UNIVERSITY OF CAPE TOWN

IYUNIVESITHI YASEKAPA • UNIVERSITEIT VAN KAAPSTAD

DEPARTMENT OF CONSTRUCTION ECONOMICS

RESEARCH TOPIC: Impediments to the implementation of Value Management technique in the public sector projects in Eastern Cape

By

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MPFSUN001

A Minor dissertation presented to the Department of Construction Management and Economics, University of Cape Town, in Fulfilment of the Requirements for the Degree Of

Master of Science in Project Management

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1 DECLARATION

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2 ACKNOWLEDGEMENTS

Best to my capacity, I thank the Almighty God, for the strength and wisdom he gave me during and after the preparation of this dissertation.

Special thanks go to my Late Mother who encouraged me every day to finish this research report till she passed on. May her soul rest in peace

Thank you to Mr Moses Chiropa for all the assistance from the beginning of this course including this research report. God Bless You.

Last but not least I wish extend gratitude to my supervisors Mr. Ian Jay and Mr Mark Massyn for helping through this research report. If it wasn't for their encouragement, I may not have finished.

3 ABSTRACT

Purpose - Construction projects in Provisional Government authorities in South Africa are vital vehicle for social economic development of the community. In achievement of best and viable projects, Value Management technique should be deployed from the beginning to the end of the project. This research investigated the impediments to the adoption of Value Management technique studies in the public sector projects. The aim is to identify impediment factors to the adoption of Value Management technique Studies in the public sector projects in the Eastern Cape Province in South Africa

Design - In addition to the literature review that was conducted and identified a number of impediment factors to the adoption of Value Management technique in the public sector in other countries such as Malaysia, China and Hong Kong, A semi structured interview was conducted with key Heads of Eastern Cape Department of Publics works to get their views. A web survey with a number of impediment factors identified by the interviewers and those identified in the literature review was sent to Built environment professionals who work with Eastern Cape Provisional Government in deferent capacities.

Findings – The research find identified that, Incompetent Skilled Personnel, Lack of training and Education in Value Management technique, Political Influence, Lack of Awareness about Value Management technique, Bureaucracy with government and lack of practical guideline for implementation of Value Management technique are overwhelmingly the main impediment factors to the adoption of Value Management technique study in the public sector projects in the Eastern Cape province of South Africa.

Practical Implications - The findings revealed critical key issues that need to be addressed so that the benefits of implementation of Value Management technique

may be realised however, the findings and the research process had some limitations. The sample for the survey was chosen from a population of Eastern Cape Province of South Africa. The outcome of the survey is not always a true representation of the entire country as this was limited to one province. It therefore implies that further research studies might be required using a bigger sample size spanning various and different levels of government and provinces. The research findings may also need to be confirmed with more qualitative methods.

Table of Contents

4 LIST OF TABLE

5 LIST OF FIGURES

1 CHAPTER ONE: INTRODUCTION TO THE RESEARCH REPORT

1.1 Introduction

This chapter sets out a brief overview of the research topic and background to the research problem, the research question, aim and objectives of the research and proposition are presented. The chapter concludes with the research framework to be employed in this research

1.2 Introduction to the research topic

The increasing complexity of the construction industry has seen a shift in emphasis from cost to value (Ashworth and Hogg, 2014) and Value Management technique is a methodology that is focused on continuously improving the value provided to the client.. The construction industry is an important sector for its significance and contribution to the economy of South Africa in terms of both its GDP contribution and creation of direct employment. In In 2020, the South African construction sector's contribution was approximately 83 billion rand (roughly 5.4 billion U.S. dollars) to the country's gross domestic product (GDP). This was down from the 104 billion recorded in the previous yea (Schröder, 2020 p162). As a result efficiency of the construction industry has a direct impact on the Development and investment portfolio for the economy at large (Male *et al.*, 2007). A lower level of Value generated from construction degrades the level of competitiveness of the industry and subsequently investment in the sector. Value Management technique provides an appropriate methodology to bring about change, influence decision making, identify basic functions (Functional Analysis) and unify a group of strong individuals into one collective whole. Value Management technique seeks to enhance value and optimise the lifecycle cost of a facility through identifying opportunities to remove

unnecessary cost while ensuring that quality, reliability, performance and other critical factors will meet or exceed customer's expectations (Dell'Isola, 1997).

Infrastructure development has shifted from speculative development to mainly commercial development resulting in clients wanting whole life cycle value. In the public domain there is an emerging need for cost effectiveness and as a result there is greater emphasis in delivering infrastructure with value to the end users within predefined budget constraints and quality standards (Locatelli *et al.*, 2017). The Value Methodology provides a framework for establishing projects and improving the value of the product (Bowen *et al.*, 2007). The current fiscal policy in South Africa has forced Government to cut back expenditure or at least minimise unnecessary expenditure and as such there is a need for Value Management technique as a tool for cost optimisation. The competitive nature of the construction industry and the desire by clients for value for money has placed a challenge on the construction industry to come up with innovative techniques to address these requirements.

Value Management technique was identified as one of the management concepts which has been advocated for use in the construction industry (McGeorge *et al.*, 1997). Value Management technique in the UK construction industry has been described as the total process of enhancing value for clients from a project phases of concept through to operation and use (Male *et al.*, 2007).

"Value Management technique has been defined variously as a multi-disciplinary, team orientated, structured, analytical process and systematic analysis of function which seeks best value via the design and construction process to meet the client's perceived needs and expectations" (Jaapar, 2006: 2).

"A proactive, creative, problem-solving service, using a multi-disciplinary team oriented approach to make explicit the client's value system, at targeted stages through the development of a project or the life of a facility" (Kelly et al., 1993: 3).

"A means of group decision support (Norton and McElligott, 1995). The most promising method in co-ordinating professionals from different disciplines as well as a method to help the clients better achieve their goals" (Connaughton and Green, 1996: 12).

"Value Management technique is defined as an organized set of procedures and processes that are introduced, purposely to enhance the function of a designs, services, facilities or systems at the lowest possible total cost of effective ownership, taken cognizance of the client's value system for quality, reliability, durability, conformance, durability, aesthetic, time, and cost" (Olanrewaju and Khairuddin, 2007: 3).

It is therefore evident that the facets and methodology of Value Management technique are not only a requisite in construction projects to achieve better value for money from the resources, as well provide other important benefits such as improved communication, better team-working, better alignment and understanding of project objectives.

1.3 Background to the research problem

The Eastern Cape Department of Basic Education is mandated with putting in place measures to ensure that the right to education is realised in terms of Section 29 of the South African Constitution (Odeku, 2014). Education in South Africa is widely recognized for its potential to lift people out of poverty and promoting human rights and democracy. For this reason, the government devotes the biggest portion of the

National Budget to Education. According to (Godongwana, 2022)) 17.5% has been allocated to Basic Education in the 2017/2018.

The Eastern Cape Department of Public Works and infrastructure (ECDPWI) is the Implementing Department for all Government departments including the Department of Education. Its mandate is to manage and deliver infrastructure according to the requirements of specific client departments.

According To a report by Public Service Accountability Monitor, in May 2004 there were 572 Schools labelled "disaster Schools" (which range from mud structures that have collapsed, to existing structure where roof have been damaged and which pose major danger to learners and teachers. In addition 1279 schools were without water, 1177 were without sanitation and 1924 without electricity (Dalton, Nov 2005). Whilst the report argues that part of the problem is the fact that the Eastern Cape Department of Basic Education inherited Apartheid education system that was underfunding education. There is overwhelming evidence that suggests poor budgeting, poor planning, poor designs and failed service delivery has exacerbated the problem since the dawn of democracy in South Africa(Dalton, Nov 2005).

Whilst the Eastern Cape Department of Basic Education faces a huge backlog of schools Infrastructure, it is reported that, it required a maximum of R3.3 billion a year and a total of R24.4 Billion over a ten year budget to eradicate the entire backlog (Dalton, Nov 2005). Interestingly, The Eastern Cape Department of Basic Education Infrastructure plan appears to suggest that the Department has only three options: they can increase budget allocation, reduce quality of the infrastructure delivered or push back the target dates. In light of the challenges that are confronting the Department of Basic Education, Value Management technique has been suggested or put forward as a service that maximizes the functional value of a project by managing its development from concept to use through the audit of all decisions

against a value system determined by the client (Kelly *et al.*, 1993). Application of the value methodology at planning stage of the project lifecycle can ensure the construction design fits the purposes and functional requirements of the client (Hunter, 2004: 31).

However, the challenge that faces most Government Departments is capacity constraints of the personnel and limited resources. This predicament therefore places the concept of Value Management technique in the hands of Built Environment professionals either through voluntary implementation or prescribed statutory requirements in the tender document. A survey of construction professional by (Bowen, Edwards*, et al.*, 2010) concluded that the actual usage of Value Management technique by the built environment professionals is low, being reported as less than a quarter of all respondents. Notably, less than 10% of architects use Value Management technique (Bowen, Jay*, et al.*, 2010). Further, in 2016 it was concluded that the Value Management technique discipline has not fully adopted and utilized for construction projects in south Africa (Aigbavboa *et al.*, 2016) Why the use of Value Management technique is very low in South Africa when those that have applied it attest to its benefits remains unknown in the context of South Africa.

A number of influential Value Management technique researchers (Norton and McElligott, 1995; Bowen *et al.*, 2007; Kelly *et al.*, 2015)have placed a very strong emphasis on how Value Management technique is implemented in construction projects, inherent benefits of Value Management technique in construction projects and the level of awareness by the built environment professionals. Research into the impediments to adoption of Value Management technique studies in public sector projects in South Africa is relatively limited. This omission calls for an expansion of research into the impediments to adoption of Value Management technique studies in public sector funded projects.

The application of the Value Management technique methodology is widely accepted internationally especially in developed Countries such as the UK, USA, Japan and Australia. In fact Value Management technique has been suggested (Robertson, 2003) as the best approach in improving public sector infrastructure service delivery.

In South Africa, application of Value Management technique is still at its infancy stage. "Research has concluded that usage of Value Management technique by the Built Environment across all disciplines is very low" (Kelly *et al.*, 1993), (Bowen, Jay*, et al.*, 2010). Thus, to promote the application of Value Management technique in the construction industry specifically in South Africa, this research seeks to identify impediments to the adoption of Value Management technique in public sector projects in the Eastern Cape South Africa.

1.4 Problem Statement

The problem statement is:

> *Despite research showing that Value Management is the best approach in improving public sector infrastructure service delivery, Value Management technique is rarely implemented in the South African Government projects.*

1.5 The research questions

The research question can be stated as follows:

> *What are the challenges to adoption of Value Management technique in government funded projects in the Eastern Cape, South Africa?*

1.6 Research Proposition

The research proposition is

The application of Value Management technique within the government funded project in the Eastern Cape will contribute to the improvement of much needed service delivery within the Eastern Cape

1.7 Aim of the research report

- The aim of the research is to identify impediments to the adoption of Value Management technique studies in government funded projects in the Eastern Cape of South Africa.

1.8 Objectives

- To assess the awareness and understanding of Value Management technique amongst the public sector personnel.
- To establish level of implementation Value Management technique in public sector funded projects in the Eastern Cape
- To establish factors that imped the adoption of Value Management technique in infrastructure service delivery in the Easten Cape, South Africa

1.9 Contribution of Research

Successful implementation of Value Management technique in the construction industry and public sector at large has been observed in and around developed countries (Norton and McElligott, 1995). (Hunter and Kelly, 2003) believe that Value Management technique in the UK private sector has reached a level of growth and maturity within manufacturing and construction. There is an increasing demand for public sector service delivery to demonstrate their value to the society (Hunter, 2004). Therefore, this research explores and makes a case for understanding impediments to the implementation of Value Management technique within the public sector in Eastern Cape South Africa with a view to suggest possible solutions within the sector so as to maximise value.

1.10 Research Methodology

The methodology utilised to conduct this research and meet the stated objectives above would be as follows:

- Conduct literature review of review of peer reviewed journals and conference proceeding and books using key words such as impediments, challenges to identify the impediment factors to the adoption of Value Management technique in various countries including in South Africa
- Conduct a semi-structured interview to gather data from the key personnel in the public sector in the Eastern Cape
- Develop and administer a web-questionnaire with the facts gathered from the semi structured-interviews
- Utilise a quantitative approach to obtain data through the use of a web-based tool.
- Summarize, analyse, and discuss collected data information.
- Draw up a conclusion to the research.
- Recommend any future studies or study areas.

1.11 Limitation of the Research report

Limitations of this research may be but not limited to the following:

- This research is limited to the government sector in the Eastern Cape Province of South Africa
- Data collection during covid-19 and under lockdown was difficult because of the limitation in movement. Interview could be arranged and conducted online

1.12 Structure of the Research

The dissertation consists of five chapters outlined to depict the development of the research and analysis along with the presentation of key results, findings and conclusions.

Chapter One: Introduction

A brief description of the background of the research report leading to the research topic will be unpacked. It will also include an introduction to the construction industry and the Value Management technique. Problem statements, research questions, research aims, objectives, methodology and limitations are also unpacked on this chapter.

Chapter Two: Literature review

An in-depth literature review of the subject matter will be carried out. Value Management technique process will be unpacked, and its benefits will be explained. Impeding factors for implementation of Value Management technique study in South Africa and other countries will be uncovered and how they prejudice the people of South Africa through service delivery

Chapter Three: Research Methodology

Research methodology will give an outline description of how the research will be executed. How the data will be gathered and how the information will be processes analysed to help come to a conclusion.

Chapter Four: Research Findings

The data/information will be presented in this chapter.

Chapter Five: Discussions

The results presented in chapter four will be analysed. A brief discussion will explain the analysis of the results.

Chapter six: Conclusions and Recommendation

In this chapter, the research is concluded, and recommendations are made for future study areas.

1.13 Conclusions

This chapter provided an insight of this project is all about and introduces the reader to the project clearly stating the aim and objectives of the study. The chapter identifies the project limitations and concludes with the report structure

2 CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The literature review for this research is divided into three parts. The first part sets out the context upon which this research study is based. The review defines the main concepts around Value Management technique; it provides a brief background to Value Management technique and scope of this literature review. The second part provides an insight into the Value Management technique processes and how they relate to the public sector, explores factors that imped the adoption and implementation of Value Management technique in other countries. The third part is a summary of this chapter.

2.2 Value Management

Value Management technique is an innovative service, well recognised in the manufacturing sector and construction sector (Hunter, 2004). It has been shown to offer and provide a systematically structured methodology using a defined set of supporting tools and techniques that facilitates effective decision making on many different types of projects, thus achieving "Best Value" for client. It offers a direct approach to not at exploring projects and functions in line with clients and stakeholders' objectives. Value Management technique has been suggested as an approach to improving public sector service (Bowen *et al.*, 2007).

There is an increasing demand on public agencies to demonstrate their value to society (Hunter, 2004). "This has prompted a question of; Can Value Management technique techniques deliver Best Value in the Public Sector Environment"? (Robertson, 2003). A strong argument has been put forward suggesting that Value Management technique provides a platform to maximise the value of Government

services to achieve the 'Best Value'. Best Value is an emerging paradigm for public sector agencies in improving quality of public sector services (Gwynne, 2003).

In South Africa, Procurement is central to the government service delivery system and is often used as a vehicle to promote aims which are, arguably secondary to the primary aim of procurement to promote social, economic, and industrial or environmental policies. Public procurement is a discipline wherein public sector organisations and agencies of the government acquire goods, services and development and construction projects from suppliers in the local and international market, subject to the constitutional principles of fairness, equitability, transparency, competitiveness, and cost-effectiveness.

In South Africa, public sector procurement process is guided by the Public Management Finance Act (76[4]), a legislative framework which governs the procurement process for all government projects. The basic principle is that all government procurement must be seen to be fair, equitable, transparent, competitive, and cost effective. This therefore places government departments at the heart of procurement which they often outsource such as Design and Construction to private business through a tender system. However, it is important to note that the government dictates the terms and conditions of any outsourced services because they return responsibility Government institutions often outsource the service of implementing some of the government

It is at that stage when the government sets out terms and condition for any government project that the government ought to introduce the concept of Value Management technique because a case has been made that Value Management technique enhances cost effectiveness by eliminating unnecessary cost in any project (Mohamad, 2014). As an example, The Scottish Local Government Act 2003 imposes a duty on local government to ensure a measurable continuous improvement in the

performance of the organisation's functions and securing Best Value through appropriate balance between cost and quality and equal opportunities (Martin, 2000)

In the Eastern Cape province of South Africa, there is very little literature if any on the legislative mechanisms which advocate for a methodology that fosters the facets of Value Management techniques. Notwithstanding the relatively significant evidence of awareness of Value Management technique by the built environment professionals (Bowen, Jay*, et al.*, 2010), the implementation of Value Management technique studies remains non-existent and the underlying reasons for existence of this approach remains a subject of speculation. There is limited literature about the levels of awareness of Value Management technique. For instance (Bowen, Jay*, et al.*, 2010). This research report seeks to build on previous work, by identifying the reason for the lack of implementation of Value Management technique specifically with respect to public sector projects in the Eastern Cape.

2.3 History of Value Management technique

The origins of Value Management technique are well documented and date back to World War 1 (WW1). Its aim is to combine product performance improvement and cost reduction through a formal procedure based on an analysis of function and value. Value Management technique evolved firstly as Value Analysis mainly focusing on the manufacturing industry. This was formalised by Miles at General Electric Company (GEC) as a means of fulfilling the function by an alternative method (McGeorge *et al.*, 1997). They go on further to state that value analysis was later adopted in the US Department of Defence's Bureau of Ships in 1954 where it was re-named Value Engineering largely because it was aimed at improving conceptual design and the work was mainly restricted to Engineers. This culminated in the

formation of the Society of American Value Engineers (SAVE) in 1959 to further the interests of Value Engineering.

UK, Australia, Hong Kong and other commonwealth countries prefer using the term Value Management technique which reflects a structured management of the total value equation throughout the project life cycle and as such it subsumes Value Engineering as a component part of the whole service. (Excellence, 2004) concurs that Value Management technique incorporates Value Engineering, which in itself is a systematic approach to delivering function at optimum cost. Over the years Value Management technique has evolved from the need to satisfy specific functional requirements at least cost (Kelly *et al.*, 1993). The idea spread to the UK in the 1960s leading to the establishment of the Institute of Value Management technique (IVM) in 1966 in a bid to standardise the operations of Value Management technique practitioners.

The maturity of Value Engineering in the United States had an impact in other countries to adopt a similar approach towards their won manufacturing industry. In 1967 the Japanese formed the society of Japanese Value Engineers while in the UK, they started to use Value Engineering but with an additional twist in terms of the managerial aspect of production. In the UK, the introduction of Value Engineering experienced a growth in its development and practise mainly in the construction industry and the terms subsequently changed to Value Management technique

The growth in Value Management technique practice through different government agencies in the US and private industry led to the establishment of the Society of American Value Engineers(Hiley and Gopsill, 2000). In late 1980's, the UK construction industry has been applying Value Management technique in their projects. According to (Hunter, 2004), Value Management technique differs from Value Engineering in term of its focus on the overall project and its products. In

contrast Value Engineering is focused on particular components of a product. Taking this idea, Value Management technique subsumes Value Engineering as a component part of the whole service (Kelly *et al.*, 2004). The application of Value Management technique in the UK construction industry has been well accepted and lauded by the professionals. (Ellis *et al.*, 2005) c

The (Latham, 1994) report argues Value Management technique to be conducive as a good practice while (Egan, 1998) shares the same view for collaborative working environment promoted by the implementation of Value Management technique. Both reports are highly influential documents in the UK construction industry that promotes good governance, modernisation of industry and benchmarking within professionals in the industry.

At the government level, The Office of Government Commerce produces procurement guideline for construction projects to carry out Value Management technique for project development. The Royal Institute of Chartered Surveyor (Royal Institution of Chartered Surveyor (RICS)) in 1988 published research by John Kelly and Steven Male entitled "A Study of Value Management technique and Quantity Surveying Practice". The publication marked the beginning of a serious development of Value Management technique as an instrument to be employed in the construction industry to realise better value for money for clients and has drawn interest from many sectors of the construction industry across the world (Fong & Shen, 2000). Several countries such as Australia, France, Germany, and Hong Kong have benchmarked this initiative.

In South Africa, the roots of implementation are not well documented especially in relation to its usage in the public sector. (Bowen, Edwards*, et al.*, 2010) refers to a survey of clients and other design professionals and the results indicate that there was very little attempt to match client objectives with a different procurement

system. This survey was only limited to the private sector clients and does not make reference to the public sector. It therefore implies that there is very limited if any literature on history of usage of Value Management technique in the public sector especially in Eastern Cape

2.4 Defining Value Management technique

Value Management technique is defined as a process that maximises the functional value of the project by managing it from development phase to the concept to the completion and commissioning through the audit of all decision against value systems defined by the client (Kelly and Male, 2003). There are many different definitions of Value Management technique but importantly all have similar meaning:

- The Australian and New Zealand AZ/NZS 4183:1994 defines Value Management technique as "a structured and analytical process which seeks to achieve value for money by providing all the necessary function at the lowest total cost consistent with the required levels of quality and performance.
- (Norton and McElligott, 1995) describes Value Management technique as a systematic, multi-disciplinary effort directed towards analysing the functions of the project for the purpose of achieving the best value at the lowest overall whole life cycle costs.
- "Value Management technique is a systematic and structured process of team-based decision making. It aims to achieve best value objectives and delivering those functions at the least cost (whole life cost or resource use), consistent with the required quality performance" (www.alabc.org.uk, access 13/03/2009)

In other words, it can be regarded as a systematic and multi-disciplinary process directed towards analysing the function of projects from its inception to completion to commissioning (though auditing or examination) for the purpose of achieving

best value and return on investment at lowest possible overall lifecycle cost. In the last decade, Value Management technique has been recognised as an emerging paradigm that focuses on continually increasing the value provided to the client and has been widely accepted as an integral and important tool in the successful management and implementation of construction projects

2.4.1 Value

Value is worthy of goods and services expressed in monetary terms and non-monetary terms. Value is the level of importance that is placed upon a desired function. Value can be distinguished into seven classes that is economic, moral aesthetic, social, political religious and judicial. It therefore implies that value is subjective and should be differentiated from cost which is the amount of money to be expended on something that is quantifiable and objective. Further, value is manifested in different ways such as attitude, beliefs, preferences, need and criteria. Value thus can be said to be "the equivalence of an item expressed in objective and subjective units of currency effort or exchange or a comparative scale that reflects the desire to obtain or retain an item (Kelly *et al.*, 1993)

$$\text{Value} = \frac{\text{Function}}{\text{Cost}}$$

The lower the cost of optimum function, the better the value or

$$\text{Value} = \frac{\text{Benefit Delivered}}{\text{Resource Used}}$$

The value Ratio (Austin *et al* 2005)

In construction the term Value' is used to describe the balance between the expectation of the owner and the resources employed which normally consist of land, material, labour and plant & machinery

2.4.2 Value Engineering

Value Engineering is a method that evolved out of a problem in manufacturing industry due to the pressures of the war in the 1940ies. Value Engineering is described as the study of value at the design, construction and Engineering stage of a project (Finnigan, 2001). (De Leeuw, 2006)concluded that judging from the principle surrounding the concept and conduct of the practice, it is more related to 'value' and 'management' than that of 'value and engineering'. In fact, most authors agree that Value Management technique embraces other terms in that other terms relate to Value Management technique at different specific stage(s) of a project ((Wilson, 2015; Karunasena *et al.*, 2016)

2.4.3 Value Analysis

Value Analysis is a philosophy implemented by the use of a specific set of techniques, knowledge and learned skills. It is an organised creative approach which seeks to identify unnecessary cost, i.e. cost that provides neither quality nor use nor life nor appearance nor customer features (Yu, 2007). Value analysis is associated with the post-construction or completion phase, indicating that the practice is related to the value of completed project. This is inclusive of the use and re-uses stages of a project.

2.4.4 Value Planning

Value planning is an aspect of Value Management technique that is associated with achieving project value during the planning stages of a project. Value planning is a subset of Value control, and they are both derived from the principle of cost planning and cost control, which are common terms for management of developmental projects

2.5 Value Management technique in construction projects

2.5.1 The "Best Value" Concept

The fundamental premise of the Best Value concept is that services should procured on the basis of value for money rather than on the lowest cost. This therefore places Value Management technique at the core of procurement delivery because as (Bowen *et al.*, 2007) asserts that Value Management technique increases or enhances decision making and could be used as a tool in assessing options.

In one of the few attempts to define value in a construction setting (Male, 2002) argues that a value system is a perceptual and the view of what constitutes value depends upon person's role in the construction process. Other scholars equated value for money in terms of cost reduction and higher quality threshold which leads to greater client satisfaction. This view was however challenged by (Male, 2002) who sees value chain as delivering symmetrical values to all involved. Unlike the earlier view which seeks to satisfy the client only, (Male, 2002) seeks to satisfy all involved in the process.

In the public sector projects, the value chain is defined by the government representing the end users of the facility but the problem with that is fact that government often goes for lower cost in an attempt to get the best value. It has been long recognised that value and lowest cost do not go hand in hand. Despite this assertion, it is rather a setback that construction in the public sector in south Africa is dominated by the view that value is obtained through the lowest tender.

The need to deliver value for money in construction projects and the desire to provide building products that satisfy the client's needs at relatively low life cycle cost has prompted Value Management technique to be at the centre of decision making of construction projects. In the public sector, Value Management technique has contributed significantly in improving service delivery in the public sector and

creating value for money. While it is important to note that there are various perceptions on how the application of Value Management technique contributes to the construction projects, there is a general consensus that it is an efficient tool in managing construction projects. (Ashworth and Hogg, 2014) argues that Value Management technique assist in reducing unnecessary cost in the construction project especially when it is properly implemented at design stage of the project. Whilst many scholars have argued that the Value Management technique is not a cost reduction exercise it is important to note that Value Management technique cannot be isolated from cost reduction exercise because unnecessary cost reduction is one of many facets of Value Management technique.

The Department of Housing in Western Australia views Value Management technique in relation to proposed development projects as a process that enables all stakeholders to be involved in the decision making process that includes the selection of designs, refinement of design briefs and identification of budgets constraint of the projects (Australia, 2007). This assist in defining what value means to the client by agreeing to the project objectives and how they can be achieved (Connaughton and Green, 1996)

Value Management technique can be implemented at all the stage of a construction project life cycle. The timing of the implementation of Value Management technique during different stages of the life cycle of a project results in different result depending on when it implemented and how it is implemented.

2.5.2 The project life cycle phases

Value Management technique can be implemented at any phase of the construction project. The timing of implementation at different phases of the construction project produces different result depending on when it is implemented. Value Management technique is best suited to be implemented at the earliest possible phase of the

project simply because it attracts the best opportunity to influence the best outcome of the project at minimal cost effect (Hunter and Kelly, 2003; Bowen *et al.*, 2007).

It is argued that the maximum cost reduction potential occurs early in the briefing/design phase of the project. This is because at this stage decision around the genetic makeup of the project are taken without anything on physical development, which therefore allows for improvements to be made. This involvement of all parties brings together all relevant stakeholders to review proposed development; clients' expectations remodelled and are understood by all the parties involved.

The idea of early involvement of all interested parties has a greater potential of saving not only the cost of Value Management technique but the construction costs compared with involvement at later stage of the project (Mohamad and Coffey, 2010). Government projects are often synonymous with cost overruns exceeding the approved budget, partly because of scope changes at later stage of project. The main reason for cost overruns in construction projects is scope change (Ramabodu and Verster, 2010). With proper implementation of Value Management technique, the government may realise a lot of savings especially with the current fiscal challenges that exist in government. The potential savings as a result of early implementation of Value Management technique is greater than the cost of changes at a later stage of the project.

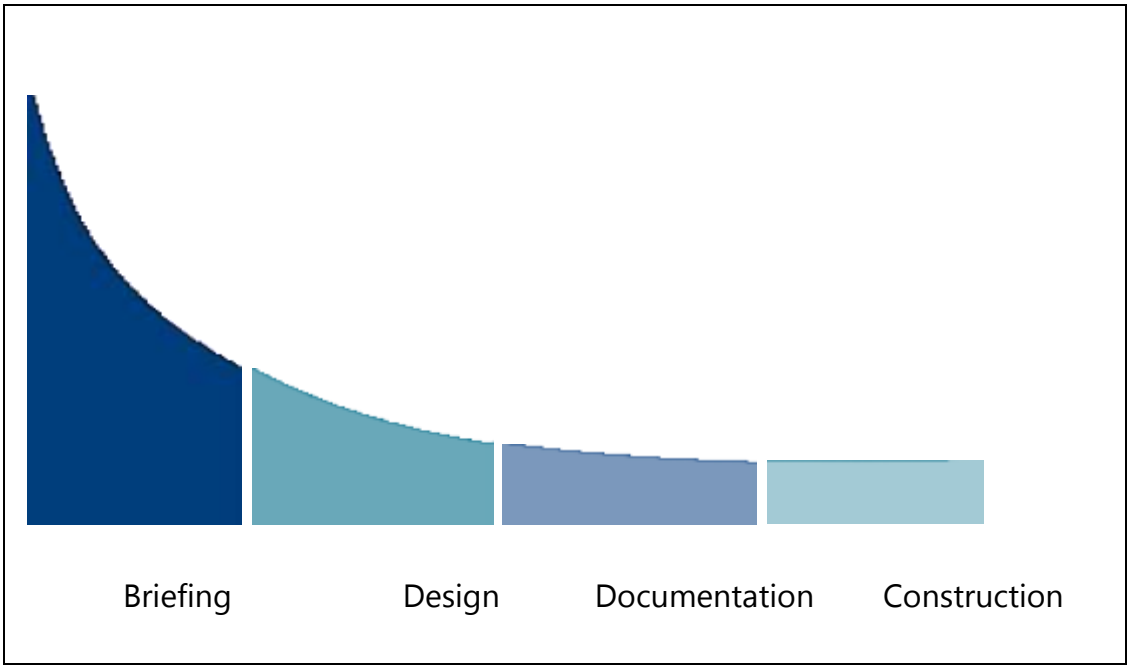


Figure 1: Potential Influence of Value Management technique (Government of Western Australia)

Figure 1 illustrates diminishing opportunity for savings as the projects progresses which therefore means that the cost of change increases as the project moves towards construction phase. Several publications as cited by (Mohamad and Coffey, 2010) validate the notion that says, early application of Value Management technique in construction projects leads to greater potential savings. It is reported that on average, a saving between 10-30% can be generated if Value Management technique is applied before the construction phase of the project.

Whilst the idea of early involvement of Value Management technique is well documented and accepted amongst some construction practitioners. (Kelly *et al.*, 2004) disagrees and offers an alternative perspective on Value Management technique implementation in construction projects. (Kelly *et al.*, 2004) asserted that the early implementation of Value Management technique alone does not guarantee positive results if the aggregate problems or challenges affecting the projects are not well understood and defined.

The success cannot be realised if the Value Management technique study is conducted in phases where stakeholders are not part of the study team. For example,

the contractor's involvement is only possible once the contractor is appointment after the tendering process. Prior to tendering phase, the contractor's contribution is not possible, and the contractor cannot input their expertise into the Value Management technique study. Therefore, the proposal offered by (Kelly *et al.*, 2004) is particularly interesting in terms of the South African Construction industry given the procurement strategy that is normally adopted by the Public Sector. As previously highlighted, the procurement strategy in South Africa is defined by a legislative instrument which basically requires a tendering of all services required by the government. Tendering process does not fit the approach proposed by (Kelly *et al.*, 2004) because this process exclude the Main Contractor from the Value Management technique process.

Five strategic key points of intervention during the phases of construction projects are offered by taking into account the team composition and actual problem to be solved. Each Intervention points have different team composition as shown on the Table below. The key points indicate a period where Value Management technique intervention is possible. As the project progress, the composition of the team for Value Management technique study changes depending on the current needs for the project.

Another dimension to the concept of early implementation of Value Management technique in the construction as suggested by (Kelly *et al.*, 2004) is addressing client needs or problems at each stage of the project. For example, in VM1 where the project is at the brief stage, the client and the facilitator are the only team to the study as the objectives are requirement of the project are still developing. Compared to VM5, the study only involves the facilitator and the independent audit team when all scheme and detail design has been completed. The key intervention point indicates changes in the team composition that correspond to the need of the

project progress and context of the issues faced at each phase or stage of the project.

In conclusion therefore, the key point of intervention for Value Management technique is subjective in nature and must be flexible to every project as long as the needs for such study are fully understood. The idea of Value Management technique implementation at earliest possible stage of the project as proposed by (Kelly *et al.*, 2004) may seem to generate positive benefits to the project, however it is important knowing the needs of the workshop, context of the issues to be addressed and the team composition so as to add value to the context to the process.

2.6 The Value Management approaches

There are four approaches to Value Management technique as identified by (Hunter, 2004; kelly, 2004; Kelly *et al.*, 2015) and each approach has a different method, time & purpose of conducting the Value Management technique study but maintain the investigation of function and value for the project as main objectives. These approaches are

- Charette
- 40 Hour Workshop
- Value Management technique Audit
- Value Management technique Change Proposal

2.6.1 Charette

This is a form of workshop that is conducted with the involvement of the client and the design team to rationalise client's brief through identification of key elements of spaces specified. It is a compressed design process that aim to produce a concept design (Stankey, 1995). The charrette are normally conducted at VM 4 intervention point as indicated in Table 1. The workshop is led by the facilitator acting on behalf of client to guide through the entire study process. (Kelly *et al.*, 2004) observed that a brief given by a client normally is an amalgam of the ' wish list' of all the parties involved in his or her organisation that contributes to the brief. Therefore, a charatte is necessary to identify and define the real function of the proposed projects by separating the needs and wants. Further, (Kelly *et al.*, 2004) describes charette as "an inexpensive means of examining the clients requirement by the use of functional analysis and allowing rationalisation and full design team briefing"

2.6.2 Hour-workshops

Contrary to the charatte, the 40-hour workshop utilises external or independent team to audit the developed design. The independent design team is responsible for producing and developing an alternative solution of the design that is technically

viable. It comprises of mix multi-disciplinary team that is a reflective of the existing internal design team. Their role in this study provides a fresh outlook at the design. (McGeorge *et al.*, 1997) observed this approach as having an opportunity of pulling-in additional skill mix and experience to review and improve the design. By contrast, (Hunter, 2004; kelly, 2004) argued that the original design team may interpret the exercise as a critique of their design judgment and as adversative action (Kelly *et al.*, 1993). The 40-hour is a reflection of the time spent by the team to study the design. As compared with Charette, there are no fix time duration for each study.

2.6.3 Value Management technique audit

The appointment of facilitator in Charette or 40-hour workshop focuses as client's advisor by conducting Value Management technique study at key points of intervention of a project life cycle. Their involvement starts at strategic point of project to assist the development of client's requirement. In contrast, the Value Management technique audit is a service offered by value engineer/facilitator to large companies to review their project proposal. The intervention points between VM 2 and VM3 are where their contribution is made (Refer Table 2). Their role and task is slightly different from Charette and 40-hour workshop. In Value Management technique audit, the facilitator act as an independent and external party to the project. The audit is based on the assumption that the client had already finalised their concept and project proposal. Therefore, the audit provides their services by way of auditing the project proposal. The audit team examines the proposal using a similar workshop style adhering to the job plan. The aim of the audit is to ensure a proper direction and that the primary functions of the project are established in advance (Kelly *et al.*, 2004).

2.6.4 Value Management technique Change Proposal (VMCP)

A Value Management technique Change Proposal is a proposal submitted by a contractor to the government, client or private employer after a construction

contract has been awarded to them, provided that their contract contains a Value Management technique clause (Cheah and Ting, 2005; Mat and CVM, 2010) Its purpose is to incentivize the contractor to propose contract modifications that reduce cost without reducing product or process performance. It is a post tender change inspired by the contractor (Kelly *et al.*, 2004) that is different from the former approaches discussed. Leen (2010) in citing Minister of Works Malaysia states that VMCP is a written contractual mechanism which allows contractors, based on their own efforts, to introduce innovation to a project. The savings generated from the accepted proposal, will be shared between the clients and contractor based on an agreed percentage split (Kelly, et al., 2004).

2.7 Value Management Job Plan

There are several formal approaches of a Value Management technique study and originate from different countries such as the USA, Australia, China and the UK. (Kelly and Male, 1993) in his study on bench marking of Value Management technique practice found that the term 'JOB PLAN" is widely used across the USA, UK, Australia and Asian regions. Although there are different terms for Job plan used by different authors, for this research report the Job plan will be used to describe a structured approach to Value Management technique Process

Job plan is a procedure of decision-making procedures applied by a multi-disciplinary team of professionals to enhance value through the analysis of the project functions. There are several views on the format of the Job Plan across the literature in this field (Parker, 1998). The Job Plan as suggested by (Male *et al.*, 2007) comprises of seven phases which include Preparation, Information, Analysis, Creation, Evaluation, Development and Presentation Phases. Other authors identify only five phases starting from Information, Creativity, Evaluation, Development, Presentation and Feedback (Dell'Isola, 1997; Hunter, 2004) while (International, 2007) stipulates six

phases. The following Table 4 summarises the Value Management technique process from various authors and organisations.

Table 1: Summary of Value Management technique process(Mohamad, 2014)

Value Management technique Process			
Mile (1989)	Dell 'Isola (1982), (Norton and McElligott, 1995; Kelly *et al.*, 2015)	SAVE (International, 2007)	Australian Standard AS 4183-2007 (Australia, 2007)
Preparation	Pre-study		Pre-workshop
Information	Information	Information	Workshop
Analysis		Functional Analysis	Post Workshop
Creation	Creativity	Creative	Post Study
Evaluation	Evaluation	Evaluation	
Development	Development	Development	
Presentation	Presentation & Feedback	Presentation	

For the purposes of this research report, the five phases of Job plan format as proposed by (Norton and McElligott, 1995; Dell'Isola, 1997; Kelly *et al.*, 2004) is used as the work of (Norton and McElligott, 1995) has been well accepted and has been suggested to represent a generally accepted process which indicates the entire systematic approach to the Value Management technique.

Job Plan is implemented by way of a workshop format which includes a multi-disciplinary team who acts following the procedures set down in the five-step job plan as shown in Figure 2. The team composition will normally comprises of relevant design professionals such as architect, engineers, quantity surveyors, clients and VM facilitators (Leung and Liu, 2003). The composition of the team is tailored to suit

particular project issues and nature, for instance where constructability and sequencing issues are of a concern, a construction manager may also participate in the workshop (Norton and McElligott, 1995)

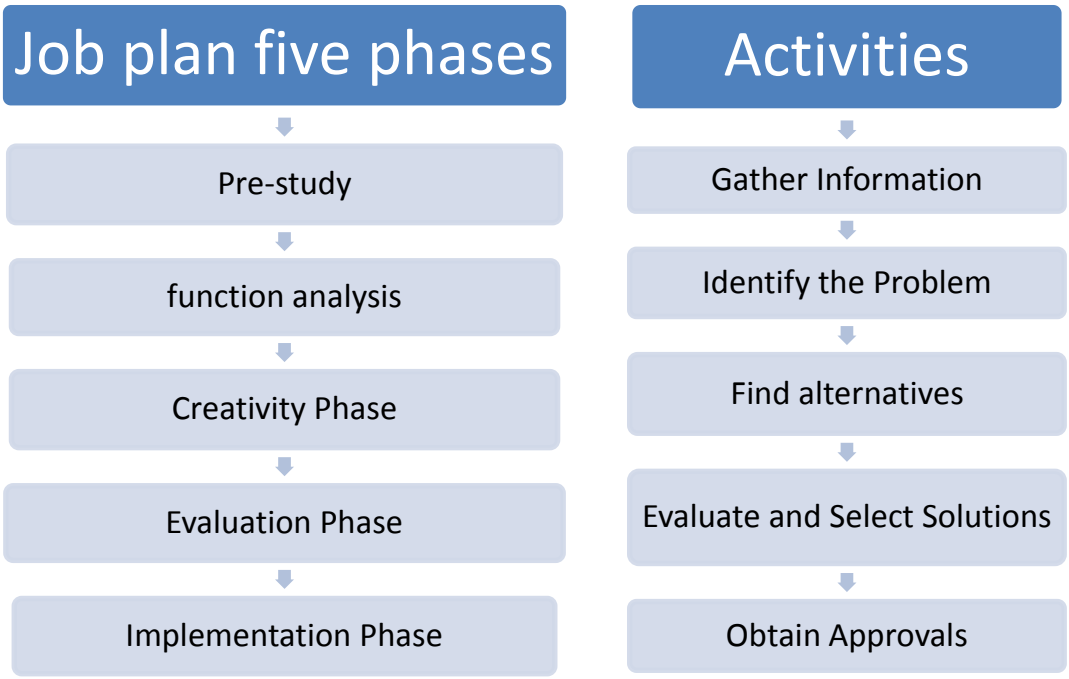


Figure 2: Value Management technique five job plan phases

In summary, the job plan depicts a systematic decision-making process from problem identification all the way to analysis and solution findings. The five phases of job plan as suggested by (Dell'Isola, 1997; kelly, 2004; Male *et al.*, 2007) represent standardized process flow that is use in this research for further exploration taking into consideration a study by (Male *et al.*, 2007) on international benchmarking of Value Management technique. Although practices across the world have different term used with varying numbers of phases, however the process retains a similar process flow.

2.7.1 Pre-study phase

The main objective of this phase is to ensure that there is sufficient information regarding the project. In addition, this phase is meant to establish why the client needs to undertake the Value Management technique Study. This phase also enables identification of the real need or the purpose for the workshop and to ensure that the main activities of the workshop are done. In addition, interviews and site tours are observed to be the norm in works (Kelly *et al.*, 2004). Participant stakeholders who participate in the Value Management technique study are carefully selected and should not only consist of construction personnel but also other important professionals who can contribute their expertise in the process. It is important to note that pre-study workshop activities vary according to the needs and complexities of the project. In summary, the pre-workshop phase act as preparatory works that includes background information collection, study scope, cost overviews, setting agenda and appointing workshop participants

2.7.2 Information phase

The main purpose of this phase is to set out a good understanding of the project, its design and operations, the functions of the project itself and to determine areas with the greatest potential for savings and needed improvements (Norton and McElligott, 1995). Some institutions such as (SAVE international 2007) suggest that having an informed understanding of constraints that influence the project decision is very important during this stage of workshop. The following objectives have been underlined by (Kelly *et al.*, 2004) that need to be addressed during this stage of the project.

a. Team development for workshop participant including introduction of facilitator

b. Ensure facilitator, client and workshop participants understand the strategy and approach of the workshop

c. Briefing on study aims, objectives and scope of study by the facilitator

All project team members involved will be informed on the issues that have prompted the study. Briefing will be given to workshop participants by the VM facilitator on the objectives of the study. Information that surrounds the project will be analysed. A presentation by the designers (Mat and CVM, 2010) and other relevant stakeholders (International, 1998) during information gathering is required to update the workshop participants to bring them to the same level of understanding of the project situation.

The outcome of activities and processes involved during information phase will brings workshop participants to a basic level of understanding of the project, including tactical, operational, and specifics of the subject (International, 2007). Fundamental questions address during this phase of a workshop will be use during the next stage (Function Analysis) where more in-depth exploration of the project functions are analysed.

2.7.3 Function Phase

Function analysis phase is a systematic process of establishing functions within the project and their related cost and assessing the importance of those functions based on established criteria for the project in the simplest possible way (Spaulding, Bridge, & Skitmore, 2005; Steven, 2004). It helps in identifying the scope of the project by showing the logical relationships of all functions. It is regarded to the quintessence and the heart of Value Management technique (Kelly and Male, 1993; McGeorge *et al.*, 1997; kelly, 2004). Function analysis phase involves workshop participant working together to identify and define functions of the project using sets of tools and techniques. Various techniques have been developed to identify the functions of a project and ultimately assess their relative significance (Standard, 2007).

2.7.4 Creativity Phase

There are two approaches in solving problem that are analytical and creative (Mandelbaum *et al.*, 2008). Creative problem solving is an idea-producing process that focuses in generating as much possible solutions to particular issue. (Fong and Shen, 2000) argues that creative problem solving in Value Management technique brings in qualitative technique that specifies ways to think about the problem and its constraints.

Creativity phase, alternatively termed as the Speculative Phase (Che'Mat, 2010; Dell'Isola, 1982; Miles, 1989), Ideas/Options Phase (NSW Treasury, 2004), this stage has the objective of compiling an abundance of ideas regarding alternative ways to perform the various functions highlighted and discovered during the Function Analysis Phase (Dell'Isola, 1982; SAVE International, 2007). It brings together workshop participant to discover solutions to function relationship discovered during previous phase of the workshop. Discovery of solution in a form of alternate designs, methods, systems or processes to assist to accomplish basic functions and enhance optimum solutions for design problems (Dell'Isola, 1982; Parker, 1998). Output from Function Analysis phase in a form of FAST diagram and summary of function analysis are used during this phase to assist in finding possible solution. Ellis et al. (2005, p.487) stresses that identification of issues, problems and value mismatches from previous phase is crucial for a starting point in creativity phase.

2.7.5 Evaluation Phase

Ideas generated during Creativity Phase are not allowed to be comment, criticized, judge and evaluated (Mat and CVM, 2010; Ashworth and Hogg, 2014); Economic Planning Unit Malaysia, 2011). The aim is to allow for free flow of ideas among workshop participants and eliminate mental blocks to creativity (Parker). All judgment and evaluation to ideas were only be made during Evaluation Phase (Kelly

et al., 1993; Dell'Isola, 1997). The Evaluation Phase also termed as the Judgment Phase (McGeorge *et al.*, 1997), or Analytical Phase (Dell'Isola, 1997) is directed towards evaluating all of the ideas generated from the Creativity Phase based on the agreed set of criteria and functions of the project. The objective is to reduce the quantity of ideas that have been identified, to a shortlist of those ideas having the greatest potential to improve the project (SAVE International, 2007). Ideas are refined and reviewed to a workable solution and further analysis (Dell'Isola, 1997).

According to study conducted by (Sik-wah Fong *et al.*, 2001) on Value Management technique framework, they found that there are two stages in Evaluation Phase that are critical in Value Management technique study. The first screening refers to the preliminary filtering of ideas from Creativity Phase that has not been evaluated. Ideas that are feasible will be kept and remaining will be discarded. The second stage is the critical evaluation of shortlisted ideas/solution using set of tools or techniques. The filtering process aimed to reduce ideas that do not add value to the existing problems of the study.

(Dell'Isola, 1997) suggested a technique of comparing the merits of each ideas using advantage and disadvantage classification. Ideas listed are compared and weighted against their potential advantages and disadvantages it has on the project. Ideas that have more advantages indicate potential solution and are selected for further evaluation (Dell'Isola, 1997: 47) .

The outcome of this phase produces a focused list of solutions that warrant quality time being spent to develop value-based solutions that can be implemented into a project, or a project feature (International, 2007). The selected solution will be taken into the next phase (i.e. Implementation Phase) for further refinement and development.

2.7.6 Development phase

The shortlisted solutions derived from the Evaluation Phase will be further developed into a workable document, Action plan and Value Management technique report to be presented to a client (Che'Mat, 2010; NSW Treasury, 2004). Documents such as drawings, specification, calculations, estimates, cost comparison, Cost-Benefit Analysis (Dell'Isola, 1997) and vendor information are included to support the ideas. Outcome of this phase will produce a comprehensive report (i.e. value proposal) to ensure that the client and other key stakeholders understand the rationale of the proposed alternatives and also to generate interest that will sanction implementation. The workshop provides a platform for gathering together all project team members to discuss and debate alternative courses of action. There are different ways in which the workshops can be conducted in VM, which are discussed in the next section.

2.7.7 Presentation

The objective of the presentation phase is to present the team's proposal to the clients representative (Ashworth and Hogg, 2014). This phase is very sensitive to the consultants and the clients because of its adjustment to the original design. Perhaps a different approach is needed so as to encourage an enabling environment for this exercise to unfold.

2.8 Challenges of implementing Value Management internationally

2.8.1 Implementation of Value Management in Nigeria

Value Management technique has been widely used over the year to address challenges arising from the construction industry as has been the case with manufacturing industry, However it has encountered resistance in its implementation because amongst other reasons, passive participation in Value Management technique workshops and lack of time and information to complete all the task in the

workshops (Mandelbaum *et al.*, 2008; Shen and Yu, 2016). In Nigeria, barriers, and impediments to application of Value Management technique have been divided into two categories i.e., Behavioural and Practical Barriers.

Lack of awareness about Value Management technique

A recent study by (Noor *et al.*, 2015) reveals a low level of awareness of Value Management technique studies and its applications by clients and construction industry practitioners. The low level of awareness was attributed to lack of knowledge during Value Management technique workshops (Oke and Ogunsemi, 2011). (Oke and Ogunsemi, 2011) further argued that another contributing factor to the problem faced was due to lack of input from the related specialists' as well as poor facilitation skills during the Value Management technique workshops.

Passive behaviour among Value Management technique practitioners

In Nigeria, the mind of the client and the professionals in the construction industry are hardened to the old ways (the resistance to change by the involved parties during the VM workshops sessions as well as the conflicting objectives of the project by different parties) and method of executing the project. This brings a barrier to Value Management technique implementation in Nigeria construction industry.

The high cost of Value Management technique study

Another major impediment to the application of Value Management technique in a construction project is the inability to fund the Value Management technique. It is believed that the additional cost of setting up a Value Management technique team and their attendant resources may increase the cost to the clients and therefore are avoided. Even after considering the costs and barriers to Value Management technique, the advantages still far outweigh the cost of Value Management

technique. (Jaapar, 2006) argued that Value Management technique should be commonly practiced on projects, especially on larger and more complex projects to increase value for money and meet the client's expectations.

(Jaapar *et al.*, 2012) further stated that most of the client thinks Value Management technique is another way of wasting money or enriching the pocket of the professionals involved, not knowing that the costs associated with Value Management technique compared with the benefits are almost dismissible. The costs of conducting a Value Management technique workshop rarely ever exceeds 1% of total project costs, whilst potential savings of between 10 and 15% of total project costs are possible.

Lack of Training and Education in Value Management technique

The main Impediment to the application of Value Management technique in a construction project in Nigeria is inadequate training and educating of professionals that will involve in Value Management technique approach. It is necessary for professional institutions and universities to add Value Management technique to their curriculum in order to educate people in the construction industry so that they will not reject this new concept out of fear and will come to appreciate the true value of Value Management technique.

This was also stressed by (Mat and CVM, 2010), who stated that it is important to make people understand the practice and the concept of Value Management technique. Many important stakeholders are not even aware of the concept of Value Management technique and so are naturally resistant to change.

Regulatory barriers

Public policies and regulatory frameworks do not encourage the development of the construction sector. Having realized the existence of several barriers to Value

Management technique studies, it can be deduced that these barriers might still exist in the current practice of Value Management technique in government projects, mostly, especially in the developing countries.

Procurement issues

Undue emphasis on lowest price rather than best value impacts negatively on industry performance in terms of time, cost and quality. It affects the sustainability of enterprises and their ability to develop and retain a skilled workforce, and to actively promote safety, health and the environment.

2.8.2 Implementation of Value Management technique in Malaysia

Currently Value Management technique is being widely practiced in many developing nations around the world. However, the concept whose origins dates back to the World War II and its application to the construction industry do not seem to be well embraced in the construction sector of the majority of developing counties.

In Malaysia (Jaapar, 2006) stated that Value Management technique is still an early stage of its evolution and this evolution is being hindered by certain factors that are hindering the full growth and application of Value Management technique in the Malaysian construction industry. (Lai 2006) cited by (Kim *et al.*, 2016) identified ten factors hindering the application of Value Management technique in the Malaysian construction. Despite this infancy stage of implementation to the construction industry, the Malaysian Government has enacted legislative instruments which require that all projects that exceed RM50 Million undergo Value Management technique studies.

The main objective was cost optimisation for public projects. Cost optimization is strategy that is meant to reduce cost while maximising the business value. In order to achieve this, Government agency especially EPU and Public works Department (PWD)

actively organised and handled the Value Management technique workshops for the projects. However, there was a challenge in terms of acceptance and receptiveness amongst Value Management technique participants towards the Value Management technique workshops due to lack of knowledge, experience and exposure towards Value Management technique.

2.8.3 Implementing Value Management technique in China

After China started its reform and open door policy, it is in urgent mode for national industries to improve their competitive ability for achieving a share in the global market (Shen and Liu, 2004). Value Management technique was introduced to Chinese state-owned manufacturing companies in 1978 for making savings. The first application of Value Management technique emerged in the manufacturing industry where huge saving was realized because of Value Management technique. Encouraged by the success in the manufacturing industry, Value Management technique was soon in other industries. It is important to note that the spread of Value Management technique in China was engineered through Government support through the first national Value Management technique standard *Value Engineering-General Terms and work program (GB8223-87).*

Value Management technique applications have declined since China started to the transition from the planned economy to the market economy. This transition presents many challenges to local companies. Many state-owned manufacturing companies, the main users of Value Management technique in China are struggling to survive the new business environment because the mechanism for Value Management technique implementation was wired in terms of principles of a planned economy. Value Management technique applications have sharply declined in China, many local Value Management technique societies have ceased to exist, and Value Management technique publications have come to close.

The main obstacles to Value Management technique application in China construction industry are (Shen and Liu, 2004);

Overemphasis on Quality

In China, good quality is the most important objective of a construction project. Almost every construction professional in China is familiar with a slogan "For realising a hundred-year plan, quality is the highest priority". According to (Shen and Liu, 2004) Emphasising on the importance of quality cannot be criticised. However, overemphasis on quality has resulted in the conservative attitude of construction professionals against change, creation and innovation. As a methodology encouraging creative thinking, Value Management technique will be confronted with an intensive challenge caused by the conservative attitude. If this attitude cannot be changed, even if a Value Management technique study is carried out, the beneficial proposal generated by the study cannot be effectively and efficiently implemented.

No practical guidance for implementing VM in construction

A lack of practical guidance for implementing Value Management technique in China's construction industry is another key factor blocking the wide application for Value Management technique in the industry. Value Management technique was first used and boomed in the manufacturing industry in China, the job plan approaches, performance levels and techniques of Value Management technique in most published books were introduced according to the nature of the manufacturing industry. There are no practical Value Management technique guidance notes or manuals for implementing Value Management technique in the context of construction industry in China. According to (Shen and Liu, 2004), a framework in the context of construction should be developed instead of imitating approaches in the manufacturing industry.

The transitional problems in the construction market

The Chinese construction industry is in a transitional period. The co-existence of the centrally planned economy and the market economy has led to the construction market in disorder. Current project procurement in China is in fact a partially competitive system that includes both competitive tender and administration assignment (Shen and Liu, 2004). The distribution of design and construction task of many projects does not totally depend on a fair tendering approach but influenced by local government. Moreover, from the conception to the occupancy of a project, a number of tedious approvals have to be obtained from the relevant government authorities. Therefore, many construction practitioners in China have to pay more attention to maintaining good relationship with the relevant authorities for winning tasks and smoothing approval process than to improving their competitiveness with advanced management techniques. This is not a favourite culture for promoting development of Value Management technique.

2.8.4 Implementing of Value Management technique in Southeast Asia

The application of Value Management technique in construction industry has received so much attention from different researchers and practitioners around the world. (Shen and Yu, 2016) conducted a survey to investigate the Value Management technique awareness and application in Hong Kong's Construction industry and highlighted three important reasons Value Management technique was not being implemented in the construction industry of Hong Kong. (Shen and Yu, 2016) concluded specifically that.

- Lack of knowledge as to how to implement Value Management technique

  (Shen and Yu, 2016) further argued that lack of awareness and knowledge as to how to implement Value Management technique on the part of senior

management in clients organisation was the main reason that very few companies had adopted Value Management technique as a strategy.

- Lack of knowledge about Value Management technique in Construction industry

  Lack of knowledge about Value Management technique, lack of support from parties with authority such as government departments and company owners, lack of Value Management technique guidelines for implementations were some of the reasons identified.
- Conflict of interest amongst project stakeholders.
- Lack of communication amongst project stakeholders.
- Divided authority/segmented decision-making process.
- Plain inapplicability of VE principles in construction.
- Lack of flexibility in contractual provisions.

2.8.5 Implementing of Value Management technique in Hong Kong

Whilst clients and construction professionals are willing to accept new concepts and methodologies in the form of Value Management technique, there are other hidden factors inhibiting the full application of Value Management technique in the construction industry in Hong Kong. These inhibiting factors are the main roadblocks in the development of Value Management technique in the construction industry in Hong Kong.

High Land Cost

Land is a very scarce commodity in Hong Kong and it is usually allocated to the highest bidder (Fong and Shen, 2000). Due to the rise in demand for demand for property, the price for is driven to an extremely high level and as a result, construction cost for whatever development are just a minor part of the total development. For this reason, the application Value Management technique will be

an insignificant process because the potential savings are a small percentage of the whole. Thus, even though there are significant benefits in applying Value Management technique, most clients in Hong Kong are not interested. The most important objectives of most client is realising property to the market so as to recover investment and profit and the fear that Value Management technique studies will prolong the design process and adversely affect their investment plans.

Procurement System

Hong Kong construction has adopted the traditional system of procurement for all their construction projects because it is more popular than other options such as Design and Build, Management Contract or Build Operate and Transfer. The reason for this is that most local firms are already familiarised and accustomed to the system and there is resistance to change. Because the traditional system is characterised by the clear separation of the design and construction phases, it is difficult for contractors to input their expertise and knowledge to the design process. This could be detrimental to a Value Management technique study as the presence of Contractors is vital in improving buildability and polishing the design.

Professionalism

In conducting a Value Management technique workshop, the Value Management technique team can either be led by the original design team, or by an external or hybrid team. When external professionals are involved in reviewing the design, it is expected that designers will try their best to defend their original de-sign, especially when the objectives of the study are not clearly defined and there is no appropriate briefing. Designers always express criticism regarding Value Management technique: some oppose the implementation of a Value Management technique study as it is costly and time-consuming, and some question the qualifications of the team members.

Further arguments, such as the responsibility for design liability and who should bear the cost of redesign, further aggravate the relationship between the designer and the Value Management technique team members. Sometimes, the discussion is too emotional to be objective, resulting in a non-productive debate rather than a constructive study. As stated by (Kelly *et al.*, 2004)`the very nature of the Value Management technique process, dynamism, a change orientation and being perceived potentially as conflict laden, means that it could be seen as undermining traditional professional practices and procedures rather than being complimentary.

2.9 Implementation of Value Management technique in public sector in South Africa

There is limited literature available of Value Management technique in the public sector in South Africa. In fact (Bowen, Jay*, et al.*, 2010) concludes that Value Management technique is not being used and the knowledge of implementation of Value Management technique is limited despite the fact that there is some degree of awareness of Value Management technique. The reasons for such lack of implementation have not being thoroughly researched in the context of public sector in South Africa. In the UK, some Council have used it successfully on a number and variety of projects but it is not being implemented consistently (Gwynne, 2003). (Hunter and Kelly, 2003) cite (Garfitt and Sucliff, 2003) states that whenever Value Management technique is applied in the public sector it delivers results as well as address some of the key aspects of the Best Value. Best Value is an emerging initiative that aims to improve the quality of public service (Bowen *et al.*, 2007). Best Value will be explored in detail later in this section.

Value Management technique is precisely about interrogating what, why and how functions are performed to ensure that the desired functions are achieved. (Gwynne, 2003) asserts that no public sector has a fully-fledged Value Management technique programme. It is important to note that (Gwynne, 2003) was making case for the public sector in the UK. In South Africa, it remains a grey area in as far as the level of implementation of Value Management technique in the Public Sector is concerned. Other scholars such as (Bowen, Jay*, et al.*, 2010) have placed much emphasis on the built environment professionals and neglected the public sector departments which are champions of service delivery.

(Bone 2003) cited by (Hunter, 2004) describes a missing element in the public sector that might be filled by implementation of Value Management technique. The missing element is the stakeholders or the community value in the public service delivery. (Barton, 2003) outlines the importance of integrating stakeholder values into the Value Management technique of public sector projects in Hong Kong to allow for successful participation.

Value in the public sector is a complex area; (Walsh 1991) states that "it is not one of meeting service specifications, but of dealing with shifting value structure of society. Public sector projects involve different stakeholders groups with all different value and interest that have to be captured to allow for effective decision making. (Barton, 2003) argues that in a public sector project there are multiple perceptions on what is useful, beneficial, and important. This is illustrated in the figure which shows the stakeholder groups for a typical public sector hospital project.

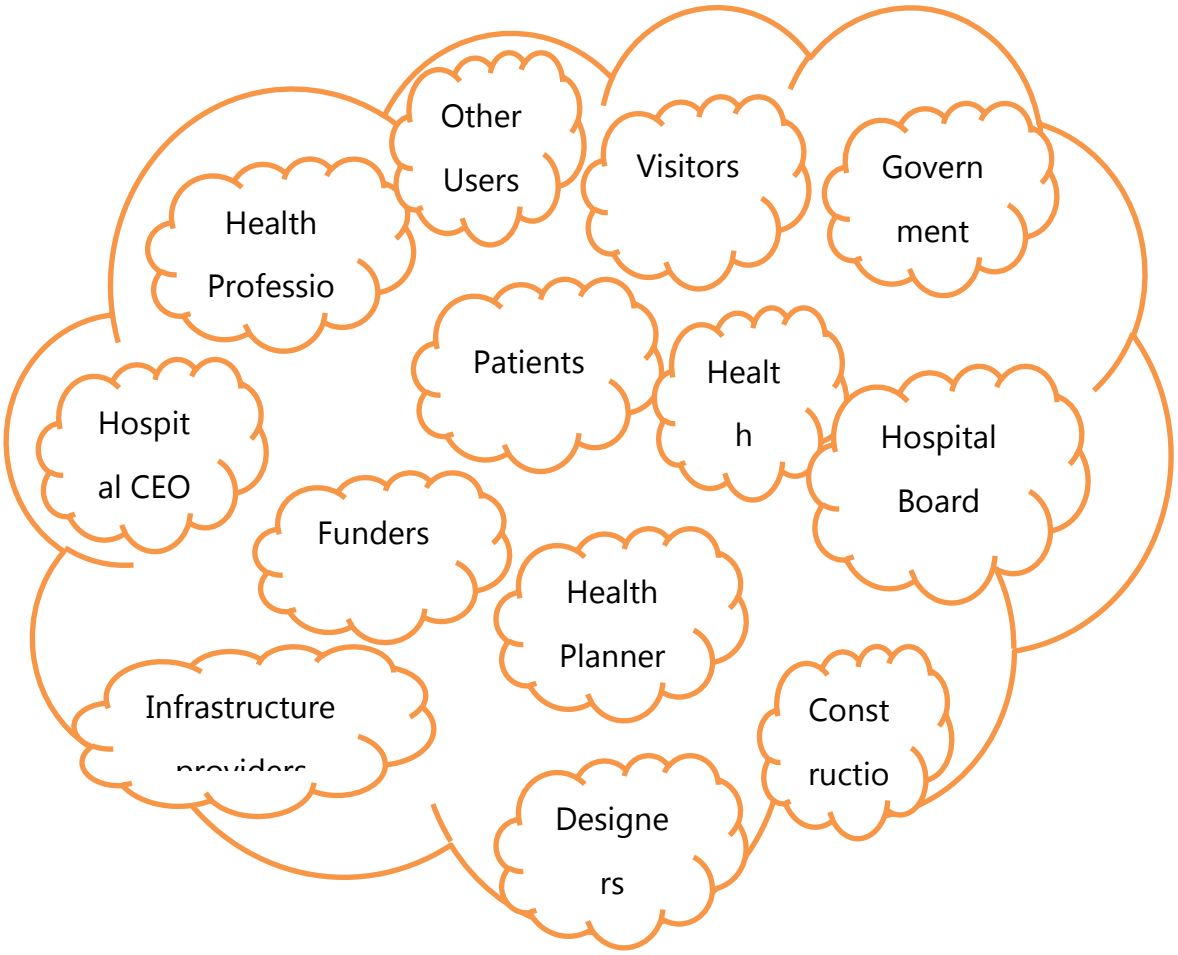


Figure 3: Plurality of Stakeholders(Barton, 2003)

There are various perspectives on the implementation of Value Management technique contributing to the construction of a project. According to (Ashworth and Hogg, 2014) Value Management technique seeks to remove or reduce unnecessary cost in the construction project. The implementation of Value Management technique from a cost reduction perspective places much emphasis towards defining

the actual resources needed to execute and complete the project with lowest cost possible without compromising the level of quality required or the expectations of the user client. The process requires a team of consultants to analyse the building components and design that are most economical and necessary to the function of the building.

2.10 Conclusions

It can be concluded that the understanding and to a greater extent the awareness level of Value Management technique in the public and private sector amongst developing countries is very limited. (Hunter and Kelly, 2003) argues that no public service has a fully-fledged Value Management technique programme. This is despite the acceptance of inherent benefits of Value Management technique in the implementation of public sector projects. Whilst the benefits of innovation have been acknowledged by my scholars, similarly the existences of barriers to its application are also apparent. It is further agued by (Benmansour and Hogg, 2002) that if innovation is of key importance to the success in Morden society, an investigation into the factors that may impede its adoption is fundamentally important. Whilst other researcher (Kelly and Male, 1993; Kim *et al.*, 2016) have attempted to ventilate the factors that imped the adoption of Value Management technique, these factors are only relevant to the respective countries and it is not established if these are applicable to the South African public sector industry in Eastern Cape.

3 CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

According to (Rubin and Rubin, 2011) constructivists expect people to examine actions through different philosophical lenses and come to somewhat different conclusions about meanings rather than just accepting them literally. The main purpose of this chapter is to unpack and explain the methodology undertaken to answer the research questions posed in Section 1.4. Section 3.2 will review the research questions and brief discuss the steps taken to answer the research question. Section 3.3 discusses the research philosophy, compares, and discusses the different philosophies to inform the philosophy adopted for this research. Section 3.4 discusses the research approach adopted. Section 3.5 discusses the research design in detail, the research instrument sample, instrument distribution method, data collection, and analysis strategy. Section 3.6 will discuss the research limitation that may affect the research findings. Section 3.7 addresses ethical issues considered when planning and conducting the research. Section 3.8 provides a summary of the entire research methodology chapter

3.2 Research purpose

The aim of this research is to identify impediments to the adoption of Value Management technique studies in Government funded projects in the Eastern Cape of South Africa. Therefore, in order to decide on the appropriate research methodology, we need to revisit the research question which is stated as:

> *What are the challenges to the adoption of the Value Management technique in government funded projects in the Eastern Cape*

To answer the above research question, the following measures are important.

The research through literature review has identified some of the impediments to the adoption of Value Management technique studies in countries such as Hong Kong, Nigeria and South Asia.

3.3 The Research Philosophy

A research philosophy as defined by (Saunders *et al.*, 2009) is a belief system that a researcher adopts to shape how new knowledge should be researched and developed. It is imperative that the philosophical belief of a researcher is known before a position on a particular research methodology is assumed so as to ensure full understanding of how the research is or was conducted (Pring, 2018). In fact (Jackson, 2013) argues that these philosophical assumptions including beliefs and values are important in the decision making process relating to which research methodology is adopted. The philosophical assumption is important as it guides the type of evidence to gather its origin and how it should be interpreted in order to help with answering of the research questions (Easterby-Smith *et al.*, 2012). The philosophy on which research methodology decision making can be based ontology and epistemology philosophy.

3.3.1 Ontology

Ontology is the philosophical study of the nature of reality and truth (Jackson, 2013). it is a belief that reality is based on one reality and others believe that reality is based on multiple realities depending on the context (Killam, 2013). Philosophies about reality can therefore be divided into two different types of ontologies of realism and relativism. Realism is a believe system that only one truth or reality exists and therefore does not change. The truth can be discovered using objective measurements and once you found out what the truth is, it can be generalised to other situations (Matsio, 2018). On the other hand, relativism is a believe system that there are multiple versions of reality and is shaped by context, one's experience and can therefore not be generalised. The truth is created on how we see things and the

context it presents itself. It can therefore only be transferred to similar context (Killam, 2013; Matsio, 2018).

3.3.2 Epistemology

Epistemology refers to what relationship the researcher has with what is being researched and how the researcher should get the knowledge should be obtained (Matsio, 2018). This relationship will be dictated by the researchers ontological believe (realism or relativism). In other words what the researcher believes what reality is will dictate the type of relationship the researcher should have with what is being researched (Matsio, 2018). There are two basic believes on what the relationship of the researcher should be with what is being researched and how the new knowledge should be gathered. These beliefs are positivists or interpretivists

3.3.2.1 Positivism Perspective:

A positivism approach refers to where researchers believe new knowledge should be gathered in an objective manner and the researcher should be far removed from what is being researched (Jackson, 2013; Matsio, 2018). In this way, they can get an objective measurement. Positivism is a belief that reality is stable and can therefore be described objectively (Levin, 1988). It assumes that reality is objective, independent from human behaviour and all other factors that create an unstable situation (Crossan, 2003). The positivism epistemology is therefore driven by realism ontology in this case.

A positivist approach excludes examination of human beings and is therefore not appropriate approach to study human behaviour (Matsio, 2018). Humans can be influenced by feelings, perceptions, and attitudes and therefore research outcomes affected by these will not be considered by a positivist researcher (Crossan, 2003).

In summary, the positivist philosophy requires that statements are verified against the facts of reality (Crossan, 2003). The truth should therefore be verifiable through

the study of external reality. The study of human behaviours are therefore beyond the scope of positivism (Crossan, 2003; Matsio, 2018).

3.3.2.2 Interpretivist Perspective:

Interpretivist provides an alternative to positivism. For the interpretivist researcher, reality is not constant, instead it is a created by human beings participating in the research (Crossan, 2003).The interpretivist approach believes in a subjective way of gathering information (Killam, 2013). In this approach, the researcher interacts with what is being researched with a view to gather in depth data to find out what the truth is. The potential influence of the researcher in this instance is acknowledged. The relativism ontology in this case led to an Interpretivist epistemology. Relativists believe that the truth is created by meaning and experience from people. Therefore, an interpretivist approach believes that in order to understand somebodies experience you need to talk to them and get involved (Killam, 2013). Therefore reality does not exist without a context and there is therefore a different form of reality (Hughes, 1994). The context that influence reality maybe be individual behaviour, attitude, culture, gender, and etc (Crossan, 2003)

The scope of interpretive approaches is limited to qualitative research methods (Crossan, 2003). This approach allows more participation of individuals in the research process. Its participatory and interactive nature is seen as its main weakness and the researcher close involvement in the research process (Parahoo, 2014). The interpretive approach that directs research qualitatively is a collection of personal experiences and is therefore prone to the researchers' bias. Qualitative research cannot be reproduced to a different situation, as it is personal to the researcher. A different researcher may therefore come to a completely different conclusion for the same research (Mays and Pope, 1995).

3.4 Research Approach

The above section has provided insightful description of the philosophies of positivism and interpretivism to inform the decision of the research methodology to be adopted. Positivism adopts a clear quantitative research approach, whereas the interpretivism approaches takes a qualitative approach (Crossan, 2003). Quantitative and qualitative research approaches are seen as different approaches but are frequently used together. Although the two philosophies are different from each other, neither of the two is better than the other. In fact, (Crossan, 2003) argues that the difference between the philosophies are exaggerated and the use of mixed approaches is common. The most appropriate position should therefore be taken that is best suited to answer the research question and the problem statement.

The aim of this research is to identify impediments to the adoption of Value Management technique studies in Government funded projects in the Eastern Cape of South Africa.

A mixed method approach will be adopted to answer the research question and the problem statement. According to (Johnson and Onwuegbuzie, 2004) the goal of mixed methods research is not to replace either the quantitative or qualitative approaches to research, but rather to draw from the strengths of these approaches and to minimise possible weaknesses.

As explained by (Tashakkori *et al.*, 1998), there has been growing interest in research methodologies such as mixed-method and mixed-model studies in many fields. Nevertheless, there has been a lack of conceptual clarity and not enough examples of the mixed methods being used (Tashakkori *et al.*, 1998). However, they stated that, although the growth of the mixed-method or mixed-model has been retarded by the vestiges of the paradigm wars, researchers are now free to use the methods in their research questions. In fact, the research questions are best answered with mixed-

method or mixed-model research designs, rather than with a sole reliance on either the quantitative or the qualitative approaches.

There are two major advantages to employing multi methods in the same study (Saunders *et al.*, 2009). Firstly, different methods can be used for different purposes in a study. This would give the researcher confidence having addressed the most important issues. The second advantage of using multi-methods approach is that it enables triangulation to take place. Thus, it may be concluded that the combination of quantitative and qualitative research methods offers the advantage of the respective qualities of both approaches (MacLeod and Part). Further, advocates for mixed methods research approach argue that the quantitative and qualitative methods of measurement and accompanying analyses are compatible and complementary to each other in a mixed method research design.

The rationale of choosing a mixed method research methodology for this research was to:

- Gain data about a wider range of interests.
- Understand more fully – and thus get fuller research picture;
- Generate deeper and broader insights.
- Enhance the significance of interpretation.
- Enhance the convergence and collaboration of findings.
- Allow for unexpected developments.
- Clarify underlying logic.
- Facilitate both outsider and insider perspectives, thereby improving research

3.5 Research Design

A research design characterizes a plan and the procedures for conducting an investigation based on the nature of the research problem and issues that are being addressed in combination with the researcher's personal experience (Creswell, 2009).

Rresearch design is also described as a blueprint, or outline, for conducting the study in such a way that maximum control will be exercised over factors that could interfere with the validity of the research results (Polit and Hungler, 1999: p155). It describes what we intend to do with the participants with a view to reaching conclusions about the research problem (Welman *et al.*, 2005). Research design is the framework for collecting data for the project in the best possible way (Polonsky and Waller, 2018). Another author (Punch, 2013) defines Research design as the basic plan for a piece of research, other scholars have defined research design as a package, plan of action and a strategy of investigation from beginning to the end of the research study.

The research study being a mixed qualitative and quantitative method, the researcher made use of a mixing strategy as suggested by (Creswell, 2009; Creswell and Clark, 2017) to connect the qualitative data, in order to "build" or develop the subsequent quantitative data. Qualitative date was collected through semi-structured interview with Head of Department with built environment experience. More specifically, the data are connected in that the qualitative results were used in collaboration with the literature review to design a measurement instrument, namely a survey questionnaire.

3.6 Data Collection

The most common research instrument used to collect research data is the questionnaire and the measurement tool used with the research instrument is the Likert Scale. This scale was chosen as the primary measurement approach to the instrument for this research due to wide and effective documented use in the literature (Kaplan and Saccuzzo, 1993). The outcomes of the interviews will be categorised in a tabular format and forwarded to respondents to determine their

perceived relevance of each hindrance factors in adopting Value Management technique studies in government project.

The 5-point Likert scale to measure respondents' attitude with respect to 5 ordinal points is a commonly used variant of the Likert Scale (Jamieson, 2004). The 5-point Likert scale is therefore chosen for this research and respondents will be asked to rank the relative importance of each identified impediments factors in adoption of Value Management technique studies in government projects. The 5 ordinal points chosen, in ascending order, were as follows:

1. Absolutely
2. Most Likely
3. Very Likely
4. Likely
5. Not at all

An approach commonly undertaken is to map the ordinal Likert Scale points to an interval scale, particularly when there is a strong relation between the two scales and a need exists for numerical analysis to be made on the ordinal data (Labovitz, 1970; Blaikie, 2003; Allen and Seaman, 2007).

3.7 Population and Sampling

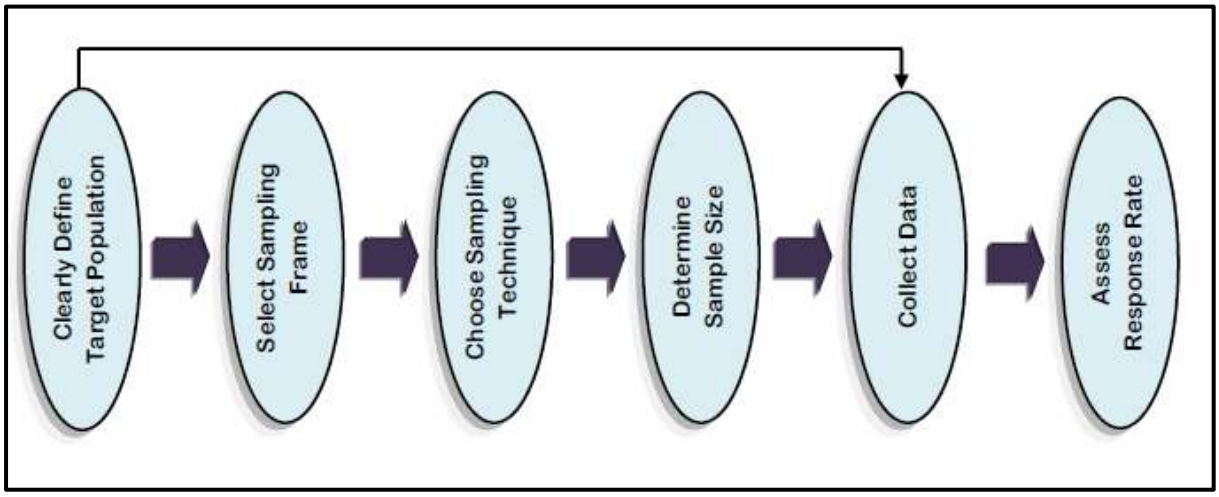


Figure 4: Sampling process steps (Taherdoost, 2016)

Sampling refers to the selection of a subset of persons or things from a larger population, also known as a sampling frame (Morrison, 2007)with the intention of representing the particular population (Gall *et al.*, 2007). This research is specifically focused on the Eastern Cape. Eastern Cape has 13 Provincial department, 6 district municipalities and 31 local municipalities (Du Toit and Falkena, 1994).

In terms of the Constitution of the Republic of South Africa, 1996 (Act No 108 of 1996) The Department of Roads and Public Works mandate is to be the custodian and manager of all national governments' fixed assets, for which other legislation does not make another department or institution responsible. This includes the determination of accommodation requirements, *rendering expert built environment services to client departments*, the acquisition, maintenance and disposal of such assets (Department of Public Works South Africa, 2006, July 20). Therefore the Target Population is the Eastern Cape Department of Public Works and Infrastructure.

3.7.1 Sampling Technique

A *non-probability sampling* procedure was used for the selection of knowledgeable and experienced built environment professionals within the Eastern Cape

Department of Public Works and Infrastructure. For this reason, *a purposive sample* was used to select different selected individuals who are responsible Heads for each strata or facet of the Eastern Cape Department of Public Works and Infrastructure. The participants of this research phase were purposefully selected based on their involvement in the decision making of the affairs of the Department of Public Works and Infrastructure.

3.7.2 Sample Size

This sample size for the qualitative data of this research is Six (6) participants who are Head the Eastern Cape Department Public works and infrastructure. The Six participants are Heads of the following Department;

- Supply Chain Management,
- Project Construction Management,
- Architectural Services,
- Quantity Surveying Services,
- Engineering Service and
- Building Inspectorate.

A sample of 65 Built Environment Consulting Professionals was selected and option survey was sent them via email. The questionnaire clearly defined and outlined the context of the research. To get a balanced view among the stakeholders, questionnaires was sent to project managers, quantity surveyors, and engineers supply chain management and building inspectorate. The involvement of these different stakeholders will help as different people have different perception of the factors that impede the implementation of Value Management technique study in the public sector projects. The number of participants is viewed as being sufficient. It is based on the saturation principle of diminishing returns – the notion that each

additional unit of information would supply less new information than the preceding one: until new information dwindles to nothing(De Rond and Thietart, 2007: p166).

3.8 Research Instruments

3.8.1 Semi Structured Interviews

Semi Structured interviews will be conducted with selected participants with the identified Eastern Cape Government Department. Interviews yielded rich material unobtainable in any other way, which support or be supported by other data from questionnaires and standardised test responses. As previously indicated qualitative data obtained from interviews is then used to develop the structured questionnaires which are then thought a pilot survey are sent via emails to other built environment specialists who provide built environment services to the Department of public works.

3.8.2 Structured Questionnaires

A questionnaire is a way to collect data in survey research that contains recorded questions that people respond to directly on the questionnaire form itself, without the aid of an interviewer (Monette, 2011).

The researcher emailed the questionnaire via the use of a web-based tool to collect data. Brief descriptions were also given to allow easy of understanding to respondents. Web based tools was preferred as they are cheap, easy to use, some of them have template questions already set up, some provide useful reporting and quick turnaround.

The survey questionnaire comprised of the three parts; the first part pertained to the respondents' professional background. The second section of the questionnaire dealt with the use of Value Management technique by the respondents, the third section of questionnaire dealt the factors that impede the implementation of Value

Management technique in the public sector projects and the last section of the questionnaire invited respondents to suggest ways to deal with impeding factors to the adoption of Value Management technique study. The third section of the questionnaire was on a 5-point Likert scale. The Survey Monkey Website served as an administration tool and a central repository of all the responses. A built-in logic within the Monkey Survey tool ensured that respondents answered all the compulsory questions (i.e., section one and two) before submitting final responses.

3.9 Data Analysis

3.9.1 Qualitatative

This section discussess the qualitative analysis on the interviews conducted. Content analysis was used to explore and investigate the impeding factors to the adoption of Value Management. Content analysis refers to the process of identifying, coding and categorizing the primary pattern in the data (Patton 1990).

The patterns and themes emerge from the analysis of raw data colleted from the Interviews and then the data will be tested by subjecting to a wide audience via a survey Data analysis for qualitative data was processed into theme to codify the veiws expressed by the interview participants. As part of the analysis, themes were estavblsed form what the participants were expressing.

3.9.2 Quantitative

The aim of survey method applied by the researcher in this research is to obtain friequencies of data and to establish the nature of the relationship between variables related to the adoption of Value Management in the public sectorprojects in the Eastern Cape, South Africa

Thereafter, from the surveys conducted, responses were analysed by the researcher to ascertain whether the results obtained were significant and did not happen by

chance. Responses were collated on an excel spread sheet and coded to assist in the analysis. Results were tabulated and graphically presented using the frequency distribution.

3.10 Data Validity and Reliability

Results obtained from both quantitative and qualitative processes require to be validated. The validations of both results are validated in two stages. The first stage is the triangulation of data from analysis result. It refers to a process of using more than single source of data as part of validation purposes (Hussein, 2009). Triangulation for this section consists of data collected from all three sources (i.e. interview, survey and document analysis). Triangulation process is conducted through analysing results obtained for all three sources.

3.11 Research Ethics

Ethics is rooted in the ancient Greek philosophical inquiry of moral life. It refers to a system of principles which can critically change previous considerations about choices and actions. It is said that ethics is the branch of philosophy which deals with the dynamics of decision making concerning what is right and wrong (Fouka and Mantzorou, 2011).

It is therefore important to consider the ethics around the methods used, how participants are treated, results collected and presented during the research process (Bell and Wray-Bliss, 2009). The following ethical principles have been compiled based on medical and social ethics to guide research processes (Bell and Wray-Bliss, 2009):

1. Ensure the voluntary consent of the participant/subjects.
2. Experiment must be for the good of society.
3. Sufficient prior research must have been conducted.

4. Unnecessary suffering and harm must be avoided.
5. Experiment with the chance of injury of death is prohibited.
6. The risk should never outweigh the potential impact on humans when studying the research problem.
7. Preparations and facilities must be in place to avoid harm or injury.
8. Only properly qualified people may conduct the research.
9. The subject/participants can withdraw consent.
10. The researcher must terminate the experiment if the risk of harm warrants it.
11. Research subjects are fully informed about the nature of the research.
12. The privacy of the participants must be maintained.
13. Where appropriate data should be kept confidential and anonymous.
14. Sources of funding should be declared where appropriate.
15. The affiliation of the researcher and potential conflicts of interest should be declared.

The list is useful to guide this research process on points to consider relating to research ethics. However not all of the points were addressed as some are relevant and some are not. All points indicated on the above list was considered with the exception of points 2, 5, 7, 8, and 10. These points are more related to experimentation.

The research used a web survey to gauge a perspective from the decision makers at the Eastern Cape Department of Public Works and Infrastructure on the factors impeding the adoption of Value Management technique study in the public sector projects. Since the data generated was quantitative, the research therefore did not require any personal information of the participants and thus the process was totally confidential and anonymous. Data confidentiality was therefore maintained in this regard.

The findings of the research did not provide any personal details but a computation of between 1- 5 on what participants consider to be impeding factors to the adoption of Value Management technique Study in the public sector projects. Therefore, the outcome was statistical. In addition, the process does not foresee any risk to the participants including injury or death due to the nature of this research process.

The participants were informed about the nature of the research. This was covered in the first page of the survey and participants were further encouraged to contact the researcher if more information of the research is required.

3.12 Conclusions

The research philosophy was discussed which underpins the paper's research approach.. This chapter also addresses the research limitation and ethics that needs to be adhered to in relation to the research methodology design and research process.

4 CHAPTER FOUR: RESEARCH FINDINGS

4.1 Introduction

This chapter presents the results obtained from the survey conducted as outlined in the research design. The full, un-modified, survey results can be found in Appendix C. Section 4.1 provides an overview of the respondent demographics, noting their roles played in the industry and their professional background. Section 4.2 shows the level of awareness of Value Management technique by the respondents.

The primary research results were obtained through structured interviews with selected key decision construction practitioners and then the results were used to design a structured questionnaire that was pilot tested with built environment consulting firms who are services providers to the Eastern Cape Department of Public Works and Infrastructure.

4.2 Sampling profile

The sample chosen was 6 participants within the Eastern Cape Department of Public Works and Infrastructure. This is because, the Eastern Cape Department of Public Works and Infrastructure is the implementing agent for all infrastructure projects for other government departments. The participants chosen are heads of key infrastructure delivery departments within the department; therefore they are directly involved and are key decision makers in departmental functioning. They were all contacted via email with follow-up being done telephonically.

The interviews were scheduled with each individual depending on their suitability and since the four are based in the same organization each; the interviews were scheduled such that the researcher could conduct at least two in one day if not three. This was done in order to address the problem of time constraint and logistics. An email was sent and one week was allowed to give the interview participants time to

consider and assess how the proposed interview dates can fit into their schedule. Another week was scheduled for conducting the actual interviews. This give a total of two weeks for data sourcing and three weeks will be needed to present and analyze data and complete the report.

Table 2: The responsibility and levels of the participants to be detailed

Participants	Organization	Levels	Role and responsibility
Interviewee 1	ECDPW&I	12	Chief Architect
Interviewee 2	ECDPW&I	10	Supply Chain and Procurement Manager
Interviewee 3	ECDPW&I	12	Chief Quantity Surveyor
Interviewee 4	ECDPW&I	11	Specialist
Interviewee 6	ECDPW&I	12	Chief Engineer

4.3 Interview results

The aims of the interviews were to firstly establish the processes related to the infrastructure delivery within the Department of Publics Works and Infrastructure to establish whether there is any form of Value Management technique in any current methodologies that are used by the Eastern Cape Department of Works & infrastructure. The interview also sought to establish the understanding of Value Management technique from the participants

Secondly, it was to assess and establish the familiarity with the Value Management technique methodology and if there are any alternatives within the department in place that embodies the same principles as Value Management technique and delivers the same benefits.

Thirdly, the interview sought to establish if any, whether there is any form implementation of Value Management technique within the department and where

in the project lifecycle do they implement Value Management technique study. Lastly, the factors that impede the implementation of Value Management technique were canvased with the participants

The participants were senior officials in senior positions and professionals within the built environment. The first set of questions sought to establish the infrastructure delivery criteria within the public sector. It was clear from the interviews that the implementation of infrastructure projects within the public sector is based on the legislative instruments which guide the departments in implementation of government projects within the public sector. The participants stressed that the bureaucratic processes of implementation of government projects do not allow for processes like Value Management because they are viewed as ad hoc..

The second set of question sought to establish the level of awareness of Value management by the government officials. All the participants exhibited signs of awareness of Value Management concept although they did not fully have a full appreciation of it. Some indicated that they have activities within the framework for implementation of public sector projects that has some feature of value engineering, which is the internal design audit process that are built into the project implementation processes.

Political Influence was one the factors that identified as an impediment to the adoption of Value Management within the public sector projects. Participants indicated that there is already a delay in implementation of government infrastructure due to the requirements of PFMA Act and if Value Management study is introduced, it will create another layer of delay to the implementation of government projects which will have an impact on the expenditure performance on the department and such under performance is frowned at by the political heads of the department.

To summaries data from the interviews conducted by a sample population selected within the government department, the key factors that impede the adoption of Value Management study within the public sector projects, the following are critical players.

- Lack of awareness
- Political Influence
- Corruption
- Bureaucratic nature of government processes

The results were tested in a broader scale of the construction industry by incorporating it in a web questionnaire which was distributed to a bigger populationto test the validity of the data collected through the inteviews

4.4 Participants Information

An online survey conducted though the structured questionnaire that was designed based on the qualitative data obtained from the semi structured interviews with six (6) purposely selected key decision makers within the Eastern Cape Government Department. 45 responses were obtained out of 62 structured questionnaires which were forwarded to different built environment consulting firms in the construction industry in the Eastern Cape Province. The response rate was 73% which was sufficient for the research to procced.

Table 3: Participants Data

	Project Manager	Architect	Quantity Surveyor	Structural Engineer	Mechanical Engineer	Civil Engineer	Other	Total #	Total %
Government Department	17	1	1	0	0	3	1	**23**	**51%**
Consultancy	2	1	0	0	0	0	0	**3**	**7%**
Project Management		1	0	0	0	0	0	**1**	**2%**
Contracting	5	0	2	0	0	6	0	**13**	**29%**
Property Developers	1	0	0	0	0	0	0	**1**	**2%**
Others	2	0	0		1	1		**4**	**9%**
Total #	**27**	**3**	**3**	**0**	**1**	**10**	**1**	**45**	
Total %	**60%**	**7%**	**7%**	**0%**	**2%**	**22%**	**2%**		**100**

The responses were from various built environment consulting firms working within and with different government department within the Eastern Cape Province as professional service providers. From the Table 5 above, it is very clear that the most responses received from a role perspective were from the "Project Managers" Sixty percent (60%), followed by the "Civil Engineers" Nineteen percent (19%), and then followed by "Quantity Surveyors" at fourteen percent (14%), followed by Architects at twelve percent (12%), Other Professions at twelve percent (12%) and then lastly Mechanical Engineers at two percent (2%).

The results indicate that the survey was able to capture response from all the role players as well as the relevant industry players. From the table 5 above, it can be seen that most response were received from the various Government department fifty one percent (51%) followed by contractors with twenty nine percent (29%), others nine

percent (9%) and then followed by consulting respondents with seven percent (7%). Property developers firms and project management firms only accounted for two percent (2%).

4.5 Value Management technique Awareness

Value Management technique is fairly known by the respondent. Amongst 45 respondents, 46% percentage are fully aware of the Value Management technique study and their knowledge of Value Management technique between a score poor, good and solid, 46% have a good knowledge of Value Management technique study. 31% indicated to have solid knowledge and awareness of Value Management technique study and only 22% of the respondents indicated to have poor knowledge, understanding and awareness of Value Management technique study

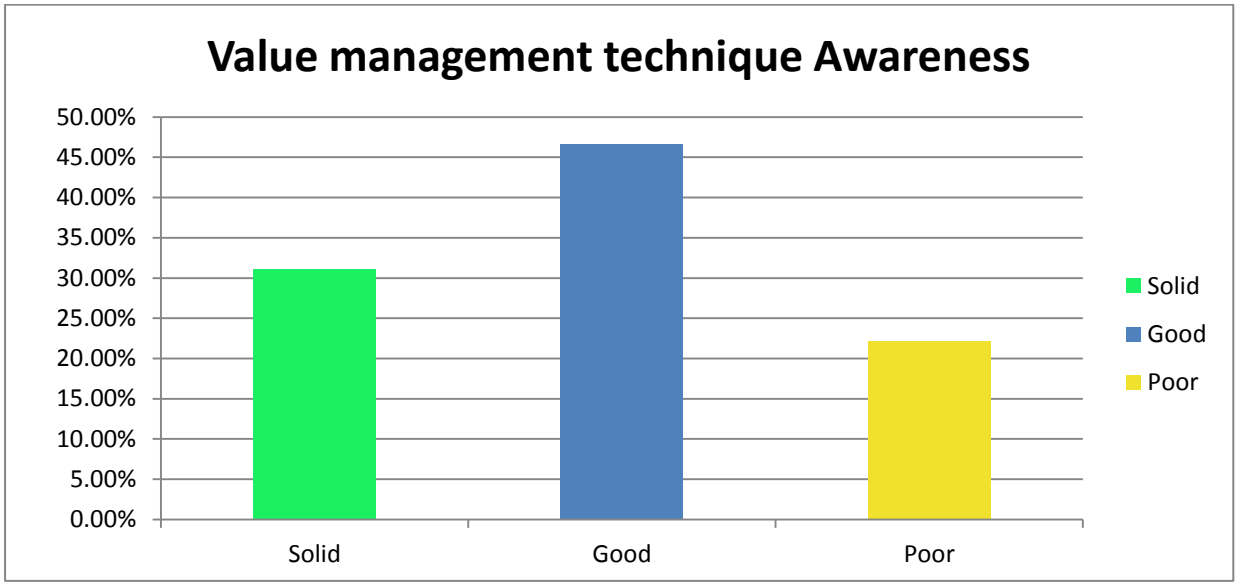


Figure 5: Value Management technique Awareness

4.6 Impediments to adoption of Value Management technique

A heat map from the table 7 below shows the overall respondents' rankings of the likelihood of impediments to the implementation of Value Management technique study. From the table 7 below, in each cell the number below shows the number of

respondents who rank the like hood of the corresponding identified impediment factor. Respondents were asked to rank from a scale of 1 – 5, 1 being "not at all" and 5 being "absolutely cause" of impediments to implementation of Value Management technique.

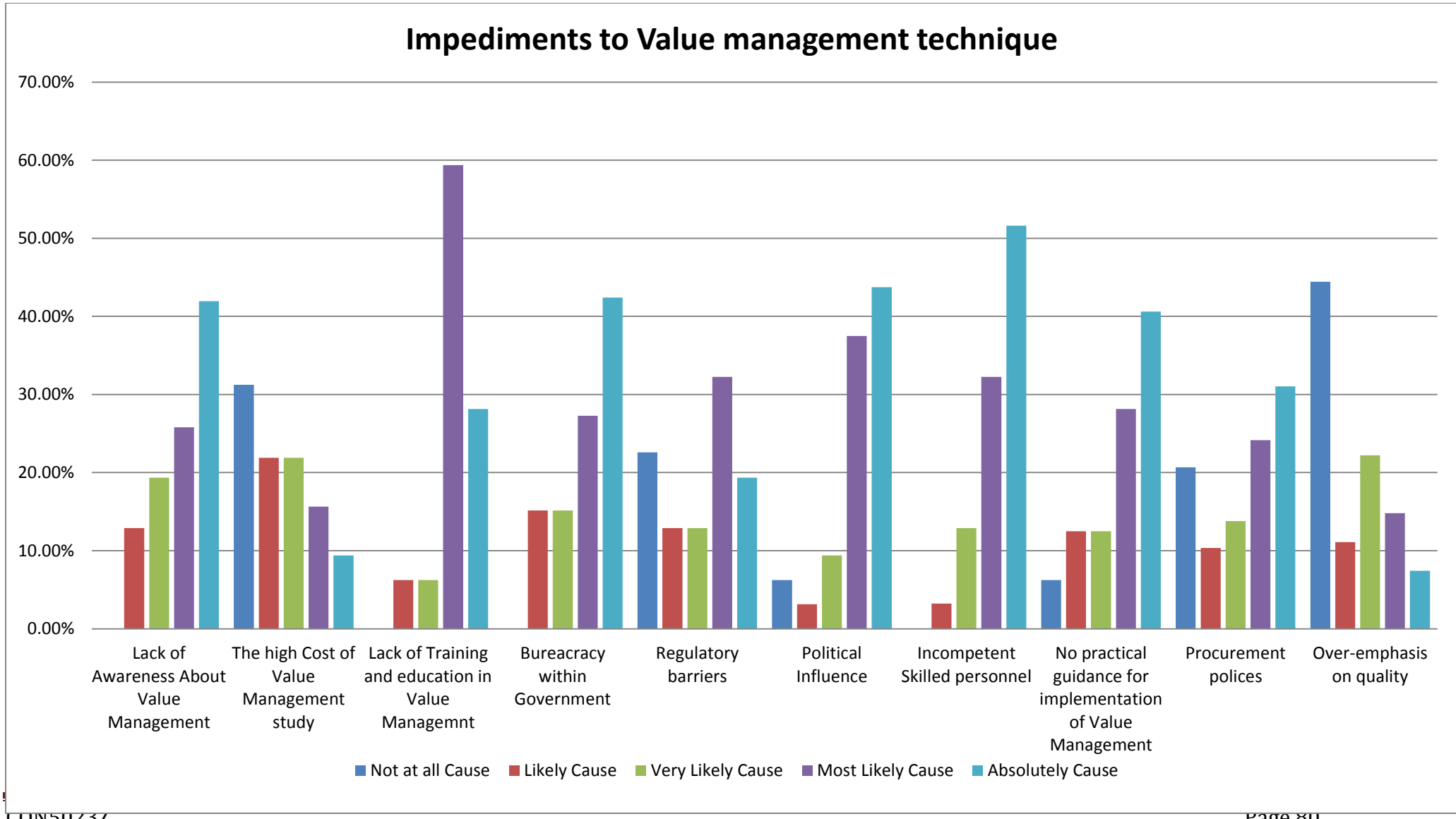
The table below indicates a number of highlights. There are two factors where over fifty percent (50%) of the respondents agree that "*Lack of Training and Education in Value Management technique*" and *"Incompetent Skilled Personnel"* are *absolutely* the cause and *most likely* the impediments to the adoption of Value Management technique Studies in the public sector projects in the Eastern Cape.

In addition, there are three factors that where at least just below fifty percent (50%) of the respondents indicated that there factors are absolutely the impediments to the adoption Value Management technique Studies in the public sector projects in the Eastern Cape. These factors are, "*Political Influence"* with forty four percent (44%), "*Lack of awareness about Value Management technique"* with forty two percent (42%) and "*Bureaucracy within government"* with forty two percent 42%.

It can be further noted that there are factors which the respondents agree that they are not cause factors to the adoption of Value Management technique in the public sector projects in the Eastern Cape. These factors are *"Over-emphasis on quality"* with forty four percent (44%) and "*The High Cost of Value Management technique Study"* with thirty one percent 31%. One can reasonable infer that the "Cost of Value Management technique study" should not be considered as an impeding factor simply because there appears to be no attempt at all to formally introduce Value Management technique Study in the public sector notwithstanding the existence of what they refer to as "Audit Committee".

Figure 6: Impediments to Value Management technique

	Not at all cause (1)	Likely Cause (2)	Very Likely Cause (3)	Most Likely Cause (4)	Absolutely Cause (5)	Total
Incompetent Skilled Personnel	0.00% 0	3.23% 1	12.90% 4	32.26% 10	51.61% 16	31
Lack of Training and Education in VM	0.00% 0	6.25% 2	6.25% 2	59.38% 19	28.13% 9	32
Political Influence	0.00% 0	3.13% 1	9.38% 3	37.50% 12	43.75% 14	32
Lack of Awareness about VM	0.00% 0	12.90% 4	19.35% 6	25.81% 8	41.94% 13	31
Bureaucracy with government	0.00% 0	15.15% 4	15.15% 4	27.27% 9	42.42% 14	33
No practical Guidance for Implementation of VM	6.25% 2	12.50% 4	12.50% 4	28.13.% 9	40.63% 13	32
Procurement Policies	20.69% 6	10.34% 3	13.79% 4	24.14% 7	31.03% 9	29
Regulatory barriers	22.58% 7	12.90% 4	12.90% 4	32.26% 10	19.35% 6	31
The High Cost of Value Management technique Study	31.25% 10	21.88% 7	21.88% 7	15.63% 5	9.38% 3	32
Over-emphasis on quality	44.44% 12	11.11% 3	22.22% 6	14.81% 4	7.41% 2	27


Impediments to Value management technique
70.00%
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
Lack of Awareness About Value Management
The high Cost of Value Management study
Lack of Training and education in Value Managemnt
Bureacracy within Government
Regulatory barriers
Political Influence
Incompetent Skilled personnel
No practical guidance for implementation of Value Management
Procurement polices
Over-emphasis on quality
Not at all Cause
Likely Cause
Very Likely Cause
Most Likely Cause
Absolutely Cause

4.7 Other impediments factors to the adoption of Value Management technique

The survey allowed for respondents to suggest other impediments factors to be gathered from the comments section at the end of the survey pages. Table 10 below shows the additional key success factors obtained from survey. The factors have been coded for easy of understanding. Coding enables the factors to be put in different categories.

Figure 7: Other impediment factors

Item	Impediment factor	Coding
1	Time constraints	Regulatory barriers
2	Not listening to advise from professional consultants	Incompetent Skilled Personnel
3	Lack of Knowledge of VM by the Project Manager	Lack of awareness of VM
4	Corruption and self-enrichment	Political Influence
5	Lack of Commitment	Lack of awareness
6	Lack of knowledge and implementation	Lack of training and education
7	Political Influence	Political Influence
8	None existence of intermediate financial auditing and reporting	Procurement policies
9	Lack of Knowledge and Political Will	Lack of awareness of VM
10	Political Influence to deliver projects in time without delay	Political Influence

The above list was analysed and compared to the list of factors indicated in the survey to determine which of the factors listed are additional to what has been covered in the survey. A total of 10 suggestions were provided by the respondents and were then coded to the categories for understanding. In other words, the categorisation of additional suggested impediment factors must be understood in the context within which they are categorised.

5 CHAPTER FIVE: DISCUSSIONS

5.1 Introduction

This chapter discusses in detail the results presented in Chapter 4. Both primary and additional research findings were listed in Chapter 4; however, the discussion emphasises the primary research findings only, i.e. those which answer the research questions and only elaborates on the more relevant additional research findings observed.

5.2 Discussion of primary findings

The participants overwhelmingly concurred that one of the major impeding factors to the adoption of Value Management technique study in the public sector projects is the **political pressure** that befalls upon the professionals from the political heads of the department to spend budgets to meet the financial year expenditures. Any Value Management technique studies or any activities that mirror the Value Management technique methodology will be viewed as an additional layer of delays within the public sector procurement. Participants indicated that their Heads are measured performance against expenditure and therefore, there is always pressure to spend budgets in line with National or Provincial targets

Awareness of Value Management was another impeding factor that was overwhemilngly expressed by the personnel at the Department of Public Works and Infrastructure. Majority of partcipants expressed lack of awareness of Value Management Studies and its relevance towards infrastucture service delivery and this is according to the participants is due to limited focus on training human capital within government departemnts

Other factors that were cited as impeding factors include the legislative instruments within which public procurements operate and the additonal cost of the Value

Management studies over and above the budgeted grants for infrastructure service delivery

5.3 Discussion of secondary findings

Challenges confronted with the adoption of the Value Management technique

The table 5 indicates that construction project professionals formed a significant number of the research respondents with a total percentage of 62.5%. On the same table, it can conclude that there is no adequate representative data set. Gathered data could be termed to be inclined more to project professionals as there are no results from client representatives. This is particularly so because the research targeted construction project professionals who worked within and with government Department in the eastern cape in various and different disciplines.

Figure 8: Ratings

	Not at all cause	Likely Cause	Very Likely Cause	Most Likely Cause	Absolutely Cause	Total	Weighted Average
Incompetent Skilled Personnel	0.00% 0	3.23% 1	12.90% 4	32.26% 10	51.61% 16	31	4.32
Lack of Training and Education in VM	0.00% 0	6.25% 2	6.25% 2	59.38% 19	28.13% 9	32	4.09
Political Influence	0.00% 0	3.13% 1	9.38% 3	37.50% 12	43.75% 14	32	4.09
Lack of Awareness about Value Management	0.00% 0	12.90% 4	19.35% 6	25.81% 8	41.94% 13	31	3.97
Bureaucracy with government	0.00% 0	15.15% 4	15.15% 4	27.27% 9	42.42% 14	33	3.97
No practical Guidance for Implementation of Value Management	6.25% 2	12.50% 4	12.50% 4	28.13.% 9	40.63% 13	32	3.84
Procurement Policies	20.69% 6	10.34% 3	13.79% 4	24.14% 7	31.03% 9	29	3.34
Regulatory barriers	22.58% 7	12.90% 4	12.90% 4	32.26% 10	19.35% 6	31	3.13
The High Cost of Value	31.25%	21.88%	21.88%	15.63%	9.38%	32	2.50

Management technique Study	10	7	7	5	3		
Over-emphasis on quality	44.44% 12	11.11% 3	22.22% 6	14.81% 4	7.41% 2	27	2.30

From the table 8 above, it is observed that top 6 factors are highest impediment factors to the implementation of Value Management technique studies in the public sector projects in the Eastern Cape. These are, Incompetent skilled personnel, Lack of Training and education in Value Management technique, Political Influence, Lack of Awareness, and Bureaucracy with government and No practical Guidance for Implementation of Value Management technique.

Incompetent Skilled personnel

The highest percentage of responses agreed that the Incompetent skilled personnel at Government Department were absolutely an impediment factor to the adoption of Value Management technique studies in the public sector projects. This factor accounts for the greatest factor (51%) as the absolute impediment factor. This result Is consistent with (Shen and Liu, 2004) who argued that Value Management technique experts must poses experience and technical skills in Value Engineering and must be Certified Value Specialist.

Lack of Value Management technique specialist causes significant hindrance to the adoption of Value Management technique study in the public sector projects because there is absence of experts who can provide guidance and foundation for the development and implementation of Value Management technique study.

Lack of Training and education in Value Management technique

This impediment factor had the second highest score with 59%. It is rated as most likely impediment to the adoption of Value Management technique studies in the public sector projects. It is not surprising that *"lack of Training and education in*

Value Management technique and incompetent skilled personnel" are next to each other and amongst the top factors of impediments to the adoption of Value Management technique.

This indicates that for successful implementation of Value Management technique, proper training and skill level of the project manager is very important. The empowerment and ownership of each individual in Value Management technique study towards the project are crucial. Membership Roles of Value Management technique Team are able to influence behaviour, dynamic and outcome of VM study (Kelly *et al.*, 2004). Their ability to present and take up ideas for further implementation of Value Management technique influences the effectiveness of the workshop (Male, 2002).

Lack of Awareness about Value Management technique

Lack of awareness about Value Management technique also come in high from the respondents because of the fact that the respondents identified, lack of training and education on Value Management technique as absolutely the impediment factor to the adoption of Value Management technique studies in the public sector projects in the eastern cape of South Africa The low level of awareness is also attributed to lack of knowledge during Value Management technique workshops.

The lack of awareness about Value Management technique (Aghimien *et al.*, 2018) argued is one of the contributing factor to the problem faced was due to lack of input from the related specialists' as well as poor facilitation skills during the Value Management technique workshops.

Political Influence,

Political influence is one of the impediment factors placed high on the ranking by the respondents. Respondents on interview argued that political influence is one of the

major impediments to the adoption of Value Management technique in public sector projects because as public sector projects are used as a vehicle for service delivery. For that reason respondents argued that there is undue pressure that put on the construction professionals within government department to spend more money contrary to the philosophy of Value Management technique.

Political Heads of Government Department are performance evaluated against the expenditure of their respective Department and for that reason they put pressure on government employees to spend more money which takes away the Value Management technique study in the public sector projects.

Bureaucracy with government

This impediment factor had fifth high percentage score with 42%. It falls within absolutely impediment factors to the adoption of Value Management technique studies in the public sector projects in the Eastern Cape. In this case, Bureaucracy with government refers to the complicated government system in which decisions are taken by after a very exhaustive procedure. Bureaucracy results in managers being compensated for doing what they told and not for thinking. The "rules is rules" rather than common sense (Weber, 2013).

No practical Guidance for Implementation of Value Management technique.

A lack of practical guidance for implementing Value Management technique is one of the factors that 41% of the respondents agreed to be absolutely impediment factors to the adoption of Value Management technique Studies in the public sector projects. There is no clear guideline in terms of how Value Management technique is supposed to be implemented despite the fact that there is an attempt to audit designs prior to construction but that process is distinct from Value Management technique to a greater extent in that, it is a one sided approach that looks at the

client requirements and legislative requirements as to whether or not they are included in the actual designs.

Other impediments

Time Constraints

Respondents raised time constraints as on the impeding factor to the Value Management technique study in the public sector projects. It is important to note that this time constraint ties with the political influence in that because of undue political pressure to deliver infrastructure projects, there is limited to no time for implementation of Value Management technique study.

Corruption

The construction industry has been regarded and identified as the most corrupt sector in the world (Bowen *et al.*, 2012).Corruption takes many forms in the construction industry but in the main, it is located in the bid evaluation process. Respondents have asserted that corruption inhibit the adoption of Value Management technique Study simply because Value Management technique Study is viewed as a cost cutting exercise that in effect reduces the consultant fees. This argument resonate with (Locatelli *et al.*, 2017) who argued that corruption is one of the major impediments to the development of emerging economies and to further improve the quality of life in the developed countries.

Procurement policies

The South African government procurement system guided by the Public Finance Management Act No 1 of 1999 and anchored on a competitive bidding system. For Construction projects, a traditional system of procurement is mainly used, mainly because it is more popular than other options such as Design and Build. Respondents raised that procurement policies do not allow for the contribution of

contractors to provide expert and knowledge to the design process. The absence of contractors from the design process of the project is detrimental to a Value Management technique Study in terms of improving buildability and polishing design (Shen and Yu, 2016)

6 CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

This chapter entails the recommendations and conclusion of the study. The chapter will address the background and purpose of this research, a summary of findings made and limitation of this research. This chapter will also include further research recommendations that can be taken forward.

6.2 Research Objectives

Objective 1: To establish factors that imped the adoption of Value Management technique in infrastructure service delivery in the Easten Cape, South Africa

The primary impeding factors to the adoption and implementation of Value Management technique Study to Public Sector Project appear to be as follows;

a. Incompetent Skilled Personnel.
b. Lack of training and Education in Value Management technique.
c. Political Influence.
d. Lack of Awareness about Value Management technique.
e. Bureaucracy with government.

Objective 2: To assess the awareness and understanding of Value Management technique amongst the public sector personnel.

It appears that there is reasonable knowledge of Value Management technique in the public sector in the Eastern Cape Province of South Africa, however, due to lack of awareness, insufficient information about the discipline, wrong perception of the discipline, unwillingness on the part of clients to adopt and pay for the exercise as

well as lack of motivation from other concerned stakeholders there is reluctance to implement Value Management techniques in the public sector project

However, the fact that it has been introduced and used mostly for renovation and school projects has contributed to the goal of construction projects, which is to provide value for money for construction clients and enhance better project performance.

It has serve as a viable management tool to optimize value for money, create clearer focus of project objectives, works towards more effective design and identifies unnecessary costs through unnecessary design, material, labour and machine. In order to improve the use of Value Management technique for better performance of construction projects, there is a need to adopt innovative ideas and solutions that will work for South African construction industry considering the culture and state of mind of the general citizen.

Objective 3: To establish the level of implementation of Value Management technique in public sector projects.

There is also a need for excellent communication skills of construction professions since they are all potential Value Management technique team members and more information gathering to understand effective ways of applying the discipline. Appropriate and relevant guidelines as well as legislations to adopt, enforce and monitor the application of the discipline are also an important prerequisite.

6.3 Research question

The key question posed for this research was as follows:

> *What are the challenges to adoption of Value Management technique in government funded projects in the Eastern Cape, South Africa?*

Based on the findings of the objectives as discussed above it is clear that the research question interrogated and fully answered in detail.

6.4 Research Findings

The research results were presented and analysed in Chapter 4 and were discussed comprehensively in Chapter 5. This research report provides a snapshot of the state of Value Management technique in the public sector in the Eastern Cape Province context. It appears that there is reasonable knowledge of Value Management technique in the public sector in the Eastern Cape Province of South Africa, however, the primary impeding factors to the adoption and implementation of Value Management technique Study to Public Sector Project appear to be as follows;

f. Incompetent Skilled Personnel.
g. Lack of training and Education in Value Management technique.
h. Political Influence.
i. Lack of Awareness about Value Management technique.
j. Bureaucracy with government.
k. No practical guideline for implementation of Value Management technique.

Lack of awareness, insufficient information about the discipline, wrong perception of the discipline, unwillingness on the part of clients to adopt and pay for the exercise as well as lack of motivation from other concerned stakeholders is some of the contributing factors

However, the fact that it has been introduced and used mostly for renovation and school projects has contributed to the goal of construction projects, which is to provide value for money for construction clients and enhance better project performance.

It has serve as a viable management tool to optimize value for money, create clearer focus of project objectives, works towards more effective design and identifies unnecessary costs through unnecessary design, material, labour and machine. In order to improve the use of Value Management technique for better performance of construction projects, there is a need to adopt innovative ideas and solutions that will work for South African construction industry considering the culture and state of mind of the general citizen.

There is also a need for excellent communication skills of construction professions since they are all potential Value Management technique team members and more information gathering to understand effective ways of applying the discipline. Appropriate and relevant guidelines as well as legislations to adopt, enforce and monitor the application of the discipline are also an important prerequisite.

6.5 Research Recommendations

It is recommended that government develops a policy to adopt Value Management technique as part of the Infrastructure delivery management system (IDMS). This will enable a structured implementation of Value Management technique in government funded projects such that government optimise the value for money in its infrastructure projects.

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7 APPENDIX

7.1 SURVEY INSTRUMENT

yourselves and your responses cannot lead to your identification. All response are strictly confidential and will be used for academic and research purposes only.

Section 1: Respondents Background

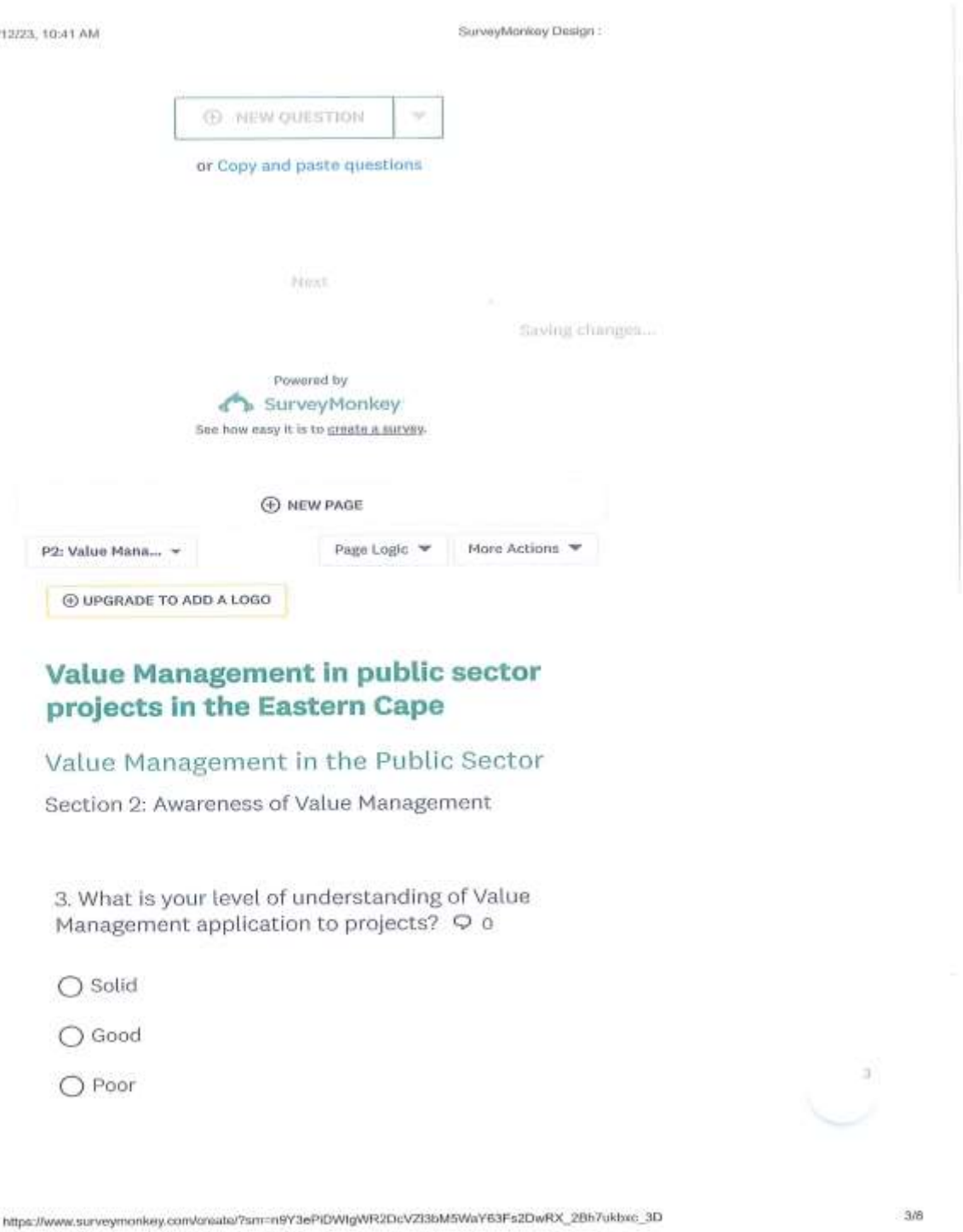
1. What is your professional background?

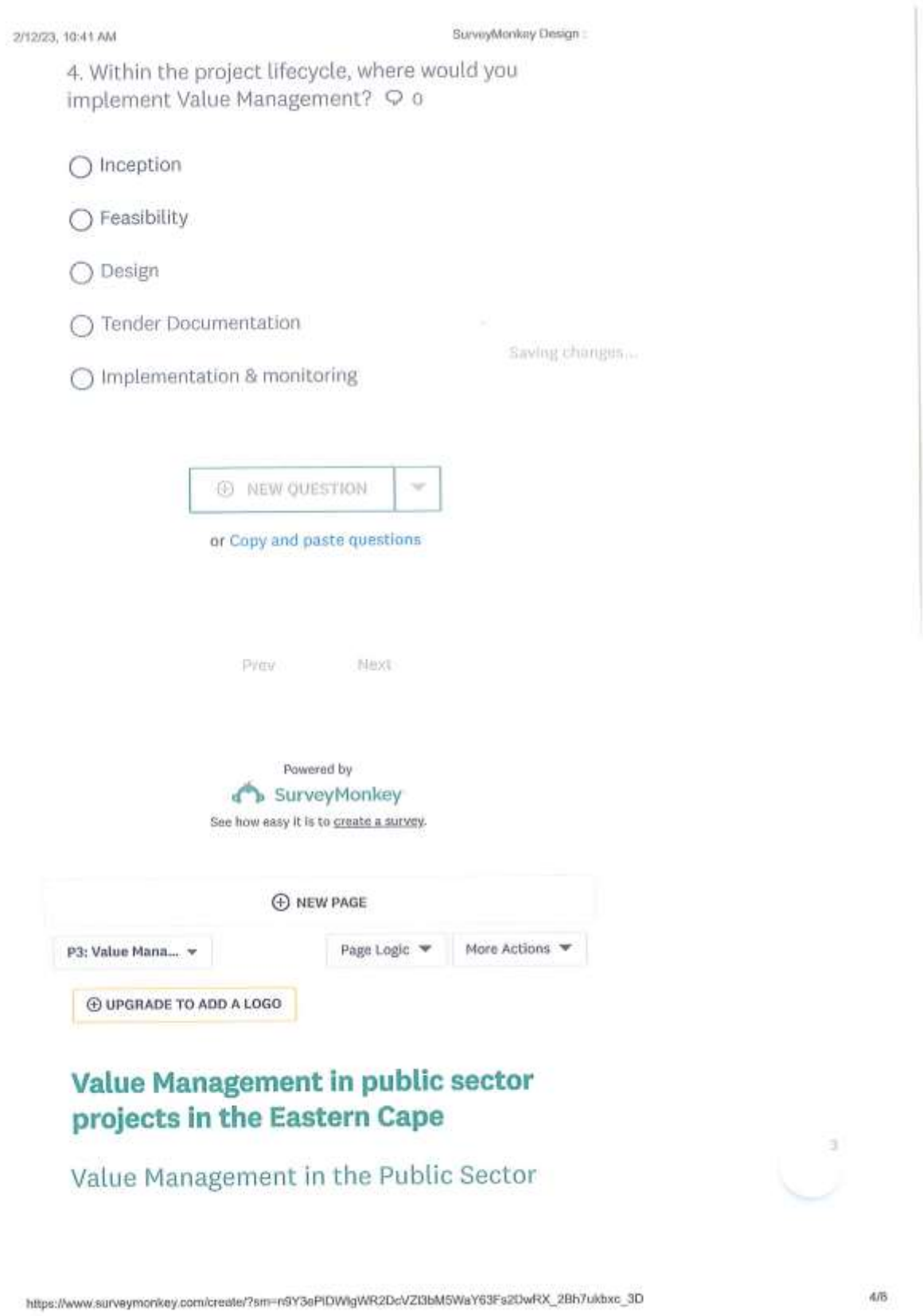
Saving changes...

- [ ] Project Manager
- [ ] Architect
- [ ] Quantity Surveyor
- [ ] Civil Engineer
- [ ] Structural Engineer
- [ ] Mechanical Engineer
- [ ] Other (please specify)

2. Which type of organisation that you are currently working? 0

- ◯ Government
- ◯ Consultancy
- ◯ Contracting
- ◯ Project Management
- ◯ Property Developers
- ◯ Other (please specify)


NEW QUESTION
or Copy and paste questions
Next
Saving changes...
Powered by
SurveyMonkey
See how easy it is to create a survey.
NEW PAGE
P2: Value Mana...
Page Logic
More Actions
UPGRADE TO ADD A LOGO
Value Management in public sector projects in the Eastern Cape
Value Management in the Public Sector
Section 2: Awareness of Value Management
3. What is your level of understanding of Value Management application to projects? 0
Solid
Good
Poor


2/12/23, 10:41 AM
SurveyMonkey Design
4. Within the project lifecycle, where would you implement Value Management? 0
Inception
Feasibility
Design
Tender Documentation
Saving changes...
Implementation & monitoring
NEW QUESTION
or Copy and paste questions
Prev
Next
Powered by
SurveyMonkey
See how easy it is to create a survey.
NEW PAGE
P3: Value Mana...
Page Logic
More Actions
UPGRADE TO ADD A LOGO
Value Management in public sector projects in the Eastern Cape
Value Management in the Public Sector
https://www.surveymonkey.com/create/?sm=n9Y3ePlDWlgWR2DcVZI3bM5WaY63Fs2DwRX_2Bh7ukbxc_3D
4/6

Impediments to the implementation of Value Management

5. Impediments to the implementation of Value Management are factors that hinder the implementation of Value Management Study in the public sector projects.

This research has identified 10 factors th the implementation of Value Managemer the public sector projects. The aim of this research is to identify factors that impede the adoption of Value Management Studies in government funded projects in the Eastern Cape of South Africa. 0

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	Not at all cause	Likely cause	Very Likely cause	Most Likely cause	Absolutely cause
Lack of awareness about value management	○	○	○	○	○
The high cost of value management study	○	○	○	○	○
Lack of training and education in value management	○	○	○	○	○
Bureaucracy with government	○	○	○	○	○
Regulatory barriers	○	○	○	○	○
Political Influence	○	○	○	○	○
Incompetent Skilled Personnel	○	○	○	○	○

	Not at all cause	Likely cause	Very Likely cause	Most Likely cause	Absolutely cause
No practical guidance for implementation of Value management	○	○	○	○	○
Procurement policies	○	○	○	○	○
Over-emphasis	○	○	○	○	

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6. In your opinion, what are some of the factors that impede the implementation of value management study in the public sector projects? 0

7. What would you suggest, as a way to deal with these challenges that impede value management in the public sector projects? 0

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3

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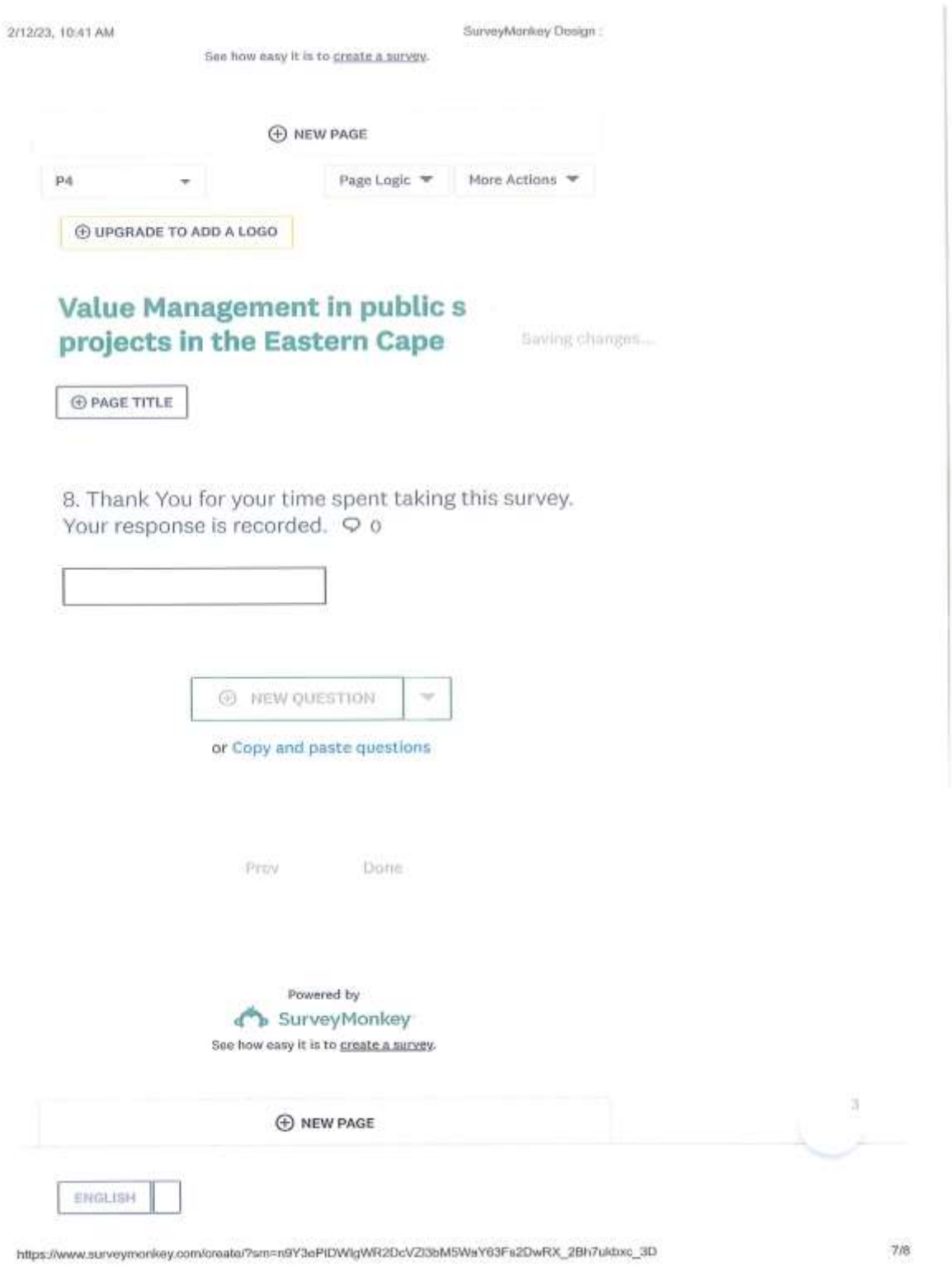
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