

**DISSERTATION: FACTORS CRITICAL TO BENEFITS
REALISATION OF IT/IS PROJECTS IN THE SOUTH AFRICAN
GOVERNMENT**

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Abstract

Purpose – This research investigated factors critical to benefits realisation of IT/IS project in the South African Government. The aim of the research was therefore to establish a list of factors critical to benefits realisation of IT/IS projects in SA government by testing the applicability of Coombs (2015) factors and as well as testing factors identified in the literature.

Method – In addition to the factors identified in Coombs (2015) study, a literature review was conducted to identify additional factors critical for benefits realisation in IT/IS projects and twenty-one factors were identified. A web-survey with twenty one (21) success factors was sent to IT stakeholders in SA government particularly the State Information Technology Agency to determine their relevance and importance in benefits realisation of IT/IS projects in SA government.

Results – The research finding revealed that all four of Coombs (2015) study success factors were relevant. Two of the factors were amongst the top ten factors considered the most important factors rated by the IT stakeholders in SA government. It also revealed that all twenty-one factors were relevant, however the following ten (10) factors were considered the most important factors: *Clear Project Mission, Effective Communication, Defined Project Scope, User/Client Involvement, Top Management Support, Competent Project Manager, Sufficient/Well allocated resources, Strong, and detailed project plan, Business Process Knowledge, and Governance Structure.*

Furthermore, the research also revealed nine (9) additional factors identified by the IT stakeholders and they include: *Political Stability, Architecture, Supportive legislation and policies, Teamwork, Trust and Honesty, IT solutions aligned to global Trend, Social and Economic Impact on Citizen, System Integration, and Project Management Methodology.*

Practical Implications – The findings allowed for an establishment of twenty-one factors critical for benefits realisation in IT/IS projects in SA government. However, the findings

and the research process had some limitations. The sample for the survey was chosen from a population of a single organisation. The outcome of the survey is not an accurate representation of the entire government. Therefore, further research might be required using a larger sample size spanning various and different levels of government. The research findings may also need to be confirmed with more qualitative methods.

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List of Acronyms

Table 1: Acronyms used in Text

Acronym	Description
BDN	Benefits Dependency Network
BM	Benefits Management
CRM	Customer Relations Management
CSF	Critical Success Factor
ERP	Enterprise Resource Planning
FMS	Financial Management System
IS	Information Systems
IT	Information Technology
PPM	Project Portfolio Management
UK	United Kingdom

CHAPTER 1. RESEARCH BACKGROUND

1.1 INTRODUCTION

Studies relating to Information systems (IS) and information technology (IT) indicate that organisations are still failing to achieve benefits from the IT/IS project deployment (Coombs, 2015). In order for organisations to realise these benefits, projects have to achieve more than the technical targets of delivering projects within the set cost, schedule, and quality parameters (Coombs, 2015). Academic research has shifted the definition of project success to the achievement of broader organisation objectives such as customer satisfaction and financial returns. Project managers generally still focus on the achievement of technical targets of cost, time and quality (Brynjolfsson and Hitt, 2000; Badewi, 2016). Meeting technical targets on their own and excluding broader organisation objectives, is argued to be an insufficient measure of project success (Ashurst *et al.*, 2008; Samset, 2009). For instance, IT projects related to organisational transformation can encourage changes in business processes and how people conduct their work, thus resulting in cost reduction, increase in quality, new product development, and improved customer experience. According to recent research, all these benefits are examples of the real and holistic value that IT/IS projects ought to be bringing to organisations, in the form of benefits that go beyond the technical targets (Brynjolfsson and Hitt, 2000). Therefore, project benefits management is an important practice to be adopted to identify the factors and process required to realise benefits from projects (Chih and Zwikael, 2015).

Benefits Management (BM) is a process of organising and managing factors with the purpose of realising benefits from the deployment of IT and the use thereof (Ward and Elvin, 1999). The BM approach initiates organisational changes as a new IT/IS project implementation brings new functionalities that require changes to the current organisational operations (Doherty *et al.*, 2012). BM processes aims to change an organisation's structures and behaviour to ensure that there is an alignment between the organisation and the new IT/IS system (Coombs, 2015). It is therefore critical that factors required to realise benefits from IT/IS projects are identified early and managed to realise

benefits from these projects. The Cranfield Benefits Dependency Network (BDN) provides a framework that can be utilised for this to be achieved. The BDN framework is developed to link business objectives and benefits to organisational and IT/IS changes required in order to realise the set benefits (Ward and Daniel, 2006). The BDN includes a number of broad categories critical to the delivery of benefits from IT/IS projects such as enabling and business changes (Coomb's, 2015).

Studies have demonstrated that BDN framework can be used to highlight technical and organisational aspects of the project (Ashurst *et al.*, 2008; King, 2011). The BDN framework has also been primarily developed for the planning and management of benefits during the implementation phase of IT/IS projects. This therefore explains why categories such as inhibiting factors to technical and or organisational change are excluded from the BDN framework (Coomb's, 2015). Coomb's (2015) also points out that the BM literature provides little specific guidance regarding what these broad BDN categories consist of. For example, the BM literature does not provide sufficient guidance on the type of business changes required to realise benefits from IS/IT projects (Coomb's, 2015). Further research can therefore provide a specific analysis and breakdown of factors critical to benefits realisation.

In the BDN example provided in figure 1 below, the BDN is created from the right to left, starting with the agreed IT/IS project investment objectives, and, flowing from that, identification of the benefits that is aligned to the investment objectives.

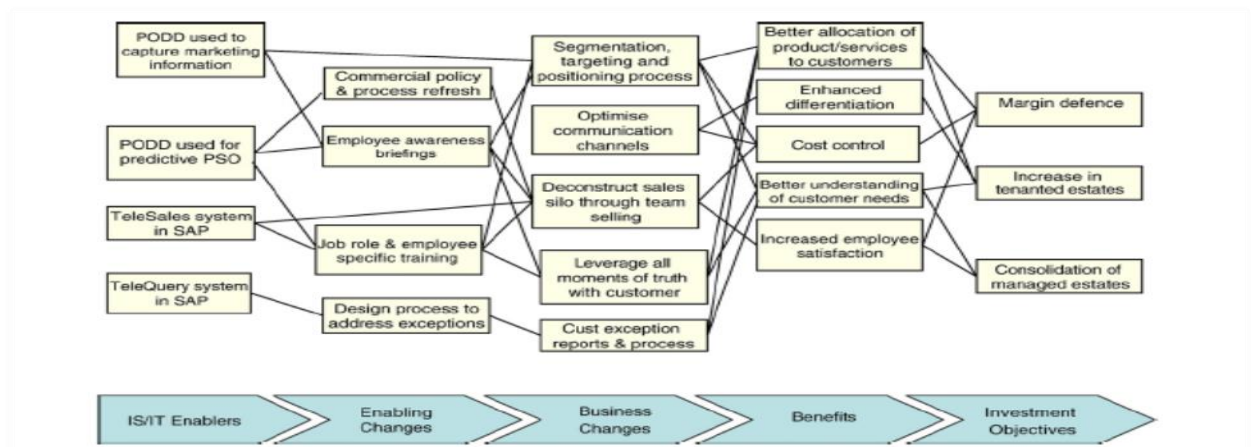


Figure 1: Benefits dependency network - industrial products manufacturer (Wilson *et al.*, 2007: 777)

Investments objectives are organisational targets that should be achieved once the project or investment is completed. *Business benefits* refer to advantages that will be achieved through the deployment of a project before the investment objective can be achieved. Once each benefit is defined, the *business and enabling changes* required to realise each benefit are identified (Coombs, 2015). *Business change* has to do with the adoption of new work practices in an organisation to ensure that the set benefits are realised and sustained over the long term. *Enabling changes* on the other hand, are required to achieve business changes these essentially refer to the actions that need to be undertaken to bring a system into full operation so that it can be used. In other words, business changes cannot be realised if there is no product or system working for organisational use. It is only when the system is fully operational that business changes can be initiated. Enabling change therefore represents the facilitators needed to initiate business changes. Lastly, *IT/IS enablers* refers to IT or systems requirements to enable the realisation of anticipated benefits and changes (Coombs, 2015). Coombs (2015) relabelled enabling changes as facilitators to reflect the focus of his study.

In addition to the gaps identified above, the BDN does not make provision for inhibiting factors and its only focus is on facilitating factors (enabling and business changes). This omission is due to the BDN tool application as a planning tool rather than as an evaluation tool. There exists a need to consider the inhibiting factors indicated in the IS literature which suggests a number of possible factors inhibiting the successful implementation of IT/IS projects. Some of the inhibiting factors may include lack of top management support (Dong *et al.*, 2009), user resisting to use the deployed system (Lapointe and Rivard, 2005), and organisational issues that are ignored (Doherty and King, 2005) by management. Inhibiting factors can be identified by using a multifaceted approach that includes consideration of the following:

- a) The interests of diverse stakeholders and their interactions with the environment and;
- b) The nature of the technical and social environment

Ignoring these two factors can inhibit an IS project from reaching its potential (Mohan *et al.*, 2014). It is therefore important to introduce an inhibiting factor category in the BDN to make provision for all related factors.

The BDN may also require further refinement to break down each category in order to provide clarity on the factors critical for benefits realisation in IT/IS projects. Coombs (2015) highlights some of the facilitating and inhibiting factors that can be considered. These factors are discussed in more detail below.

1.2 BACKGROUND

Coombs (2015), in his study which investigated the facilitating and inhibiting factors of IT projects that are designed to transform organisations, used the extended BDN as a diagnostic tool for his research questions. His research was based on the premise that there is little or no agreement in the IS literature relating to key facilitating and inhibiting factors for successful IT/IS projects (Fortune and White, 2006). Furthermore, many IT professionals still appear to lack change management skills required for the successful implementation of IT projects (Paré and Jutras, 2004). For this reason, Coombs (2015) identified a need to conduct research that will examine factors critical to benefits delivery of those IT projects that have an element of organisational change. Using the extended version of Cranfield BDN, the Coombs (2015) study sought to address the following research questions: 1) *“What are the facilitators and inhibitors to IT-enabled organizational transformation in an IT/IS project context?”* 2) *“How do facilitators and inhibitors to IT-enabled organizational transformation influence the realization of business benefits from an IT/IS project?”* (Coombs, 2015:366).

Coombs (2015) used a case study approach to address the above questions, and to gain an in depth understanding of benefits realisation from IS projects. The case study used was a new Financial Management System (FMS) in a United Kingdom public sector (a finance department). The extended BDN tool was used to investigate the study research question and analyse the data collected. A number of results were therefore uncovered relating to planned benefits, realised benefits, facilitators, inhibitors, and business changes related to the FMS. The relationships were then analysed to explain why some benefits were not realised (Coombs, 2015). Key insights from the case study included:

- Facilitating and inhibiting factors could be divided into technical and organisational orientated factors.
- Technical facilitating factors included training and organisational facilitating factors included mapping and redesign processes. The study results indicated that the organisation was more successful in implementing the technical facilitating factors, compared to organisational facilitating factors. This implies that IT professionals involved in this process may lack the necessary change management skills required to implement facilitating factors that are organisationally orientated (Paré and Jutras, 2004). IT professionals needs to pay more attention on those organisational factors that prevent projects from achieving its benefits.
- Technical inhibiting factors included the FMS outputs that did not meet the needs of the users. This has resulted in the system not to be usable and ultimately making it difficult for the set benefits to be realised. This implies that user requirement may not have been effectively collected and that users may not have been adequately involved in the development process.
- Organisational inhibiting factors included staff not engaging with the FMS and inconsistent adoption of the system across the organisation. This can also be attributed to insufficient involvement of users in the process, leading to users not accepting or using the system.
- The Level of facilitating and inhibiting factors did influence the degree to which organisational change and benefits were achieved.
- The extent to which the facilitating factors were implemented helped with potentially achieving the related business changes and benefits. The benefits were realised despite the presence of inhibiting factors. Thus suggesting that when there are the same levels of facilitating and inhibiting factors present in a project, facilitating factors tend to mitigate the negative influence of inhibiting factors. This implies that not focusing on addressing facilitating factors, inhibiting factors were subsequently not sufficiently addressed. As a result, the planned benefits were not realised.
- Reinforcement of the view that IT project coupled with organisational change management initiatives are required in order to realise business benefits and investment objectives. This means that IT projects cannot be treated as a technical deployment only but as an opportunity to change how organisations conduct their

business so that intended business benefits can be realised. Consideration of non-technical aspects of the project is therefore important when considering IT/IS success.

- Application of the extended BDN reveals important relationships between functionality of the system, facilitating factors, business changes, and business benefits. For example, facilitating factors such as changing work cultures of key stakeholders and development of relevant new business process were lacking. These lead to key stakeholders and users not engaging with the new FMS, as the FMS outputs did not meet the needs of the users. This subsequently inhibiting the realisation of the planned benefits.
- Tools currently used to evaluate IT/IS projects do not assist with providing the necessary insights. In other words, the relationships between facilitating factors, inhibiting factors, organisational change, and business benefits when conducting evaluation after the project is implemented are excluded.
- The original BDN might therefore be inadequate as a tool for evaluating IS /IT project implementation since there were several inhibiting factors uncovered that could have reduced the level of the planned benefit realisation. Therefore, inclusion of a category that addresses inhibiting factors was an important change on the original BDN so that it could be applied effectively as an evaluation tool.

The study provided some important new insights but there were a number of limitations to it. The study used a single case study approach. This implies that the findings of the study may not be generalised (Coombs, 2015). This gave rise to the need for a follow up study using different research methods to assess if the findings are applicable under different circumstances (Coombs, 2015). Facilitating and inhibiting factors relating to benefits realisation in IT/IS projects might be broader than indicated in Coombs (2015) study. The reason for this is that there is a wide range of IT/IS projects implemented across countries, industries, and organisations.

In addition, consideration of traditional success factors can provide meaningful information on additional factors critical for benefits realisation (Doherty *et al.*, 2012). A review of IT/IS Critical Success Factors (CSF) studies is therefore an important step in this regard.

Based on the limitation of Coombs (2015) study, there is a need to explore the applicability of the identified facilitating and inhibiting factors under a different context. The context on which this will be done is IT/IS projects in the South African government.

Coombs (2015) study was used as basis for this research. The reason for using Coombs (2015) study was that its focus was to identify how inhibiting and facilitating factors influence the realisation of benefits in IS/IT projects in government particularly looking at Financial Management System (FMS) deployed in a United Kingdom public sector (a finance department). Since its focus was on an IS/IT project in a government entity, it was felt that the study was relevant and could possibly be expanded in another government setting particularly the SA government services.

1.3 PROBLEM STATEMENT

'Previous studies of facilitating and inhibiting factors relating to benefits realization in IT/IS projects have been restricted in scope and their applicability to SA government services is not known.'

1.4 RESEACRH AIM

With the above problem statement in mind, the aim of the research is therefore to:

- a. Establish a list of factors that are critical to benefits realisation of IT/IS Projects in SA government services

1.5 RESEARCH QUESTIONS

In order to address the research problem, the research will address the following questions:

- a. What factors are critical for benefits realisation of IT/IS projects in SA government services?
- b. Are the factors indicated in previous studies relevant for benefits realisation of IT/IS projects in SA government services?
- c. Are there any additional factors that are critical for benefits realisation of IT/IS projects in SA government services?

1.6 RESEARCH PROPOSITION

Based on the research aim the research therefore proposes the following:

- a. Changes to the existing facilitating and inhibiting factors indicated in previous studies and addition of other factors may provide a more generalised view of the factors that are critical for benefits realisation in IT/IS projects

1.7 RESEARCH OBJECTIVES

To meet the research aim and questions, the objectives of this research are as follows:

Table 2: Research Objectives

Research Aim	Research Question	Research Objectives
Establish a list of factors that are critical to benefits	a. What factors are critical for benefits realisation of IT/IS projects in SA government services	a. Compile a list of facilitating and inhibiting factors that are critical for benefits realisation in IT/IS projects

Research Aim	Research Question	Research Objectives
realisation of IT/IS Projects	b. Are the factors indicated in Coombs (2015) study relevant for benefits realisation of IT/IS projects in SA government services?	b. To determine which of facilitating and inhibiting factors as indicated in Coombs(2015) study are deemed more or less important by IT/IS stakeholders for benefits realisation of IT/IS projects
	c. Are there any additional factors that are critical for benefits realisation of IT/IS projects in SA government services?	c. To identify factors that are critical to benefits realisation in IT/IS projects by reviewing previous literature d. To determine which facilitating and inhibiting factors from the literature review process are deemed more or less important by IT/IS stakeholders for benefits realisation of IT/IS projects

1.8 RESEARCH METHODS

The following research methodology is therefore used to assist with the achievement of the above stated objectives:

- a. A literature review to identify factors critical to benefits realisation in IT/IS projects.
- b. To ensure that there is a more generalised view of facilitating and inhibiting factors critical to benefits realisation in IT/IS projects, a quantitative survey is used to gauge data from various IT/IS stakeholders of different levels affected by different IT/IS projects in the SA government services.
- c. Once the above points (a) and (b) are completed, its findings will be analysed, discussed, summarised and a list of factors critical for benefits realisation in IT/IS projects will be produced.

CHAPTER 2. LITERATURE REVIEW

Studies were done to understand what it means to be successful from a project point of view. Success in this regard has been defined in accordance to criteria indicated by organisations from different industries (construction, engineering and IT) that are involved in the implementation of projects (Shenhar *et al.*, 2001).

However, irrespective of which industry the project is initiated from, almost in all cases projects are initiated to develop new products, create change, establish new processes or new organisations. All of the reasons indicated, are with the sole purpose of improving the organisations' competitiveness, effectiveness and survival over a long run (Shenhar *et al.*, 2001). Additionally, all projects should clearly provide the benefits to the targeted stakeholder or users to facilitate the achievement of organisational long term goals (Peppard *et al.*, 2007). This therefore means that management of projects irrespective of industry, should be designed to meet both short and long term goals of the initiating organisation. Identification of success factors should similarly be in line with organisational long-term goals.

Because of the focus of this study, the following sections and discussions mainly refers to projects related to IS/IT industry.

2.1 PROJECT SUCCESS

Projects including those in the IS/IT industry are initiated for a number of reasons and therefore interpretation of success can be multi-dimensional (Shenhar *et al.*, 2001). A single or even two dimensions of success may not be sufficient to ensure that the goals of a project are achieved. For example, a project may have been efficient in delivering a quality product but being a failure in terms of its impact on the business. It is therefore important that organisations take into account both the short term and long term perspective in measuring project success. In some instances it may take a long time after the project implementation before the success of a project can be measured (Shenhar *et al.*, 2001).

Other authors argue that project success includes both project management and investment success (Zwikael and Smyrk, 2012) which includes aspects relating to project efficiency and longer term organisational impact (Munns and Bjeirmi, 1996). This implies that project success is measured by project efficiency in the short term, and whether the project deliverables had any medium to long-term impact on organisational objectives. Project efficiency refers to measuring project performance in terms of the budget, schedule and quality goals set for the project (Cooke-Davies, 2002; Serrador and Turner, 2015). The importance of project efficiency is related to the traditional project management point of view that emphasise the point that scope creep, over running budgets and schedules in projects cannot be accepted (Atkinson, 1999). As a result, the success of project management has been measured at the end of the project in terms of set performance goals relating to cost, time, and quality (Munns and Bjeirmi, 1996).

It has therefore been shown over time that there is a difference between project management success and project success (Munns and Bjeirmi, 1996). A distinction of the two perspectives should therefore be made to avoid confusion and to enable proper evaluation of ultimate project success (Munns and Bjeirmi, 1996). This means that the project will first be evaluated by whether the project scope was completed within schedule, budget and in accordance to specifications which addresses the project management success or project efficiency success (Shenhar *et al.*, 2001).

Once the project has met its project management success criteria it also ought to be evaluated on how well it was able to deliver the benefits, customer needs, return on investment, business strategies and objectives (Cooke-Davies, 2002; Turner and Zolin, 2012; Zwikael and Smyrk, 2012; Serrador and Turner, 2015). This aspect of project success is more challenging than project management or efficiency success (Shenhar *et al.*, 2001; Zwikael and Smyrk, 2012). It is particularly difficult in projects where changes in behaviour and attitude of stakeholders are required to achieve project success (Yu and Kwon, 2011). Stakeholder management becomes a critical success factors in this to achieve project investment success (Yu and Kwon, 2011; Golini *et al.*, 2015). This is because stakeholders define the benefits of the project and so for project investment

success to be achieved, the benefits defined by the stakeholder should first be realised (Peppard *et al.*, 2007).

On the other hand, it is also argued that the difference between project efficiency and project success is not distinguished because it is seen as both parts of the same project success framework (Shenhar *et al.*, 2001). For example, it is shown that there is a strong relationship between project efficiency, stakeholder satisfaction and with overall project success (Zwikael and Globerson, 2006). This means that project efficiency significantly impacts stakeholder satisfaction and ultimately leading to overall project success (Turner and Zolin, 2012). For example, a project output has to be delivered at the right quality in order for it to be accepted and ultimately be used. There is no use delivering a product with inferior quality and expecting to reap organisational benefits from it. It therefore makes sense for the project efficiency part of the project success framework should be done correctly in order to increase the chance of ultimate project success. Because of the relation between the two parts it makes sense to conclude that project success relates to both project efficiency during execution and the impact of the project outputs on the business (Badewi, 2016). Figure 2 provides a summary of the two frameworks and how they are seen as the same part of the success framework.

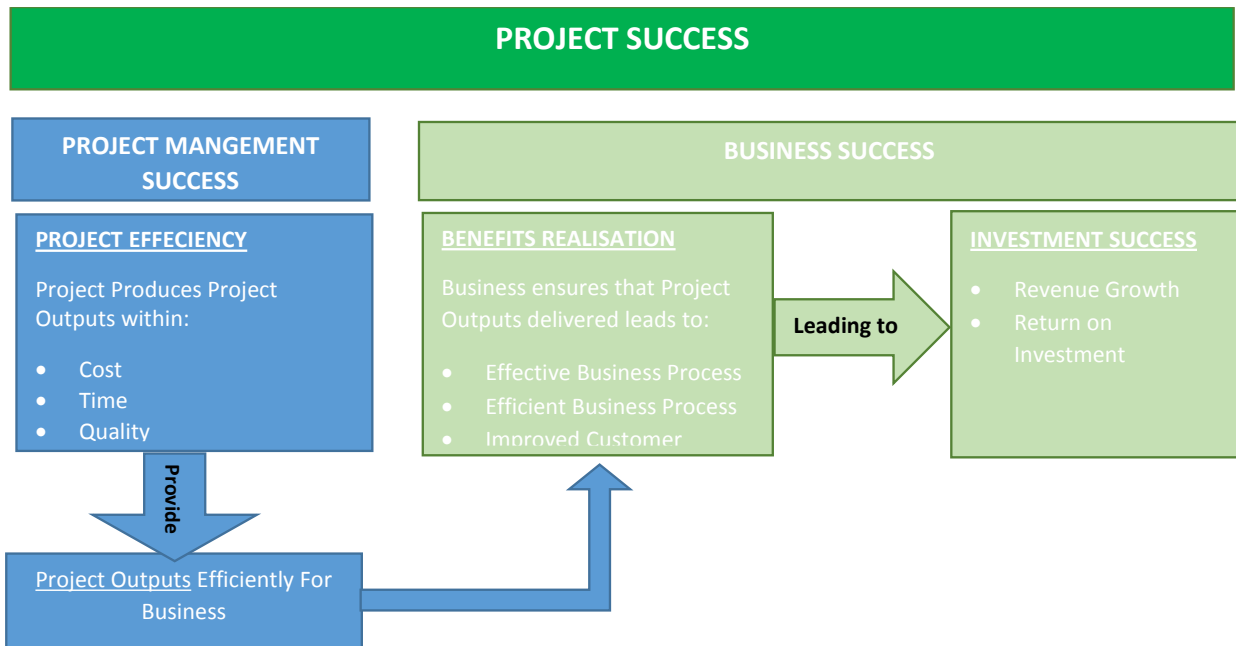


Figure 2: Project Efficiency versus Business Success Framework, Adopted from (Shenhar *et al.*, 2001: 719; Badewi, 2016: 7)

Another framework breaks the project success criteria down into three parts. The three parts are project management success, stakeholder satisfaction with project deliverables and organisational satisfaction with project outcomes on the business objectives (McLeod *et al.*, 2012). In this framework, project success is measured in three parts and includes the following (Munns and Bjeirmi, 1996; Badewi, 2016):

1. How successful was project management in the delivery of project outputs;
2. How well were the needs of the stakeholder communicated and understood ; and
3. How successful are the project outputs in terms of realisation of project benefits.

This framework suggests that the above measure of success is part of the same framework and therefore management of projects should be seen as such.

Additionally, since the success criteria should encapsulate the expectations of stakeholders. This implies that the measure of success will differ from one project to another (Shenhar *et al.*, 2001). For example, the dimensions of project success may vary with technological uncertainty. In a high technology project that has high uncertainty,

delivering the project within time and budget might not be important. The importance of meeting customer needs therefore increases from low technology projects with lower uncertainty to high technology projects with higher uncertainty (Shenhar *et al.*, 2001). On the other hand, project success can be determined by how well project efficiency has been managed. For example, the timing of product launch at the right quality could be a critical success factor in achieving business success. With this view the project type will drive the success dimension that should be adopted for a project (Shenhar *et al.*, 2001).

With this understanding on what project success is, its dimensions and how they relate to each other, it is important that critical factors relating to each dimension of success is identified and managed accordingly as it affects the ultimate realisation of project benefits and success.

2.2 PROJECT BENEFITS

Project benefits is seen as the component that goes between project management success and project investment success. This means that in order for project investment success to be achieved, the benefits outlined by the stakeholders should first be achieved before project investment success is achieved (Peppard, 2007).

A project benefit is therefore defined as an advantage that a particular stakeholder will enjoy once project outputs are delivered (Ward and Daniel, 2006). In order to deliver the advantage or benefit, a number of things should be done (Badewi, 2016). First, initiatives should be identified and implemented to change the current situation in order to encourage organisational adoption of new work practices (Peppard *et al.*, 2007). Second, measures of success should be clearly defined for both parts of the project success (project management and business success) (Müller and Turner, 2007). Third, certain personnel members or departments should be identified that will own the benefits and ensure that they are realised (Chih and Zwikael, 2015). It is important to ensure that each benefit has an owner assigned to it as it will ensure that the project outputs delivered are used by these owners and ultimately the benefits thereof are realised (Peppard *et al.*,

2007). The identification of the benefits and associated measures should be agreed with the respective stakeholder's right from the beginning to ensure ownership thereof.

However, there is a difference between project benefits and investment success (Badewi, 2016). Project investment success is a more comprehensive measure of success as it measures the difference between the financial benefits produced and the cost associated with producing the benefits (Badewi, 2016). Project benefits on the hand can be tangible and intangible (Irani and Love, 2002). The tangible benefits include financial benefits (e.g. profitability) and non-financial benefits (e.g. speed of service delivery). The intangible benefits are usually non-financial and are not-measurable such as the strength of organisation's brand (Lin and Pervan, 2003). However, non-financial benefits are not included in the calculation of project's investment success but organisations needs to measure and show how the realisation of non-financial benefits will impact the realisation of financial benefits (Lin and Pervan, 2003). This implies that the non-financial benefits should be first realised before the financial benefits could be realised (Peppard *et al.*, 2007). The Benefit Dependency Networks (BDN) is one such tool that can be used to list non-financial benefits and show the linkage to financial benefits. This process makes it easier to evaluate and select projects for investment (Peppard *et al.*, 2007).

Critical factors should be identified and managed from the beginning and post-delivery of a project in order to realise both non-financial and financial benefits of a project. The following section expands on this theme with a review of literature on factors critical for benefits realisation in projects.

2.3 FACTORS FOR SUCCESS

Factors for success are aspects of a project that should be present or absent in the project development and management process to increase the project success chances (Gichoya, 2005). This means the presence of a factor supports success, the lack of it results in failure. For example if factors such as good project management, change management and top management support are present in a project it may lead to success

and if they are not present it may lead to failure (Gichoya, 2005). This also means that if the opposite happens, the presence of a factor will cause failure and if it is absent, it will cause success. For example if factors such as bureaucracy, poor project and change management are present in a project it may lead to project failure and if they are absent it may lead to project success (Gichoya, 2005). IT/IS projects can be a complex socio-technical undertaking. Therefore, factors of success should be identified and integrated in the project implementation process to increase the chance of successful IT/IS project implementation.

In addition, IT/IS project success is multi-dimensional and therefore it is important to identify which factors are critical in achieving the different dimensions of project success, including project efficiency and organisational wide impact (Cooke-Davies, 2002). These factors are inputs to the project management process that lead directly or indirectly to both parts of the project success (project management and business success) (De Wit, 1988). Since project management success is important for benefits realisation, the literature reviewed is categorised to identify the factors relating to project management success and business success.

2.3.1 FACTORS OF PROJECT MANAGEMENT SUCCESS

The focus of research into project management over the past 30 year has put emphasise on the achievement of short term objectives as opposed to the achievement of longer term organisational objectives (Munns and Bjeirmi, 1996). These short-term objectives are associated with the project management success criteria of time, cost, and quality. Therefore project management techniques were established to plan and control time, cost and quality as a means of achieving success (Munns and Bjeirmi, 1996). Research has therefore been conducted to identify success factors that are designed at achieving project success criteria of time, cost, and quality.

One research project involving seventy multinational or national organisations identified twelve factors for successful project implementation (Cooke-Davies, 2002). From those,

eight were regarded as factors that lead to project management success. The success factors related to the time performance criteria were around the adequacy of the application of risk management practices, clarification of organisational roles and responsibilities on the project and keeping the project duration as short as possible. Furthermore, success factors related to the cost performance criteria were to follow scope management process for scope changes and ensuring that the integrity of the project performance baseline is maintained (Cooke-Davies, 2002).

Lesson can also be learned from failed IT projects in order to identify factors that leads to project success. In a survey conducted of seventy small to medium size projects revealed that poor project management was the cause of most of the failed projects. (Verner *et al.*, 2008). In eighty one percent of the seventy failed projects, cost and time were underestimated. The root cause lies in inadequate requirements development for these projects. The inability to adequately capture project requirements and subsequently estimate project workload accurately lead to many problems. These included staff added late to the project, inadequate staff, and an unrealistic schedule. These problem affected the quality of project outputs , team motivation and health (Verner *et al.*, 2008). Requirements that keep on changing have been cited as one of the causes of constant changes in project scope and ultimate project failure (Glass, 2002). Where requirements were not done properly the failure of these projects was further compounded by two project management practices that were done poorly. These practices included inadequate time allocation to conduct reviews at the end of each project phase and risk management during the project (Verner *et al.*, 2008).

In a study conducted to determine the critical success factors relating to Information technology projects, sixty three publication were assessed to produce a list of twenty seven critical success factors (Fortune and White, 2006).The twenty seven critical success factors are listed in table 3 below:

Table 3: Critical success factor identified across 63 publications (Fortune and White, 2006)

No.	Critical Success factor	Number of Literature citations identified by Fortune and White, 2006
1.	Support from senior management	39
2.	Realistic objectives	31
3.	Strong/detailed plan kept up to date	29
4.	Good communication/feedback	27
5.	User/client involvement	24
6.	Skilled/suitably qualified/ sufficient staff/team	20
7.	Effective change management	19
8.	Competent project manager	19
9.	Strong business case/ sound basis for project	16
10	Sufficient/well allocated resources	16
11	Good leadership	15
12	Proven/familiar technology	14
13	Realistic schedule	14
14	Risks addressed/assessed/ managed	13
15	Project sponsor/champion	12
16	Effective monitoring/control	12
17	Adequate budget	11
18	Organisational adaptation/ culture/structure	10
19	Good performance by suppliers/ contractors/consultants	10
20	Planned close down/review/ acceptance of possible failure	9
21	Training provision	7
22	Political stability	6
23	Correct choice/past experience of project management methodology/tools	6
24	Environmental influences	6
25	Past experience (learning from)	5
26	Project size (large)/level of complexity (high)/number of people involved (too many)/duration (over 3 years)	4
27	Different viewpoints (appreciating)	3

The top five critical success factors with the most citation were Support from Senior Management, Realistic objectives, Strong/detailed plan kept up to date, Good

communication/feedback and User/Client involvement (Fortune and White, 2006). In a study done by Imitiaz (2013) to identify fifteen critical success factor relating to IT project has found to be in line with the Fortune and White (2006) top five critical success factors. The only difference was that Team capability is one of the top five critical success factor for IT projects identified by Imitiaz (2013).

A study to identify problems and causes leading to poor performance of large IT/IS project in the public sector in the UK, US and Australia found that the challenge of managing projects is greater in the public sector (Patanakul, 2014). This was due to the large scope and a high degree of complexity. Managing participation of many stakeholders and associated relationships is particularly difficult (Patanakul, 2014). This phenomenon is also addressed in the Fortune and White (2006) study. However, as indicated in table 3, it only feature as the 26th most cited critical success factor (Fortune and White, 2006). Complexity in this instance caused difficulties in the development of systems architecture at the systems and enterprise level. The instability of architecture development further lead to a number of issues such as difficulties in the management of requirements, system development and integration (Patanakul, 2014).

Requirement management, system development and integration issues experience were also as a result of lack of project risk management, monitoring and control, change management, and governance (Patanakul, 2014). This resulted in project time and cost overruns and failure to meet user requirements (Patanakul, 2014). Poor contract management from the bidding process to operations was also seen as a major contributor. This view is also covered in table 3 but only as the 19th most cited critical success factor (Fortune and White, 2006). The complexity of large scale projects and the fact that it has many stakeholder makes contract management highly challenging (Patanakul, 2014).

In an experience report from 28 IT projects, Top management, Risk Analysis and User requirements were identified as the three most important factors (von Würtemberg *et al.*, 2011). This report is also in line with what Fortune and White (2006) indicated as the top five most cited critical success factors, with the exception of Risk Analysis which is indicated as the 14th most cited critical success factor (Fortune and White, 2006).

Slevin and Pinto (1986) describe a project implementation profile that can be used by project managers to monitor critical success factors in the implementation of projects. The critical success factors identified includes (Slevin and Pinto, 1986):

1. Project Mission: Clear project goals understood by the project stakeholders
2. Top Management Support: Senior management's support to ensure project success and project outputs adopted across the organisation.
3. Project Schedule/Plan: A detailed plan with action steps, resource requirements and timelines.
4. Client Consultation: A process to ensure that the client participate in the project process and is constantly engaged throughout the process.
5. Personnel: Availability of a process to ensure that the right project team with the right skills and expertise is available for the project.
6. Technical Tasks: Availability of the technology and specific technical steps required by the project team to complete project tasks.
7. Client Acceptance: A process to ensure that there is constant client acceptance of project deliverables during the implementation and at the end of the project.
8. Monitoring and Feedback: Continuous monitoring and control of the project progression.
9. Communication: Availability of a process to ensure that key actors are informed of the project process.
10. Trouble-Shooting: A procedure to respond to the dynamic nature of a project, unexpected crises, and deviations from plan.

There are some similarities between the Fortune and White (2006) top 10 critical success factors with those of Slevin and Pinto's (1986). The similarities are indicated in table 4 below.

Table 4: Fortune and White (2006) and Slevin and Pinto (1986) CSF Comparison

Fortune and White (2006) CSF	Slevin and Pinto (1986) CSF									
	1. Project Mission Support	2. Top Management	3. Project Schedule/Plan.	4. Client Consultation	5. Personnel	6. Technical Tasks	7. Client Acceptance	8. Monitoring and Feedback	9. Communication	10. Trouble-Shooting.
1. Support from senior management		X								
2. Realistic objectives	X									
3. Strong/detailed plan kept up to date			X							
4. Good communication/feedback							X	X		
5. User/client involvement				X						
6. Skilled/suitably qualified/ sufficient staff/team					X					
7. Effective change management										
8. Competent project manager					X					
9. Strong business case/ sound basis for project										
10. Sufficient/well allocated resources		X								

As can be seen in table 4, the Fortune and White (2006) top ten critical success factors list only Effective change management and Sufficient/well allocated resources are not represented in Slevin and Pintos (1986) critical success factors list. On the other hand, Slevin and Pintos (1986) Technical tasks, Client Acceptance and Trouble Shooting are not represented in Fortune and White (2006) critical success factor list. This suggests that even after the twenty years since Slevin and Pinto (1986) produced the critical success factors list, the majority of those factors are still applicable as it can be seen in Fortune and Whites (2006) list. The top factors identified from conducting this literature review is therefore summarised and combined in the below table 3:

Table 5: Combined Top CSF list: Fortune and White (2006) and Slevin and Pinto (1986)

No.	Factors
1.	Top Management support
2.	Project mission
3.	Strong and Detailed Project Plan
4.	Monitoring and Feedback
5.	User/client involvement
6.	Personnel
7.	Technical Tasks
8.	Effective change management
9.	Communication
10.	Client Acceptance
11.	Competent project manager
12.	Trouble-Shooting
13.	Sufficient/well allocated resources

The above table 5 provides a list of factors critical for project management success of cost, time, and quality. Although project management success criteria is important, its role must be seen in line with achievement of other success criteria's that can be of longer term in nature (Munns and Bjeirmi, 1996). These success factors are primarily focussed on contributing to successful technical outcome of a project. Therefore it might not necessarily be directly in line with the achievement of long term organisational benefits (Doherty *et al.*, 2012). The traditional success factors are primarily focussed on achievement of technical targets and does not take into account the need for organisational change in order for deliver organisational benefits (Markus, 2004). Therefore, it is critical to go further than the identified factors and review existing literature in the next section to identify factors that goes beyond the project management success criteria of time, cost, and quality.

2.3.2 FACTORS OF PROJECT INVESTMENT SUCCESS/ BENEFITS REALISATION

Most organizations focus on the achievement of technical targets and not on what is required to achieve organisational benefits through technology (Peppard *et al.*, 2007). This has resulted in organisations not realising benefits even in instances where projects met their technical targets. The failure to realize benefits is primarily due to project management methods and tools that are focussed on delivering the technical aspect of an IT project (Peppard *et al.*, 2007). IT projects are not only about technology, but also about bringing new ways of working in an organisation. Therefore, project management tools used for project management success might be inadequate to achieve project benefits and investment success (Golini *et al.*, 2015). The adoption of a benefits management approach is therefore critical to supplement the traditional project management approach and tools (Peppard *et al.*, 2007). The benefits management approach will enable managers to identify, plan and, manage the delivery of benefits. It will also bring about new work practices and much closer collaboration between IT professionals and business managers to deliver IT solutions that goes beyond the technical targets (Peppard *et al.*, 2007).

This approach requires IT professionals to improve their current project delivery practices to enable them to identify success factors that are benefits orientated and focussed towards achieving long term targets (Doherty *et al.*, 2012). The following guiding principles were therefore identified to assist with identifying factors that are more benefits orientated (Doherty *et al.*, 2012):

1. Benefits orientation: Factors should be focussed on the delivery of benefits
2. Organisational Change: Benefits cannot be achieved without changing the organisation, therefore factors should be in line with bringing about organisational change
3. Portfolio Focus: Factors should not be applied to an individual project but should take into consideration that a single project cannot have an impact on its own; it is part of the bigger system.
4. Investment Life cycle: Factors should be in line with investment life cycle and not only the life cycle of the project.

5. Tailored to Context: Factors should be specific to the organisations context where the IT projects are implemented.
6. Factors are interdependent constructs: Factors should not be seen as independent from each other but rather as interdependent system, that should be managed as such.

The factors relating to the above principles are reviewed and discussed in the followed sections.

2.3.2.1 *BENEFITS ORIENTATION*

The success implementation of the technical aspect of an IT project is important. However, the ultimate goal of delivering an IT solution should be to deliver clear organisational benefits (Doherty *et al.*, 2012). Therefore, project stakeholders are required to play a more proactive role in identifying benefits orientated factors that affect every stage of the project (Doherty *et al.*, 2012). Doherty (2012) in his detailed analysis of three organisations identified how traditional success factors could be modified to be more benefits orientated. From all the factors investigated, six of the more prominent factors were chosen and modified to be more benefits delivery orientated. These factors were modified as follows (Doherty *et al.*, 2012: 7-10):

1. From Identifying Goals and Objectives to Detailed Benefits Planning
2. From Project Management to the Management of Transformation
3. From Well Balanced Project Team to Coherent Governance Structures
4. From Senior Management Support and Commitment to Active Business Leadership
5. From User Participation to Stakeholder-Enabled Benefits Realization
6. From Rigorous Software Testing to On-going Benefits Review.

However, these modifications do not suggest that the traditional success factors are not important. These factors are important to deliver the technical aspects of the IT project as benefits delivery is depended on the successful delivery of the technical aspects of the project (Badewi, 2016).

An analysis of sixty articles and fourteen conference paper revealed seven benefits management factors that facilitate benefits realisation of IS development (Mohan *et al.*, 2014). These factors are:

1. Benefits planning: A clear plan that details the benefits, resources required, activities, interdependencies, and responsibilities to manage changes to ensure benefits are realised.
2. Benefits review: Continuous control and evaluating results against the planned benefits at various stages of the project.
3. Incentive management: Provisioning of incentives to ensure long-term commitment on the realisation of benefits after the project implementation.
4. Top management's involvement: to ensure that the vision is understood and that business personnel are involved in the IT delivery and after the implementation thereof to ensure continued commitment to IT benefits delivery.
5. Benefits measurement: Clear metrics to enable measurement of the benefits.
6. Business process knowledge: IT project team understanding of business needs and processes to ensure that the IT solution is aligned to the business.
7. Benefits realisation success: A process to measure the degree of stakeholder satisfaction on the delivered benefits.
8. Business-IT communication: A process for effective communication between IT department and business to ensure constant IT and business alignment during the project process.

The above list highlighted by Mohan *et al* (2014) agrees with that of Doherty *et al* (2012). However, the only factors not included in the Mohan *et al* (2014) list are the 1) Management of Transformation and 2) Coherent Governance Structures and 3) Stakeholder-Enabled Benefits Realization. Although the naming of the some factors are different from those of Doherty *et al* (2012) to those of Mohan *et al* (2014) it can be argued that essence of each factor might find a place on both authors factor list. Key and central to benefits delivery is the interests of the stakeholders and what they hope to achieve through the project (Cooke-Davies, 2002). These interests are therefore expressed in both Doherty *et al* (2012) and Mohan *et al* (2014) factor list. The stakeholder expectations expressed as benefits should be clearly identified and a detailed plan identifying how those benefits will be realised at the beginning of the project. This plan should indicate

how outputs delivered will enable change in organisational work practices and ultimately benefits realisation (Badewi, 2016). The plan is then used to direct project work and to monitor progress during implementation and post implementation. To ensure successful execution of the benefits realisation plan, the key stakeholders should be involved from the development of the plan to the execution. The key stakeholders are the managers and users involved in the daily operations of a business as they would be the stakeholders required to change the current work practices by making use of the new system deployed and subsequently ensure benefits are realised (Kohli and Devaraj, 2004). It is therefore important to review benefits realisation progress on a continuous basis in order to link these stakeholders and benefits realised with the organisational reward system. In this way, motivation to work actively on realising benefits will be increased (Badewi, 2016).

The existence of an effective benefits management process, co-operation of IT and business is important to ensure that benefits are delivered (Cooke-Davies, 2002). In reality, the relationship between IT and business is poor and as a result leads to a number of issues (Peppard and Ward, 1999). The issues caused by the poor relations includes the following (Henderson and Venkatraman, 1993):

- a) Unrealistic Benefits or benefits not identified at all
- b) Bad planning
- c) Required organisational change for benefits realisation is not achieved.

This process also ensures that there is an active contribution of stakeholders in the planning, project implementation phases and toward utilisation phase of the project outputs (Munns and Bjeirmi, 1996). The adoption of organisational BM capabilities and process are therefore particularly important in ensuring that the IT resources are transformed into actual benefits through projects (Marnewick and Labuschagne, 2010).

In a study to investigate the relationship between theory and practice of benefits management at South African professional organisations, it was shown that there is a gap between theory and practice. Although there is awareness of benefits management in most large organisations and that there are efforts underway to

formalise it, there are still issues that exist that hampers the full adoption of benefits management. The results indicate that benefits management practice is prohibited by the complexity of the environment, lack of support or understanding from top management and immature organisational processes and structures to implement benefits management (Marnewick and Labuschagne, 2010). There is also still some level of uncertainty regarding the value of benefits management, a lack of formalized knowledge and experience of benefits management in some of these organisations (Marnewick and Labuschagne, 2010). In instances where benefits management was adopted there were some issues experienced.

For example, in a research conducted of organisations in South Africa and Netherlands to review the extent of benefits management practices adopted in the management of IS projects, key issues were uncovered (Marnewick, 2016). Benefits documented in the business case are not linked back to organisational strategies and therefore makes measurement of success almost impossible. Organisations are also not able to properly quantify the benefits to be realised and thus resulting in difficulties when the success of a project needs to be measured. Marnewick (2016) made a number of propositions to strengthen benefits management practices and it included the following:

1. A link between organisational vision and strategies and benefits in the project business case must be explicitly shown. This is to ensure that only projects that are in line with achieving organisational strategies are approved and initiated.
2. The project benefits should be clearly articulated and formulated in the business case to ensure that organisations are able to measure project success (OGC, 2009).
3. There should be a governance structure that approves and prioritise all IS projects based on the business case received.
4. A governance control should also be included to ensure that the benefits indicated in the business case are continuously reviewed. Project Managers should include the benefits review activities in their project schedule.

5. The project life cycle should be extended beyond its traditional life cycle to ensure that the management of the projects is designed at ensuring that the management of benefits occurs long after the project is implemented. The business case owners' responsibility on this aspect of benefits management should also be clearly stipulated.

The above points shows that it is not enough to merely adopt the benefits management practices, but it is equally important conduct the adopted practices correctly to achieve organisational strategies and sustainability targets (Marnewick, 2016) .

A study of challenges to e-government implementation in South Africa leadership, citizen inclusion, and appreciation of perceived IT value was cited amongst others as key. Numerous dimensions of leadership including leadership structure, success measures, continuity and sustained interest emerged from the study (Matavire *et al.*, 2010). Service providers in government deliver services against benefits that are unknown and thus potentially leading to unusable systems provided. This is as a result of community participation that takes place at a very late stage of the project usually at the service delivery stage (Matavire *et al.*, 2010). Stakeholder involvement and participation from internal users, communities, and service providers is key to successful delivery of projects.

2.3.2.2 ORGANISATIONAL CHANGE

The introduction of a new system in an organisation impacts the functioning of the business and its employees (Doherty and King, 1998).It is likely to affect the organizations processes, structure, culture, and performance. It is therefore necessary to initiate change management tactics such as employee readiness assessments, training, and the design of new organisational structures to transition from the old to the new work practices (Markus, 2004).

Organisations realise benefits through organisational change including when the deployed technology is used as part the new organisational (Peppard and Ward, 2005). Therefore, factors required to manage the successful implementation of IT must explicitly address organisational change and the technology part of the project. Factors such as leadership, user involvement, and benefits planning should focus on organisational change required to realise benefits (Doherty *et al.*, 2012).

Implementation of an IT/IS project too often negatively affects the organisation and thus leading to users entirely or in part not accepting the deployed system (Martinsons and Chong, 1999; Doherty and King, 2005). This is caused by the exclusion of human and organizational factors related to the implementation of IT projects (Doherty and King, 2005). It is therefore not surprising that poor project management, exclusion of human and organisational factors are seen as major causes with regard to the high levels of systems failure (Clegg *et al.*, 1997).

IT projects focussed on the delivery of technology and failing to account for the social aspect of change required when introducing IT systems, are destined to fail from the inception (Marchand and Peppard, 2008). It is therefore important for management to understand the social and organisational context where IT projects are implemented (Peppard and Ward, 2005). This will allow management to identify factors that are in sync with the organisational context and, changing demands during the project investment lifecycle (Doherty *et al.*, 2012). Ignorance of organisational context where IT is deployed has been proven to be the cause of failure in case study analysis of ERP and CRM system roll outs (Marchand and Peppard, 2008). The factors identified that lead to system failure included the following (Marchand and Peppard, 2008):

- Rigidity in planning and failure to respond to the dynamic nature of projects
- Failure to recognise that there is a need for change to people's behaviour so that the system deployed is used
- Failure to conduct benefits review of past projects to capture lessons learnt that can be used in next the projects to be undertaken.
- Failure to adequately define project strategy and scope

- Lack of clear ownership and governance
- Lack or limited communication and education of business
- Failure to create a cross organisational team
- Limited time spent to assess user readiness for the proposed IT system
- Ineffective means of gathering of user requirements.
- Insufficient planning of change programme and the implementation thereof

What this list suggests is that every aspect of IT project implementation should be centred around its organisational context and particularly how to encourage system usage to deliver value to the organisation. This approach is based on the premise that deploying new IT systems are directly or indirectly modifying how people work and how they use information (Marchand and Peppard, 2008). Therefore it is important to determine the organisational benefits, and then what changes, such as capabilities, behaviours, and processes are required to realise those benefits before creating the project plan (Peppard *et al.*, 2007; Maklan *et al.*, 2010).

In addition, the need to manage risks of negative organisational consequences is also an important factor to consider (Doherty, 2014). The need to manage risk in this regard is driven by the view that information systems deployment are unpredictable and may therefore behave differently as soon as it is placed in a social and organisational setting (Doherty *et al.*, 2006). Although there is in some instances a strong focus on benefits when business cases are written, the management of benefits tend to fade away as soon as the business case is approved (Ashurst *et al.*, 2008). Furthermore, even if organisations want to use their business cases to proactively manage the delivery of benefits, the benefits are overestimated and costs understated to get the business case approved (Ward *et al.*, 2008). The outcome from systems development projects are unpredictable over the system life cycle and are sometimes not planned (Orlikowski, 1996). It therefore makes the initial business case an unreliable road map going forward for benefits realisation (Doherty, 2014). IT professionals are therefore encouraged to expect a different outcome as soon as the project is implemented rather than simply sticking to the initial business case (Doherty, 2014).

This implies that benefits arise from changes initiated in an organisation and the ability of an organisations to manage the unexpected organisational consequences (Peppard *et al.*, 2007). This is obviously the case when an IT project has a strong element of organisational change. However, it can also be applicable in many other IT projects, except in a limited number of infrastructure IT projects (Marchand and Peppard, 2008). The benefits management approach provides a framework on which these social and organisation factors can be identified and managed throughout the technology or system lifecycle (Ward and Daniel, 2006).

2.3.2.3 PORTFOLIO MANAGEMENT

Increasing economic benefits from the use of IT can be addressed by “doing the right projects” and “doing the right projects right” (Linenberg *et al.*, 2003). Project Portfolio Management (PPM) is a key project management discipline designed precisely to address these two aspects of increasing economic benefits from IT.

PPM enables a consistent achievement of project success as it has to do with processes and practices relating to decisions to translate organisational strategy into programmes and projects (Cooke-Davies, 2002). Although project management techniques will enhance the successful delivery of the project, selecting the wrong project to match organisational strategy, the projects are bound to fail (Munns and Bjeirmi, 1996). Selecting the right project at the beginning and disallowing projects that are not aligned to organisational objectives is one of the first critical step in ensuring total project success and benefits realisation (Munns and Bjeirmi, 1996). PPM practices are therefore key as it allows the organisation to fully resource projects in line with the organisational strategy and objectives (Cooke-Davies, 2002). These practices also ensure that there is a global view of the organisations project performance to ensure that there are connections between different projects that delivers the same benefits, projects are continuous aligned to organisational strategy and its realities (Cooke-Davies, 2002; De Reyck *et al.*, 2005). Adoption of PPM has proven to have positive impact on benefits realisation on projects managed at a portfolio level. (De Reyck *et al.*, 2005).

It is therefore important to consider success factors from a portfolio point of view instead of only focussing on the single IT project. The reason for this view is that implementation of an individual IT project might not deliver benefits on its own. It is therefore important to manage the implementation process and the factors required to implement the project successfully within the context of a portfolio. Developing a benefits management capability to address this is key (Ashurst *et al.*, 2008). If projects are not managed within a context of a portfolio it may lead to duplication of efforts , task scheduling conflict and poor resource management (Matavire *et al.*, 2010). Business and IT communication is therefore key to ensure that management of project within a portfolio is considered (Mohan *et al.*, 2014). Management of factors relating to PPM are therefore key contributors to organisational benefits realisation and long term value creation (Cooke-Davies, 2002).

2.4 CONCLUSION

The literature indicates a variety of areas that needs to be looked at when considering factors that are critical for IT/IS benefits realisation and project success. The factors can be categorised into those that improves the chances of project management success as well as those that affects longer-term impact on organisations. Although the factors comes from different areas of practice, it is argued that these factors are highly interdependent and needs to be managed accordingly (Doherty *et al.*, 2012). In addition, the factors interdependence means success factors are not, for example, applicable only for the system development and implementation duration, but throughout entire system lifecycle. It is therefore important that the investment in the system must be managed through its entire lifecycle (Doherty *et al.*, 2012). This means the identification of factors and the management thereof should cover the full investment lifecycle.

The literature review was conducted to identify those factors that cover the full investment lifecycle and the factors identified are summarised as follows:

Table 6: Summary of Factors Critical for Benefits realisation in IT/IS projects adopted from the Literature and Coombs (2015)

No.	Factors	Description	Factors from Literature	Factors from Coombs (2015)
1.	Top Management Support	Senior management's support to ensure project success and project outputs adopted across the organisation	X	
2.	Project Mission	Clear project goals understood by the project stakeholders	X	
3.	Strong and detailed project plan	A detailed plan with action steps, resource requirements and timelines	X	
4.	Monitoring & feedback	Continuous monitoring and control of the project progression	X	
5.	User/client involvement	A process to ensure effective user requirements collection and user/client involvement in the project implementation process	X	X
6.	Cross Organisational Team	Availability of skilled project team members from different organisational departments	X	
7.	Technical Tasks	Availability of the technology and specific technical steps required by the project team to complete project tasks	X	
8.	Effective Change Management	Process to ensure people behaviour or attitude are changed to ensure that the system or IT artefact produced is accepted by users	X	X
9.	Communication	Effective communication among IT project team members and as well as between IT project team and business department to ensure constant alignment between IT and Business	X	
10.	Competent project manager	Availability of a suitably skilled and experienced project manager	X	
11.	Client Acceptance	A process to ensure that there is constant client acceptance of project deliverables during the implementation and at the end of the project	X	X
12.	Trouble-Shooting	A procedure to respond to the dynamic nature of a project, unexpected crises, and deviations from plan.	X	
13.	Sufficient/well allocated resources	Availability of required resources to successfully complete the project.	X	
14.	Governance Structures	Clarity of governance structure, decision-making process, and project authority.	X	
15.	Detailed benefits planning	A clear plan that details the benefits, resources required ,activities, interdependencies and responsibilities to manage changes to ensure benefits are realised	X	
16.	Continuous Benefits review	Continuous control and evaluating results against the planned benefits at various stages of the project	X	

No.	Factors	Description	Factors from Literature	Factors from Coombs (2015)
17.	Incentive management	Provisioning of monetary and/or non-monetary rewards to ensure long term commitment on the realisation of benefits after the project implementation	X	
18.	Benefits measurement metrics	Clear metrics for identified benefits to enable measurement of benefits	X	
19.	Business process knowledge	IT project team understanding of business needs and processes to ensure that the IT solution is aligned to the business	X	X
20.	Benefits realisation success	A process to measure the degree of stakeholder satisfaction on the delivered benefits.	X	
21.	Project Scope	Clear definition of project scope	X	

CHAPTER 3. RESEARCH METHODOLOGY

The purpose of this chapter is to discuss the approach to answer the research questions posed in Section 1.4. Section 3.1 begins by reviewing the research questions and briefly discusses the steps to answer the research questions. Section 3.2 discusses the research philosophy, compares, and discusses the different philosophies to inform the philosophy adopted for this research. Section 3.3 discusses the research approach adopted. Section 3.4 discusses the research design in detail, the research instrument sample, instrument distribution method, data collection, and analysis strategy. Section 3.5 will discuss the research limitation that may affect the research findings. Section 3.6 addresses ethical issues considered when planning and conducting the research. Section 3.7 provides a summary of the entire research methodology chapter.

3.1 RESEARCH PURPOSE

The aim of the research is to establish a list of factors that are critical to benefits realisation of IT/IS Projects in SA government. The research questions for this dissertation as indicated in Section 1.4 are as follows:

- a) *What factors are critical for benefits realisation of IT/IS projects in SA government services*
- b) *Are the factors indicated in Coombs (2015) study relevant for benefits realisation of IT/IS projects in SA government services?*
- c) *Are there any additional factors that are critical for benefits realisation of IT/IS projects in SA government services?*

To answer the above research questions, the following two steps are important:

1. *A literature review to identify factors critical to benefits realisation in IT/IS projects.*
2. *Comparison of the importance of all the identified factors critical to benefits realisation of IT/IS projects*

The first step was completed in Chapter 2 by reviewing previous literature in order to identify the factors critical to benefits realisation of IT/IS projects. The process was a critical first step in answering the research questions (a) and (c). Table 6 from Section

2.4 provides a summary of factors critical for benefits realisation in IT/IS projects identified from the literature in this regard.

The second step is concerned with comparing all identified factors indicated in table 6 section 2.4 to identify their importance to benefits realisation in IT/IS projects. The following sections provide more details on what is required to complete the second step. The first point to address in order to complete the second step is a discussion on the research philosophy because it will provide the philosophical basis on how the data should be gathered.

3.2 THE RESEARCH PHILOSOPHY

A research philosophy is a belief system that a researcher adopts in order to shape how new knowledge should be researched and developed (Saunders *et al.*, 2009). It is necessary to make the philosophical belief of a researcher known before a position on a particular research methodology is adopted so that there is a deep understanding on how the research is conducted (Pring, 2000). The philosophical assumptions including beliefs and values is important in the decision making process relating to a research methodology to adopt (Jackson, 2013). The philosophical assumption is important as it guides the type of evidence to gather, its origin, 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 on the assumptions about the ontology and epistemology philosophy.

3.2.1 ONTOLOGY

Ontology is the philosophical study of the nature of reality and truth (Jackson, 2013). There 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 (Killam, 2013). 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).

3.2.2 EPISTEMOLOGY

Epistemology refers to what relationship the researcher has with what is being researched and how the researcher should get the knowledge (Killam, 2013). 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 (Jackson, 2013). 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 believes are positivists or interpretivists.

a. 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 (Killam, 2013). In this way, they can get an objective measurement. Positivism is a believe 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 (Ayer, 1949; Crossan, 2003). 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).

b. Interpretivist Perspective:

Interpretivist provides an alternative to positivism. For the interpretivist researcher, reality is not constant, instead it is 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 believe that in order to understand somebody's experience you need to talk to them and get involved (Killam, 2013). Therefore reality does not exist without a context and there is therefore different forms of reality (Hughes, 1994). The context that influence reality maybe be individual behaviour, attitude, culture, gender, and etc. (Proctor, 1998; 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 (Pope and Mays, 1995).

3.2.3 DISCUSSION ON THE CHOICE OF RESEARCH APPROACH

The above sections have provided description of the philosophies of positivism and interpretivism to inform the research methodology or approach to adopt. As indicated, 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. The difference between the philosophies are exaggerated (Webb 1989) and the use of mixed approaches are common (Polk 2001). It is therefore important to assess the advantages and disadvantages of both approaches and the philosophies that underpin these approaches. (Crossan, 2003).

Although the two philosophies are different from each other, neither of the two is better than the other. The most appropriate position should therefore be taken that is best suited to assist with answering the research question and the problem. As indicated in the Problem statement that *'Previous studies of facilitating and inhibiting factors relating to benefits realization in IT/IS projects have been restricted in scope and their applicability to SA government services is not known.'* The aim of this research is to fill a knowledge gap by identifying a list of factors critical to benefits realisation in IT/IS projects and tests their applicability in the South African government. The list of factors identified in the literature will therefore be tested to see if they can be generalised and relevancy thereof tested in the South African government IT/IS projects context. For these reasons, it would be appropriate to conduct research in an objective manner and not get involved with the research participants. If the research aim were to solve a problem, it would require the researcher to conduct a deeper investigation and would therefore require an involvement with the participants to identify the root causes of the problems. This is not the case for this research. Therefore, a positivism approach is required and will be adopted in this regard.

3.3 RESEARCH APPROACH

Since a positivist's position is adopted for this research, the approach associated with this position is usually a quantitative approach. The quantitative research approach is a process of inquiry into the given problem and the testing of a theory using statistics to determine whether the theory is true (Greswell, 1994). This implies that the researcher will not get involved in the feedback process of the participants and thus minimising the researchers bias (Killam, 2013).

There is a variety of techniques used to facilitate the quantitative approach to this research. The techniques are based on a positivists approach and they are as follows (Galliers, 1991).

Laboratory experiments are a quantitative analysis research process that studies small variables in a controlled environment with the intention of replicating and making generalisation thereof to the real world. The weakness of this process is that the experiment is conducted in a controlled and isolated environment and therefore might not consider the factors experienced in real life (Galliers, 1991).

Field experiments are an extension of the laboratory experiments into the real world. This approach takes into account more on factors that might be encountered in the real world and therefore making it more objective (Galliers, 1991).

Surveys are conducted to gauge peoples' views and experiences using questionnaires and interviews. The data that comes from it is than analysed using quantitative techniques to draw inferences on relationship of different variables being studied. The weakness of this study is that it does not consider the context of what its being researched and assumes there is one reality (Galliers, 1991).

Case studies are a research approach to study relationship of different variables by using a single organisation or situation. This process can be either qualitative or quantitative. The case study approach is driven by the researchers' philosophical position and aim. This process provides an opportunity to have intense or detailed study of a situation. However, the weakness of this process is that research is restricted to a single situation

or organisation and therefore the outcome of the research might not be generalizable to other contexts (Galliers, 1991).

Simulation can be the same as experimental research as it involves setting up an environment to study a certain behaviour to understand certain variables and their relationships. This process weakness is that it might not be realistic, as it is not conducted in the “real world” and therefore might exclude important factors to be considered in the “real world” (Galliers, 1991).

Forecasting is research process that analyses the past and present to make predictions about the future. It can therefore be used in situation where a researcher would like to predict the impact of a certain behaviour on the future (Galliers, 1991).

Based on the above evaluation, the most appropriate approach for this study is the use of a survey. This study involves requesting participants’ opinions on what they believe the most critical factors are for benefits realisation of IT/IS projects in the South African government. The findings of the survey will be analysed using quantitative techniques to infer what is considered critical factors for benefits realisation of IT/IS projects in the South African government.

3.4 RESEARCH DESIGN

This section describes the details of the research process employed to address the research questions of this dissertation. Section 3.4.1 describes the research instrument chosen to collect the research data for analysis. Section 3.4.2 describes the sample chosen for the research. Section 3.4.3 describes the data collection and distribution method to distribute the research instrument to the chosen sample.

3.4.1 RESEARCH INSTRUMENT

This section is concerned with the instrument that was used to collect and analyse information. The focus of this research is to collect opinions of respondents. Thus meaning that ordinal data was collected in this research. A Likert scale was used which is a commonly used for surveys. The Likert scale provides a quality ranking scale from high to low or best to worst using five or seven response levels (Allen and Seaman, 2007). It is important to at least consider five response level for the Likert scale(Allen and Seaman, 2007). A Likert scale with five response levels or categories was used for this research. It was used for respondents to rate the level or degree of importance of each factor indicated in table 4 section 2.4 critical to benefits realisation of IT/IS project in SA government. The five ordinal categories chosen to rate the level or degree of importance relating to each factor is as follows:

1. Not important
2. Moderately Important
3. Important
4. Very Important
5. Critical

A rating of between 1 – 5 was used for computation purposes. A sixth ranking of “Not Applicable” was included for each factor. This ranking was used to accommodate respondents that does not have an experience or knowledge of a particular factor.

3.4.2 SAMPLE

The South African government is large and dispersed, as there is currently a total of 278 municipalities, 118 provincial government department and 24 national departments (Gov.za, 2017). Therefore, it is expected that each government entity presented has been involved at some level or degree in IT or IS projects. However, it is beyond the resource capacity of this study to sample each entity for the survey.

Therefore, accessibility to information and respondents were among several considerations made to determine the population to choose the sample from. The sample to be chosen will be from an organisation called the State Information Technology Agency in South Africa (SITA.co.za). The SITA has been mandated by government to improve service delivery to the public through the provision of information technology and systems in a secured environment to government (SITA.co.za, 2017). It would therefore be valuable to take a sample from the SITA as it is centrally located in the delivery of IT/IS projects in government. It is likely that SITA would have been involved in a wide variety of IT and IS projects in government. This provides a diverse range of IT professionals, clients, and end users who were involved in different types of IT and IS projects from hardware, software to telecommunications.

IT professionals, clients, end-users and other stakeholders that were involved in IT/IS projects in government completed the research survey. The need to broaden the reach of the survey is important, as the research aim is to ensure that results of the research are as generalizable as possible. The research survey particularly targeted the following project roles:

1. IT Project Manager
2. Senior Management
3. Line Managers
4. Project Team Member
5. IT support staff
6. Client
7. User

The government of South Africa national, provincial, local authorities and other government institutions employs approximately 2.1 million (Statssa.gov.za, 2017). However, given the size of government the target population will be from SITA with a total of 3100 employees and IT professionals. A target of at least fifty IT respondents or professionals was solicited and this representing a response rate of 1.6%. The respondents would be derived from the above mentioned roles and the following several sub industries associated with information technology:

1. Software: This sub industry has to do with the development and provisioning of software and applications that can be used by consumers, businesses, or government through computer equipment such as PCs, cell phones, tablets etc. Examples of these include Microsoft, Oracle, Adobe, Symantec, etc. (Peterson *et al.*, 2014).
2. Hardware: Provisioning of computer hardware equipment for consumers, businesses and government such as PCs, monitors, printers, copiers, servers, network equipment and other peripherals (Peterson *et al.*, 2014).
3. Telecommunications: This sub industry consist of fixed line, cellular, wireless, and fibre optic cable networks services (Peterson *et al.*, 2014) . Examples of companies that provide these services include Telkom, MTN, Vodacom, and Neotel.
4. Electronics: - This sub industry consist of provisioning of equipment for entertainment (TVs, DVD players, video games, remote control cars, etc.) and communications (telephones, cell phones) (Peterson *et al.*, 2014).
5. Internet: This sub industry includes service provisioning such as broadband access, Internet access, domain name registration and web hosting(Peterson *et al.*, 2014)
6. Others: This describes all other sub industries that is not covered by the above-mentioned five sub industries.

Data collected from the various stakeholder and from the sub industries associated with information technology will assist in ensuring that the outcome of the research is generalizable as far as possible.

3.4.3 DATA COLLECTION

A web-based survey using the Likert Scale was used to collect the data from the above-mentioned targeted respondents. The use of a survey is an instrument used for collecting respondents attitude and beliefs (Frankel and Devers, 2000). It was used because of the following advantages (Frankel and Devers, 2000):

1. Provides access to a wide and large number of population
2. It is an inexpensive way of sampling opinions, attitudes, etc.
3. Results can be easily quantified
4. It is more generalizable

The survey instrument as per “Appendix A” was sent electronically to the targeted roles and regular monitoring of feedback was conducted to ensure the target of at least fifty respondents is received.

3.4.4 DATA ANALYSIS

Once the data was collected, the following steps were taken to analyse the data:

- Excel spreadsheet was used to tabulate all responses received in terms of the stipulated roles and IT sub industries.
- From the spreadsheet, a frequency table was developed to identify the number of responses received per rating category for each factor.
- The rating response received from the Excel spreadsheet was calculated and expressed in percentages to determine the average importance rating of each factor.

The formula used in this regard is as follows:

$$IRP = 100 (N * AWIR) / 5*(N-NA)$$

Whereas *IRP* is Importance Rating Percentage for each factor. *N* is the total number of respondents, *AWIR* is the Averaged Weighted Importance Rating given for each factor, *5* is the number of rating categories and *NA* is the number of respondents who responded Not Applicable.

- The results of the above calculation were then presented in a bar graph to compare the overall importance rating of each factor. This allowing us to analyse the degree of importance of each factor to benefits realisation of IT/IS project in SA government.
- Once the overall analysis was completed, the factors importance rating was also compared from an IT role players and IT sub industry perspective using percentages. This information was presented using a table.
- In addition, a *Chi-square test statistics goodness of fit* was used to test whether the obtained results (observed frequencies) conforms to the expected results of the population targeted.

Based on the above an inference was drawn on the factors critical to benefits realisation of IT/IS projects in SA government to address the research questions.

3.5 RESEARCH LIMITATIONS

The following limitations were noted of the methodology implemented for this research:

- The limited time available to collect the data from the survey distributed may negatively affect the number of responses.
- Availability of participants who properly represent the population being researched to provide the necessary feedback required may affect the generalizability of findings negatively.
- Feedback from the participants may not be in line with questions asked. Therefore, the feedback provided may not be accurate and thus affecting the reliability of the data.

3.6 RESEARCH ETHICS

Research ethics is an important aspect of the research methodology process. The importance of ethics stems from a variety of issues that affect the research process. For example, organisational research has an effect on the participants and may not be beneficial to all. 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 or death are 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 feedback from IT stakeholders on what they believe the factors are that are critical to benefits realisation in IT/IS 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. At the same time, the data generated from the research process is not sensitive in a sense that it does not require personal information and confidential information of an organisation. 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 critical factors to benefits realisation in IT/IS 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.

3.7 SUMMARY

The research philosophy was discussed which underpins the paper's research approach. As indicated the research approach adopted resides in the positivist paradigm and therefore will use a web-based survey to gauge data on the factors critical to benefits realisation on IT/IS projects in the South African government. The participants was required to rate the level of importance of each factor using a scale of 1 – 5. The findings thereof was analysed using quantitative techniques mentioned in section 3.4.4 to infer what the stakeholder in the South African government believe the factors critical to benefits realisation on IT/IS project in SA government are. 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.

CHAPTER 4. RESEARCH RESULTS AND DISCUSSIONS

The purpose of this chapter is to report the results of the survey conducted as indicated in chapter 3. The reported results was immediately followed by analysis and discussions of the results to make meaningful interpretation thereof. The survey returned one hundred and one (101) responses from the sample chosen, however only ninety-four (94) responses could be used as the seven (7) responses did not provide any data on factor ratings. The seven (7) unusable response is greyed out in APPENDIX B. This chapter will address the participants' information, results on the factor ratings by the participants and discussion of the findings.

4.1 PARTICIPANTS INFORMATION

As previously indicated, the survey provides ninety-four usable data for analysis and discussion. From this, data on participant's roles and IT sub industry from the results of survey are indicated in below table 7.

Table 7: Participants Data

Role	IT-Sub- Industry						TOTAL #	TOTAL %
	Software	Hardware	Telecoms	Electronics	Internet	Other		
Project Manager	8	3	2	0	1	1	15	16%
Senior Manager	9	3	3	0	1	0	16	17%
Line Manager	8	2	3	1	3	5	22	23%
Project Team Member	7	3	1	0	1	2	14	15%
IT Support Staff	6	3	2	0	1	1	13	14%
User	0	0	0	0	0	2	2	2%
Client	0	1	1	0	1	1	4	4%
Other.	2	1	3	0	1	1	8	9%
TOTAL #	40	16	15	1	9	13	94	
TOTAL %	43%	17%	16%	1%	10%	14%		100%

From this table, it is clear that the most responses received from a role perspective were from Line Managers at twenty three percent (23%), followed by "Senior Managers" at seventeen (17%), Project Managers at sixteen (16%), Project Team Members at fifteen (15%), IT support staff at fourteen (14%) and the remaining fifteen (15%) was shared by Users, Client and Others. From an IT sub industry perspective, the most responses

received were from Software at forty three percent (43%) followed by Hardware (17%) and Telecoms at fourteen percent (16%) each, Other industries at fourteen percent (14%), Internet at nine percent (10%) and Electronics at one percent (1%).

The results indicate that the survey was able to capture responses from all role players and as well as from the IT-sub industry they belong to. However, “Client” role player returned only two (2) responses and “User” role player only four (4) responses. From a sub industry perspective, electronics only returned one (1) response. Since these responses are below five (5), no meaningful conclusion can be drawn from these responses. Therefore, on the individual analysis of roles and sub industries, the user, client, and electronics responses were excluded.

4.2 OVERALL MAIN RESULTS AND DISCUSSIONS

The ninety-four survey participants as indicated in section 4.1 rated each factor as per the five ordinal points provided. The results thereof are indicated on the below table 8.

Table 8: Factor Frequency rating per category

Factor	Not Important (1)		Moderately Important (2)		Important (3)		Very Important (4)		Critical (5)		N/A		Total
	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	
Top Management Support	2%	2	2%	2	11%	10	21%	20	62%	58	2%	2	94
Clear Project mission	0%	0	1%	1	5%	5	32%	30	60%	56	2%	2	94
Strong and detailed project plan	0%	0	3%	3	9%	8	37%	35	51%	48	0%	0	94
User/Client involvement	1%	1	3%	3	5%	5	30%	28	60%	56	1%	1	94
Sufficient/Well allocated resources	0%	0	0%	0	7%	7	48%	45	45%	42	0%	0	94
Governance structure	2%	2	3%	3	17%	16	30%	28	48%	45	0%	0	94
Defined project scope	0%	0	2%	2	5%	5	37%	35	55%	52	0%	0	94
Effective Change Management	1%	1	1%	1	20%	19	44%	41	32%	30	2%	2	94
Detailed benefits plan	0%	0	6%	6	31%	29	40%	38	20%	19	2%	2	94
Continuous Benefits Review	1%	1	15%	14	28%	26	43%	40	12%	11	2%	2	94
Incentive Provisioning	1%	1	18%	17	39%	37	29%	27	10%	9	3%	3	94
Clear Measurement Metrics	1%	1	5%	5	27%	25	39%	37	26%	24	2%	2	94
Business Process Knowledge	0%	0	4%	4	13%	12	37%	35	43%	40	3%	3	94

Factor	Not Important (1)		Moderately Important (2)		Important (3)		Very Important (4)		Critical (5)		N/A		Total
Benefits Realisation Success	0%	0	9%	8	10%	9	50%	47	30%	28	2%	2	94
Monitoring and Feedback	0%	0	2%	2	13%	12	49%	46	33%	31	3%	3	94
Skilled Cross Organisational Team	1%	1	2%	2	26%	24	50%	47	17%	16	4%	4	94
Technology and Technical steps	0%	0	1%	1	19%	18	50%	47	26%	24	4%	4	94
Effective Communication	0%	0	0%	0	7%	7	31%	29	58%	55	4%	4	94
Competent project manager	0%	0	0%	0	12%	11	35%	33	49%	46	4%	4	94
Client Acceptance	2%	2	5%	5	13%	12	34%	32	43%	40	3%	3	94
Trouble-Shooting	0%	0	2%	2	17%	16	50%	47	26%	24	5%	5	94

The above table indicates a number of highlights. There are six factors where over fifty percent (50%) of the respondents agreed that these factors are “Critical”. These factors are *top management support* at sixty two percent (62%), followed by *clear project mission* at sixty percent (60%), *user/ client involvement* at sixty percent (60%), *effective communication* at fifty eight percent (58%), *defined scope* at fifty five percent (55%), *strong and detailed plan* at fifty one percent (51%). This indicating that majority of the respondents agree that these factors are critical to project benefits realisation in IT/IS project. The remaining sixteen factors were below 50 percent with *incentive provisioning* being the lowest standing at ten percent (10%) in the “Critical” rating.

In addition, there are four factors that where at least fifty percent (50%) of respondents agreed that these factors are “Very Important”. All of these factor were at fifty percent (50%) and they are *benefits realisation success*, *skilled cross organisation team* and; *technology and technical steps*. However, to ensure that each factor is rated on the same scale an importance rating percentages was calculated using the steps indicated in section 3.4.4 to average the level of importance of each factor. This process enabled the ranking of each factor based on the average percentage importance rating received. The results of this process are indicated in the below figure 3.

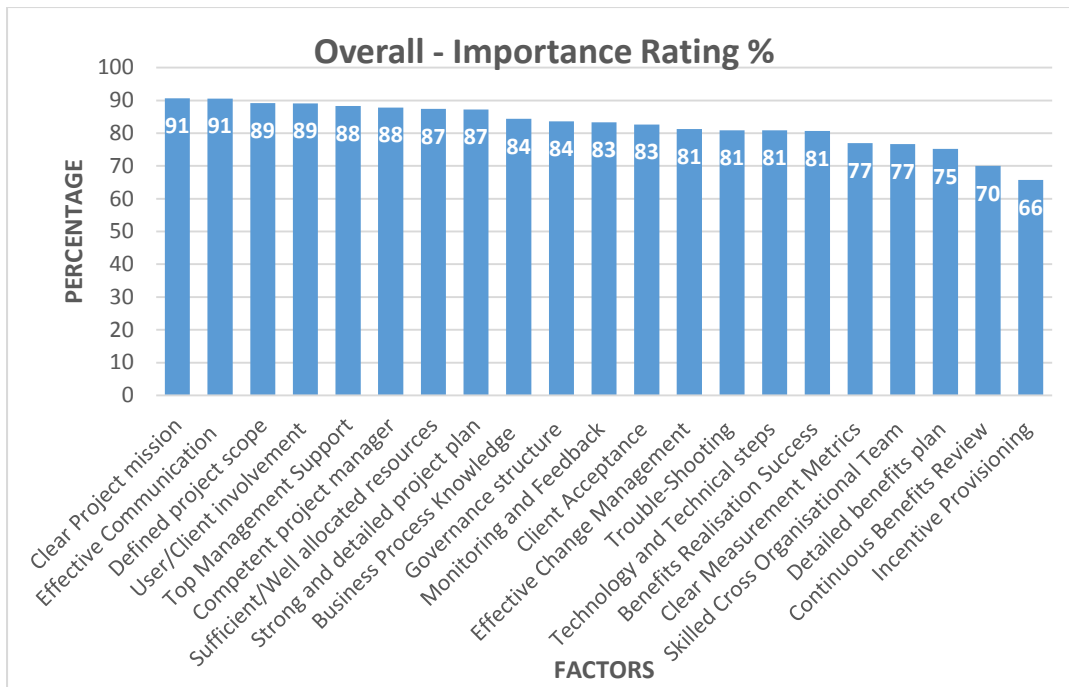


Figure 3: Overall Importance rating

As can be seen from the above figure 3 all factors received a rating of over 50%. Clear Project Mission and Effective Communication received the highest rating at 91%. Incentive Provisioning received the lowest rating of 68%. All ratings are presented in the above figure 3 in a descending order from the highest to the lowest average percentage importance rating. The factors represented in the top 10 received a rating of between 91 – 84 % while the lower ranked (from 11 -21) factors received a rating of between 83-66%. However it must be noted that all of the indicated factors received a ranking above 60% which is still significant.

Furthermore, the factors indicated in Coombs (2015) study includes User/Client involvement at 89%, effective change management at 81%, and client acceptance at 83% and business process knowledge at 84%. This indicating that two out of the four factors are in the top 10 rated factors at number 4 and 9 respectively.

When comparing this study's top ten factor list to that of Fortune and White (2006) and Slevin and Pinto (1986) top ten critical success factor list the result are as follows:

Table 9: Factor Ranking Comparison

Factor	This study Ranking	Fortune & White (2006) Ranking	Slevin & Pinto (1986) Ranking
Clear Project mission *	1	2	1
Effective Communication *	2	4	9
Defined project scope x	3	NR	NR
User/Client involvement *	4	5	4
Top Management Support*	5	1	2
Competent project manager*	6	8	5
Sufficient/Well allocated resources*	7	10	NR
Strong and detailed project plan*	8	3	3
Business Process Knowledge x	9	NR	NR
Governance structure x	10	NR	NR
Monitoring and Feedback	11	16	8
Client Acceptance	12	NR	7
Effective Change Management	13	7	NR
Trouble-Shooting	14	10	18
Technology and Technical steps	15	12	6
Benefits Realisation Success	16	NR	NR
Clear Measurement Metrics	17	NR	NR
Skilled Cross Organisational Team	18	6	5
Detailed benefits plan	19	NR	NR
Continuous Benefits Review	20	NR	NR
Incentive Provisioning	21	NR	NR
NR = Not Ranked and is not on the factor list			

The above comparison indicates the following:

- Seven of the top ten factors marked with an **asterisk *** are in line with either or both Fortune and Whites' (2006) or Slevin and Pintos' (1986) top ten factor list.
- Three factors marked with a multiplication sign **x** of this study top ten list does not appear on both Fortune and Whites (2006) or Slevin and Pintos (1986) top ten factor list.

When comparing Coombs (2015) factor list to that of Fortune and Whites (2006) or Slevin and Pintos (1986) top ten factor list the following is revealed:

- User/Client involvement, effective change management, and client acceptance factors are in line with either Fortune and Whites (2006) or Slevin and Pintos (1986) top ten factor list or both.
- Business process knowledge does not appear on both Fortune and Whites (2006) or Slevin and Pintos (1986) top ten factor list.

This comparison therefore suggests that the most of the factors rated in the top ten are in line with Fortune and Whites (2006) or Slevin and Pintos (1986) top ten factor list or both.

4.3 DETAILED MAIN RESULTS AND DISCUSSIONS

The following section detailed the findings per factor and how the IT roles and IT sub industries rated each factor. The discussion was organised from the factor that received the highest rating to the lowest. Table 10 below will be used to aid the discussion in this regard.

Table 10: Roles and IT sub industry importance rating

FACTOR	OVERALL RATING %	RANK #	ROLES RATING %										IT SUB INDUSTRY RATING %											
			Project Manager		Senior Manager		Line Manager		Project Team Member		IT support staff		Other roles		Software		Hardware		Telecomms		Internet		Other	
			%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%	Rank
Top Management Support	88	5	93	5	93	3	86	5	87	5	73	19	98	1	93	2	81	14	91	3	84	3	83	11
Clear Project mission	91	1	95	3	95	1	87	4	91	2	91	4	88	8	94	1	93	1	90	5	80	8	87	3
Strong and detailed project plan	87	8	85	8	90	7	84	9	93	1	92	2	80	14	86	9	93	2	89	6	80	9	86	6
User/Client involvement	89	4	96	1	91	4	83	10	84	6	91	5	94	2	92	3	92	3	85	8	82	5	85	9
Sufficient/Well allocated resources	87	7	89	6	88	10	86	6	84	7	92	3	88	9	88	7	91	4	84	10	84	4	86	7
Governance structure	84	10	93	4	91	5	78	15	73	18	85	12	85	10	89	6	80	15	85	7	71	17	78	16
Defined project scope	89	3	96	2	91	6	89	1	83	9	89	7	85	11	91	5	89	5	91	4	73	15	92	1
Effective Change Management	81	13	81	11	85	13	78	16	80	15	83	14	83	12	83	12	84	11	77	16	69	20	87	4
Detailed benefits plan	75	19	69	18	79	18	74	18	76	16	77	18	80	15	74	19	76	19	76	18	73	16	77	18
Continuous Benefits Review	70	20	65	20	68	20	71	20	70	20	68	20	80	16	67	20	73	20	68	21	71	18	75	19
Incentive Provisioning	66	21	56	21	66	21	70	21	66	21	66	21	71	20	65	21	64	21	68	20	67	21	65	21
Clear Measurement Metrics	77	17	71	17	84	14	77	17	71	19	83	15	80	17	76	17	81	13	76	17	71	19	75	20
Business Process Knowledge	84	9	77	13	88	11	85	7	81	12	91	6	89	4	86	11	79	16	84	9	80	10	90	2
Benefits Realisation Success	81	16	72	16	84	15	79	12	81	13	88	9	83	13	81	14	84	12	79	14	76	13	80	12
Monitoring and Feedback	83	11	80	12	89	8	79	13	83	10	83	13	89	5	86	10	84	8	83	11	76	14	80	13
Skilled Cross Organisational Team	77	18	69	19	78	19	79	14	74	17	78	17	74	18	74	18	77	18	76	19	80	11	80	14
Technology and Technical steps	81	15	75	15	83	16	84	8	81	14	82	16	74	19	79	16	79	17	83	12	82	6	85	8
Effective Communication	91	2	89	7	94	2	89	2	89	3	93	1	89	6	91	4	89	6	95	1	91	1	85	10
Competent project manager	88	6	85	9	86	12	89	3	89	4	85	10	91	3	87	8	86	7	92	2	87	2	87	5
Client Acceptance	83	12	83	10	89	9	74	19	84	8	85	11	89	7	82	13	84	9	80	13	78	12	78	17
Trouble-Shooting	81	14	76	14	81	17	82	11	83	11	88	8	71	21	81	15	84	10	77	15	82	7	80	15

4.3.1 Clear Project Mission

Clear project mission is ranked number one with an average importance percentage rating of ninety one percent (91%). From a role perspective, Project Managers and Senior Managers rated this factor the highest at ninety five percent (95 %) and ranked it number three (3) and one (1) respectively. Line managers rated this factor the lowest at eighty seven percent (87%) and ranked it number four (4).From an IT sub industry perspective, Software gave the highest rating at ninety four percent (94%).While Internet rated this factor the lowest at eighty percent (80%) and ranked it number eight (8). All sub industries ranked this factor within the top ten.

The high ranking received for this factor could be attributed to that fact that projects are initiated for a number of reasons. The reasons could be a need to respond to a customer

request, achievement of organisational strategic objectives, business efficiency improvement, etc. Whatever the reasons are, those reasons must be clear and understood by the stakeholders involved in the execution of the project. Without clarity of the project mission and buy in from stakeholder to achieve a common mission the project is doomed to fail. This is true as organisations are likely to invest its financial resources on a project with little or no impact on its strategic objectives or mission.

A clear project mission also enables the identification of relevant stakeholder to participate in the projects across the organisations. The reason for this is that once there is clarity on the project mission and what its strategic objectives are, then you are likely to understand the impact that it has on the organisation and its stakeholders. With his understanding, the user/stakeholder requirement collection and project scoping process become more robust and inclusive. All of this speaks to the basis that any project should have before it is initiated or implemented. It is therefore not surprising that the factor received the top spot out of all factors identified. The criticality of this factor is supported by that fact it was ranked at number one and two on Fortune and Whites (2006) or Slevin and Pintos (1986) ten factor list.

4.3.2 Effective communication

This factor is ranked number two (2) with an average percentage rating of ninety one percent (91%). Senior Managers rated this factor the highest at ninety four percent (94%) and ranked it at number one (2). However, IT support staff ranked this factor the highest at number one (1) with a rating of ninety three percent (93%). On the other hand, Project Managers rated this factor the lowest at eighty nine percent (89%) and ranked it number seven (7). From an IT sub industry perspective, Telecommunications rated this factor the highest at ninety five percent (95%) and ranked it number one (1). This factor was also ranked number one by the Internet sub industry with a rating of ninety one percent (91%). Other sub industries rated this factor the lowest at eight five percent (85%) with a rank of number ten (10).

Effective communication is concerned with ensuring that there is constant flow of information amongst project team members and stakeholders. This factor therefore facilitates common understanding in terms of what needs to be delivered and management of stakeholder expectations. It also ensures that there is communication between IT project team and business to ensure project implementation is in line with the business requirements, process and policies. Communication in this context therefore suggest that the delivery of what business needs is dependent on the effective communication process between IT project team and business. Business provides the need and IT provides the solutions that should address the stated need. IT solutions that are not strongly tied to business needs are likely to fail. Effective Communication and collaboration is therefore crucial to ensure constant alignment between IT solutions and business needs. It is therefore not surprising for this factor to have received the second highest rating.

4.3.3 Defined project scope

The Defined project scope factor is ranked at number three with an average percentage rating of eighty nine percent (89%). Project Managers rated this factor the highest at ninety six percent (96%) and ranked it number two (2). Other roles rated this factor the lowest at eight five percent and ranked it number eleven (11). The high rating can also be seen from sub industry perspective with other industries scoring this factor highest rating at ninety two percent (92%) with a ranking of number one followed by software and telecommunications at ninety one percent (91%) each with rankings of number five (5) and four (4) respectively. The lowest scoring industry is internet at seventy three percent (73%) with a ranking of number fifteen (15). Only one of the five sub industries rated this factor outside of the top ten.

A clearly defined project scope is seen as key in the successful delivery of a project and ultimately providing the benefits to the organisation. Project scope is concerned with providing requirements and road map of a project. The absence of a clearly defined project scope impacts on project cost, quality and project team members' moral negatively. Project scope improves communication between team members and stakeholders as it can be clearly communicated what needs to delivered by the project.

If the project scope is not clear proper project resource estimation and planning cannot be done. This will therefore cause the project to be delivered late, over budget and with compromised quality outcomes. If projects are under resourced due to inadequate scoping, project team members are likely to take short cuts and thus comprising on quality. Quality project deliverables ensure that users are able to use the deliverable produced by the project. Usage of the deliverables are a direct facilitator of ensuring that organisational benefits are achieved.

Developing a clear project scope from the start is one of the most important project management deliverables that the project manager should competently produce. It is therefore not surprising to have received such a high rating from both project and senior managers.

4.3.4 User /client involvement

User and client involvement is ranked number four with an average percentage rating of eight nine percent (89%). Project Managers rated this factor the highest at ninety six percent (96%) with a ranking of number one (1). Line manager rated this factor the lowest at eighty three percent (83%) with a ranking of number ten (10). All of the six roles ranked this factor within the top ten. In terms of the IT sub industry, Software and hardware rated this factor the highest at ninety two percent (92%) each and ranked it at number three respectively. The lowest scoring sub industry is internet with a rating of eighty two percent (82%) and ranking of number five (5). However, other industries ranked this factor the lowest at number nine (9). All of the sub industries ranked this factor within the top ten.

User and client involvement is a crucial component in the project planning and execution process. This factor also directly feeds into the project scope definition process. This suggesting that if this process is not done correctly the scoping process will also be affected negatively. The use and acceptance of an IT system is dependent on whether the system developed meet the needs of a user or client. Effectively capturing the user and client needs from the start and ensuring that they are involved throughout the development process is key in ensuring that system developed is constantly in line with

the user and client needs. The success of project is directly dependent on the usage of the system. If the system is not used the benefits planned for the project will not be realised. The importance of the factor is also emphasized by stakeholder in the Software sub industry ranking it at number two.

4.3.5 Top Management Support

Top management support is ranked number five with an average percentage rating of eighty eight percent (88%). It received the highest percentage rating from "Other role" at ninety eight percent (98%) ranking at number one (1). The other roles that rated this factor the highest is Project Managers and Senior Manager at ninety three percent (93%) and ranking it at number five (5) and three (3) respectively. IT support staff rated top management support the lowest at seventy three percent (73%) and ranking it at number nineteen (19). All of the roles except for IT support staff rated this factor within the top ten. From an IT sub industry point of view, software rated the top management support the highest at ninety three percent (93%) with ranking of number two (2) followed by Telecommunications at ninety one percent (91%) with ranking of number (3). Hardware rated the lowest at eighty one percent (81%) and ranked it at number (14). Three of the five sub industries ranked this factor within the top ten.

Top management support is concerned with ensuring that project is successful both in the implementation phase as well as ensuring that the IT artefact or system produced is used and adopted across the organisation. This meaning that providing support in terms of adequate resources, fostering organisational reception of the new system and understanding objectives of the project (Dong *et al.*, 2009). Top management support is critical in ensuring that the project is started, implemented and the artifacts thereof is used by the organisation. The criticality thereof is further emphasized by sixty two percent (62%) of the IT stakeholder rating it as a "*Critical*" factor for benefits realisation in IT/IS projects. Without top management support project are likely to be disbanded before they are started and also during the project implementation process. Top management support is therefore crucial in ensuring there is organisational support from the beginning of the project, during the implementation of the project and long after the project is implemented.

4.3.6 Competent project manager

This factor is ranked at number six (6) with an average percent rating of eighty eight percent (88%). Other roles rated this factor the highest at ninety one percent (91%) and ranked it number three (3). IT support staff rated this factor the lowest at eighty five percent (85%) and ranked it at number ten (10). It must also be noted that Senior managers is the only role player that ranked this outside the top ten at number twelve (12) and rating of eighty six percent (86%). From a sub industry perspective, Telecommunications rated this factor the highest at ninety two percent (92%) and ranked it number two (2). Hardware rated this factor the lowest at eight seven percent and ranked it number seven (7).

It is important to employ a competent project manager to transform organisational strategic objectives into reality within the performance criteria of cost, time and quality. Inability of organisation to meet the important performance criteria may impact the organisation negatively or at worse threaten the existence of an organisation. For example, projects cost overruns due to bad planning impact directly on project feasibility and ultimately organisational objectives such as profitability margins. Project managers should be able to make use of the provided resources effectively to enable the achievement of organisational objectives.

The notable ranking of number twelve by the senior managers could be attributed to their understanding that a project should be properly conceived before anything else. Meaning that the top management support should be in place, correct projects should be selected, the project missioning and objectives should clarified and the benefits it ought to achieve. Without these building blocks even a competent project manager will be set up for failure. The other stakeholders ranking of this factor within the top ten could be attributed to the fact that the project manager after all the initial building blocks has been put in place is the vocal point of communication in the project implementation process. They are therefore more likely to interface with the project manager in the project implementation process. Therefore, a competent project manager is seen as one of the main factors for

successful implementation of a project. A successfully implemented project directly facilitates project benefits realisation.

4.3.7 Sufficient/Well allocated resource

This factor is ranked number seven (7) with an average percentage rating of eighty seven percent (87%). IT support staff rated this factor the highest at ninety two percent (92%) with a ranking of number three (3). Line managers rated this factor the lowest at eighty six percent (86%) and ranked it at number six (6). In addition, the Hardware IT sub industry rated this factor the highest at ninety one percent (91%) with a ranking of number four (4). The sub industry with the lowest rating is Telecommunications and Internet at eighty four percent (84%) each. All of the sub industries rated this factor within the top ten.

The high rating received for this factor particularly from the IT support staff could be as a result of a need to sufficiently resource projects so that it can be effectively transitioned to the post implementation phase. Issues that are born after the project implementation are sometimes left to IT support staff to deal with. Therefore it is critical that IT/IS projects are sufficiently resourced for both the implementation and post implementation phases. This will ensure that IT support staff are sufficiently empowered to effectively support the IT system or artifact produced by the project to benefit the end users. If users are not sufficiently supported to enable them to make use of the IT system, the user may not use the system and thus leading to the organisation not realising the benefits of the system deployed. This is equally true for Project Manager as IT systems or output delivered post project implementation might be referred back to the project team if resources are not allocated for the post implementation phase.

4.3.8 Strong and detailed project plan

Strong and detailed project plan is the ranked number eight (8) with average percentage rating of eighty eight percent (88%). Project team members gave this factor the highest rating of ninety three percent (93%) with a ranking of number one (1). Other roles rated

this factor the lowest at eighty percent (80%) with a ranking of number fourteen (14). Only one from the six roles ranked this factor outside the top Ten. From a sub industry perspective, hardware posted the highest rating at ninety three percent (93%) with a ranking of number two (2). The lowest scoring sub industry is internet at eight percent (80%) with ranking of number nine (9). All sub industries ranked this factor within the top ten as well.

This factor is concerned with detailing a project plan once the project scope is defined. A detailed project plan provides a description of project activities, resource requirements and schedules to implement the project. This activity is usually facilitated by the project manager with inputs from various team members with expertise. The highest rating posted by project team members and IT support staff is therefore not surprising as they require direction from the project manager on what and how it needs to be executed to enable them to play an effective role in the successful execution of projects. Thus providing a strong and detailed project plan is key given their role in a project.

4.3.9 Business process knowledge

The business process knowledge factor is ranked number nine (9) with an average percentage rating of eighty four percent (84%). From a project role perspective, IT support staff rated this factor the highest at ninety one percent (91%) but has however ranked it number six (6) in comparison to other factors. The senior managers rated this factor the second highest at eighty eight percent (88%) with a ranking of number eleven (11). The lowest scoring project role is the project manager at seventy seven percent (77%) with a ranking of number thirteen (13). From an IT sub industry perspective, other industries rated this factor the highest at ninety percent (90%) and ranked it number two (2). Software rated this factor the second highest at eighty six percent (86%) and ranked it number eleven (11). The lowest scoring sub industry is hardware at seventy nine percent (79%) with a ranking of number sixteen (16).

The factor is related to how well the IT project team understood the business needs, processes and ensure that IT is aligned to business (Mohan *et al.*, 2014) . Senior

managers are concerned with how the project meet business needs and are in alignment to business process before a project can be initiated. Therefore it would have been expected for senior managers to have ranked this factor amongst the top ranked factors. Proving to business how the project will meet business needs and how it is aligned to business process and strategies are amongst the critical steps that should be undertaken before a project is initiated. Projects that are initiated without the afore mentioned in mind are doomed to fail before it even started as it means that the organisation has not selected the right project from the start (Munns and Bjeirmi, 1996) . It is therefore surprising that senior managers, who are responsible for selecting the right projects only considers this factor the eleventh important factor. The reason for this rating could be attributed to the fact that perhaps this understanding would be covered under the clear project mission factor which in fact forms the basis for why projects are implemented.

Similarly with software sub industry that has only ranked this factor number eleven. Software projects are sometimes meant to automate organisational processes. Therefore any software development projects undertaken should be in line with organisational processes and policies. Software development projects that are not aligned to organisational processes, the deployed software is likely not to be used and thus making project benefits realisation almost impossible.

4.3.10 Governance structure

This factor is ranked at number ten (10) with an average percentage rating of eight four percent (84%). Project Manager rated this factor the highest at ninety three percent (93%) and ranked it at number four (4). The lowest scoring project role is IT support staff at seventy three percent (73%) with a ranking of number eighteen (18). All roles rated this factor within the top ten. In addition, Software rated this factor the highest at eight nine percent (89%) with a ranking of number six (6). Internet rated this factor the lowest at seventy one percent (71%) and ranked it number seventeen (17).

It is not surprising for the two highest scoring project roles to have rated this factor in the way they did. Project Managers and Senior Managers usually are represented in project

governance structures such as project boards and have the overall responsibility of ensuring that the project is successfully executed. A well constituted governance structure with representatives from different business units is key in facilitating communication between the project, the business and alignment of the project to business needs. The absence of a properly constituted governance structure may lead to difficulties in project buy in from stakeholders in the business and therefore making the project implementation a challenge. For these reasons, Project Managers and Senior Managers may therefore be concerned about removing these potential bottlenecks in the project implementation process, hence the rating given for this factor.

4.3.11 Monitoring and feedback

This factor is ranked at number eleven (11) with an average percentage rating of eighty three percent (83%). Senior managers and other roles rated this factor eighty nine percent (89%). However, senior managers ranked it at number eight (8) and other roles at number five (5). Line managers rated this factor the lowest at seventy nine percent (79%) and ranked it at number thirteen (13). Only three from the six roles ranked this factor outside the top Ten. In terms of the IT sub industry perspective, software rated this factor the highest at eighty six percent (86%) and ranked it at number ten (10). Internet rated the factor the lowest at seventy six percent (76%) and ranked it at number fourteen (14).

Monitoring and feedback is concerned that the progression of the project is monitored to ensure that is in line with project performance criteria established. This factor is also concerned with ensuring that the project performance information gathered as part of monitoring is fed back to the organisations and its stakeholders to take corrective action were projects performance is not in line with the set expectations. It is an important factor that facilitates participation and involvement of project stakeholders in the project. Although its ranked only number eleven, the importance of the factor is still significant as it facilitates the *“User and Client Involvement”* and *“Effective Communication”* during the implementation process.

4.3.12 Client acceptance

This factor is ranked number twelve (12) and received an average percentage rating of eighty three percent (83%). Other roles and Senior Managers rated this factor the highest at eight nine percent (89%) and ranked it at number seven (7) and nine (9) respectively. Line Managers rated this factor the lowest at seventy four percent (74%) and ranked it at number nineteen (19). In terms of the sub industry perspective, Hardware rated this factor the highest at eight four percent (84%) and ranked it number nine (9). Other roles rate this factor the lowest at seventy eight percent (78%) and ranked it number twelve (12).

The overall ranking received for this factor could be attributed to the fact that this factors is already covered under the “Client and User Involvement” factor which is ranked at number four (4). The reason for this assertion is that this factor is concerned with ensuring that there is continuous acceptance by the client of project deliverables throughout the project process. This is to ensure that the client is continuously involved in the project and is not surprised with the final outcome of the project. Thus ensuring that the client expectations is continuously managed throughout the process.

4.3.13 Effective change management

Effective change management is ranked number thirteen (13) with an average percentage rating of eighty one percent (81%). Senior manager rated this factor the highest at eighty five percent (85%) with a ranking of number thirteen (13). The lowest scoring project role is line managers at seventy eight percent (78%) with a ranking of number sixteen (16). None of the project roles rated this factor within the top ten. From an IT sub industry perspective, Other industries rated this factor the highest at eight seven percent (87%) with a ranking of number four and the only sub industry ranking this factor within the top ten. Internet rated this factor the lowest at sixty nine percent (69%) and ranked it number twenty (20).

Effective change management is concerned with ensuring that the IT artifact produced by the project is used and impacts the wider organisation through the usage thereof

(Peppard and Ward, 2005) . Business unit managers who sometimes consists of senior managers would therefore be responsible for driving change management initiatives in this regard to change the status quo and ensure that users adopt the newly deployed IT artifact or system as part the new work practices (Kohli and Devaraj, 2004) . Change management and benefits realisation are therefore closely linked. However, it was only ranked as number thirteen and none of the project roles ranked it within the top ten. The reason for the ranking could be the fact that change management involves multiplicity of initiatives in a project including the level of top management support, allocation of resources, involvement of users, etc. These initiatives are therefore included as part of factor list of this document and has received rankings that are within the top ten. Therefore, change management to some extend has already been addressed through the mentioned factors.

4.3.14 Trouble-shooting

This factor is ranked number fourteen (14) and received an average percentage rating of eighty one percent (81%). IT support staff rated this factor the highest at eighty eight percent (88%) and ranked it at number eight (8). Other roles rated this factor the lowest at seventy one percent (71%) and ranked it at number twenty one (21). Only one (1) out of the six (6) role players rated this factors within the top Ten. In terms of the sub industry perspective, Hardware rated this factor the highest at eight four percent (84%) and ranked it number ten (10). Telecommunications rated this factor the lowest at seventy seven percent (77%) and ranked it number fifteen (15).

This factors is concerned with ensuring that project is able respond to the dynamic nature of a project, unexpected crises, and deviations from a plan. Once a system is put on any organisational setting it tend to behave differently from what has been expected (Doherty, 2014). So it is important to have a procedure in place that facilitate necessary changes to ensure that the system deployed is geared at achieving the set benefits instead of just sticking to the original plan (Doherty, 2014). Trouble shooting in this regard ensure that the project is continuously directed at achieving the set objectives and benefits.

4.3.15 Technology and technical steps

This factor is ranked number fifteen (15) with an average percentage rating of eighty one percent (81%). Line managers rated this factor the highest at eight four percent and ranked it at number eight (8) which is in the top ten. The Other roles rated this factor the lowest at seventy four percent (74%) and ranked it number nineteen (19).With regards to the IT sub industry perspective, "Other" sub industries rated this factor the highest at number eight (8) which is in the top ten. However it must be note that Internet ranked it the highest at number six (6) although with a lower percentage rating of eighty two percent (82%). Software rated this factor the lowest at seventy nine percent (79%) with a ranking of number sixteen (16).

Availability of the technology and specific technical steps required by the project team to complete project tasks is equally significant as the availability of skilled project personnel (Slevin and Pinto, 1986) . This impact the timely delivery and quality of the project. Unavailability of technology impacts the moral of personnel as their ability to competently complete their tasks are hampered. This also facilitates the ability of the project team to conduct trouble shooting and to resolve unforeseen problems associated with IT/IS projects.

4.3.16 Benefits realisation success

This factor is ranked number sixteen (16) with an average percentage rating of eight one percent (81%). IT support staff rated this factor the highest at eighty eight percent (88%) and ranked it number nine (9) which is within the top ten ranked factors for IT support staff. The remaining factors are outside the top ten with Project Managers rating this factor the lowest at seventy two percent (72%) and ranking it at number sixteen (16).From an IT sub industry perspective, hardware rated this factor the highest at eighty one percent (84%) and ranked it at number twelve (12). Internet rated this factor the lowest at seventy six percent (76%) and ranked it number thirteen (13). However, telecommunications ranked this factor the lowest at number fourteen with a percentage rating of seventy nine percent (79%). All IT sub industries ranked this factor outside the top ten.

This factor is concerned with items that measure the degree to which stakeholder expectations were satisfied regarding the planned benefits (Mohan *et al.*, 2014). This factor takes into account the view of the stakeholders to ascertain that indeed the planned benefits were realised as planned. Although this factor is important for benefits realisation from a stakeholder point of view, it was ranked number sixteen. This ranking could be attributed to the fact that to some extent it is already addressed under “Monitoring and Feedback”, “User and Client Involvement”, “Client Acceptance” and “Effective Communication” factors. These factors are designed to ensure the following:

- Stakeholder needs are identified
- Products are developed in line with these needs,
- Stakeholders are constantly informed of the project progress regarding the realisation of these needs
- Stakeholders are constantly involvement in checking if the needs are met throughout the project implementation.

This suggesting that some of the tradition critical success factors can be sufficient if they are correctly acted upon to ensure that benefits are realised from a stakeholder point of view.

4.3.17 Clear measurement metrics

The clear measurement metrics factor is ranked at number seventeen (17) with an average percentage rating of seventy seven percent (77%). Senior managers rated this factor the highest at eight four percent (84%) and ranked it at number fourteen (14). Project Managers and project team members rated this factor the lowest at seventy one percent (71%) and ranked it number seventeen (17). All these factor were ranked outside of the top ten by all stakeholders. In terms of the IT sub industry perspective, hardware rated this factor the highest at eighty one percent (81%) and ranked it at number thirteen (13). Internet rated this factor the lowest at seventy one percent (71%) and ranked it at number nineteen (19). All sub industries ranked this factor outside the top ten rated factors.

Clear measurement metrics is concerned with the identification and documentation of indicators that will be used to measure progress relating to the achievement of the identified benefits (Mohan *et al.*, 2014). Without these metrics benefits review will be an impossible task to conduct. The reason why this measure only feature at number seventeen could be attributed to the same reason indicated for the “Continuous Benefits” review factor. Project Managers and other stakeholder are probably more concerned with meeting the traditional measure of success such as cost, time and quality. And therefore factors that are more in line with that would be given more priority over this factor and other factors that are more benefits orientated.

4.3.18 Skilled cross organisation team

This factor is ranked number eighteen (18) with an average percentage rating of seventy seven percent (77%). Line managers rated this factor the highest at seventy nine percent (79%) with a ranking of number fourteen (14). Project Managers rated this factor the lowest at sixty nine percent (69%) with a ranking of number nineteen (19). From an IT sub industry point of view, Internet rated this factor the highest at eighty percent (80%) and ranked it at number eleven (11). While telecommunications rated this factor the lowest at seventy six percent (76%).

This factor is rated the fourth lowest which is quite interesting and surprising as without a skilled cross organisational team a lot of the other factors mentioned would not be possible to be infused into the delivery of a project without a competent project team in the first place. However, it can also be argued that no matter how skilled the project team is if the project is not properly conceived the project will not benefit the hosting organisation. Therefore other factors are probably more important before a skilled and competent team is assembled to execute the project.

On other hand, no matter how properly the project was conceived, without a skilled team to execute, the project remain a pipe dream. A skilled team is therefore crucial to ensure that what was put in paper becomes products, systems or IT artifacts that can be used by organisations.

4.3.19 Detailed benefits plan

This detailed benefits plan factor is ranked number nineteen (19) with an average percentage rating of seventy five percent (75%). Other roles rated this factor the highest at eighty percent (80%) with a ranking of number fifteen (15). Project Managers rated this factor the lowest at sixty nine percent (69%) with a ranking of number eighteen. None of the project role players ranked this factor within the top ten. From a sub industry point of view, other sub industries rated this factor the highest at seventy seven percent (77%) with a ranking of number eighteen (18). Internet rated this factor the lowest at seventy three percent (73%) with ranking of number sixteen (16). None the sub industries ranked this factor within the top ten.

This factor is concerned with documenting all benefits that ought to be derived by the organisation and its stakeholders from the implementation of the IT/IS project. It would therefore be common cause that the factor should be one of the most important factor to consider to ensure that the project is implemented with the benefits indicated in mind. However, with the ranking received it suggest that there are eighteen (18) other factors that are considered to be more important. The reason could be that stakeholders still consider project management factors to be more important. *Clear project mission* and *user and client involvement* factors mentioned could to some extend be addressing this factor.

4.3.20 Continuous benefits review

The continuous benefits review factor is ranked number twenty (20) with an average percentage rating of seventy percent (70%). Other roles rated this factor the highest at eighty percent (80%) and ranked at number sixteen (16). Project managers rated this factor the lowest at sixty five percent (65%) and ranked it at number twenty (20). All project role players ranked this factor outside the top ten and within the bottom five Factors. Similarly, all sub industries ranked this factor outside the top ten and within the bottom five factors. Other sub industries rated this factor the highest at seventy five

percent (75%) with ranking of number nineteen (19). The software rated this factor the lowest at sixty seven percent (67%) with a ranking of number twenty (20).

Although this factor is ranked at number twenty, the importance rating received could still be considered high. However, compared to other nineteen factors this factor is one of the four factors that has rated below the eight percent (80%) rating. The lower percentage rating received for this factor could be attributed to the fact that there is still wide spread practice by organisations to review project performance from a traditional success criteria of cost, time and quality only (Brynjolfsson and Hitt, 2000) . Continuous benefits review is concerned with checking if the project deliverable meets stakeholder expectations and indeed are in line with the intended benefits indicated (Doherty *et al.*, 2012). For these reasons, continuous benefits review could easily also find a place in the “Monitoring and Feedback” factor as well as the “Client and User involvement” factor.

4.3.21 Incentive provisioning

This incentive provision factor is ranked at number twenty (21) and last with an average percentage rating of sixty six percent (66%). The project role that rated this factor the highest is “Other” project roles at seventy one percent (71%) with a ranking of number twenty (20). Project managers rated this factor the lowest at fifty six percent (56%) and ranked it at number twenty one (21). All project stakeholders rated this factor in the bottom two factors. Similarly, all sub industries ranked this factor in the bottom two factor with the majority rating it at number twenty one (21). Telecommunications rated this factor the lowest at sixty eight percent (68%) and ranked it at number twenty (20). The hardware sub industry rated this factor the lowest at sixty four percent (64%) and ranked it at number twenty one (21).

This factor received the lowest overall rating and is the only factor that received a rating of below seventy percent (70%) with Project Managers scoring it the lowest at fifty six percent (56%). Too often when project are completed the commitment fizzles out and all project team members and project stakeholder return to business as usual. Incentive provisioning factor is concerned with ensuring incentives for benefits realisation are

designed in the organisational rewards system. This is to ensure that there is long term commitment to benefits realisation after project implementation (Mohan *et al.*, 2014). The rating received by the project stakeholders could be argued that long term commitment to benefits realisation could be dealt with by top management support. This is to ensure that project resources are allocated for both project implementation and post implementation processes that has to do with ensuring that all stakeholders are involved in the benefits realisation process. Incentive provisioning may therefore be a supplement to other factors and not a core requirement for benefits realisation.

4.4 SECONDARY RESULTS AND DISCUSSIONS

As part of the survey, the participants were also requested to provide feedback in their own words on other factors that they think are critical for benefits realisation. Only fifty two (52) of the survey participants provided feedback on other factors to take into considerations. A total of fifty four (54) factors were listed as provided in the below table 11. The unedited version of the response received can be found on APPENDIXB: Survey Response Data.

Table 11: List of other factors from Survey responses

No.	Other Factors	Decoding of Responses to Critical Factors for Benefits Realisation
1.	Project Steering Committee decisions	Governance Structure
2.	Continuity, political instability	Political Stability *
3.	Formal written mandate from level above project. Formal Project Board executive to OWN the project	Top Management Support
4.	Scope Creep Management	Monitoring and Feedback
5.	Architecture	Architecture*
6.	stakeholder involvement	User/Client Involvement
7.	Cost analysis before and after project	Strong and detailed project plan, Monitoring and Feedback
8.	Data	Monitoring & feedback
9.	Project scope	Project Scope
10	Communication	Communication
11	Multi stakeholder commitment to a common vision.	Project mission
12	Talent/skills/champions. Networks.	Skilled Cross Organisational team
13	Supportive policies.	Supportive Legislation and Policies*

14	Change management is critical for project success to ensure buy in from all stakeholders	Effective Change Management
15	Sufficient project budget	Sufficient/Well allocated resources
16	research and development to keep up with the global trends to make IT relevant	IT solutions aligned to global Trends*
17	service delivery enhancement	Business Process Knowledge
18	Involvement of all impacted stakeholders to the project from inception of project.	User/Client Involvement
19	Buy in from all stakeholders - Change management to encourage/conduct stakeholder engagements	Effective Change management , User/Client Involvement
20	Scope management. Do not allow amendment on defined scope without detail re-costing process.	Monitoring & feedback
21	Identifying application legislation and technology standards	Technology and Technical steps
22	Appointment of proven quality service providing suppliers	Skilled Cross Organisational team
23	Project sponsor and budget availability	Top Management Support
24	Research for the best & cost effective solution	Technology and Technical steps, Sufficient/Well allocated resources
25	Service delivery time lines	Strong and detailed project plan
26	Proper user training prior to implementation of application/system	Effective change management
27	Commitment from Support Staff	Team work *
28	Clearly defining the benefits at the inception of the project	Detailed benefits plan
29	Well covered in survey	N/A
30	Adequate project funding and effective project finance management	Sufficient/Well allocated resources
31	Governance structure for BRM	Governance structure
32	Detailed User Requirement Specification	User/Client Involvement
33	The socio economic and political impact the IT/IS will make to ordinary citizens	Social and Economic Impact on Citizens*
34	Mandate and Business Case	Clear Project Mission
35	Governance	Governance Structure
36	Initiatives for the implementation of Systems integration	System Integration*
37	Hands on and honest project management	Competent Project Manager
38	The Project should be aligned to the business plan/business objectives	Clear Project Mission
39	Proper IT Infrastructure	Technology and Technical steps
40	adequate funding	Sufficient/Well allocated resources
41	Knowledgeable about Policies and Process governing the support functions	Business Process Knowledge
42	Detail planning with correct people in team	Strong and detailed project plan
43	Stake holder's understanding of the challenges as well as strong support from them	Governance Structure, User/Client Involvement
44	Commitment by all stakeholders	Governance Structure, User/Client Involvement
45	sufficient project budget	Sufficient/Well allocated resources
46	Clients need to truly know and manage their own business and NOT defer all decisions to IT resources.	Effective Communication, Business Process Knowledge
47	Clear communication plan	Effective Communication
48	methodology used	Project Management Methodology adopted*

49	Acceptance of requirements before starting. Manage expectations from the start	User/Client Involvement
50	Teamwork	Team work*
51	Trust Relation and Honesty and be open minded	Trust and Honesty*
52	team focus	Team work*
53	Client buy in at the start	User/Client Involvement
54	Determining the real needs of the customer before the project is planned, is the most important for me	User/Client Involvement

The above list was analyzed 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. From a total of the fifty four factors only nine were regarded as additional factors that does not form part of the factors listed in the survey. The nine additional factors identified are marked with an **asterisk*** in table 11. The remaining forty five factors listed by the IT stakeholder could be matched to the following sixteen factors included in this study:

1. Clear project mission
2. Effective Communication
3. Clear Project Scope
4. User/Client Involvement
5. Competent Project Manager
6. Top Management Support
7. Sufficient/Well allocated resources
8. Strong and detailed project plan
9. Business Process Knowledge
10. Governance structure
11. Monitoring and Feedback
12. Client Acceptance
13. Effective Change Management
14. Technology and Technical steps
15. Skilled Cross Organisational team
16. Detailed benefits plan

This effectively meaning that the participants listed twenty five factors (sixteen factors already addressed in the survey and nine additional factors). The additional nine factors in table 11 are listed and discussed hereunder:

1. **Political Stability:** Political stability is critical to ensure IT projects benefits are realised in government. Changes in political leadership affect the performance of IT/IS projects in government. New leadership may not have the same interest or motivation in the projects as they tend to focus more on other multiple legislative priorities to the detriment of government IT/IS projects that requires long term and strong political support to survive (Matavire *et al.*, 2010). Lack of leadership continuity caused by new political leadership changes and priorities can lead to failure of IT/IS projects in government
2. **Architecture:** Enterprise and system architecture is also seen as an important factor that makes it easy to manage business requirements, system development and integration (Patanakul, 2014). A stable architecture provides clear guidance on which technologies and systems to deploy in line with the organisations' architecture and goals. It makes it also easier to see how the system fits in the whole organisations' IT landscape. This view makes it easier to manage integration between different aspects of the organisations' IT landscape and project dependencies. Therefore an unstable architecture leads to multiple technical and integration issues that makes it challenging to implement IT/IS projects successfully (Patanakul, 2014).
3. **Supportive legislation and policies:** Legislation and Policies in government makes it difficult to implement IT projects with the required pace. This is due to fragmentation of legislation across different spheres of government. The number of policies that needs to be adhered to and government departments operating in silos makes integration of efforts very difficult. Electronic government projects are particularly difficult in the planning phase as project requirements are required to be aligned to multiple policies. The adherence to these significantly increases the requirements of a project and thus making the projects to fail in some instances (Matavire *et al.*, 2010)
4. **Team work:** Commitment of project team member is key to successfully implement a project. However, it must be underpinned by clear project mission, scope and capability of the team. The project manager ability to engender team work and

constant communication across team members, is critical to achieve project goals. Without team work projects are bound to have issues relating to integration of efforts amongst team members and members working in silos. This usually leads to project reworks and delays which may ultimately lead to project failure.

5. **Trust and Honesty:** Trust and honesty in projects is also seen as an important factor. If project team members are not honest, project issues are not revealed in time until it is too late to do anything about. Honesty is therefore key in uncovering project issues in time so that solutions could be found to correct the project performance in time. Dishonesty can have a devastating effect on a project and as well as the hosting organisations integrity.
6. **IT solutions aligned to global Trends:** It is important to align the IT solution to IT global trends while responding to local needs. This reason for this assertion is that IT is constantly changing and global issues affects local organisations. The fact that information technology and the internet is accessible to everyone across the globe makes local organisations susceptible to global issues.
7. **Social and Economic Impact on Citizen:** Government are established to provide services to its citizenry. Adoption of IT/IS project should therefore be aligned to socio-economic upliftment of citizens. The voice of the citizens should therefore be present in every stage of the project implementation process. Exclusion of the citizens in the process may render project of no use to the citizens. “For example an e-Government project hosted in a school laboratory at which public access was denied during learning hours and evenings. This effectively rendered the initiative to be of no value to the community”(Matavire *et al.*, 2010: 160).
8. **System Integration:** IT/IS project that requires integration and interoperability with other systems requires strong coordination and completed requirements definitions. In the absence of these factors project experiences serious integration and technical issues and thus negatively affecting the project performance. Issues that relating to system integration is the compatibility of the system developed with those being used by the organisation makes it difficult to implement the system successful and thus sometimes requires additional resources to ensure that issues of compatibility are dealt with (Patanakul, 2014). It is therefore important to clearly understand system integration requirements, ensure different role players representing these other systems are involved and forms part of the management of the project.

9. **Project Management Methodology:** Project management methodology is key in ensuring that there is proper IT/IS project oversight and governance. A lack of a project management methodology and process leads to inconsistency use of project management practices. Thus leading to poor project planning, monitoring and control, risk, change, contract and requirements management (Patanakul, 2014). Poor application of these process leads to system projects being delivered late, costing more than the original budget and system not meeting user requirements (Ratcliff, 1987). Adopting of project management methodology assists with doing projects right and more so in large complex public sector IT/IS projects.

The above findings suggests a level of agreement with the factors listed in the survey. Sixteen of the twenty one factors listed in the survey could be matched with the responses provided by the participants. Nine additional factors were identified, which could be further tested in future surveys to determine the level of agreeability amongst IT stakeholders in government.

4.5 CHI SQUARE TEST RESULTS

The research is concerned with obtaining data from government IT stakeholders on the factors critical to benefits realisation of IT/IS project in government. The research through a survey used five categories (Critical, Very Important, Important, Moderately Important and Not Important) to obtain the level of importance of each factor frequencies. The statistical test that is particularly designed for this is the *chi-square test for goodness of fit*. This is used to test whether the obtained results (observed frequencies) conforms to the expected results of the population targeted. This meaning, when the observed and expected results is a good fit then we know that results across all the categories is more or less equal. However, when there is large differences between the observed and expected results among categories, this means that the fit is not good.

To start with the process of analyzing the frequencies a null and alternative hypothesis had to be established. The Null hypothesis for no frequency difference among a set of different categories are:

- *H0: There is no difference in the importance rating across all five categories*

In other words if the chi-square test statistic results indicates that there is a good fit between the observed and expected frequencies than this hypothesis can be accepted.

The alternative hypothesis is then:

- *H1: There is a statistically reliable difference between the expected and observed frequencies across all five categories*

In other words if the chi-square test statistic results indicates that there is not a good fit between the observed and expected frequencies than the null hypothesis can be rejected. The *chi-square test for goodness of fit* (X_2) statistic formula to be used in this regard is as follows:

$$\chi_c^2 = \sum \frac{(O_i - E_i)^2}{E_i}$$

Whereas O refers to the observed frequency and E refers to the expected frequency. To determine the value of the X^2 test statistic a tabular format was used as per the APPENDIX C: Chi square test results. The X^2 test statics value obtained per factor are listed below:

Table 12: Chi Square Test Static Values

Factor	X ² Value
Top Management Support	118.43
Clear Project Mission	128.76
Strong and detailed project plan	97.60
User/client Involvement	119.63
Sufficient/Well allocated resources	110.15
Governance structure	69.72
Defined project scope	116.53
Effective Change Management	68.00
Detailed benefits plan	53.76
Continuous Benefits Review	48.98
Incentive Provisioning	44.66
Clear Measurement Metrics	49.09
Business Process Knowledge	73.01
Benefits Realisation Success	78.54
Monitoring and Feedback	86.20
Skilled Cross Organisational Team	79.22
Technology and Technical steps	82.78
Effective Communication	124.11
Competent project manager	76.83
Client Acceptance	53.21
Trouble-Shooting	68.11

As it can be seen from the above table the X² test statistics of all factors are quite large. With a degree of freedom of 4 giving an X² critical value of 9.488. Since the X²_{test} statistics is significantly larger than the X₂ critical value it therefore means that the H₀ can be rejected as there is a reliable difference between the observed and expected frequency for ratings across all five categories for all twenty one factors. The alternative hypothesis H₁ is therefore accepted.

As shown by the original results, IT stakeholders generally agreed the above listed factors are important for benefits realisation in IS/IT projects in SA government services although at varying levels. When X² test statistics is significant, the original results must be taken as is where interpretation is concerned. Which is the case with the results of this research. However, it does not mean that all IT stakeholders in SA government agree on the importance of the factors for benefits realisation in IS/IT project in SA government services, but simply means that those that participated in the research

agree on the outcome. For those reasons, we can reasonable concluded that from the randomly selected IT stakeholders and those who participated in the research departed from the expectation and they generally agree all factors listed are important for benefits realisation in IS/IT projects in SA government services.

CHAPTER 5. RESEARCH CONCLUSION

This chapter is the last section and closes this research. This 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.

5.1 RESEACH BACKGROUND

This research was based on the fact that Coombs (2015) study facilitating and inhibiting factors to benefits realisation in IT/IS projects have been restricted to single case study and their general applicability is not known. Therefore, there was a need to test the identified factors applicability in a different environment using different research methods. The environment chosen for this research was that of SA government services and the research method used was a survey.

Since the factors for benefit realisation identified was limited, the research aim was to test the factors identified in Coombs (2015) study applicability and identify additional factors critical for benefits realisation in SA government services. Therefore, this research proposes that *“Changes to the existing facilitating and inhibiting factors indicated in previous studies and additions of other factors may provide a more generalised view of the factors that are critical for benefits realisation in IT/IS projects”*. This will than allow us to ultimately reach the aim of the research which is to:

- a. *Establish a list of factors that are critical to benefits realisation of IT/IS Projects in SA government services*

In order to address aim of the research the following research questions had to be addressed:

- a. *Are the factors indicated in previous studies relevant for benefits realisation of IT/IS projects in SA government services?*
- b. *What factors are critical for benefits realisation of IT/IS projects in SA government services?*

- c. *Are there any additional factors that are critical for benefits realisation of IT/IS projects in SA government services?*

The research objectives set for to answer the research questions was therefore set as follows:

- a. *To identify factors that are critical to benefits realisation in IT/IS projects by reviewing previous literature*
- b. *To determine which of facilitating and inhibiting factors as indicated in Coombs(2015) study are deemed more or less important by IT/IS stakeholders for benefits realisation of IT/IS projects*
- c. *To determine which facilitating and inhibiting factors from the literature review process are deemed more or less important by IT/IS stakeholders for benefits realisation of IT/IS projects*
- d. *Compile a list of facilitating and inhibiting factors that are critical for benefits realisation in IT/IS projects*

5.2 RESEARCH FINDINGS

5.2.1 MAIN FINDINGS

The research findings were presented, analysed and discussed in chapter four. The literature review and research findings proved that the factors indicated by Coombs (2015) grouped under four factors identified in the literature are not enough for benefits realisation if IT/IS projects. Seventeen additional factors were identified in the literature although not exhaustive. Thus meaning, a total of twenty one factors were identified. These factors were then tested with the intention to answer the research questions posed. A summary of findings that addresses the research questions are indicated in the following sections.

5.2.1.1 (A) Are the factors indicated in the previous studies relevant for benefits realisation of IT/IS projects in SA government services?

Facilitating and inhibiting factors in Coombs (2015) study were grouped under *User/Client involvement, Effective change management, Client acceptance and Business process knowledge* factors. The relevancy of these factor were than tested in the context of IT/IS project in SA government services. The research findings were as per the below table 13.

Table 13: Coombs (2015) Factor Relevance

Factor	Rating	Ranking
User/Client involvement	89%	4
Business process knowledge	84%	9
Client acceptance	83%	12
Effective change management	81%	13

As it can be seen from the above table, two of the four factors falls outside the top ten factors regarded as the most important for the benefits realisation in IT/IS projects in SA government services. However, it must be noted that the findings also revealed that importance rating received from IT stakeholders from SA government is between 81 - 89% which is still significant. This finding and rating received confirms that the factors from Coombs (2015) study is important and relevant for benefits realisation in IT/IS projects in SA government services. This confirmation allows for question (a) to be addressed.

5.2.1.2 (B) What factors are critical for benefits realisation of IT/IS projects in SA government services? (C) Are there any additional factors that are critical for benefits realisation of IT/IS projects in SA government services?

To address these research questions twenty one factors were identified in the literature including the four factors mentioned in Coombs (2015) study. Thus meaning that seventeen additional factors were identified. These factors were tested to identify how

important they are for benefits realisation of IT/IS projects in SA government. The findings are as per below table 14:

Table 14: Factor Rating and Ranking

Factor	Rating %	Ranking
Clear Project mission	91	1
Effective Communication	91	2
Defined project scope	89	3
User/Client involvement	89	4
Top Management Support	88	5
Competent project manager	88	6
Sufficient/Well allocated resources	87	7
Strong and detailed project plan	87	8
Business Process Knowledge	84	9
Governance structure	84	10
Monitoring and Feedback	83	11
Client Acceptance	83	12
Effective Change Management	81	13
Trouble-Shooting	81	14
Technology and Technical steps	81	15
Benefits Realisation Success	81	16
Clear Measurement Metrics	77	17
Skilled Cross Organisational Team	77	18
Detailed benefits plan	75	19
Continuous Benefits Review	70	20
Incentive Provisioning	66	21

As can be seen from the above table 14, all twenty one factors identified are important as the factor that was rated the least stands at sixty six percent (66%). However the top ten factors with a rating of between eighty four percent (84%) to ninety one percent (91%) identified as the most important factors by IT stakeholders are as follows:

1. Clear Project Mission
2. Effective Communication
3. Defined Project Scope
4. User/Client Involvement
5. Top Management Support
6. Competent Project Manager

7. Sufficient/Well allocated resources
8. Strong and detailed project plan
9. Business Process Knowledge
10. Governance Structure

This therefore addresses the research question (b) and (c). With all the research questions addressed, this also confirms that the research aim has also been achieved. Thus indicating that a list of twenty one factors critical to benefits realisation of IT/IS Projects in SA government services is established.

5.2.2 SECONDARY FINDINGS

In addition, IT stakeholders in SA government were also requested to list factors that they consider important to benefits realisation in government IT/S projects. The IT stakeholders listed Fifty-four factors. These factors were grouped under twenty-five factors. However, only nine (9) factors were considered as additional factors. The additional nine factors are:

1. Political Stability
2. Architecture
3. Supportive legislation and policies
4. Team work
5. Trust and Honesty
6. IT solutions aligned to global Trends
7. Social and Economic Impact on Citizen
8. System Integration
9. Project Management Methodology

The above factors were not rated to gauge their level of importance amongst IT stakeholders in SA government. The rating of these factors by IT stakeholder in SA government can be considered for future research undertakings.

5.3 RESEARCH LIMITATIONS AND RECOMMENDATIONS

Although the research was focused on government services, due to limitation of resources and time, the research could not be extended to different levels of government and various government departments. The sample was chosen from a single organisation and therefore might not be a comprehensive representation of the broader government. With more resources and time the research can be repeated targeting a larger sample from more government departments and different levels of government.

Furthermore, the fact that the IT stakeholder were requested to provide a subjective rating to indicate the level of importance of each factor may not be accurate representation of factors critical to benefits realisation in IT/IS projects. The reason for this is that the IT stakeholder were given a list of factors and were therefore confined to the list provided. The results of the survey could therefore be confirmed by more qualitative methods of research to gauge the real experience of projects in SA government.

In addition, the research also revealed nine additional factors listed by the IT stakeholders. However the agreeability of these factors importance to benefits realisation were not tested. It therefore warrants for these factors to be further tested to gauge the relevance and level of importance amongst IT stakeholders in SA government.

REFERENCES

- Allen, I.E. and Seaman, C.A. (2007) Likert scales and data analyses. *Quality progress*, **40**(7), 64.
- Ashurst, C., Doherty, N.F. and Peppard, J. (2008) Improving the impact of IT development projects: the benefits realization capability model. *European Journal of Information Systems*, **17**(4), 352-370.
- Atkinson, R. (1999) Project management: cost, time and quality, two best guesses and a phenomenon, its time to accept other success criteria. *International journal of project management*, **17**(6), 337-342.
- Ayer, A.J. (1949) Language, truth and logic: Victor Gollancz.
- Badewi, A. (2016) The impact of Project Management (PM) and Benefits Management (BM) practices on project success: Towards developing a project benefits governance framework. *International journal of project management*, **34**(4), 761-778.
- Bell, E. and Wray-Bliss, E. (2009) Research ethics: Regulations and responsibilities. *The Sage handbook of organizational research methods*, 78-92.
- Brynjolfsson, E. and Hitt, L.M. (2000) Beyond computation: Information technology, organizational transformation and business performance. *The Journal of Economic Perspectives*, **14**(4), 23-48.
- Chih, Y.-Y. and Zwikael, O. (2015) Project benefit management: A conceptual framework of target benefit formulation. *International journal of project management*, **33**(2), 352-362.
- Clegg, C., Axtell, C., Damodaran, L., Farbey, B., Hull, R., Lloyd-Jones, R., Nicholls, J., Sell, R. and Tomlinson, C. (1997) Information technology: a study of performance and the role of human and organizational factors. *Ergonomics*, **40**(9), 851-871.
- Cooke-Davies, T. (2002) The "real" success factors on projects. *International journal of project management*, **20**(3), 185-190.
- Coombs, C.R. (2015) When planned IS/IT project benefits are not realized: a study of inhibitors and facilitators to benefits realization. *International journal of project management*, **33**(2), 363-379.
- Crossan, F. (2003) Research philosophy: towards an understanding. *Nurse researcher*, **11**(1), 46-55.
- De Reyck, B., Grushka-Cockayne, Y., Lockett, M., Calderini, S.R., Moura, M. and Sloper, A. (2005) The impact of project portfolio management on information technology projects. *International journal of project management*, **23**(7), 524-537.
- De Wit, A. (1988) Measurement of project success. *International journal of project management*, **6**(3), 164-170.
- Doherty, N.F. (2014) The role of socio-technical principles in leveraging meaningful benefits from IT investments. *Applied ergonomics*, **45**(2), 181-187.
- Doherty, N.F. and King, M. (1998) The consideration of organizational issues during the systems development process: an empirical analysis. *Behaviour & Information Technology*, **17**(1), 41-51.
- Doherty, N.F. and King, M. (2005) From technical to socio-technical change: tackling the human and organizational aspects of systems development projects. *European Journal of Information Systems*, **14**(1), 1-5.
- Doherty, N.F., Coombs, C.R. and Loan-Clarke, J. (2006) A re-conceptualization of the interpretive flexibility of information technologies: redressing the balance between the social and the technical. *European Journal of Information Systems*, **15**(6), 569-582.

- Doherty, N.F., Ashurst, C. and Peppard, J. (2012) Factors affecting the successful realisation of benefits from systems development projects: findings from three case studies. *Journal of Information Technology*, **27**(1), 1-16.
- Dong, L., Neufeld, D. and Higgins, C. (2009) Top management support of enterprise systems implementations. *Journal of Information Technology*, **24**(1), 55-80.
- Easterby-Smith, M., Thorpe, R. and Jackson, P.R. (2012) *Management research*. Sage.
- Fortune, J. and White, D. (2006) Framing of project critical success factors by a systems model. *International journal of project management*, **24**(1), 53-65.
- Frankel, R.M. and Devers, K. (2000) Qualitative research: A consumer's guide. *Education for Health*, **13**(1), 113.
- Galliers, R. (1991) *Choosing Appropriate Information Systems Research Approaches: A Revised Taxonomy*.
- Gichoya, D. (2005) Factors affecting the successful implementation of ICT projects in government. *the Electronic Journal of e-government*, **3**(4), 175-184.
- Golini, R., Kalchschmidt, M. and Landoni, P. (2015) Adoption of project management practices: the impact on international development projects of non-governmental organizations. *International journal of project management*, **33**(3), 650-663.
- Gov.za (2017) *South African Government Official Website* [Online]. Available: <http://www.gov.za/about-government/government-system> [Accessed 20 August, 2017].
- Greswell, J. (1994) Research design: Qualitative and quantitative approaches. In: Sage, Newbury Park, California.
- Henderson, J.C. and Venkatraman, H. (1993) Strategic alignment: Leveraging information technology for transforming organizations. *IBM systems journal*, **32**(1), 472-484.
- Hughes, J. (1994) *The Philosophy of Social Research*. Essex, Longman Press.
- Irani, Z. and Love, P.E. (2002) Developing a frame of reference for ex-ante IT/IS investment evaluation. *European Journal of Information Systems*, **11**(1), 74-82.
- Jackson, E. (2013) Choosing a methodology: Philosophical underpinning. *Practitioner Research in Higher Education*, **7**(1), 49-62.
- Killam, L. (2013) *Research terminology simplified: Paradigms, axiology, ontology, epistemology and methodology*. Laura Killam.
- King, N. (2011) A benefits dependency network as the bridge between requirements and business objectives: an ODE perspective. *International Journal of Organisational Design and Engineering*, **1**(3), 185-208.
- Kohli, R. and Devaraj, S. (2004) Realizing the business value of information technology investments: an organizational process. *MIS Quarterly Executive*, **3**(1), 53-68.
- Lapointe, L. and Rivard, S. (2005) A multilevel model of resistance to information technology implementation. *MIS quarterly*, 461-491.
- Levin, D.M. (1988) *The opening of vision: Nihilism and the postmodern situation*. Taylor & Francis.
- Lin, C. and Pervan, G. (2003) The practice of IS/IT benefits management in large Australian organizations. *Information & management*, **41**(1), 13-24.
- Linenberg, Y., Stadlker, Z. and Arbuthnot, S. (2003) Optimising organisational performance by managing project benefits. In, *PMI Global Congress*.
- Maklan, S., Knox, S. and Peppard, J. (2010) The missing link of CRM profitability: building marketing capabilities. *MIT Sloan Management Review*.
- Marchand, D.A. and Peppard, J. (2008) Designed to fail: why it projects underachieve and what to do about it. *Research paper*, **11**, 1-28.

- Markus, M.L. (2004) Technochange management: using IT to drive organizational change. *Journal of Information Technology*, **19**(1), 4-20.
- Marnewick, C. (2016) Benefits of information system projects: The tale of two countries. *International journal of project management*, **34**(4), 748-760.
- Marnewick, C. and Labuschagne, L. (2010) Benefits management in practice: an exploratory investigation. *Paper presented at PMI® Research Conference: Defining the Future of Project Management, Washington, DC. Newtown Square, PA: Project Management Institute.*
- Martinsons, M.G. and Chong, P.K. (1999) The influence of human factors and specialist involvement on information systems success. *Human relations*, **52**(1), 123-152.
- Matavire, R., Chigona, W., Roode, D., Sewchurran, E., Davids, Z., Mukudu, A. and Boamah-Abu, C. (2010) Challenges of eGovernment project implementation in a South African context. *The Electronic Journal Information Systems Evaluation*, **13**(2), 153-164.
- McLeod, L., Doolin, B. and MacDonell, S.G. (2012) A perspective-based understanding of project success. *Project Management Journal*, **43**(5), 68-86.
- Mohan, K., Ahlemann, F. and Braun, J. (2014) Exploring the Constituents of Benefits Management: Identifying Factors Necessary for the Successful Realization of Value of Information Technology. *In, System Sciences (HICSS), 2014 47th Hawaii International Conference on.* IEEE, 4286-4295.
- Müller, R. and Turner, R. (2007) The influence of project managers on project success criteria and project success by type of project. *European management journal*, **25**(4), 298-309.
- Munns, A. and Bjeirmi, B.F. (1996) The role of project management in achieving project success. *International journal of project management*, **14**(2), 81-87.
- OGC (2009) *Managing successful projects with PRINCE2*. The Stationery Office.
- Orlikowski, W.J. (1996) Improvising organizational transformation over time: A situated change perspective. *Information systems research*, **7**(1), 63-92.
- Parahoo, K. (2014) *Nursing research: principles, process and issues*. Palgrave Macmillan.
- Paré, G. and Jutras, J.-F. (2004) How Good Is the Professional's Aptitude in the Conceptual Understanding of Change Management? *The Communications of the Association for Information Systems*, **14**(1), 65.
- Patanakul, P. (2014) Managing large-scale IS/IT projects in the public sector: Problems and causes leading to poor performance. *The Journal of High Technology Management Research*, **25**(1), 21-35.
- Peppard, J. (2007) The conundrum of IT management. *European Journal of Information Systems*, **16**(4), 336-345.
- Peppard, J. and Ward, J. (1999) 'Mind the Gap': diagnosing the relationship between the IT organisation and the rest of the business. *The Journal of Strategic Information Systems*, **8**(1), 29-60.
- Peppard, J. and Ward, J. (2005) Unlocking sustained business value from IT investments. *California Management Review*, **48**(1), 52-70.
- Peppard, J., Ward, J. and Daniel, E. (2007) Managing the realization of business benefits from IT investments. *MIS Quarterly Executive*, **6**(1).
- Peterson, T., Tsway, R., Adams, K. and Wu, S. (2014) Information Technology & Telecommunication Services Sector Overview.
- Pope, C. and Mays, N. (1995) Reaching the parts other methods cannot reach: an introduction to qualitative methods in health and health services research. *BMJ: British Medical Journal*, **311**(6996), 42.

- Pring, R. (2000) Philosophical of educational research. *London: Continuum*.
- Proctor, S. (1998) Linking philosophy and method in the research process: the case for realism: Adopting a realist approach can help researchers to design and execute a study that does not exclude vital segments of data, argues Sue Proctor. *Nurse researcher*, **5**(4), 73-90.
- Samset, K. (2009) Projects, their quality at entry and challenges in the front-end phase, *Making essential choices with scant information*, pp. 18-35: Springer.
- Saunders, M., Lewis, P. and Thornhill, A. (2009) *Understanding research philosophies and approaches*. Vol. 4.
- Serrador, P. and Turner, R. (2015) The relationship between project success and project efficiency. *Project Management Journal*, **46**(1), 30-39.
- Shenhar, A.J., Dvir, D., Levy, O. and Maltz, A.C. (2001) Project success: a multidimensional strategic concept. *Long range planning*, **34**(6), 699-725.
- SITA.co.za (2017) *State Information Technology Agency Official Website* [Online]. Available: <http://www.sita.co.za/page/about> [Accessed 20 August, 2017].
- Slevin, D.P. and Pinto, J.K. (1986) The project implementation profile. *Project Management Journal*, **17**(4), 57-70.
- Statsa.gov.za (2017) *Statistics South Africa Official Website* [Online]. Available: <http://www.statssa.gov.za/> [Accessed 10 September 2017].
- Turner, R. and Zolin, R. (2012) Forecasting success on large projects: developing reliable scales to predict multiple perspectives by multiple stakeholders over multiple time frames. *Project Management Journal*, **43**(5), 87-99.
- Verner, J., Sampson, J. and Cerpa, N. (2008) What factors lead to software project failure? In, *Research Challenges in Information Science, 2008. RCIS 2008. Second International Conference on*. IEEE, 71-80.
- von Würtemberg, L.M., Franke, U., Lagerström, R., Ericsson, E. and Lilliesköld, J. (2011) IT project success factors: An experience report. In, *Technology Management in the Energy Smart World (PICMET), 2011 Proceedings of PICMET'11*.: IEEE, 1-10.
- Ward, J. and Elvin, R. (1999) A new framework for managing IT-enabled business change. *Information systems journal*, **9**(3), 197-221.
- Ward, J. and Daniel, E. (2006) *Benefits management: Delivering value from IS & IT investments*. John Wiley & Sons Chichester.
- Ward, J., Daniel, E. and Peppard, J. (2008) Building better business cases for IT Investments. *MIS Quarterly Executive*, **7**(1), 1-15.
- Wilson, H., Clark, M. and Smith, B. (2007) Justifying CRM projects in a business-to-business context: The potential of the Benefits Dependency Network. *Industrial Marketing Management*, **36**(6), 770-783.
- Yu, J.-H. and Kwon, H.-R. (2011) Critical success factors for urban regeneration projects in Korea. *International journal of project management*, **29**(7), 889-899.
- Zwikael, O. and Globerson, S. (2006) Benchmarking of project planning and success in selected industries. *Benchmarking: An International Journal*, **13**(6), 688-700.
- Zwikael, O. and Smyrk, J. (2012) A general framework for gauging the performance of initiatives to enhance organizational value. *British Journal of Management*, **23**(S1).

APPENDIX A: SURVEY INSTRUMENT

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Preview & Test INVITE

Factors Critical to Benefits Realisation of IS /IT Projects in the South African Government

Introduction

1 / 7 14%

Good day,

My name is Thato Matsio and I am currently conducting a research as part of my Master degree in project management. The purpose of the research is to identify factors critical to benefits realisation of IS/IT Projects in the South African Government. I therefore request you to please complete the survey if you were involved and were affected by IS/IT Projects. You are also welcome to forward this survey to any other suitable respondent .

Please note that this survey is completely anonymous and will not divulge any of your personal information.

You are welcome to sent me an email to thatomatsio@gmail.com if you need further information on the research.

Your participation is appreciated.

Please click "Next" to proceed to following sections

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Factors Critical to Benefits Realisation of IS /IT Projects in the South African Government

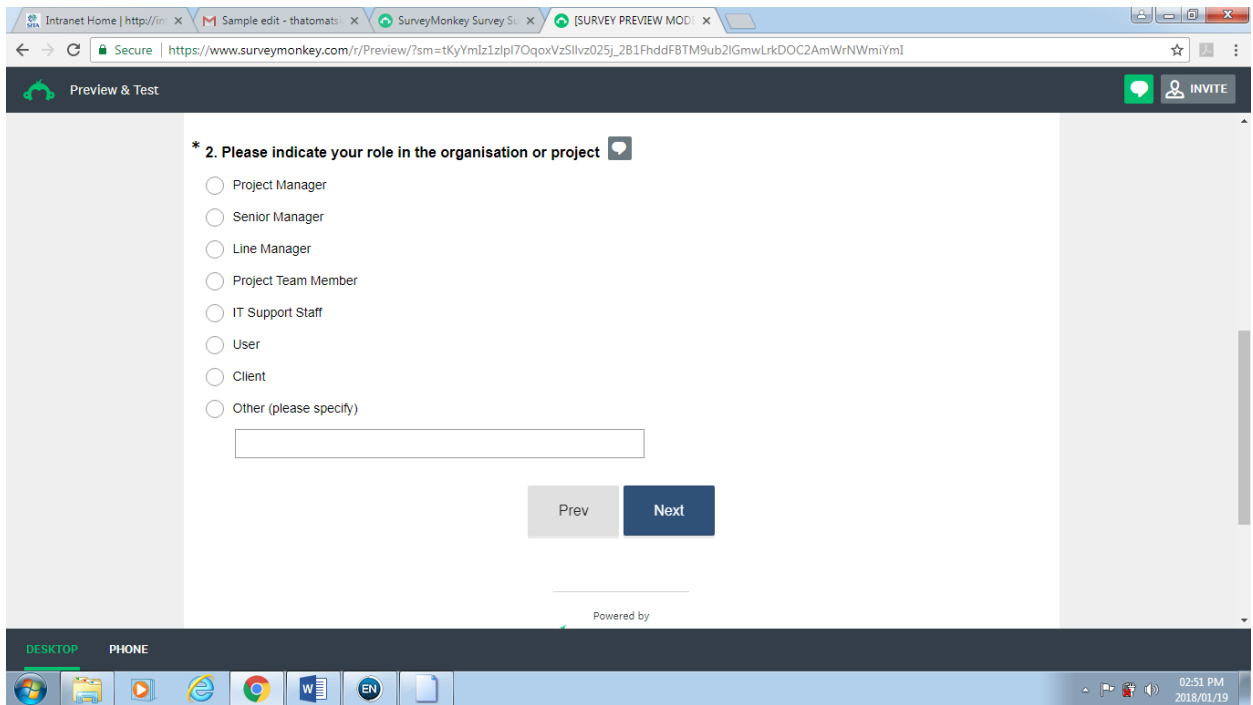
Participant Background

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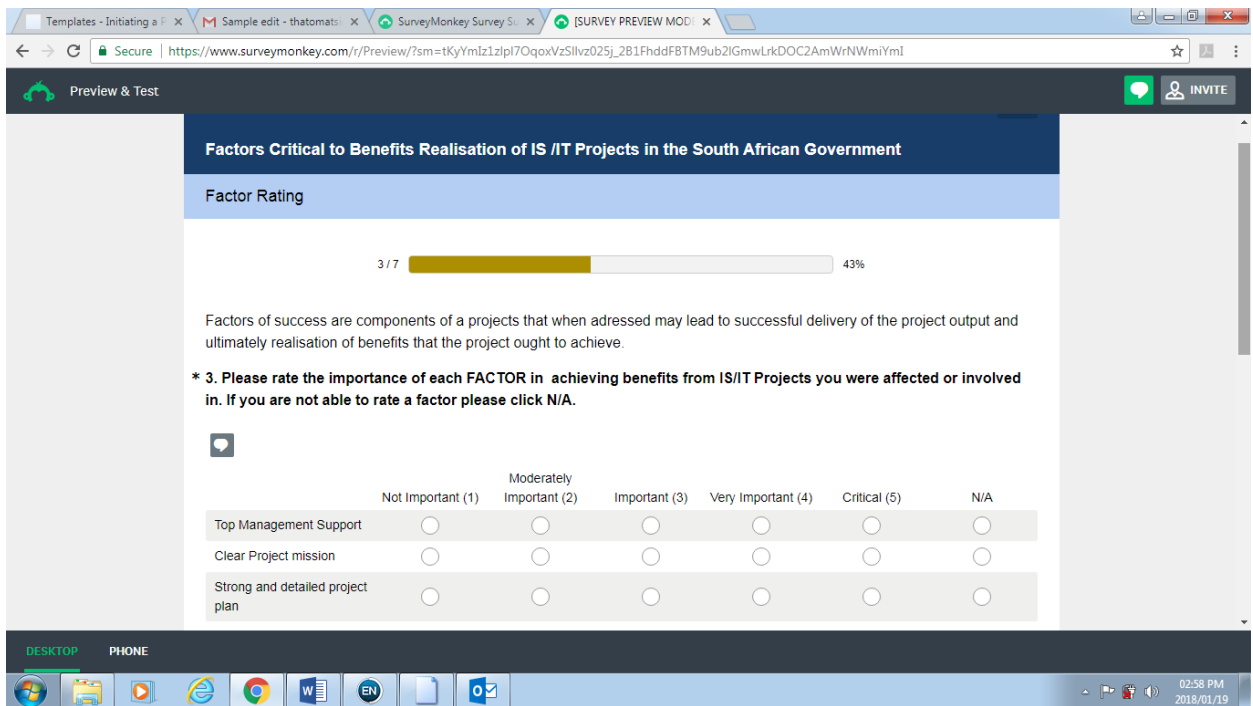
* 1. Please indicate the type of IT/IS project you were involved in

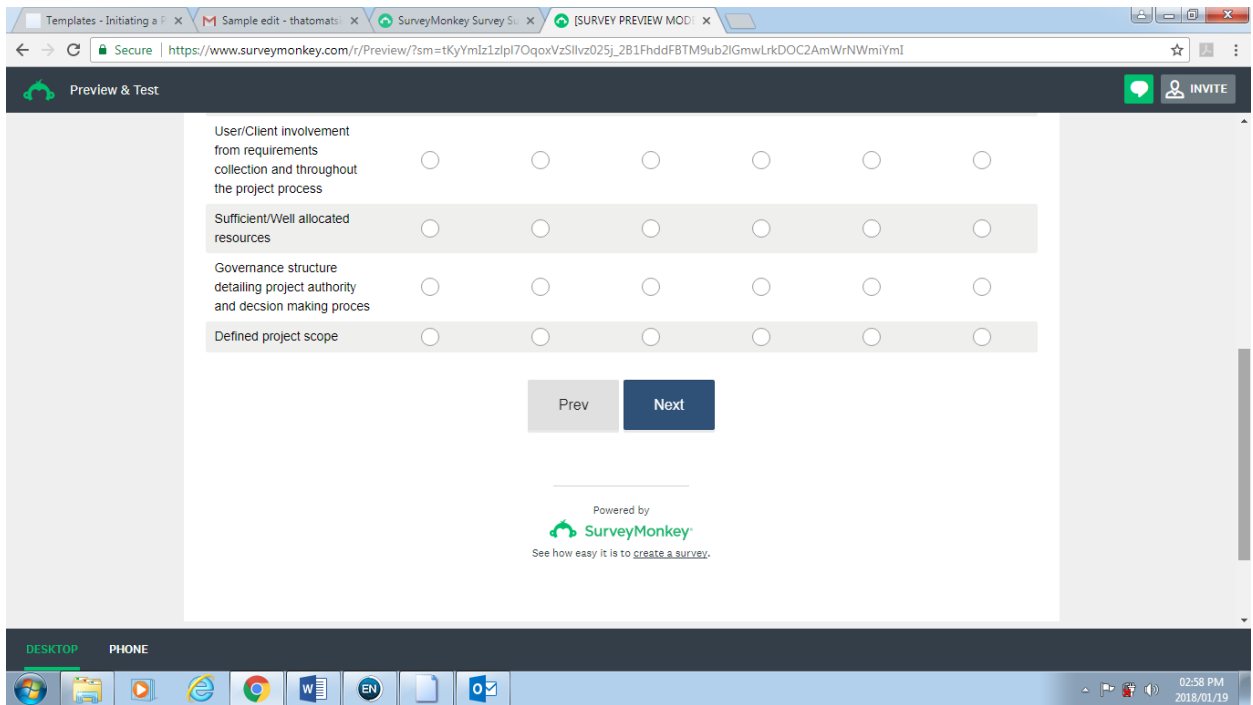
- Software
- Hardware
- Telecommunications
- Electronics
- Internet
- Other (please specify)

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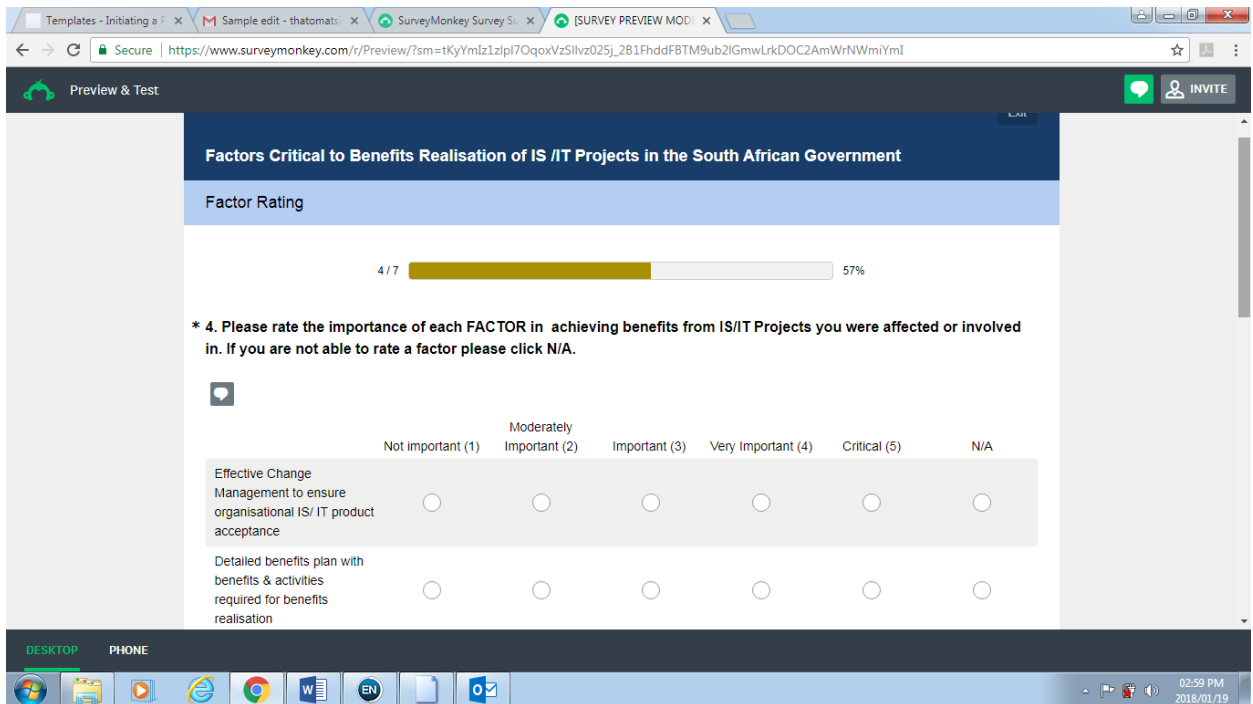


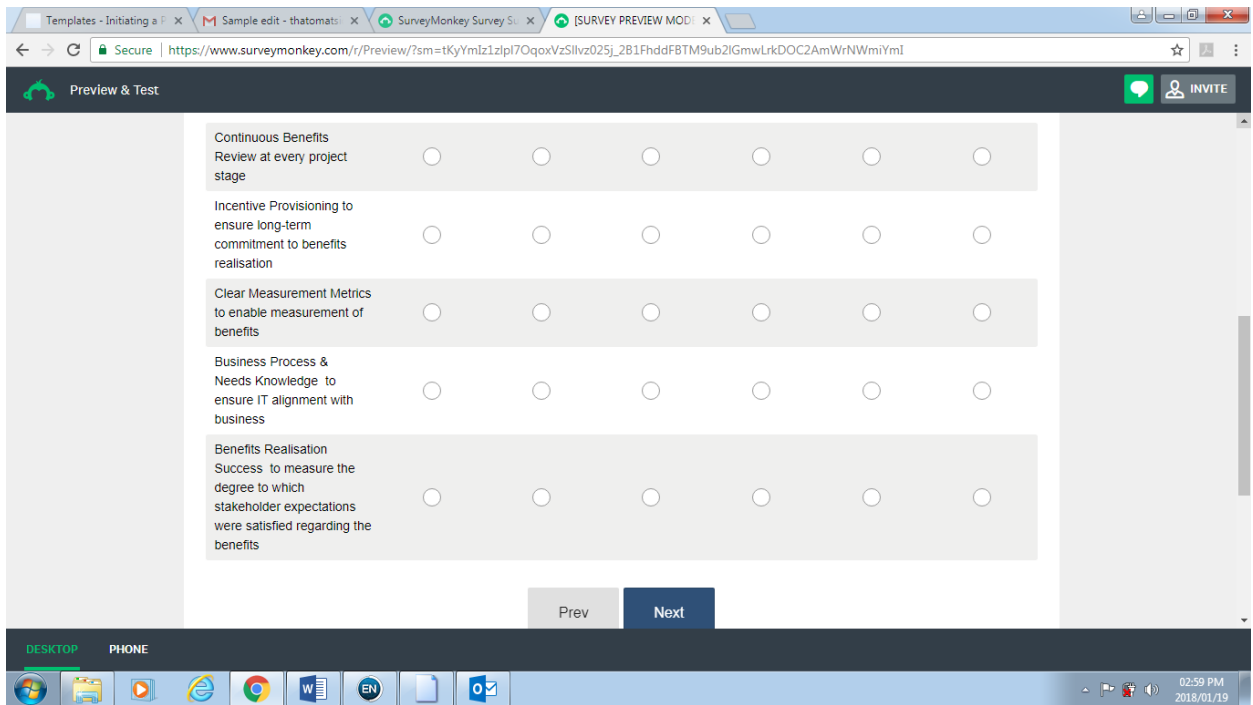
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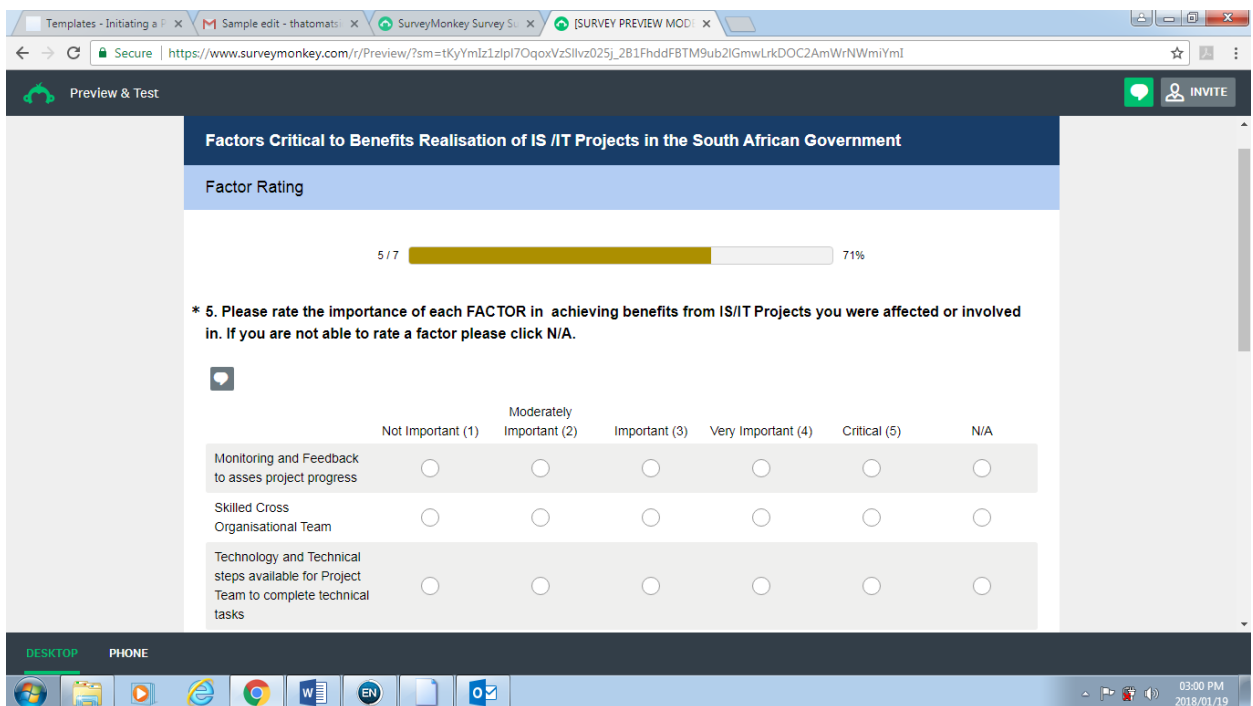


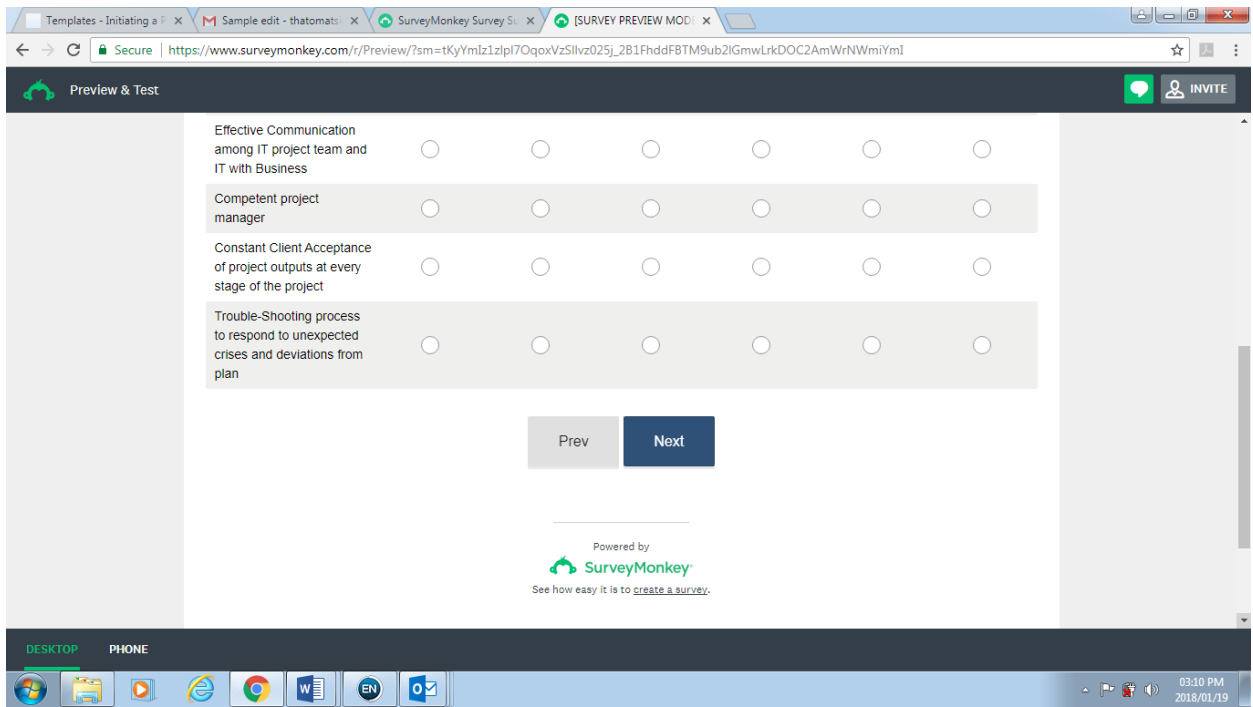
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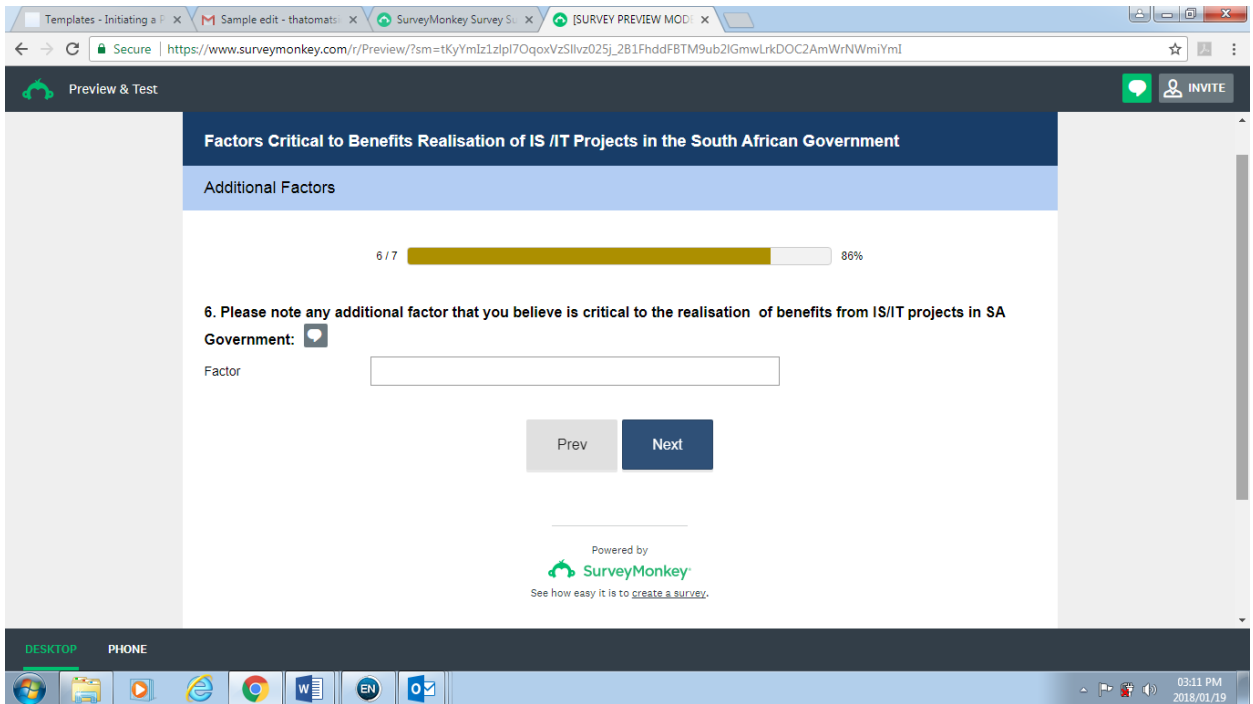


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Preview & Test Exit INVITE

Factors Critical to Benefits Realisation of IS /IT Projects in the South African Government

Thank You

7 / 7 100%

Thank you for participating in the survey. You are welcome to contact me on thatomatsio@gmail.com if you would like me to share the findings of the research.

Prev Done

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APPENDIX B: SURVEY RESPONSE DATA

#	IT Sub-Industry	Role	Factor Rating																		Other Factors			
			Top Management	Clear Project mission	Strong and detailed project plan	User/Client involvement	Sufficient/Well allocated resources	Governance structure	Defined project scope	Effective Management Change	Detailed benefits plan	Continuous Review Benefits	Incentive Provisioning	Clear Measurement Metrics	Business Knowledge Process	Benefits Success Realisation	Monitoring and	Skilled Organisational Team Cross	Technology and Technical steps	Effective manager project	Client Acceptance	Trouble-Shooting	Other Factors	
1	Software	Project Manager	4	5	5	5	4	5	5	5	4	3	4	4	4	5	4	4	4	5	4	5	5	
2	Software	Senior Manager	3	4	5	5	3	4	5	5	5	4	4	5	5	5	5	4	5	5	4	4	4	Project Steering Committee decisions
3	Hardware	Project Manager	3	4	3	4	4	5	5	4	3	2	2	3	2	2	3	3	3	3	4	4	3	
4	Hardware	IT Support Staff	4	5	5	5	4	5	4	4	4	4	4	4	4	4	3	3	3	3	3	3	3	
5	Internet	User																						
6	Telecoms	Line Manager	5	4	5	2	3	2	4	3	3	4	3	1	N/A	3	3	4	3	5	5	2	4	
7	Software	Line Manager	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	5	5	5	5	5	Continuity, political instability
8	Software	Project Manager	N/A	5	2	5	5	5	5	3	2	2	N/A	3	5	4	3	3	3	4	3	3	3	Formal written mandate from level above project. Formal Project Board executive to OWN the project as envisaged in Prince2
9	Software	Project Manager	5	5	5	5	4	5	5	4	3	3	2	3	5	4	4	4	4	5	4	4	4	Scope Creep Management
10	Other	Line Manager	3	4	4	3	4	3	4	4	4	3	5	4	5	4	3	N/A	4	3	3	3	4	
11	Other	Line Manager	5	5	5	4	5	3	5	N/A	N/A	N/A	N/A	N/A	N/A	5	1	N/A	5	5	3	N/A	N/A	
12	Software	Project Manager	5	5	4	5	4	5	5	4	3	4	3	4	5	4	5	3	3	5	5	5	4	Architecture
13	Hardware	Client	4	5	4	4	4	3	4	3	3	3	3	3	3	3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
14	Telecoms	Project Manager	5	4	4	3	3	3	4	3	2	2	2	3	3	2	2	2	3	3	3	3	3	stakeholder involvement
15	Other	Line Manager	1	3	3	3	4	4	4	4	4	4	3	4	4	4	4	4	4	4	4	4	4	Cost analysis before and after project

#	IT Sub-Industry	Role	Factor Rating																		Other Factors			
			Top Management	Clear Project mission	Strong and detailed project plan	User/Client involvement	Sufficient/Well allocated resources	Governance structure	Defined project scope	Effective Management Change	Detailed benefits plan	Continuous Benefits Review	Incentive Provisioning	Clear Measurement Metrics	Business Knowledge Process	Benefits Success Realisation	Monitoring and	Skilled Organisational Team Cross	Technology and Technical steps	Effective	Competent project manager	Client Acceptance	Trouble-Shooting	Other Factors
16	Software	IT Support Staff	5	5	5	5	5	5	5	5	3	4	3	5	5	5	5	3	4	5	5	5	5	data
17	Software	Project Team Member	5	5	5	5	5	5	4	3	3	4	4	5	4	4	3	4	4	5	5	3		
18	Software	Senior Manager	5	4	4	4	4	4	3	3	1	2	3	4	3	3	3	3	3	4	3	4		
19	Hardware	Project Team Member	4	4	5	5	5	4	5	3	4	3	3	4	4	5	3	3	5	5	4	4	Project scope	
20	Hardware	Line Manager	4	5	5	5	5	5	5	5	5	4	4	5	5	5	4	4	4	5	4	4	Communication	
21	Software	Line Manager	3	4	4	5	4	5	5	3	2	2	3	4	4	4	5	4	4	5	5	5		
22	Internet	Senior Manager	4	5	5	5	4	4	4	5	5	4	4	5	4	4	5	4	5	5	5	4	Multi stakeholder commitment to a common vision. Talent/skills/champions. Networks. Supportive policies.	
23	Software	Line Manager	5	5	4	4	3	3	4	4	3	2	2	3	3	2	4	3	3	5	4	2	2	
24	Telecoms	Senior Manager	5	4	4	5	3	5	5	4	4	4	4	5	4	5	5	3	4	5	5	5	4	Change management is critical for project success to ensure buy in from all stakeholders
25	Software	Project Manager	5	5	4	5	4	5	5	5	5	3	3	4	4	4	5	3	3	5	5	5	3	Sufficient project budget
26	Other	Project Manager	5	5	4	5	5	4	5	4	3	2	2	4	4	2	4	4	4	4	4	1	4	
27	Software	Other	5	3	3	5	4	5	5	4	4	5	4	4	5	3	5	3	3	4	5	4	3	research and development to keep up with the global trends to make IT relevant
28	Hardware	Project Team Member	5	5	5	4	4	4	4	5	4	4	4	4	5	5	5	5	5	4	4	4	5	service deliverer enhancement
29	Software	Project Team Member	3	4	4	4	4	3	4	3	4	4	4	3	3	3	4	4	4	4	4	4	4	
30	Software	Senior Manager	5	5	5	5	5	5	5	5	4	3	3	3	4	4	4	4	4	5	4	4	Involvement of all impacted stakeholders to the project from inception of project.	

#	IT Sub-Industry	Role	Factor Rating																	Other Factors				
			Top Management	Clear Project mission	Strong and detailed project plan	User/Client involvement	Sufficient/Well allocated resources	Governance structure	Defined project scope	Effective Management Change	Detailed benefits plan	Continuous Review Benefits	Incentive Provisioning	Clear Measurement Metrics	Business Knowledge Process	Benefits Success Realisation	Monitoring and	Skilled Organisational Team Cross	Technology and Technical steps		Effective manager project	Client Acceptance	Trouble-Shooting	
31	Internet	Project Manager	5	5	5	5	5	5	5	5	5	4	5	5	5	5	5	5	5	5	5	4	Buy in from all stakeholders - Change management to encourage/conduct stakeholder engagements	
32	Software	Senior Manager	5	5	4	4	5	4	4	3	3	4	3	5	4	3	4	4	4	5	3	5	4	Scope management. Do not allow amendment on defined scope without detail re-costing process.
33	Internet	Project Team Member	5	5	5	4	3	2	2	4	4	4	4	5	5	3	3	4	4	5	5	5		
34	Other	Project Team Member	5	5	5	5	5	4	5	5	4	4	3	3	4	4	4	4	4	5	5	4		
35	Hardware	Project Manager	4	4	4	5	4	4	4	4	3	3	2	3	3	4	4	3	4	4	4	5		
36	Other	Other	5	4	4	4	4	4	4	5	4	3	3	4	5	4	4	3	3	4	4	3	Identifying application legislation and technology standards	
37	Telecoms	IT Support Staff	4	5	5	4	4	4	4	4	4	3	5	4	5	4	4	4	4	5	5	4		
38	Hardware	Other	4	5	5	N/A	5	1	3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
39	Software	IT Support Staff	N/A																					
40	Electronics	Line Manager	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	Appointment of proven quality service providing suppliers	
41	Hardware	Senior Manager	5	5	4	5	5	5	5	5	4	4	4	4	5	5	5	5	5	5	5	5	Project sponsor and budget availability	
42	Telecoms	Client	5	4	4	5	4	5	5	3	5	4	3	4	5	5	4	4	4	5	5	3	Research for the best & cost effective solution	
43	Internet	IT Support Staff	3	3	4	3	4	3	4	3	3	3	3	3	3	3	4	3	4	5	4	3	Service delivery time lines	
44	Other	Line Manager	5	5	5	5	5	5	5	4	4	4	3	4	4	4	4	5	4	4	5	4	Proper user training prior to implementation of application/system	
45	Telecoms	Line Manager	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	Commitment from Support Staff	

#	IT Sub-Industry	Role	Factor Rating																			Other Factors		
			Top Management	Clear Project mission	Strong and detailed project plan	User/Client involvement	Sufficient/Well allocated resources	Governance structure	Defined project scope	Effective Management Change	Detailed benefits plan	Continuous Review Benefits	Incentive Provisioning	Clear Measurement Metrics	Business Knowledge Process	Benefits Success Realisation	Monitoring and	Skilled Organisational Team Cross	Technology and Technical steps	Effective	Competent project manager	Client Acceptance	Trouble-Shooting	
46	Software	Project Manager	5	5	5	5	5	5	5	4	5	4	3	4	4	4	4	2	3	5	4	5	5	Clearly defining the benefits at the inception of the project
47	Hardware	Senior Manager	5	4	5	4	5	4	5	4	3	4	3	5	3	4	4	4	3	5	4	4	4	Well covered in survey
48	Software	Line Manager	5	5	5	5	5	5	5	5	5	5	4	5	5	5	5	5	5	5	5	5	5	Adequate project funding and effective project finance management
49	Software	Line Manager	5	4	4	5	4	3	4	4	2	2	2	3	3	3	4	4	4	4	4	4	4	N/A
50	Internet	Other	5	4	4	4	4	5	4	3	5	5	4	4	5	5	4	4	4	5	4	4	4	Governance structure for BRM
51	Other	Project Team Member	4	5	5	5	4	4	5	4	4	4	4	4	5	4	4	4	4	5	5	5	4	Detailed User Requirement Specification
52	Other	Client	5	4	5	5	4	3	5	5	3	4	3	3	5	5	4	5	5	5	N/A	4	4	The socio economic and political impact the IS/IT will make to ordinary citizens
53	Telecoms	Senior Manager	4	5	5	5	4	4	4	5	4	3	3	5	4	4	5	4	4	5	4	4	4	Mandate and Business Case
54	Software	Project Team Member	4	4	4	4	4	3	4	4	3	3	2	4	4	4	4	3	4	4	3	2	4	
55	Internet	Line Manager	2	2	2	4	4	2	3	2	2	2	2	2	3	2	2	4	5	4	3	1	3	
56	Internet	Client	5	4	4	5	5	5	4	4	3	3	3	3	3	3	5	5	4	5	5	5	5	
57	Telecoms	Other	5	5	4	5	5	5	5	4	3	4	4	5	4	4	5	4	4	5	5	4	3	
58	Internet	Project Team Member			N/A																			
59	Software	Line Manager	5	5	3	5	4	3	4	4	4	4	4	4	4	4	4	4	4	4	5	4	4	
60	Telecoms	Project Team Member	4	5	5	2	5	4	5	3	3	2	2	2	4	4	4	4	5	5	5	5	5	
61	Software	Project Team Member	5	5	5	5	5	5	5	4	4	4	3	3	5	4	4	4	4	5	5	5	5	none
62	Software	Senior Manager	5	5	4	4	5	4	4	3	3	3	3	4	5	5	5	3	4	4	4	4	4	
63	Software	Senior Manager	5	5	5	5	4	5	5	4	3	3	3	3	4	4	4	4	5	5	4	5	4	

#	IT Sub-Industry	Role	Factor Rating																		Other Factors			
			Top Management	Clear Project mission	Strong and detailed project plan	User/Client involvement	Sufficient/Well allocated resources	Governance structure	Defined project scope	Effective Management Change	Detailed benefits plan	Continuous Benefits Review	Incentive Provisioning	Clear Measurement Metrics	Business Knowledge Process	Benefits Success Realisation	Monitoring and	Skilled Organisational Team Cross	Technical steps and	Effective manager project	Client Acceptance	Trouble-Shooting	Other Factors	
78	Software	Project Team Member	3	3	3	1	3	3	3	4	5	3	4	3	2	4	4	4	5	5	3	3	4	Proper IT Infrastructure
79	Software	Senior Manager	5	5	5	5	5	5	5	5	5	4	5	5	5	5	5	5	5	5	5	5	5	adequate funding
80	Telecoms	Other	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	Knowledgeable about Policies and Process governing the support functions
81	Hardware	IT Support Staff	3	5	5	5	5	3	5	4	5	3	2	5	4	5	5	4	5	5	3	5	5	Detail planning with correct people in team to ensure a fruitful outcome. Too many project are rushed into without proper planning and then aborts with lots of time and money wasted and no or improper function.
82	Internet	Line Manager	4	5	5	5	5	5	5	4	4	4	4	4	5	5	4	4	4	5	5	5	5	
83	Software	IT Support Staff	5	5	5	4	5	4	5	5	4	3	2	4	4	4	5	4	4	5	5	5	4	Stake holder's understanding of the challenges as well as strong support from them
84	Software	Project Team Member																						
85	Software	Other	5	5	3	5	4	4	3	3	3	2	2	3	3	4	4	3	2	3	4	5	3	Commitment by all stakeholders
86	Software	Senior Manager	5	5	4	4	4	5	4	4	3	2	1	2	4	2	4	3	4	4	4	5	N / A	sufficient project budget
87	Software	IT Support Staff	1	4	5	4	5	5	5	3	4	4	4	5	5	5								
88	Software	IT Support Staff	N / A	4	5	4	5	3	4	5	4	3	3	5	5	4	4	5	4	5	5	3	5	Clients need to truly know and manage their own business and NOT defer all decisions to IT resources.
89	Telecoms	Other	5	4	4	5	4	5	5	5	4	4	3	3	4	4	4	4	5	5	5	5	4	Clear communication plan
90	Software	IT Support Staff	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	

#	IT Sub-Industry	Role	Factor Rating																		Other Factors			
			Top Management	Clear Project mission	Strong and detailed project plan	User/Client involvement	Sufficient/Well allocated resources	Governance structure	Defined project scope	Effective Management Change	Detailed benefits plan	Continuous Benefits Review	Incentive Provisioning	Clear Measurement Metrics	Business Knowledge Process	Benefits Success Realisation	Monitoring and	Skilled Organisational Team Cross	Technology and Technical steps	Effective	Competent project manager	Client Acceptance	Trouble-Shooting	Other Factors
91	Hardware	Line Manager	4	4	4	4	4	4	4	4	4	4	4	4	4	3	4	4	4	4	4	4	4	methodology used
92	Software	IT Support Staff	5	5	3	5	5	5	4	5	4	2	2	3	5	4	3	4	3	4	3	5	4	Acceptance of requirements before starting. Manage expectations from the start
93	Other	IT Support Staff	2	4	4	5	4	5	5	4	4	4	3	4	5	5	4	5	5	4	4	5	Teamwork	
94	Hardware	Project Manager	5	5	5	5	5	5	5	4	4	5	3	4	4	4	4	4	5	5	4	4	Trust Relation and Honesty and be open minded	
95	Software	Project Manager	5	5	5	5	5	5	5	5	4	4	3	4	4	4	5	4	5	5	5	2	team focus	
96	Software	Project Team Member	5	5	5	5	4	4	4	5	3	3	3	3	4	4	3	4	3	4	4	4	Client buy in at the start	
97	Telecoms	Project Manager	4	4	4	5	5	4	4	3	3	3	2	2	2	2	4	4	4	4	4	3		
98	Other	Line Manager	5	4	4	3	4	4	5	4	4	4	3	3	5	4	3	5	4	4	5	4		
99	Telecoms	IT Support Staff	3	4	4	5	4	4	4	3	3	2	3	3	5	4	4	3	4	4	4	3	Determining the real needs of the customer before the project is planned, is the most important for me	
100	Internet	Line Manager	5	3	2	2	4	1	2	1	2	2	2	2	2	2	3	3	3	3	2	3	N/A	
101	Other	User	5	N/A	4	4	4	4	4	5	4	5	3	4	4	4	5	5	5	4	5	4	N/A	

APPENDIX C: CHI SQUARE TEST RESULTS

	Not Important (1)	Moderately Important (2)	Important (3)	Very Important (4)	Critical (5)	N/A	N (sample)
Top Management Support							
Observed	2	2	10	20	58	2	92
Expected	18.4	18.4	18.4	18.4	18.4		
Difference	-16.4	-16.4	-8.4	1.6	39.6		
(Difference) ²	268.96	268.96	70.56	2.56	1568.16		
Diff ² / Expect	14.62	14.62	3.83	0.14	85.23		
Chi Square	118.43						
Clear Project Mission							
Observed	0	1	5	30	56	2	92
Expected	18.4	18.4	18.4	18.4	18.4		
Difference	-18.4	-17.4	-13.4	11.6	37.6		
(Difference) ²	338.56	302.76	179.56	134.56	1413.76		
Diff ² / Expect	18.40	16.45	9.76	7.31	76.83		
Chi Square	128.76						
Strong and detailed project plan							
Observed	0	3	8	35	48	0	94
Expected	18.8	18.8	18.8	18.8	18.8		
Difference	-18.8	-15.8	-10.8	16.2	29.2		
(Difference) ²	353.44	249.64	116.64	262.44	852.64		
Diff ² / Expect	18.80	13.28	6.20	13.96	45.35		
Chi Square	97.60						
User/client Involvement							
Observed	1	3	5	28	56	1	93
Expected	18.6	18.6	18.6	18.6	18.6		
Difference	-17.6	-15.6	-13.6	9.4	37.4		
(Difference) ²	309.76	243.36	184.96	88.36	1398.76		
Diff ² / Expect	16.65	13.08	9.94	4.75	75.20		
Chi Square	119.63						
Sufficient/Well allocated resources							
Observed	0	0	7	45	42	0	94
Expected	18.8	18.8	18.8	18.8	18.8		
Difference	-18.8	-18.8	-11.8	26.2	23.2		
(Difference) ²	353.44	353.44	139.24	686.44	538.24		
Diff ² / Expect	18.80	18.80	7.41	36.51	28.63		
Chi Square	110.15						

	Not Important (1)	Moderately Important (2)	Important (3)	Very Important (4)	Critical (5)	N/A	N (sample)
Governance structure							
Observed	2	3	16	28	45	0	94
Expected	18.8	18.8	18.8	18.8	18.8		
Difference	-16.8	-15.8	-2.8	9.2	26.2		
(Difference) ²	282.24	249.64	7.84	84.64	686.44		
Diff ² / Expect	15.01	13.28	0.42	4.50	36.51		
Chi Square	69.72						
Defined project scope							
Observed	0	2	5	35	52	0	94
Expected	18.8	18.8	18.8	18.8	18.8		
Difference	-18.8	-16.8	-13.8	16.2	33.2		
(Difference) ²	353.44	282.24	190.44	262.44	1102.24		
Diff ² / Expect	18.80	15.01	10.13	13.96	58.63		
Chi Square	116.53						
Effective Change Management							
Observed	1	1	19	41	30	2	92
Expected	18.4	18.4	18.4	18.4	18.4		
Difference	-17.4	-17.4	0.6	22.6	11.6		
(Difference) ²	302.76	302.76	0.36	510.76	134.56		
Diff ² / Expect	16.45	16.45	0.02	27.76	7.31		
Chi Square	68.00						
Detailed benefits plan							
Observed	0	6	29	38	19	2	92
Expected	18.4	18.4	18.4	18.4	18.4		
Difference	-18.4	-12.4	10.6	19.6	0.6		
(Difference) ²	338.56	153.76	112.36	384.16	0.36		
Diff ² / Expect	18.40	8.36	6.11	20.88	0.02		
Chi Square	53.76						
Continuous Benefits Review							
Observed	1	14	26	40	11	2	92
Expected	18.4	18.4	18.4	18.4	18.4		
Difference	-17.4	-4.4	7.6	21.6	-7.4		
(Difference) ²	302.76	19.36	57.76	466.56	54.76		
Diff ² / Expect	16.45	1.05	3.14	25.36	2.98		
Chi Square	48.98						
Incentive Provisioning							
Observed	1	17	37	27	9	3	91
Expected	18.2	18.2	18.2	18.2	18.2		
Difference	-17.2	-1.2	18.8	8.8	-9.2		
(Difference) ²	295.84	1.44	353.44	77.44	84.64		
Diff ² / Expect	16.25	0.08	19.42	4.25	4.65		
Chi Square	44.66						

	Not Important (1)	Moderately Important (2)	Important (3)	Very Important (4)	Critical (5)	N/A	N (sample)
Clear Measurement Metrics							
Observed	1	5	25	37	24	2	92
Expected	18.4	18.4	18.4	18.4	18.4		
Difference	-17.4	-13.4	6.6	18.6	5.6		
(Difference) ²	302.76	179.56	43.56	345.96	31.36		
Diff ² / Expect	16.45	9.76	2.37	18.80	1.70		
Chi Square	49.09						
Business Process Knowledge							
Observed	0	4	12	35	40	3	91
Expected	18.2	18.2	18.2	18.2	18.2		
Difference	-18.2	-14.2	-6.2	16.8	21.8		
(Difference) ²	331.24	201.64	38.44	282.24	475.24		
Diff ² / Expect	18.20	11.08	2.11	15.51	26.11		
Chi Square	73.01						
Benefits Realisation Success							
Observed	0	8	9	47	28	2	92
Expected	18.4	18.4	18.4	18.4	18.4		
Difference	-18.4	-10.4	-9.4	28.6	9.6		
(Difference) ²	338.56	108.16	88.36	817.96	92.16		
Diff ² / Expect	18.40	5.88	4.80	44.45	5.01		
Chi Square	78.54						
Monitoring and Feedback							
Observed	0	2	12	46	31	3	91
Expected	18.2	18.2	18.2	18.2	18.2		
Difference	-18.2	-16.2	-6.2	27.8	12.8		
(Difference) ²	331.24	262.44	38.44	772.84	163.84		
Diff ² / Expect	18.20	14.42	2.11	42.46	9.00		
Chi Square	86.20						
Skilled Cross Organisational Team							
Observed	1	2	24	47	16	4	90
Expected	18	18	18	18	18		
Difference	-17	-16	6	29	-2		
(Difference) ²	289	256	36	841	4		
Diff ² / Expect	16.06	14.22	2.00	46.72	0.22		
Chi Square	79.22						
Technology and Technical steps							
Observed	0	1	18	47	24	4	90
Expected	18	18	18	18	18		
Difference	-18	-17	0	29	6		
(Difference) ²	324	289	0	841	36		
Diff ² / Expect	18.00	16.06	0.00	46.72	2.00		
Chi Square	82.78						
Effective Communication							

	Not Important (1)	Moderately Important (2)	Important (3)	Very Important (4)	Critical (5)	N/A	N (sample)
Observed	0	0	7	29	55	3	91
Expected	18.2	18.2	18.2	18.2	18.2		
Difference	-18.2	-18.2	-11.2	10.8	36.8		
(Difference)2	331.24	331.24	125.44	116.64	1354.24		
Diff2/ Expect	18.20	18.20	6.89	6.41	74.41		
Chi Square	124.11						
Competent project manager							
Observed	0	0	11	33	46	4	90
Expected	18	18	18	18	18		
Difference	-18	-18	-7	15	28		
(Difference)2	324	324	49	225	784		
Diff2/ Expect	18.00	0.06	2.72	12.50	43.56		
Chi Square	76.83						
Client Acceptance							
Observed	2	5	12	32	40	3	91
Expected	18.2	18.2	18.2	18.2	18.2		
Difference	-16.2	-13.2	-6.2	13.8	21.8		
(Difference)2	262.44	174.24	38.44	190.44	475.24		
Diff2/ Expect	14.42	0.10	2.11	10.46	26.11		
Chi Square	53.21						
Trouble-Shooting							
Observed	0	2	16	47	24	5	89
Expected	17.8	17.8	17.8	17.8	17.8		
Difference	-17.8	-15.8	-1.8	29.2	6.2		
(Difference)2	316.84	249.64	3.24	852.64	38.44		
Diff2/ Expect	17.80	0.07	0.18	47.90	2.16		
Chi Square	68.11						

APPENDIX D: ETHICS CLEARANCE

Application for Approval of Ethics in Research (EBE) Projects
Faculty of Engineering and the Built Environment, University of Cape Town

APPLICATION FORM


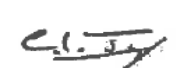

Please Note:

Any person planning to undertake research in the Faculty of Engineering and the Built Environment (EBE) at the University of Cape Town is required to complete this form before collecting or analyzing data. The objective of submitting this application prior to embarking on research is to ensure that the highest ethical standards in research, conducted under the auspices of the EBE Faculty, are met. Please ensure that you have read, and understood the EBE Ethics in Research Handbook (available from the UCT EBE, Research Ethics website) prior to completing this application form: <http://www.ebe.uct.ac.za/about/research/ethics/>.

APPLICANT'S DETAILS	
Name of principal researcher, student or external applicant	Thabo Mabele
Department	Faculty of Engineering and the Built Environment
Preferred email address of applicant:	thabomabele@gmail.com
If Student	Your Degree: e.g., MSc, PhD, etc.
	Credit Value of Research: e.g., 60/120/180/240 etc.
	Name of Supervisor (if supervised):
If this is a research contract, indicate the source of funding/sponsorship	N/A
Project Title	FACTORS CRITICAL TO BENEFITS REALISATION OF IS/IT PROJECTS IN THE SOUTH AFRICAN GOVERNMENT CONTEXT

I hereby undertake to carry out my research in such a way that:

- there is no apparent legal objection to the nature or the method of research; and
- the research will not compromise staff or students or the other responsibilities of the University;
- the stated objective will be achieved, and the findings will have a high degree of validity;
- limitations and alternative interpretations will be considered;
- the findings could be subject to peer review and publicly available; and
- I will comply with the conventions of copyright and avoid any practice that would constitute plagiarism.

SIGNED BY	Full name	Signature	Date
Principal Researcher/ Student/External applicant	Thabo Mabele		28 Jan 2018
APPLICATION APPROVED BY	Full name	Signature	Date
Supervisor (where applicable)	Ian Jay		28 Jan 2018
HOD (or delegated nominee) Final authority for all applicants who have answered NO to all questions in Section 1; and for all Undergraduates research (Including Honours).	NIEN-TSU TUAN Click here to enter text.		Click here to enter a date.