be over cost, mainly for outsourced projects. For insourced projects it is difficult to pinpoint the project cost as no project cost is allocated in the initial stage of the project, however the chief director has explained that due to the flexibility of the in-house projects, the cost of these projects increases significantly and thereby causing the department a lot of money. Table 5.1.5.2 which indicates the cost performance of outsourced projects shows how projects performed from the initial project value set out in the beginning to the final value of the project; also the difference in extra costs is indicated on the last column. Due to each project accumulating extra cost, the study therefore concludes that the performance of PDPWI projects in terms of costs has been poor and it should be a worrying factor to the department.

6.2.4 To comparatively appraise the performance of outsourcing versus insourcing public infrastructure projects in the public sector.

The study has investigated and established through data collection and data analysis that the PDPWI projects have performed the same for both insourced and outsourced projects. From the findings and tables presented in the previous chapter, it’s clear that projects for both procurement strategies have performed poorly. The performance of projects in terms of quality has been summarised and concluded to be average across all projects both in-house and outsourced based on the reported findings. The performance in terms of time and cost was found to be poor as most projects are over cost and almost all projects are late upon delivery.

6.2 Recommendations

The study’s findings in relations to the literature review shows in the IT sector the efficient outsourcing relationship management as a key factor for clients. This indicates a well-
established working relationship between the client and vendors ensures successful outcome of the outsourcing projects. The IT industry shows other factors for successful outcomes of outsourcing as the firm’s track record of successful projects and efficient project management, these factors are regarded to have a positive impact on client organisation. Therefore, the study recommends that decision makers in PDPWI consider the track records of firms the outsource projects, also the project management firms appointed by the department should be thoroughly assessed for their competency in handling departmental projects depending on the magnitude of the company. Outsourcing is defined as the allocation of non-core resource to the external service providers, therefore the study recommends that core activities in PDPWI projects should be conducted internally,

- The study recommends the department appoints experienced and qualified professional Construction project managers with good track record to handle the project management as it is a core function on departmental projects. Cost reduction in the primary objective for outsourcing across different sectors in both the private and public sector.
- Therefore, the study recommends PDPWI to enforce cost reduction measures on their projects to reduce extra costs incurred on projects. The study’s perspective or findings are aligned with the EXCO’s decision to outsource projects of value of more than 10 Million. The study also agrees with the department to outsource projects based on type of building/scope of work, complex buildings tend to require more attention to detail their designs in order to avoid unnecessary variation orders therefore recommends, for bigger and more complex projects, the department to outsource designing of this projects to specialists in the field of architecture and other trades or rather appoint specialists within the department with sound knowledge and expertise in architecture. The performance of departmental projects for both outsourced and insourced remains average on most of the projects. Therefore, the criterion used for quality management on projects needs to be re-evaluated by the department. The quality of projects needs to be improved tremendously on these projects.
- Therefore, the study recommends the adoption for Total Quality Management (TQM) techniques to be as one of the factors to consider when decision makers decides on a procurement pathway for a project, but the TQM approach can be used in both the insourced and outsourced projects. The department should enforce contractors to abide by the TQM approach in order to deliver world class facilities with good quality. The study’s findings showed that time was used as a tool to decide on a procurement pathway for
PDPWI projects, but time did not play any significant role in both these strategies. Reasons behind this analogy is due to the fact that according to decision makers they define project above 12 months should be outsourced, and less than 12 months should be insourced. Therefore, looking at the study’s findings, it was observed that projects took longer than expected for both strategies, and in some cases, projects allocated 12 months took 4 years to complete or some are still on-going even after four years. Insourced projects took longer than 12 months to complete in almost every project, and outsourced projects took longer as well, therefore the study recommends time is a valuable factor to be considered to decide on a procurement pathway.

• For insourced projects for PDPWI, the study recommends that factors that needs to be considered by decision makers when deciding to insource projects should be: a) adoption of TQM techniques, inspectors in the department needs to attend TQM training and be assessed on their competency after the training and on an annual base a refresher course should be conducted to assess the level of knowledge they still have. b) Insourced projects need to be handled like a traditional construction project, with project duration, project cost, and the full in-house project team. c) In-house projects should have a project schedule of activities, so that procurement of material could be properly planned and delivered timeously on site to avoid delays on the projects and, d) a full project team on in-house projects should be allocated to projects. The value of less than 10 million rand for insourced projects should be used again as per the study’s findings. e) The study also recommends adequate and competent appointment of professional project team within the department to undertake all the insourced projects in the province.

• The study’s aims were to find reasons behind the decision to outsource or insource and propose a comparative analysis of outsourcing versus insourcing to be used by decision makers during the procurement stage on public infrastructure projects in a case of PDPW in provincial level. The study recommends that further research should be conducted in the AEC industry using the GTM method, as few studies has been conducted in this sector with this method. The study also recommends further research on the concept of insourcing and outsourcing in public infrastructure projects to be conducted, as the researcher struggled on these concepts. Due to high levels of confidentiality on outsourcing decisions, for future research the study recommends access to these decisions as they will assist future researchers.
REFERENCES


Nanajkar, A., 2014. Implementing Building Information Modeling (Bim) At Aec Firms In India.


### ANNEXURE A

#### Data Collection for PDPW projects from 2014-2019

<table>
<thead>
<tr>
<th>PROJECT NAME</th>
<th>PROJECT TYPE</th>
<th>PLANNED PROJECT VALUE</th>
<th>FINAL EXPECTED PROJECT VALUE/REVISED TENDER AMOUNT</th>
<th>SITE HAND OVER DATE</th>
<th>PLANNED PROJECT TIME FRAME</th>
<th>REVISED PROJECT TIME</th>
<th>EXPECTED COMPLETION TIME/COMPLETION TIME ACHIEVED</th>
<th>IN-HOUSE PROJECTS</th>
<th>OUTSOURCED PROJECTS</th>
<th>CONSULTANTS OUTSOURCED</th>
<th>QUALITY OF WORK</th>
<th>PROBLEMS ENCOUNTERED ON SITE</th>
<th>PROGRESS ON SITE (%)</th>
<th>CONTRACTOR APPOINTED</th>
<th>EXTRA COST INCURRED/SAVINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wabie Decko Juvenile Prison: Major renovations</td>
<td>Major Renovations</td>
<td>R 2,447,989.60</td>
<td>R 2,047,189.45</td>
<td>12-Jan-18</td>
<td>1 Months</td>
<td>to be revised</td>
<td>12-Apr-18</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Fair</td>
<td>Delays with delivery of tiles</td>
<td>60%</td>
<td>Singabele Build &amp; Decor</td>
<td>K</td>
</tr>
<tr>
<td>Yaba Nchaba Hostel &amp; Miler Renovations</td>
<td>Minor Renovations</td>
<td>R 349,442.82</td>
<td>R 426,718.30</td>
<td>18-Apr-18</td>
<td>1 Month</td>
<td>Project completed on time</td>
<td>18-May-18</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Fair</td>
<td>completed</td>
<td>100%</td>
<td>Pacuca N Construction</td>
<td>K</td>
</tr>
<tr>
<td>PROJECT NAME</td>
<td>NEW INFRASTRUCTURE</td>
<td>PROJECT TYPE</td>
<td>PLANNED PROJECT VALUE</td>
<td>FINAL EXPECTED PROJECT VALUE</td>
<td>INVOICE AMOUNT</td>
<td>SITE HANDOVER DATE</td>
<td>PLANNED PROJECT TIMEFRAME</td>
<td>REALIZED PROJECT TIMEFRAME</td>
<td>REALIZED PROJECT TIMEFRAME</td>
<td>IN-HOUSE PROJECTS</td>
<td>OUTSOURCED PROJECTS</td>
<td>CONSULTANTS OUTSOURCED</td>
<td>QUALITY OF WORK</td>
<td>PROBLEMS ENCOUNTERED ON SITE</td>
<td>PROGRESS ON SITE (%)</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>--------------------</td>
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</tr>
<tr>
<td>One Stop Childcare Primary School</td>
<td>Renovations</td>
<td>Primary School</td>
<td>R: 518 518.81</td>
<td>R: 1 518 321.87</td>
<td>R: 1 518 321.87</td>
<td>30 Oct 17</td>
<td>6 months</td>
<td>Project is over contract and 2017-2018</td>
<td>30 Apr 18</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Acceptable</td>
<td>Late payments from the client - progress payment delays</td>
<td>47%</td>
</tr>
<tr>
<td>Drayton Community Hall Phase 1</td>
<td>Renovations</td>
<td>Community Hall</td>
<td>R: 3 000 000.00</td>
<td>To be confirmed</td>
<td>12 Jan - 18</td>
<td>12 months</td>
<td>To be confirmed</td>
<td>Project is not complete</td>
<td>31 Mar - 18</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Not identified</td>
<td>Not identified - late payments</td>
<td>60%</td>
</tr>
<tr>
<td>Coppier Community Hall</td>
<td>Upgrades</td>
<td>Community Hall</td>
<td>R: 1 300 000.00</td>
<td>18 Apr - 17</td>
<td>9 months</td>
<td>Project is complete</td>
<td>10 Mar - 18</td>
<td>Project is not complete</td>
<td>10 Mar - 18</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Satisfactory completion</td>
<td>77%</td>
<td>In house employees</td>
</tr>
<tr>
<td>Frankfurt Community Hall</td>
<td>Upgrades</td>
<td>Community Hall</td>
<td>R: 1 300 000.00</td>
<td>30 Apr - 17</td>
<td>9 months</td>
<td>Project is complete</td>
<td>10 Mar - 18</td>
<td>Project is not complete</td>
<td>10 Mar - 18</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Good</td>
<td>Progress on site - delay in obtaining payment to supplier</td>
<td>73%</td>
</tr>
<tr>
<td>Grounded Grove Centre Irrigation</td>
<td>Upgrades</td>
<td>Renovations</td>
<td>R: 3 042 441.00</td>
<td>9 May - 18</td>
<td>12 months</td>
<td>To be reviewed</td>
<td>22 Dec - 18</td>
<td>Project is not complete</td>
<td>22 Dec - 18</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Fair</td>
<td>Change of scope of work by the client</td>
<td>52%</td>
</tr>
<tr>
<td>Meals Community Hall</td>
<td>New Community Hall</td>
<td>Community Hall</td>
<td>R: 5 501 101.41</td>
<td>15 Feb - 17</td>
<td>20 months</td>
<td>Project is complete</td>
<td>30 Aug - 18</td>
<td>Project is not complete</td>
<td>30 Aug - 18</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Acceptable</td>
<td>Redundant or still outstanding, request completion of work by suppliers</td>
<td>80%</td>
</tr>
<tr>
<td>Meals Primary School</td>
<td>Renovations</td>
<td>Primary School</td>
<td>R: 7 314 301.95</td>
<td>10 Nov - 17</td>
<td>9 months</td>
<td>Project is over contract</td>
<td>10 May - 18</td>
<td>Project is not complete</td>
<td>10 May - 18</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Acceptable</td>
<td>Progress is slow, late payments from the client</td>
<td>29%</td>
</tr>
<tr>
<td>Preparations for First Floor of Field Surprises</td>
<td>Renovations</td>
<td>Office building</td>
<td>R: 2 204 197.04</td>
<td>to be reviewed</td>
<td>12 Nov - 17</td>
<td>6 months</td>
<td>To be reviewed</td>
<td>31 Apr - 18</td>
<td>Project is not complete</td>
<td>31 Apr - 18</td>
<td>Yes</td>
<td>Yes</td>
<td>Fair</td>
<td>Project is over contract</td>
<td>69%</td>
</tr>
<tr>
<td>Thea Bolts Radio - Complete Renewal</td>
<td>Renovations</td>
<td>Office building</td>
<td>R: 9 495 000.00</td>
<td>to be reviewed</td>
<td>01 Apr - 18</td>
<td>24 months</td>
<td>To be reviewed</td>
<td>31 Mar - 18</td>
<td>Project is not complete</td>
<td>31 Mar - 18</td>
<td>Yes</td>
<td>No</td>
<td>Acceptable</td>
<td>Mechanism within is delaying the project</td>
<td>66%</td>
</tr>
</tbody>
</table>
## Data Collection for PDPW projects from 2014-2019

<table>
<thead>
<tr>
<th>PROJECT NAME</th>
<th>NEW INFRASTRUCTURE/TECHNOLOGY/RENOVATIONS/ADDITIONS</th>
<th>PLANNED PROJECT VALUE</th>
<th>PROJECT TYPE</th>
<th>PROJECT STATUS</th>
<th>PROJECT OVERVIEW</th>
<th>PLANNED PROJECT TIME FRAME</th>
<th>PROJECT OVERVIEW</th>
<th>PROJECT TIME ACTUATED</th>
<th>OUTCOMES</th>
<th>OUTCOMES</th>
<th>QUALITY OF WORK</th>
<th>PROBLEMS ENCOUNTERED DURING THE PROJECTS</th>
<th>PROGRESS ON SITE(S)</th>
<th>CONTRACTOR APPOINTED</th>
<th>EXTRACTIVE INCIDENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cheeky Young Teens Primary School</td>
<td>New School</td>
<td>Primary School</td>
<td>R 57 134 061.44</td>
<td>Project 96</td>
<td>2016-2017</td>
<td>Completed in 2018</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Acceptable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Verde Primary School</td>
<td>New School</td>
<td>Primary School</td>
<td>R 66 000 241.95</td>
<td>Project 96</td>
<td>2016-2017</td>
<td>Completed in 2018</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Acceptable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Que Que community hall</td>
<td>Upgrade</td>
<td>Community Hall</td>
<td>R 2 507 551.15</td>
<td>Project 96</td>
<td>2016-2017</td>
<td>Completed in 2018</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Acceptable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hill Park Falls Bridged School</td>
<td>New School</td>
<td>Full Bridged school</td>
<td>R 59 139 203.07</td>
<td>Project 96</td>
<td>2016-2017</td>
<td>Completed in 2018</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Good</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>GHB Primary School</td>
<td>New school</td>
<td>New school</td>
<td>R 52 640 357.94</td>
<td>Project 96</td>
<td>2016-2017</td>
<td>Completed in 2018</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Good</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Western District Primary School</td>
<td>New School</td>
<td>Primary School</td>
<td>R 57 134 061.44</td>
<td>Project 96</td>
<td>2016-2017</td>
<td>Completed in 2018</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Good</td>
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<td>Frize Halton School</td>
<td>New School</td>
<td>School</td>
<td>R 66 230 005.50</td>
<td>Project 96</td>
<td>2016-2017</td>
<td>Completed in 2018</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Good</td>
<td></td>
<td></td>
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<tr>
<td>Barrow Special School</td>
<td>Urgent and Renovations</td>
<td>Special school</td>
<td>R 5 503 717.34</td>
<td>Project 96</td>
<td>2016-2017</td>
<td>Completed in 2018</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Acceptable</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Copper PDP House</td>
<td>New House</td>
<td>PDP House</td>
<td>R 151 677 66</td>
<td>Project 96</td>
<td>2016-2017</td>
<td>Completed in 2018</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Good</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Aluminium</td>
<td>New Building</td>
<td>Aluminium</td>
<td>R 69 149 855.00</td>
<td>Project 96</td>
<td>2016-2017</td>
<td>Completed in 2018</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Good</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>PROJECT NAME</td>
<td>NEW INFRASTRUCTURE/ UPGRADES/ RENOVATIONS/ ADDITIONS</td>
<td>PROJECT TYPE</td>
<td>PLANNED PROJECT VALUE</td>
<td>FINAL EXPECTED PROJECT VALUE/ REVISED TENDER AMOUNT</td>
<td>SITE HAND OVER DATE</td>
<td>PLANNED PROJECT TIME FRAME</td>
<td>REVISED PROJECT TIME</td>
<td>EXPECTED COMPLETION TIME/ COMPLETION TIME ACHIEVED</td>
<td>IN-HOUSE PROJECTS</td>
<td>OUTSOURCED PROJECTS</td>
<td>CONSULTANTS OUTSOURCED</td>
<td>QUALITY OF WORK</td>
<td>PROBLEMS ENCOUNTERED DURING THE PROJECTS</td>
<td>PROGRESS ON SITE/ IN DATES (%)</td>
<td>CONTRACTOR APPOINTED</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>-----------------------------------------------------</td>
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<td>-------------------------------------------------</td>
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<td>-------------------------</td>
</tr>
<tr>
<td>New Thabo Morel Primary School</td>
<td>New School</td>
<td>Primary school</td>
<td>48 043 181.57</td>
<td>R 50 941 783.47</td>
<td>21-Jul-15</td>
<td>12 Months</td>
<td>24 Months</td>
<td>30-Aug-19</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Acceptable</td>
<td>Late payments and design changes</td>
<td>51%</td>
<td>Eduso-Instruction</td>
</tr>
<tr>
<td>New Cossatot Primary School</td>
<td>New School</td>
<td>Primary school</td>
<td>38 607 465.15</td>
<td>R 45 071 930.70</td>
<td>08-Mar-15</td>
<td>18 Months</td>
<td>24 Months</td>
<td>30-Aug-19</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Acceptable</td>
<td>Late Payments; slow progress on site, no moving in site due to rejection of Phd</td>
<td>69%</td>
<td>Urban-Construction</td>
</tr>
<tr>
<td>New Cossatot Secondary School</td>
<td>New School</td>
<td>Secondary school</td>
<td>33 877 409.88</td>
<td>R 40 840 128.03</td>
<td>06-Jan-15</td>
<td>12 Months</td>
<td>24 Months</td>
<td>30-Sep-19</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Acceptable</td>
<td>Delays in approval of variation orders and variation order and contract payments</td>
<td>80%</td>
<td>VCBG Consulting Engineers Pboo</td>
</tr>
<tr>
<td>New Milimane Primary School</td>
<td>New School</td>
<td>Primary school</td>
<td>48 245 008.26</td>
<td>R 55 594 768.74</td>
<td>25-Mar-16</td>
<td>12 Months</td>
<td>24 Months</td>
<td>38-Jun-19</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Acceptable</td>
<td>Delays in approval of variation orders and variation order and contract payments</td>
<td>70%</td>
<td>VCBG Consulting Engineers Pboo</td>
</tr>
<tr>
<td>New Thabo Primary School</td>
<td>New School</td>
<td>Primary school</td>
<td>43 136 191.77</td>
<td>R 54 680 181.16</td>
<td>21-Jul-15</td>
<td>12 Months</td>
<td>36 Months</td>
<td>30-Aug-19</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Acceptable</td>
<td>Delays in approval of variation orders and variation order and contract payments</td>
<td>64%</td>
<td>Eduso Engineering</td>
</tr>
<tr>
<td>Ministry of Parliament complex</td>
<td>Renovations</td>
<td>Renovations</td>
<td>6 430 035.48</td>
<td>To be confirmed</td>
<td>14-Sep-15</td>
<td>7 Months to be revised</td>
<td>14-Apr-16</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Acceptable</td>
<td>Availability of access to rooms and lack of employees employed in the project</td>
<td>83%</td>
<td>In-house project</td>
</tr>
<tr>
<td>Malelane new school</td>
<td>New School</td>
<td>Primary school</td>
<td>48 003 079.84</td>
<td>R 48 295 577.95</td>
<td>24-Feb-15</td>
<td>18 Months</td>
<td>24 Months</td>
<td>31-Aug-15</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Fair</td>
<td>No contractor in site; no payments from the contractor</td>
<td>45%</td>
<td>Eduso Engineering &amp; Project Managers</td>
</tr>
<tr>
<td>Adelaide Tumbe school</td>
<td>New School</td>
<td>Primary school</td>
<td>55 333 971.38</td>
<td>R 55 332 873.19</td>
<td>30-May-18</td>
<td>26 Months</td>
<td>30 Months</td>
<td>30-May-18</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Good</td>
<td>VCO's awaiting for approval from Client. Delays in payments from Client.</td>
<td>81%</td>
<td>Metros Construction</td>
</tr>
<tr>
<td>Old Basha Hotel</td>
<td>Upgrades and renovations</td>
<td>Hostel</td>
<td>52 245 670.84</td>
<td>R 53 337 182.20</td>
<td>08-Apr-16</td>
<td>12 Months</td>
<td>To be revised</td>
<td>11-Jun-17</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Acceptable</td>
<td>Delays in approval of VCO's, no payments from Client; delays in providing payments to the contractor</td>
<td>78%</td>
<td>BRACOM Construction CC</td>
</tr>
<tr>
<td>New Boohle Clinic</td>
<td>new clinic</td>
<td>Clinic</td>
<td>12 400 960.00</td>
<td>to be confirmed</td>
<td>20-Jun-16</td>
<td>12 Months</td>
<td>44 months</td>
<td>30-Mar-10</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Acceptable</td>
<td>Delays in approval of service providers. Client is not responding to supply order to connect</td>
<td>48%</td>
<td>In-house engineers</td>
</tr>
<tr>
<td>PROJECT NAME</td>
<td>NEW INFRASTRUCTURE UPGRADES</td>
<td>PROJECT TYPE</td>
<td>PLANNED PROJECT VALUE</td>
<td>FINAL EXPECTED PROJECT VALUE</td>
<td>SITE HAND OVER DATE</td>
<td>PLANNED PROJECT FRAME</td>
<td>REVISED PROJECT TIME</td>
<td>EXPECTED COMPLETION TIME</td>
<td>QUALITY OF WORK</td>
<td>PROBLEMS ENCOUNTERED</td>
<td>JABLOW PROJECTS</td>
<td>CONTRACTOR APPOINTED</td>
<td>EXTRA COST INCURRED/SAV</td>
<td>PROGRESS ON SITE($)</td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>-----------------------------</td>
<td>--------------</td>
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<td></td>
</tr>
<tr>
<td>Bethlehem Secondary High School</td>
<td>New School</td>
<td>Primary School</td>
<td>R 46 006 042,81</td>
<td>R 52 838 760,17</td>
<td>31-Mar-15</td>
<td>12 Months</td>
<td>36 Months</td>
<td>Still in progress</td>
<td>no</td>
<td>Yes</td>
<td>Yes</td>
<td>Acceptable</td>
<td>Internal/External disputes between the consultant and the contractor</td>
<td>4%</td>
<td>ABD Constructions</td>
</tr>
<tr>
<td>Avela Biatha School</td>
<td>New School</td>
<td>Primary school</td>
<td>R 44 003 074,84</td>
<td>R 44 000 073,94</td>
<td>19-Feb-15</td>
<td>18 Months</td>
<td>To be revised</td>
<td>31-Aug-16</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Good</td>
<td>Delays from the municipality to connect electricity network, delays from municipality to connect sewer mains, delays of payments from client</td>
<td>85%</td>
<td>Mera Constructions</td>
</tr>
<tr>
<td>Bethlehem Secondary High School</td>
<td>New School</td>
<td>Primary School</td>
<td>R 42 006 042,81</td>
<td>R 52 838 760,17</td>
<td>30-Jan-15</td>
<td>18 Months</td>
<td>36 Months</td>
<td>Jan-16</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Acceptable</td>
<td>Disputes between consultant and contractor regarding drawings and BQQ. Contractor is not submitting Certification monthly</td>
<td>4%</td>
<td>ABD Constructions</td>
</tr>
<tr>
<td>Western Qing Library</td>
<td>New Library</td>
<td>Library</td>
<td>R 11 540 773,00</td>
<td>R 14 331 247,70</td>
<td>11-Feb-12</td>
<td>18 Months</td>
<td>To be revised</td>
<td>12-Aug-13</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Acceptable</td>
<td>Price adjustment is in the Final Subcontract or tender revision</td>
<td>85%</td>
<td>Group Two</td>
</tr>
<tr>
<td>Bethlehem Leslie School</td>
<td>Additions</td>
<td>Primary School</td>
<td>R 36 000 000,00</td>
<td>R 36 000 000,00</td>
<td>15-Mar-11</td>
<td>12 Months</td>
<td>Oct-12</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Acceptable</td>
<td>First contract was terminated and a new contract was approved</td>
<td>Social Construction/</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>
ANNEXURE B

Trends observed from the data collected for PDPW in the last 5 years

- The Department is satisfied with the quality of work as being on projects as “Acceptable” instead of good quality, both insourced and outsourced.
- When a project is outsourced, even all other aspects are outsourced (QS, Architects, Engineers, Project managers and etc.)
- Majority of In-sourced projects in the department doesn’t have any consultants and therefore a question arises regarding the compliance within the industry.
- The role of in-house professionals is different from outsourced consultants.
- All the projects are always late and behind schedule and extensions of time is always requested by contractors.
- About 80% of outsourced projects incur extra costs compared to the initial stipulated contract sum.
- Mainly renovations and upgrades are in-sourced unless it’s specialised work to be executed but new projects are always outsourced.
- New projects have different contracts although it’s the same type of infrastructure, like (primary schools, secondary schools)
- Some other outsourced projects are considered “Capital projects” and others are referred to “Turnkey”
- Other outsourced projects awarded to certain contractors are on hold.
- Monthly reports suggest that major delays for projects are late payments by the client and delays in approvals of documents submitted to the clients.
- Poor attendance of site and technical meetings by professionals from FSDPW also is a concern from contractors as there is always a communication breakdown.
- In-sourced projects major delays are caused by the delays in procurement of adequate resources to execute works on time.
- Change of scope during the constructions also hinders progress on site and causes delays.
- Redesigning due to change of scope also causes delays on both insourced and outsourced projects.
- Changing of consultants in “Turnkey” outsourced projects also causes delays
- There are budget cuts in other outsourced projects by the client.
- Majority of in-sourced projects doesn’t have a contract sum but a budget every year is allocated to those projects.
- In-sourced projects doesn’t have a clear timeline
- In most of in-sourced projects no site or technical meetings are being held.
- Delays by the municipality and Electric companies to connect both sewer and electricity delays projects.
- Disputes arising on site due to unclear instructions or clarifications of documents is also a problem
- Lack of skilled labours by contractors.
- Unsatisfactory work on site requires work to be re-done which subsequently is time cost consuming.
• Unclear documents and constant changes to the scope causes a lot of “Variation orders”
• Inconsistency in new projects designs causes extra costs
ANNEXURE C

Category 1: PDPW decision makers

1. What leads to a decision to outsource other projects and insource others?
2. What are determining factors to outsource and insource in terms of, time, costs and scope?
3. Why it is that insourced projects does not have timelines and contract amount?
4. Do you have a flexible scope for in-house projects?
5. Is there a difference in performance for projects that are outsourced and insourced?
6. What is the role of in-house built environment professionals?
7. What is the difference in roles played by in-house built environment professionals compared to that of external outsourced consultants?
8. What criteria is used to determine the type of contracts used in different projects? E.g.; turnkey projects

Category 2: Communication (all stakeholders)

9. How is the communication between the consultants, client and the contractors?
10. From the FSDPW who are the personnel responsible with dealing/communicating with contractors and consultants?
11. How long does it usually take for approvals of drawings, variation orders, Extension of time claims and payment certificate by the client? And how is the information circulated to relevant parties for feedback?
12. What method is used to resolve disputes arising between all the stake holders?

Category 3: Client departments (Health, Social Dev, Education, Roads and transport, Arts and Culture,

1. How is the working relationship between client departments and FSDPW?
2. What is the role of FSDPW in client’s department projects? And what is the role of clients departments during planning and construction phases of each projects executed by FSDPW?
3. What are cause of constant variation orders within the projects?
4. Are client departments satisfied with the delivery of infrastructure project by FSDPW? In terms of time, costs and quality, if not what are challenges?
5. What is the time frame set approvals of Variation Orders, extensions of time claims, payments and revised drawings?
6. How are contractors dealing with delays in sewer and electrical connections?
7. What are major delays caused by the different stake holders which hinders progress on site and thereby delaying the project?

**New questions for Client’s department for interview protocol**

8. Is your department involved in the planning phase of the projects implemented by DPW?
9. Is your department satisfied with the quality of projects delivered by DPW?
10. What impact does late delivery projects have on your department’s mandate?
11. What is the financial implication of constant variation orders on the department?
12. What is the role of the department during the projects handled by DPW?
13. What challenges is the department facing with regards to projects executed by DPW?