



Cape Peninsula
University of Technology

**THE ROLE OF ENTERPRISE ARCHITECTURE IN THE BUSINESS AND INFORMATION
TECHNOLOGY ALIGNMENT OF A PUBLIC ORGANISATION IN SOUTH AFRICA**

by

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The finalised thesis was submitted to Mr Ogundipe on 22 September 2020.

Sincerely



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ABSTRACT

The study focused on Business and Information Technology Alignment (BITA) dynamics, an essential catalyst for improved organisational efficiency and ability to achieve competitive advantage in a thriving market or economy. This implies that the absence of well-suited alignment between business and Information Technology (IT) components of an organisation could limit the organisation's processes' proficiency, thus culminating in reduced service delivery and profitability in enterprises.

To obtain appropriate alignment between the business and IT components of any organisation, a suitable Enterprise Architecture (EA) framework must be used. EA frameworks are designed to achieve the highest possible alignment between different institutions' business and IT components. This implies that the business and IT components' alignment could be a major deciding factor in an organisation's service delivery or profitability. It could also result in inappropriate resource allocation and unsuccessful IT initiatives that could lead to financial difficulty and poor organisational outcomes. For public organisations/governments, this could negatively affect the planning, budgeting, and service delivery capability to the citizens.

It was observed that, for major provincial governments (PGs) in South Africa, inquiries that lead to investigating the level of business and IT alignment and determining the efficiency of implementation are limited. Thus, this research aimed to explore the effect of the implemented enterprise architecture (EA) on the business and information technology alignment (BITA) of a public governmental organisation's businesses processes. A case study of a large provincial government in SA was carried out, and the corresponding findings were presented in relation to the investigating questions.

In this research, a qualitative approach with the exploratory design was adopted for this study. A single case study as an investigation strategy was employed to conduct an in-depth organisational study to obtain relevant information to establish the BITA status of the PG that was studied. The qualitative research method was adopted for the study, as it was essential to understand the interpretation of human factors in determining the BITA status of PG's business processes. Purposive sampling for data collection via semi-structured interviews was conducted with the PG staff at senior and mid-level management of the PG.

The PG under consideration findings shows that Human behaviour, the cost of IT investment and the communication gaps between top and lower administration levels serve as a major drawback to business and IT alignment. The findings confirmed that partnerships exist between business and IT stakeholders within the organisation, but these partnerships are

hampered by the technical language barrier and trust concerns. This, therefore, negatively affects the overall reduction in service delivery efficiency.

Key words: IT planning, IT investment, IT infrastructure, IT governance, human behaviour, IT strategy, Enterprise Architecture, IT alignment, communication, partnership, skill.

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DEDICATION

Dedicated to the Glory of Almighty God for the grace and protection over the years
I am eternally grateful; without You, there would be no me.
This is for You!

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GLOSSARY

Abbreviation	Full Word / Term
BIT	Business and Information Technology
BITA	Business and Information Technology Alignment
COBIT	Control Objectives for Information and Related Technology
EA	Enterprise Architecture
EDRMS	Electronic Document and Records Management Systems
e-TOM	Enhanced-Telecom Operations Map
IT	Information Technology
ITIL	Information Technology Infrastructure Library
ITSM	Information Technology Service Management
PG	Provincial Government
PPP	Private-Public-Partnership
PrOs	Private Organisations
PuOs	Public Organisations
ROI	Return on Investment
SAM	Strategic Alignment Model
SAMM	Strategic Alignment Maturity Model
SCOR	Supply-Chain Operations Reference-Model
TOGAF	The Open Group Architecture Framework

CHAPTER 1: INTRODUCTION

1.1 Introduction

Information Technology (IT) emerged with stride and rapid evolution, such that business practices have progressed from the era where IT was simply applied as back-office support, to leading the pack and playing a tactical role in enterprise expansion (Rahbar, Zeinolabedin & Mehrvarz, 2013; Jorfi, Nor, & Najjar, 2017; Buchalcevova & Pour, 2018). IT's impact and growth have been evident and widely acknowledged in the business world over the years (Taylor & Todd, 1995; Alaeddini & Salekfarid, 2013; Gerow, Grover, Thatcher & Roth, 2014; Mithas & Rust, 2016). Reynolds and Yetton (2015) established the strategic role as an enabler of business strategy to promote or achieve organisational goals (Reynolds & Yetton, 2015; Zhang et al., 2018). In essence, there is assured ease of business process execution and improved service delivery in any environment where suitable IT innovation is used to complement a business strategy (Barton, 2016; Kotusev, 2019).

According to Abu-Musa (2007) and Alassafi, Alharthi, Walters and Wills (2017), IT's goal is to enable innovation in service delivery, which is realised by creating relationships and processes that add value, increase returns, and balance risks within the organisation. Therefore, business strategy and innovations can be said to focus mainly on increasing the return on investment (ROI) and promoting product quality and service delivery (Coltman, Tallon, Sharma & Queiroz, 2015; Queiroz, Tallon, Sharma & Reynolds, 2018). Literature advocates that the incorporation of IT could resolve most of the issues that deter organisations from achieving optimum performance and fulfilling critical organisational goals (Luftman, Lewis & Oldach, 1993; Tamm, Seddon, Shanks & Reynolds, 2011; Gerow, Thatcher & Grover, 2014; De Bruyn, 2017). However, for businesses to achieve the desired ROI and fulfil organisational objectives, there must be a strategic alignment of IT strategy with business goals (Luoma-aho & Paloviita, 2010; Chen, & Luo, 2018).

Business plans and policies are formulated at the top level of most business organisation by the executive members. Therefore, top management levels are inclined to focus particularly on a business's strategic alliance with IT operations to optimise investments (Mithas & Rust, 2016). To achieve synergy of strategic organisational operation, Chege (2014) and Kahigu, Muchara and Mosoti (2017) describe the relationship required within diverse functions of the business and IT, in which their plans and policies are reciprocally synchronised to achieve better operational coordination as strategic alignment. Queiroz et al. (2018) assert that there is an increased emphasis on strategic alignment of business and IT operations, which

necessitates organisational policies to support Business and IT Alignment (BITA), for the organisation to optimise its investment and resources. Li, Chang and Yen (2017) reveal that in various business organisations today, the BITA strategy is understood as a ground-breaking tool for service delivery through the effective application of IT governance in business processes.

COBIT (Control Objectives for Information and Related Technology), governed by the IT Governance Institute (ITGI), as well as Abu-Musa (2007:4), describes IT governance as “a structure of relationships and processes to direct and control the organisation in order to achieve the organisation’s goals by adding value while balancing risk versus return over IT and its processes”. Accordingly, the literature reveals that business organisations are in accord that proper IT governance is a crucial factor in achieving BITA (Kaur & Hilya, 2014; Klier et al., 2017). However, the authors posit that the proper knowledge and execution of IT governance is required to achieve BITA in an organisation. Nevertheless, it has been identified since the 70s that the right use of IT governance in line with the requirements of business has been a recurring concern for organisational (business and IT) high ranking managers (King, 1978; Coleman & Papp, 2006; Alaeddini & Salekfard, 2013; Mithas & Rust, 2016). Thus, it is evident that a gap exists in understanding and applying IT governance to synergise and meet set organisational strategies by management and relevant decision-makers (Al Khalifa, 2016). As a recourse to ensure successful IT and business process alignment, organisations embarked on implementing various Enterprise Architecture (EA) frameworks to establish IT governance in business processes (Alaeddini & Salekfard, 2013; Gerow, Thatcher et al., 2014).

The EA framework enables a well-aligned business and IT structure, which consequently results in an overall profitable venture. Notwithstanding, varying arguments have been made about the nature, role, and suitability of EA to IT and business processes of organisations, in order to bring about a positive impact (Zhang et al., 2018).

Thus, the need to continually improve business process efficiency to achieve a competitive advantage has resulted in utilising different EA frameworks, as presented in Table 1.1 (Iyamu & Mphahlele, 2014; Al-Kharusi, Miskon, & Bahari, 2016; Katuu, 2018). Despite the proliferation of the different EA frameworks over the years, identifying and applying suitable EA frameworks that will impact organisational business processes and goals still remains a struggle for many (Alaeddini & Salekfard, 2013; Krey, 2018). As such, the means to achieve appropriate BITA suited for an organisation’s needs remains an issue of concern for several organisations that

struggle to align their business and IT strategies to achieve organisational goals (Luftman, 2000; Alaeddini & Salekfard, 2013).

Table 1.1: Different EA Frameworks

Different EA Frameworks
Zachman framework
TOGAF (The Open Group Architecture Framework)
ITIL (Information Technology Infrastructure Library)
e-TOM (enhanced-Telecom Operations Map)
ITSM (Information Technology Service Management)
COBIT (Control Objectives for Information and Related Technology)

It has been argued that the absence of a profitable level of BITA limits an organisation’s capability to improve their processes and achieve desired efficiency levels, such that they fall short of their full business potential (Chen, 2010; Wang & Rusu, 2018). Nevertheless, the realisation of profitable levels of BITA is evident in developed countries of the world, where business operations, product, and service delivery have excelled beyond levels seen in developing countries like South Africa (SA) (Weerakkody, Janssen & Hjort-Madsen, 2007; Mtongana, 2012; Weerasinghe, Pauleen, Scahill & Taskin, 2018). More so, developed countries continue to witness a high level of public service delivery, made possible by the status of BITA, which is evident within the structures of their governmental services (Mtungana, 2012). It is essential to recognise features affecting the achievement of profitable BITA levels in developing countries, in order to institute the prominence of BITA attained in relation to delivering quality goods and services (Chuang & Van Loggerenberg, 2010; Mtongana, 2012; Tai, Wang & Yeh, 2019). Thus, the study aimed to explore the effect of the implemented enterprise architecture (EA) on the business and information technology alignment (BITA) of a public governmental organisation’s businesses processes.

1.2 Conceptualisation of Business and IT Alignment (BITA)

Different terms were applied by different scholars over the years, as shown in Table 1.2, and all the terms have often been applied interchangeably when referring to BITA. Craig, Kanakamedala and Tinaikar (2007) and Silviu (2008a) describe alignment as a complex concept that makes use of numerous methods to comprehend and attain the objective. Roberts and Grover (2012:581) describe alignment as “the degree to which the needs, demands, goals, objectives, and structures of one component are consistent with the needs, demands, goals, objectives, and structures of another

component”. It has been established that BITA deals with the steadiness and tactical positioning of business organisations to accomplish their set objectives via the use of IT (Roberts & Grover, 2012; Zhang et al., 2018).

Table 1.2: Alignment terms by Seminar Scholar

Different Alignment Terms	Scholar
Fit	Venkatraman, 1989
Linkage	Henderson & Venkatraman, 1993
Harmony	Luftman et al., 1993
Bridge	Ciborra, 1997
Integrate	Broadbent et al., 1999
Fusion	Smaczny, 2001

Notwithstanding, the different depictions of business and IT alignment strategy, generally referred to as BITA, remain a fundamental subject of discussion within IT management sciences, aimed mainly at understanding the growth of strategically accomplishing business organisational objectives using IT (Alaeddini & Salekfard, 2013; Coltman et al., 2015; Tai et al., 2019). The BITA discussion is of great importance to senior management executives, and this makes the BITA topic frequently feature at the top of their list of major concerns (Alaeddini & Salekfard, 2013; Zhang et al., 2018).

The level of BITA operations also determines the level of success and status that can be achieved by the organisation (Al Khalifa, 2016). The strategic alignment of business and IT goals, such as cost reduction, enhanced operational proficiency, and strategic business positioning and branding, among others, has been verified to advance the enactment of the business organisation (Chan & Reich, 2007; Gerow, Thatcher, et al., 2014; Tai et al., 2019). Firms that achieve considerable levels of the synergy of business goals and IT alignment possess better drive and support for their businesses (Gerow, Grover, et al., 2014). Chege (2014) proposes that BITA can be a well thought through business-driven or IT-driven tactic. Either way, the objective of BITA is to synchronise organisational plans and policies to achieve the sole aim of realising organisational objectives (Al Khalifa, 2016). The synchronisation of business organisation strategies is significant to achieve BITA as well as BITA maturity (Alaeddini & Salekfard, 2013; Carolissen, 2018). BITA maturity offers an organisation the means to ascertain the maturity level of BITA activities, which translates to management actions carried out to achieve a better and improved alignment between

organisational goals and IT function (Carolissen, 2018) since alignment and BITA maturity are correlated.

Alignment can be achieved in different maturity stages, differentiated by the correlations between business and IT strategies (Gerow, Thatcher, et al., 2014; Queiroz et al., 2018). Zhang et al. (2018) discuss the importance of establishing the status of BITA in organisations that have actively implemented an EA framework to ascertain the effect of the BITA on the business processes and BITA maturity level. The state of BITA is used to determine the role of EA in achieving the desired BITA and its consequent effect on business process efficiency capability and service delivery capacity. Based on the rationale of establishing the status of BITA as indicated above, it was established by Zhang et al. (2018) that it is of the utmost importance to direct an evidence-based inquiry into the current BITA status of the subject matter, post implementation of the EA framework in order to harmonise and improve business processes.

1.3 Research background: The case of the provincial government (PG)

The study focused on **establishing the effective prominence of BITA in a large PG in SA**. The study aimed to explore the effect of a deployed EA framework on the PG's BITA status, which sought to advance business processes and IT enactment in order to enrich service delivery to this PG's populaces. In 2006, the PG's management implemented an EA known as the Zachman framework to address the negative sway of business and IT misalignment on the PG's service delivery, including long-drawn operational services and years of backlogs in service provision (Mtongana, 2012). However, Mtongana reported that the Zachman framework "has not delivered the expected outcomes, mainly because it does not cater for the needs of the business in practice" (Mtongana, 2012:4). It was reported that the lack of coordination of strategy within the numerous units limited the PG's ability to advance service delivery.

In response to the situation described above, in 2009, the PG deployed a process-aligned IT governance EA framework called The Open Group Architecture Framework (TOGAF). TOGAF was implemented to address the absence of service delivery components required to meet set organisational goals, which the Zachman framework did not sufficiently provide for the need of the PG. Prior to the deployment of TOGAF in 2009, the South African public sector had no evidence of effectively achieving BITA within its business processes, despite the implementation of the Zachman framework by the PG in 2006 (Iyamu, 2009; Seppänen, Penttinen & Pulkkinen, 2018). Thus, the PG became one of the first public organisations (PuOs) documented to have effectively implemented TOGAF, as a strategy to achieve BITA, towards improved

and efficient service delivery in SA (Mtongana, 2012). However, since the implementation of TOGAF, the effective status of BITA achieved has not been investigated nor determined.

Moreover, the PG is unable to determine whether the bid to improve its business process and service delivery by investing heavily in EA frameworks has been achieved at the desired level and whether it is sustainable. As such, the PG's BITA's present status remained unidentified after the implementation of the EA framework over the past 10 years. This research focused on investigating the BITA status of the PG post implementation of the TOGAF EA framework in 2009.

1.3.1 Background to the research problem

In recent years, South Africa's PuOs have been plagued with inept attitude, failing business processes, and poor service delivery (Wasserman, Chuma & Bosch, 2018). In a bid to anticipate these malpractices, it became necessary that organisations adopt IT tools and strategies as an enabler to harmonise and enhance their business processes as a deterrent to inefficient and unethical business activities. The PG took the measures of implementing EA to deliver improved services and social amenities as duty-bound to the citizenry (Luftman & Brier, 1999; Chang, 2008; Maraizia & Swartz, 2018). However, South African public organisation operations are frequently riddled with misalignment issues that depict IT as a liability to business instead of being an enabler of business processes (Carolissen, 2018).

The misalignment issues in South African PuO operations opens the door to ineffective management processes, business malpractices, and growing spates of corrupt practices (Acemoglu & Robinson, 2010; Serfontein & De Waal, 2015; Carolissen, 2018). The situation is reminiscent of PGs, which culminates in poor service delivery, where citizens are consequently denied basic amenities and efficient services that form part of their civic rights (Mtongana, 2012). As a result, many citizens become marginalised and dissatisfied with the state of service delivery as promised by the elected government (Tchamyu, 2014; Koehler, 2018). The adverse impact of the misalignment problem (misalignment of business and IT) is widely experienced in the public service sectors like education, transportation, and health, with an adverse spate of repercussions on the citizenry (Acemoglu & Robinson, 2010; Carolissen, 2018). Therefore, it is imperative that the state of PuOs' business processes tasked with governance be appraised periodically to establish concerns impacting the efficiency of services delivered to the public (Alaeddini & Salekfard, 2013; Banaeianjahromi & Smolander, 2019). It has been argued that investigation continuously compels determining the EA's expediency influence on any

organisation's BITA status (Tai et al., 2019). Thus, an unestablished BITA status could negate the business processes and the organisational goals, especially if PuOs' BITA status remains unknown (Iyamu, 2009; Dang & Pekkola, 2016b).

Despite the effort by a PG in SA to implement EA as a strategy to combat the many problems associated with the capability to deliver services effectively, the resultant effect on the PG's business processes is relatively unknown. The implemented EA must be investigated to ensure it stays continuously relevant to the organisation's business service delivery goals (Mtongana, 2012; Gerow, Thatcher et al., 2014). The business process evaluation, if left unattended, exposes the PG systems to high levels of corruption, sharp business malpractices and severe breakdown in communication, which could possibly culminate in a civil disorder, as seen in several developing countries, especially in the Middle-East and Africa (Akinboade & Lalthapersad-pillay, 2009; Berglof & Cable, 2018). The misalignment challenges mentioned above, if not adequately addressed, could ultimately erode the confidence of the citizens, investors, and international communities in the government, which could eventually result in the evasion of taxes, leading to even more inadequate service delivery (Mtongana, 2012).

The need to establish the BITA status of the PG forms the foundation on which this research was based, namely exploring the state of the BITA mandate in a PG's business processes towards delivering efficient services to the citizenry in the PG. It was established that the said PG implemented an EA framework to address issues of misalignment and inefficient business processes, leading to inept service delivery and wastage of resources. Prior to this research, several other research projects were conducted and publications released on the PG in the areas of health, economic policy, tourism, etc. Nevertheless, very few studies have been published on this research topic in relation to PGs' BITA status in SA, especially following that the aftermath of the implemented EA has remained largely undocumented (Mtongana, 2012; Iyamu & Mphahlele, 2014). Consequently, this study was undertaken to establish the effective status of the influence of the implemented EA strategy on PG's BITA and the influence on the output of the business processes and service delivery.

1.4 The research problem

Since the Zachman framework's deployment in 2006 and TOGAF in 2009, the role of the implemented EAs to facilitate the PG in achieving an improved BITA is unknown. Subsequently, the efficacy of the implemented EA strategies on PG's business processes and service delivery has not been determined in the light of the PG's set mandate. Thus, it is essential to scrutinise the deployed EA's outcome in terms of

achieving the desired level BITA within PG’s business processes. Inability to affirm BITA’s status can adversely affect budgeting, planning, investment, operational processes, and service delivery know-how to the PG’s populaces. Consequently, the effect of the misappropriation of monies, resources, and unprofitable investments, which could spiral into undesirable consequences on the citizenry’s standard of living, may lead to compromised governance goals.

1.4.1 Research problem statement

The PG’s BITA status is relatively unidentified; therefore, the deployed EA’s outcome on PG’s business processes and service delivery cannot be established.

1.5 Research aim

The research aimed to explore the effect of the implemented enterprise architecture (EA) on the business and information technology alignment (BITA) of a public governmental organisation’s businesses processes using the Luftman (2000) strategic alignment model (SAM) as an analytical lens.

1.6 Research questions

The study was guided by the main research question (RQ) and three sub-research questions (SRQs), as presented in Table 1.3.

Table 1.3: Research question, sub-questions and objectives

Research Questions	Methodology	Objective
RQ: How has the implemented EA strategy influenced the business-IT alignment (BITA) of a PuO’s business processes in South Africa?	A case study using semi-structured interviews	To determine how the implemented EA strategy influenced the business-IT alignment (BITA) of a PuO’s business processes in South Africa
SRQ 1.1: How does communication influence the business-IT alignment of a PuO in South Africa?	A case study using semi-structured interviews	To investigate the aspects of communication that contribute to achieving business-IT alignment in the PuO
SRQ 1.2: How does IT governance influence the business-IT alignment of a PuO in South Africa?	A case study using semi-structured interviews	To examine the role of IT governance in achieving business-IT alignment in the PuO
SRQ 1.3: How does partnership influence the business-IT alignment of a PuO in South Africa?	A case study using semi-structured interviews	To determine the effectiveness of partnerships in achieving business-IT alignment in the PuO

1.7 Conceptualising the analytical framework

The study utilised the Luftman (2000) strategic alignment model as an investigative lens to explore the effective role of deployed EA to achieve a desirable BITA status within a PG in SA business process. However, the study focused on three of the six categories of the Luftman (2000) framework: *Communication*, *Governance*, and *Partnership*. Previous studies have established that these three categories are the prominent categories to establish BITA status within an organisation (Alaeddini & Salekfard, 2013; Tai et al., 2019). The three categories are deemed suitable and relevant since the PG is mainly concerned with service delivery and optimisation of its business processes for efficient service delivery to the citizenry. Therefore, the three selected categories were summarily used as the analytical lens in the study's extrapolation and analysis. They were selected to comprehend the process of aligning business strategy and IT in the PG, seen as fundamental to the PG's business and IT processes in terms of operations and service delivery. Communication, Governance, and Partnership are strategically positioned within the PG's business processes to influence the performance of its business processes and service delivery level to the citizenry.

1.8 Methodological consideration

Research methodology is an essential aspect of every research project, which provides guidance in terms of the research procedure or techniques (Saunders, Lewis & Thornhill, 2009). Thus, the research methodology followed in this investigation is informed and directed by the researcher's views and understanding in a manner that reveals the nature of the phenomenon of the investigation. The study assumed a nominalist world view, which required a subjective interpretation and rationalisation of people's opinion on the effectiveness of the implemented EA framework in achieving BITA in the selected PG. The study examined participants' observations, perceptions, and insights into the effective status of BITA of PG's business processes.

Creswell and Clark (2007) posit that the illustration of the research approach influences the significance of an operational strategy, which enhances the authenticity of social research work. Therefore, an inductive research approach was selected for this study to facilitate the exploration of the BITA status of a PG's business processes in SA. An inductive research approach was considered appropriate for this study since the findings from the research were inferred back to the theoretical constructs of the Luftman (2000) model to better understand the state of BITA in the PG.

Case study as a research strategy was employed to conduct an in-depth organisational study to obtain relevant information in order to establish the BITA status

of the PG that was studied. A qualitative method was adopted for this research, as it was crucial to understanding and interpretation the human factors in determining the BITA status of the PG's business processes (Creswell & Clark, 2011; Zou, Sunindijo & Dainty, 2014). Therefore, qualitative research's principles and characteristics were used for in-depth exploration of multiple views and perspectives relating to the subject of study to provide an enhanced understanding of the phenomenon.

The study involved experienced employees' participation, which included senior managers and mid-level managers involved in the strategic organisational business processes planning and operations in the PG. The participants were selected based on their knowledge, having worked in areas concerning strategic business and IT processes in the PG. Also, they all had work experience of three years in the PG. A total number of 20 employees with work experience of three years were initially selected to participate in the study. However, only 14 were able to participate because of their busy schedules and reassignment of portfolios or positions.

Semi-structured interviews were conducted to explore participants' perceptions and understanding of the BITA status within the PG. Nine one-on-one interviews were conducted with individual participants, and a group interview with five participants was also performed. In total, 14 participants were involved in the research. Data were collected with the permission of the participants and authorities within the office premises of the organisation.

The data collected were analysed to identify the influence of deployed EAs on the BITA status of the PG's business processes using the content analysis technique. Afterwards, data were assigned to related pre-set categories of the Luftman (2000) framework used as the analytical lens. The data were then sorted and further refined and grouped to reveal similarities and emergent patterns from the data. The research methodology is discussed in detail in Chapter 3.

1.9 Ethical considerations

The study adhered to the ethical values of the Faculty of Informatics and Design at the Cape Peninsula University of Technology (CPUT), as well as to general values governing research in science. Participation in this study was voluntary, and no participant was lobbied through payment or any form of incentive. All the participants who volunteered to take part in the study were well informed about the intention of the data gathering and how the gathered data would be applied. The researcher collected data in a manner that was not harmful to the participants or to the environment. The

collected data were secured, and access to data was restricted to authorised persons only.

Participants were duly well informed of their right to partake and to withdraw at any time without any repercussions. Permission was sought and obtained from the PG before data were collected. Participants also signed consent letters that granted the researcher permission to conduct the interviews, and the choice of voice recording was indicated to the participants. All necessary ethical considerations and guidelines were adhered to throughout the study.

1.10 Delineation of the research

The research study was limited to a large PG in SA. The study did not focus on the SA National Government or any other government arm except the PG. Also, the study did not focus on the deployment or implementation of EA in the PG. Of the 13 departments in the PG, the focused was only on the Department of the Premier where ICT and Business planning are coordinated. Other PGs in SA were not considered for this study, as there was no evidence or report of any of them successfully implementing EA strategy within their business processes as at the beginning of this research.

1.11 Contribution

The research adds to the present body of knowledge in the field of strategic alignment of IT strategy within the public sector by providing new insight into, and a better understanding of BITA's role in business processes and service delivery within PuOs. The study also provides new knowledge on BITA's status within a specific PG in SA and highlights the challenges and constraints faced in a bid to achieve BITA. The study may assist the PG with identifying areas where there is a need for improvement within their business processes. Furthermore, the study provides convincing contributions that may assist the PG with developing policies and guiding EA implementation strategy as a means of achieving BITA in PuOs in SA and other comparable contexts.

1.12 Summary

The thesis consists of six chapters, arranged as follows:

In Chapter 1, the researcher introduces information technology (IT) and its roles to achieve organisational goals, particularly in a large provincial government (PG) in South Africa. Also, the importance of IT alignment and IT governance at all organisational levels according to business goals is emphasised to achieve the desired return on investment. Furthermore, other common concepts and

terminologies used in subsequent chapters are mentioned and elaborated on in corresponding sub-sections. The research problem and questions are presented, with sub-research questions 1.1, 1.2, and 1.3 focusing on communication, governance, and partnership in the PG, respectively. The research methodology and design are briefly discussed, and the research ethics are explained.

In Chapter 2, the researcher presents a comprehensive review of available literature, covering various aspects of information technology, business organisation structures (private and public organisations), and business and IT alignment. Different alignment classifications, levels, models, and means of achieving alignment are also reviewed. Finally, a conceptual framework to achieve BITA in a public organisation is discussed.

In Chapter 3, the detailed research design and methodology employed to investigate the research problem of this study are presented. This includes the underlying research philosophy, insights into the ontology, epistemology, research paradigms, and approach that guided the overall of this research. The chapter concludes with a description of the ethical statement that covers the voluntary participation of participants.

In Chapter 4, the researcher describes the data analysis procedure and presentation of the research findings. This includes a contextual description of the background profile of participants, a summarised descriptive presentation of data responses, and a summary of findings on communication between businesses and IT governance. It also includes the basis of the partnership between businesses, IT stakeholders, and knowledge of EA elicited from the responses of the participants.

In Chapter 5, a detailed discussion of these research findings is provided, including the practical implication and application of the findings on BITA. These findings are discussed under significant themes derived from the data analysis, namely, strategic IT planning, transition of the strategic plan to implementation, stakeholder engagement, governance structure, and human interaction.

In Chapter 6, significant conclusions are drawn. Practical recommendations to guide improved practices and policy making on EA implementation strategies are also discussed. Finally, potential areas for future research and the limitations of the study are highlighted.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

The chapter presents a literature review based on broad aspects relating to Business and Information Technology (IT) alignment in an organisation. The chapter covers specific concepts related to business organisation, business strategy, IT in business, means of achieving alignment, business and IT alignment, alignment classification, the Strategic Alignment Model, levels of alignment and a summary. The chapter is divided into 14 sections. The first section is the introduction to Chapter 2. The second, third, and fourth sections cover business organisation, business strategy, and IT, respectively. The fifth, sixth and seventh sections discuss means of achieving alignment, business and IT alignment, and alignment classification. The eighth, ninth and tenth sections cover the strategic alignment model, different alignment perspectives of the Strategic Alignment Model, and the Strategic Alignment Maturity Model's six categories. The eleventh, twelfth and thirteenth sections cover the five levels of the Strategic Alignment Model, Maturity Model, and means of achieving BITA in a public sector while the fourteenth section summarises the chapter.

2.2 Business organisation

The survival of many business organisations (private and public sectors) is dependent on their business, operational, and environmental strategies to meet expected organisational goals (Johnson, Scholes & Whittington, 2008; Calabrese, Costa, Levaldi & Menichini, 2018). In the private sector, ROI, customer satisfaction and retention are the main priority, while in the public sector, governance, stakeholder activity and citizenry are the natural actors and beneficiaries that shape the focus of decisions and strategies (Johnson et al., 2008; Wang, Chen & Benitez-Amado, 2015). The sub-sections below present a comprehensive explanation of the business sector in general, and in a South African context, with more focus on the dynamics of the public sector and its relationship with BITA.

2.2.1 Private sector

The private sector is that division of the national economy, which is not directly under government control (Rasul & Rogger, 2016). The private sector refers to the enterprises owned by private individuals or group of people with a generally defined objective (Gbandi & Amissah, 2014). The private sector includes the personal sector (households) and the corporate sector (companies), utilising most of the resources within an economy (Morgan, Ensor & Waters, 2016). As has been argued, the private sector aims to deliver services that meet the client's demand, thus making a profit in the process. Summarily, Rasul and Rogger (2016) assert that the private sector's goal

differs from that of the public sector in the sense that the primary intent of the enterprise is profit generation, which is in contrast to the responsibility of service delivery by the public sector.

In countries such as China where the government asserts more control of the economy, the public sector makes up most of the economy, and the government usually ensures that private sector businesses operate within strict and specific regulations (Long & Wu, 2016). The private sector has proactively extended IT's culture to actualise its main goals, which include efficient and profitable service delivery to its clients (Morgan et al., 2016). As such, private organisations (PrOs) are seen as more adept at actualising the important role expected of IT strategies, namely, aligning the use of IT systems to maximise the output from organisational business objectives (Montazemi & Qahri--Saremi, 2015). Furthermore, the optimal expectant achievement of set goals is described by the term 'IT alignment', which is achieved by ensuring that the correct IT tools are identified and deployed correctly and efficiently to meet the desired business objective (Long & Wu, 2016). Examples of PrOs that successfully achieve a significant level of BITA are banks in the financial sector, mobile phone service providers in the telecommunication sector, and a few highly rated tertiary education institutions (Masondo, 2018).

It has been observed that private sector business organisations are able to achieve Business and IT alignment because of their focus on service delivery that is suited to the demands of their clients (Schlosser, Beimborn, Weitzel & Wagner, 2015). In turn, Business and IT alignment translate into a larger profit margin, which is the primary motivation of the private sector business (Rasul & Rogger, 2016). Hence, Schlosser et al. (2015) and Long and Wu (2016) suggest that strategies used for effective service delivery in the private sector can also be employed in the public sector to provide services to the citizenry.

2.2.1.1 The South African private sector

There has been a noticeable increase in private sector investment growth rate since the inception of democratic dispensation in SA in 1994; nevertheless, the investment rate is actually lower than those witnessed in the late 70s and the early 80s (Masondo, 2018). During the latter period before the inception of democracy, investments decreased because of the nature of the political climate and uncertainty in the market, such as sanctions and other economic pressure on the regime (Asongu & Odhiambo, 2018). The inception of democracy brought about an increase in investments as a result of political emancipation and anticipated economic growth. The situation resulted in the government acquiring shares in the likes of the automotive sector and

other big economic sectors, boosting SA's production capacity in a globally competitive market (Masondo, 2018). Furthermore, there has been a significant upsurge of growth in many private sector areas, such as banking, mining, agriculture, telecommunication, education, and tourism, where local market players have become more involved internationally (Masondo, 2018; Pereira & Redento, 2019).

Many of the investment growth experienced in SA since the inception of democracy became visible with the strategic alignment of technology with business processes to maximise profit making (Amankwah-Amoaha, Egbetokunb, & Osabutey, 2018). Investment in different segments of the private sector through innovative means brought about quality and standards in products and services to consumers, and created employment opportunities for the populace, thereby giving them access to goods and services, at the same time, investors could also enjoy gains in their profit margins (Asongu & Odhiambo, 2018). Iyamu (2009) thus argue that the growth and alignment of businesses and IT in the private sector contribute immensely to gross domestic product (GDP) growth of a country, as witnessed in SA. This means big corporations are successfully aligning their IT and business strategies to a good effect, as seen in the banking, financial, telecommunication, and manufacturing sectors, among others. The evidence thus indicates the successful implementation of BITA in private sector operations (Iyamu, 2009; Dang & Pekkola, 2016a).

In SA, many of these big corporations and fast-growing enterprises in the private sector are listed on the Johannesburg Stock Exchange (JSE), with evidence and a history of innovative service and product deliveries. Literature has shown that several documented investigations have been carried out on BITA implementation in PrOs (Iyamu, 2009; Asongu & Odhiambo, 2018; Chariri, 2019). Based on a review of the literature, Avila et al. (2017) found seven different types of benefits in public sector IT projects, which are categorised into final beneficiaries and intermediate beneficiaries. The benefit types for final beneficiaries are financial, political, social, and strategic benefits, while effectiveness, efficiency, and enabling are the benefits types for intermediate beneficiaries (Avila, Sastoque, & Cuevas, 2017).

2.2.2 Public sector

The public sectors are part of the economy responsible for providing various governmental services, with a dutiful role akin to social responsibility (Verbeeten, 2008). The public sector in SA refers broadly to the entities that exist and people employed for public service delivery to the citizenry (The Presidency, 2008). The government drives the public sector, and it is citizen-focused and social services-

oriented (Van Dooren, Bouckaert & Halligan, 2015). Some of the services rendered by the public sector are shown in Table 2.1.

Table 2.1: Some of the services government renders to the citizen

Government Parastatal	Services
Military	Defence against external enemies of the state
Police	Enforce law and order
Public Infrastructure and Transport System	Public roads, bridges, tunnels, water supply, sewers, electrical grids, telecommunications, etc.
Education	Basic and Tertiary Education
health Care	Paramedical services, children clinics and hospitals

The context of the public sector varies from country to country. However, the public sector's primary aim is to provide services at a reduced price or at no cost to benefit society (Alhujran, 2009; Dang & Pekkola, 2016a). Therefore, the public sector's primary aim is not to generate profit but to serve its citizenry (Kim, Trimi & Chung, 2014). Various organisations and agencies within the public sector are tasked with the specific responsibility of governance and service delivery to the citizenry (Morgan et al., 2016). These organisational bodies within the public sector can be broadly classified as one of two types:

- Entities funded directly by the government
- Entities publicly owned, where the government owns the majority of the company's shares (Morgan et al., 2016)

The provision and improvement of service provided to clients are essential in both the public and private sectors, with different objectives and similar goals. In a quest to deliver quality services to citizenries, Long and Wu (2016) suggest that the citizens from all social categories are considered taxpayers, with rights to quality municipal services without any form of discrimination. Thus, PuOs are often burdened with avoiding discrimination while accommodating the uniqueness of citizens' demands (Morgan et al., 2016). Several authors affirm that the goal of delivering discrimination-free tailored services to citizens through the public sector can be realised using IT as a tool that serves as a means to an end (Nissenbaum & Kornhauser, 2014; Rai, 2017). IT has been recognised to be useful in designing solutions that help meet public sector service delivery goals (Georghiou, Edler, Uyarra & Yeow, 2014).

For example, as a result of BITA in SA's health sector, the implementation of EDRMS (Electronic Document and Records Management System) has transformed the sector and makes the distribution of proper health service delivery more convenient and

faster (Ruxwana, Herselman, Pottas & Ouma, 2010; Ab Aziz, Yusof & Mokhtar, 2019). In addition, eHealth is advancing the medical knowledge of citizens and their understanding of managing their health through disease-related empowerment, thereby improving prevention and early diagnosis of several diseases (Ruxwana et al., 2010; Carvalhoa, Rochab, Van de Weteringc, & Abreua, 2019). Furthermore, independent living and active ageing were enabled for the ageing populace (Ruxwana et al., 2010; Erasmus, 2014; Els & Cilliers, 2017). Therefore, it can be argued that IT's capability to improve service delivery in the private sector can also be replicated in the public sector to deliver quality services to the citizenry (Schlosser et al., 2015; Long & Wu, 2016).

2.2.2.1 The South African public sector

The Republic of South Africa has three governmental branches whose jurisdiction and responsibility are independent of each other, namely, the Executive Branch, the Legislative Branch and the Judiciary Branch. These three branches of government are discussed below in detail.

i) The Executive

The Executive of government comprises the President (Head of State), Deputy President, ministers, and other Cabinet members (SA Government, 2016). While the President exerts executive authority and spearheads other meetings, the other executive members prepare and initiate legislation for submission to Parliament for approval (SA Government, 2016; SAHO, 2019). The policy is then deployed by running the country's administration via different government departments (SA Government, 2016). However, the Executive is answerable to Parliament for its decisions and policies (SA Government, 2016).

ii) The Legislature (Parliament)

The Legislature, otherwise known as Parliament, consists of the National Assembly and National Council of Provinces, whose members are voted in by the people of SA (SA Government, 2016). The National Assembly's primary obligation is to elect the President, pass laws, ensure adequate executive performance, and provide a forum for the representatives' public debate (Murray, 2006; SA Government, 2016). The National Council of Provinces also makes laws and provides a forum for debate at the provincial level to ensure that provincial welfares are adequately addressed and characterised in the government's national scope (SA Government, 2016). The local government representatives also participate in deliberations within the National Council of Provinces in specific cases (SA Government, 2016; SAHO, 2019).

iii) The Judiciary

The Judiciary comprises the courts, namely, the Constitutional Court, Supreme Court of Appeal, High Courts, Magistrates' Courts and other courts established through the Act of Parliament (SA Government, 2016). The Chief Justice of SA is the head of SA's Judiciary in agreement with the constitution, and courts must be independent and act justly (SA Government, 2016; SAHO, 2019). Parliament and Executive must also assist the courts in ensuring its dignity, accessibility, effectiveness, independence and impartiality in dealing with cases that require the interpretation of the law and application of constitution (Murray, 2006; SA Government, 2016).

2.2.2.2 The spheres of governance in South Africa

The national government structure is also replicated at the provincial level of government in SA (ETU, 2018). The Executive Branch of the government develops policies that control PuOs' activity and governance responsibility in the mainstream (SA Government, 2016; ETU, 2018). The government is responsible for making policies and laws regarding citizens' rights and obligations and ensures adequate delivery of services (ETU, 2018). The government also collects tax revenue to provide services and infrastructure to better all the citizens, especially the poor (SA Government, 2016; ETU, 2018). The South African Constitution sets the rules for how the government operates (SA Government, 2016; ETU, 2018). As shown in Table 2.2, there are three spheres of governance in South Africa, namely: (i) National Government; (ii) Provincial Government; and (iii) Local Government.

Table 2.2: Three spheres of government in South Africa (ETU, 2018:1)

SPHERE	LEGISLATURE	EXECUTIVE	ADMINISTRATION
NATIONAL	Parliament	President and Cabinet	Directors General and departments
PROVINCIAL	Legislature	Premier and Executive Council	Heads of Department and staff
LOCAL	Council	Mayor and Mayoral Committee	Municipal Manager, HoDs and staff

As stipulated in the Constitution, the spheres of government are autonomous, idiosyncratic, inter-related and inter-dependent, and not hierarchical (Nganje, 2015; ETU, 2018). In the same vein, the three spheres of government all operate according to the Constitution and laws and policies created by National Parliament (ETU, 2018; SAHO, 2019). Government is made up of three fragments:

- i) **The elected members (Legislature)** represent the public; their primary function is to approve policies and laws and monitor the work of the Executive and departments (SA Government, 2016; ETU, 2018).
- ii) **Cabinet or Executive Committee (Executive)** co-ordinates policymaking and laws and oversee execution by government departments (ETU, 2018).
- iii) **Departments and public servants** are responsible for governmental activities and are accountable to the Executive (SA Government, 2016).

Although Judiciary is not included in Table 2.2, it forms part of Government and is deemed autonomous, so courts can defend citizens and the law without government prejudice (ETU, 2018). Judiciary autonomy is the foundation of constitutional democracy; it guarantees the supremacy of the Constitution. Section 2.2.2.3 will focus more on the PG as the subject of the study (SA Government, 2016; ETU, 2018).

2.2.2.3 The provincial governments (PGs) in South Africa

PGs collaborate closely with the National Government of South Africa (SA) to stipulate laws and provide services to the country's citizenry (De Villiers, 2008; Kumar, Kumar, 2019). There are nine provinces in SA, as shown in figure 2. 1, and all the provinces have the same governing structure, namely, Provincial Legislatures, Provincial Premiers, Provincial Departments and Provincial Entities (De Villiers, 2008; Kumar, 2019). The SA provincial structures are the same across all the provinces (SAHO, 2019). However, their number of departments and entities are not the same because each province has its own autonomy.

i) Provincial Parliament or Legislatures of the PG

The Provincial Parliament is tasked with the creation of laws for the province, which cater for the following sectors as stipulated in the SA Constitution:

“Environment, Health services, Housing, Language policy, Nature conservation, Police services, Provincial public media, Public transport, Regional planning and development, Agriculture, Road traffic regulation, Tourism, Trade and industrial promotion, Traditional authorities, Urban and rural development, Vehicle licensing, Welfare services, Abattoirs, Ambulance services, Liquor licences, Museums other than national museums, Provincial planning, Provincial cultural matters, Provincial recreation and activities, Provincial roads and traffic” (SA Provincial Government, 2018:1-2).



Figure 2.1: South African provincial governments

Provincial Parliament consists of different political parties, as shown in Table 2.3. The majority party possesses the highest number of seats, followed by the second majority party (also known as the opposition party), which takes up the second highest number of seats in the House of Parliament.

Table 2.3: South Africa’s provincial government legislature seats and parties

Legislature	Seat					
	ANC	DA	EFF	IFP	Others	Total
Eastern Cape Provincial Legislature	44	10	5	0	3	63
Free State Provincial Legislature	19	6	4	0	0	30
Gauteng Provincial Legislature	37	20	11	1	1	73
KwaZulu-Natal Provincial Legislature	44	11	8	13	4	80
Limpopo Provincial Legislature	38	3	7	0	0	49
Mpumalanga Provincial Legislature	22	3	4	0	0	30
North West Provincial Legislature	21	4	6	0	0	33
Northern Cape Provincial Legislature	18	8	3	0	0	30
Western Cape Provincial Legislature	12	24	2	0	3	42
Total	255	89	50	14	11	430

ii) Premier of the provincial government (PG)

The Premier of the PG serves in an executive position mandated by the Constitution to head the PG. The Premier appoints the Provincial Cabinet, and together they make up the Executive Branch of the PG (SA Government, 2016).

iii) Provincial government departments

Provincial governments are composed of various departments, as shown in Table 2.4. There are public entities in all provincial governments that are in different provinces, as shown in Table 2.5. The role of implementing laws and providing services to the members of the PG rests firmly on these various departments (De Villiers, 2008; SA Government, 2016). The PGs budgets are not the same because each province considers what is of importance to their citizens in their financial year (ETU, 2018).

Table 2.4: South Africa's provincial government departments

Province	Name of the Departments
Eastern Cape	<ol style="list-style-type: none"> 1. Cooperative Governance and Traditional Affairs 2. Economic Development, Environmental Affairs and Tourism 3. Education 4. Health 5. Human Settlements 6. Provincial Treasury 7. Public Works 8. Rural Development and Agrarian Reform 9. Safety and Liaison 10. Social Development 11. Sport, Recreation, Arts, and Culture 12. Transport
Free State	<ol style="list-style-type: none"> 1. Agriculture and Rural Development 2. Cooperative Governance and Traditional Affairs 3. Economic, Small Business Development, Tourism and Environmental Affairs 4. Education 5. Health 6. Human Settlements 7. Police, Roads, and Transport 8. Provincial Treasury 9. Public Works and Infrastructure 10. Social Development 11. Sport, Arts, Culture, and Recreation
Gauteng	<ol style="list-style-type: none"> 1. Agriculture and Rural Development 2. Co-operative Governance and Traditional Affairs 3. Community Safety 4. e-Government 5. Economic Development 6. Education 7. Health 8. Infrastructure Development 9. Roads and Transport 10. Social Development 11. Sport, Arts, Culture, and Recreation 12. Treasury

Province	Name of the Departments
KwaZulu-Natal	<ol style="list-style-type: none"> 1. Agriculture and Rural Development 2. Arts and Culture 3. Co-operative Governance and Traditional Affairs 4. Community Safety and Liaison 5. Economic Development, Tourism and Environmental Affairs 6. Education 7. Health 8. Human Settlements 9. Provincial Treasury 10. Public Works 11. Social Development 12. Sport and Recreation 13. Transport
Limpopo	<ol style="list-style-type: none"> 1. Agriculture 2. Community Safety 3. Cooperative Governance, Human Settlements, and Traditional Affairs 4. Economic Development, Environment and Tourism 5. Education 6. Health 7. Provincial Treasury 8. Public Works, Roads, and Infrastructure 9. Social Development 10. Sport, Arts, and Culture 11. Transport
Mpumalanga	<ol style="list-style-type: none"> 1. Agriculture, Rural Development, Land and Environmental Affairs 2. Co-operative Governance and Traditional Affairs 3. Community Safety, Security, and Liaison 4. Culture, Sport, and Recreation 5. Economic Development and Tourism 6. Education 7. Health 8. Human Settlements 9. Provincial Treasury 10. Public Works, Roads, and Transport 11. Social Development
North West	<ol style="list-style-type: none"> 1. Community Safety and Transport Management 2. Culture, Arts, and Traditional Affairs 3. Economy and Enterprise Development 4. Education and Sports Development 5. Finance 6. Health 7. Local Government and Human Settlement. 8. Public Works and Roads 9. Rural, Environment and Agricultural Development 10. Social Development 11. Tourism

Province	Name of the Departments
Northern Cape	<ol style="list-style-type: none"> 1. The Land Reform, Agriculture, and Rural Development 2. Human Settlements, Co-operative Governance, and Traditional Affairs 3. Tourism and Economic Development 4. Education 5. Nature Conservation, and Environment 6. Health 7. Provincial Treasury 8. Roads and Public Works 9. Social Development 10. Sport, Arts, and Culture 11. Transport, Safety, and Liaison
Western Cape	<ol style="list-style-type: none"> 1. Agriculture 2. Community Safety 3. Cultural Affairs and Sport 4. Economic Development and Tourism 5. Education 6. Environmental Affairs and Development Planning 7. Health 8. Human Settlements 9. Local Government 10. Provincial Treasury 11. Social Development 12. Transport and Public Works

iv) The provincial government entities

The service sector has been credited as being the leading driver of trade and industry progression and employment creation in the province (Kumar, 2019). The PG maintains a noteworthy advancement in the agri-processing value chain and numerous services sectors (Kanyane & Sausi, 2015). Agri-processing and tourism are vital sectors that foster all-encompassing growth, as both are employment-driven, thus enhancing efficiency and allowing for sustainable employment for all majority skill sets in both urban and rural areas (SA Government, 2016; Kumar, 2019). Both sectors can likewise be significant recipients of foreign exchange. Developments in the gas sector permit an overhaul of PG's energy environment to comprise additional viable, inexpensive, and environmentally friendly options (Kanyane & Sausi, 2015).

Driven by increasing demand from local retailers, the clothing sector is experiencing subtle signs of improvement (De Villiers, 2008; Kumar, 2019). Sustained growth in other sectors results in the increasing need for infrastructural developments, leading to significant gains in the construction sector (SA Government, 2016). As an outcome of the give-and-take nature of growth in these sectors, the infrastructural and construction progression in the Province is anticipated to supersede national progression. The PG entities in South Africa are shown in Table 2.5.

Table 2.5: South Africa's provincial government entities

Province	Name of the Entities
Eastern Cape	<ol style="list-style-type: none"> 1. COEGA Development Corporation (CDC) 2. East London Industrial Development Zone (ELIDZ) 3. Eastern Cape Development Corporation (ECDC) 4. Eastern Cape Gambling Board (ECGB) 5. Eastern Cape Liquor Board (ECLB) 6. Eastern Cape Parks and Tourism Agency (ECPTA) 7. Eastern Cape Provincial Arts and Culture Council (ECPACC) 8. Eastern Cape Rural Development Agency (ECRDA) 9. Eastern Cape Socio-Economic Consultative Council (ECSECC) 10. Kangela Citrus Farm 11. Mayibuye Transport Corporation (MTC) 12. Ncera Macadamia
Free State	<ol style="list-style-type: none"> 1. Free State Development Corporation (FDC) 2. Gambling, Liquor, and Tourism Authority
Gauteng	<ol style="list-style-type: none"> 1. Automotive Industry Development Centre (AIDC) 2. Automotive Supplier Park (ASP) 3. Constitution Hill Development Company (ConHill) 4. Cradle of Humankind World Heritage Site (COHWHS) 5. Dinokeng 6. g-Fleet Management 7. Gauteng Enterprise Propeller (GEP) 8. Gauteng Film Commission (GFC) 9. Gauteng Gambling Board 10. Gauteng Growth and Development Agency (GGDA) 11. Gauteng IDZ Development Company (GIDZ) 12. Gauteng Infrastructure Financing Agency (GIFA) 13. Gauteng Liquor Board 14. Gauteng Partnership Fund (GPF) 15. Gauteng Tourism Authority 16. Gautrain Management Agency (GMA) 17. Greater Newtown Development Agency 18. InvestSA One Stop Shop 19. The Innovation Hub (TIH)
KwaZulu-Natal	<ol style="list-style-type: none"> 1. Agribusiness Development Agency (ADA) 2. Amafa Heritage AkwaZulu Natali 3. Dube TradePort Corporation (DTPC) 4. Ezemvelo KZN Wildlife 5. Ithala Development Finance Corporation Limited 6. Ithala SOC Limited 7. KwaZulu-Natal Gaming and Betting Board 8. KwaZulu-Natal Liquor Authority 9. KwaZulu-Natal Sharks Board Maritime Centre of Excellence 10. KZN Growth Fund

Province	Name of the Entities
	<ol style="list-style-type: none"> 11. Mjindi Farming 12. Richards Bay Industrial Development Zone (RBIDZ) 13. Tourism KwaZulu-Natal 14. Trade and Investment KwaZulu-Natal (TIKZN) 15. Ubuciko Twines and Fabrics
Limpopo	<ol style="list-style-type: none"> 1. Corridor Mining Resources 2. Gateway Airports Authority Limited (GAAL) 3. Great North Transport 4. Limpopo Economic Development Agency (LEDA) 5. Limpopo Gambling Board 6. Limpopo Tourism Agency 7. Risima Housing Finance Corporation 8. Roads Agency Limpopo (RAL) 9. Venteco
Mpumalanga	<ol style="list-style-type: none"> 1. Mpumalanga Economic Growth Agency (MEGA) 2. Mpumalanga Economic Regulator (MER) 3. Mpumalanga Regional Training Trust (MRTT) 4. Mpumalanga Tourism and Parks Agency
North West	<ol style="list-style-type: none"> 1. Atteridgeville Bus Services SOC Ltd 2. Dirapeng 3. Kgama Wildlife Operations 4. Mmabana Arts, Culture and Sports Foundation 5. North West Development Corporation (NWDC) 6. North West Gambling Board 7. North West Parks Board 8. North West Provincial Arts and Cultural Council 9. North West Tourism Board 10. Northwest Star SOC Ltd 11. Northwest Transport Investments SOC Ltd (NTI)
Northern Cape	<ol style="list-style-type: none"> 1. Kalahari Kid Corporation 2. McGregor Museum 3. Ngwao-Boswa Ya Kapa Bokone (NBKB) 4. Northern Cape Arts and Culture Council 5. Northern Cape Economic Development, Trade and Investment Promotion Agency (NCEDA) 6. Northern Cape Gambling Board 7. Northern Cape Liquor Board 8. Northern Cape Tourism Authority
Western Cape	<ol style="list-style-type: none"> 1. The Cape Town and Western Cape Tourism, Trade and Investment Promotion Agency (Wesgro) 2. CapeNature 3. Casidra SOC Ltd 4. Government Motor Transport 5. Heritage Western Cape 6. Saldanha Bay IDZ Licencing Company SOC Ltd 7. Western Cape Cultural Commission 8. Western Cape Gambling and Racing Board 9. Western Cape Housing Development Fund

Province	Name of the Entities
	10. Western Cape Language Committee 11. Western Cape Liquor Authority 12. Western Cape Police Ombudsman (WCPO)

v) Challenges of Public Sector Governance in South Africa

This research was focused on the public sector, with emphasis placed on the provincial government (PG), which is tasked with the responsibility of administration and governance to provide service delivery to the citizenry. The decisions made at PG level have a far-reaching effect on society and world economic systems at large. Having recognised the importance of technology, the South African government implemented several technological initiatives to enhance the quality of service delivery to its people and improve their standard of living (Mutula & Mostert, 2010). SA's service delivery is guided by the principle of public service for all under the brand known as "Batho Pele", which is translated as "people first" (Mutula & Mostert, 2010). Despite this well-articulated service delivery principles, "concerns about poor service delivery continue to be voiced unabated" (Mutula & Mostert, 2010:49). Meyer (2007) found that most users at provincial and local levels were unhappy because of their limited access to public services via the Internet. A global study conducted by Naidoo (2007) on 15 well-performing economies found that the costs of ADSL (broadband) in SA were "139 per cent higher than the average rate in the nations surveyed" (Mutula & Mostert, 2010:44). Thus, the South African government requires more than investing into technological initiatives and formulating policies (Mutula & Mostert, 2010); there is a need for the strategic alignment of the business and IT processes in order to deliver efficient services to the populace.

2.3 Business strategies

All businesses experience varying levels of pressures or threats to their continuity and profitability (Johnson et al., 2008; Queiroz, 2018), because of factors such as the invention of revolutionary technologies, the emergence of new competitors, unfriendly shifts in a market order, and new regulatory requirements. These factors could be possible sources of survival threats to businesses in their immediate environment, (Johnson et al., 2008) often compelling organisations to develop formidable strategies for their businesses (Johnson et al., 2008). The business strategy describes how an organisation matches its innate potential with its external environment (Tallon, Coltman, Queiroz. & Sharma, 2016). Moreover, business strategy guides how an organisation sets its goals and objectives to meet the stakeholders' expectations (Buchalcevoa & Pour, 2018). Business strategy strengthens and improves the

operational wellness of an organisation, characterised by progressive change and transformation (Queiroz, 2018).

Authors argue that it could be more challenging to implement a strategy than to formulate a strategy (Bytheway, 2004; Valorinta, 2011; Buchalcevova & Pour, 2018). Formulating a strategy is easy, as it entails a discussion of the vision and then documenting it. However, implementing the strategy could be affected by the complexities of the organisation's culture and human behaviour (Tallon et al., 2016). An organisation's strategy statement could be either tactical or operational, depending on the business model being applied (Queiroz, 2018). However, it is necessary that the statement considers the current business structure and prevalent organisational culture (Bytheway, 2004; Versteeg & Bouwman, 2006). It is essential that business strategies foster relationships with IT to facilitate positive ROI and gain dynamic capability for competitive advantage in the market space. The threat to business survival becomes inevitable if business and IT are not continuously and suitably aligned to organisational goals (Johnson et al., 2008; Dahlberg, Hokkanen & Newman, 2017).

2.4 Information Technology in business

IT is a swiftly growing tool used in various aspects of human lives (Gilicka, 2015). The use of IT filters through every human activity, including economic (business), social, religious, cultural, health, and political activities (Akadiri, Olusanya & Omitola, 2009; Bexci & Subramani, 2013). Also, the use of IT is informed and influenced by different factors and values from different sectors and organisations (Venkatesh, Brown & Bala, 2012). Over the past three decades, the advent of IT interventions gaining rapid growth in all aspect of the economy cannot be ignored (Venkatraman, 1989; Zachman, 2009; Henderson & Venkatraman, 1990, 1991; Venkatesh et al., 2012; Alaeddini & Salekfard, 2013; Soomro, Shah & Ahmed, 2016).

The deployment and use of IT by many organisations have evolved from the period where IT was simply utilised as workplace backup or support, to playing a significant role in the development of enterprises (Rahbar et al., 2013). For instance, business strategies are now supported by IT initiatives to enable new strategies for expanding enterprises (Rahbar et al., 2013). IT executives are required to advance their ability to accommodate value and innovations that accompany the new era in the IT evolution (Craig et al., 2007; Rahbar et al., 2013). Therefore, the ability of organisations' to successfully manage IT resources as part of their business strategies and sustain their competitive advantage in different market spaces becomes paramount (Rahat, 2014; Tai et al., 2019).

There is growing acknowledgement of the pivotal role IT plays in improving organisational efficiency, thereby ensuring quality product and service delivery in organisational development. IT has made a significant contribution to many sectors, resulting in improved procedures such as online educational facilities used by tertiary institutions, and online marketing and advertisement (Waterson, 2014; Mizutani, Aoki, Coluzzi, Yukna, Wang, Pavlic & Izumi, 2016). Furthermore, IT has introduced new ways of rendering health services to citizens and patients, such as mobile clinics, virtual wards, Electronic Patient Record (EPR) systems, and mobile and assisted living technologies, among others (Waterson, 2014). These have helped improve traditional health care service delivery (Waterson, 2014; Zhang et al., 2018).

Within the financial sector, IT has provided a platform for banking customers to perform financial operations outside regular banking hours (Montazemi & Qahri-Saremi, 2015). With this advancement in the financial sector, it has been reported that there is the possibility of customers being able to access their funds at all times through online banking, mobile banking, and many other banking products via IT platforms (Montazemi & Qahri-Saremi, 2015). Similarly, retail businesses, through e-commerce, also enjoy the impact of rapid evolution in IT. This enables the customer to shop online for various products and services without leaving the comfort of their homes or living environments (Mohamed, Lim & Megicks, 2016).

IT has appreciably transformed organisational and business processes worldwide with vast networking potential, bringing information service and service delivery closer to customers in the business sector (Adeniran, 2011; Katunga, 2013). According to Coleman and Papp (2006) and Soomro et al. (2016), the appropriate application of IT for business needs, objectives and strategies has been of great concern to IT and business executives. Thus, businesses require the fusion of all relevant organisational strategies, which involves the appropriate application of IT to business processes. This fusion is generally referred to as 'alignment'.

According to various research projects conducted, alignment is one of the high-ranking concerns of senior managers in organisations (Craig et al., 2007; Silvius, 2008b; Rahbar et al., 2013). Therefore, the researchers' observations reflect the complexities in achieving suitable business and IT alignment (Craig et al., 2007; Silvius, 2008b; Rahbar et al., 2013). Business and IT alignment often referred to as Business and IT alignment (BITA), is a fundamental topic within IT management science (Alaeddini & Salekfard, 2013). Alignment for different organisations and businesses could vary based on the organisation's needs/ processes and could also

depend on the organisation's efforts to successfully align their business processes with IT, using appropriate EA frameworks.

2.5 Means of achieving alignment

Based on the abundance of literature available, it has been established that different frameworks can be used to achieve BITA in an organisation. These include Enterprise Architecture (EA) (Alaeddini & Salekfard, 2013), IT Infrastructure Library (ITIL) (Rahbar et al., 2013), Control Objectives for Information and related Technology (COBIT) (Guldentops, Hardy, Hesschl & Stroud, 2005), enhanced Telecom Operations Map (e-TOM) (Ronco & Kelly, 2004), and Supply-Chain Operations Reference Model (SCOR) (Williams, 2006). This section presents a discussion of frameworks commonly used as a means to achieve BITA.

2.5.1 Enterprise Architecture (EA)

Enterprise Architecture (EA) is the representation of an organisation's business processes, IT systems, interrelationships between IT systems and business processes, including the extent to which systems and processes are shared by units of the organisation (Simon, Fischbach & Schoder, 2014). EA has been defined as "the organising logic for business processes and IT infrastructure, reflecting the integration and standardisation requirements of the company's operating model" (Ross, Peter & Robertson, 2006:47). From this definition, it can be deduced that EA relates to operating model, business processes, standardisation and integration, which represent all levels within the enterprise. EA can also be regarded as an over-all conceptualisation of how a company could be enabled and how its strategies could be executed harmoniously (Simon et al., 2014). According to Tamm et al. (2011), a high-quality EA should provide accurate insight into the current operating platform, vision for the future operating platforms in line with the organisation's strategic goals, and the pathway of moving towards achieving the organisational vision.

Alaeddini and Salekfard (2013) posit that the EA model is a detailed depiction of the structure and functions of an enterprise; the division of an enterprise into sub-systems shows the relationship between sub-systems and the way sub-systems relate to the external environment. As such, architects of the enterprise see EA as a technique, tool, artefact descriptor, reference model, process model, and guidance to produce architectural descriptions and a plan for an enterprise (Valorinta, 2011).

(Kang, Lee & Kim, 2010) suggest that the following conditions could impair the efficacy of realising organisational objectives using EA:

- Enterprise procedures are not implemented in line with suitable strategies

- Enterprise properties or resources are not backed-up
- Members of the enterprise do not adequately understand the strategies which they contribute to the business

Through EA, it has been observed that organisations should implement enterprise integration to cope with dynamic business environments (Kang et al., 2010). Hence, EA is used as a framework to align business and IT strategy, and the concept of BITA is founded on the ideas and principles entrenched in EA frameworks (Pereira, 2005).

2.5.2 Purpose of EA

The EA framework was introduced in the 1970s (King, 1978; Schweda, 2011). This development was initiated for enterprises to reduce operating costs, improve BITA and project execution, and deal with the problem of system complexity (Simon et al., 2014). However, the challenges associated with system complexity often cause an organisation to overspend on building IT capacity, contributing very little to the organisation's BITA. These constraints make it difficult for seamless communication between IT systems and business (Roger, 2007). Because of the need to proactively enable BITA in organisations, several EA frameworks, such as the frameworks described below, were developed (Alaeddini & Salekfard, 2013):

- The Zachman Framework (Zachman, 1987)
- The Gartner Framework (Lapkin, 2005)
- Treasury Enterprise Architecture Framework (TEAF) (DoT, 2000)
- The Open Group Architecture Framework (TOGAF) (The-Open-Group, 2009)
- Department of Defence Architecture Framework (DoDAF) (DoD, 2007)
- Federal Enterprise Architecture (FEA) Framework (CIO-Council, 2001; Alaeddini & Salekfard, 2013).

Furthermore, the different approaches offer a pool of frameworks to accommodate the evolution of architectural planning within an organisation. One of the most remarkable enterprise architectures in this category is Zachman's framework (Zachman, 1987; Alaeddini & Salekfard, 2013). Zachman's EA framework provides both a framework and a model through which evolution and the preservation of activities are demarcated (Alaeddini & Salekfard, 2013). EA describes comprehensive approaches aimed at developing and maintaining architectural descriptions and business structures (Mayer, Aubert, Grandry & Feltus, 2016). However, the authors argue that the description of EA is mainly summed up as goals of the enterprise, the business processes, roles and functions of the business, information of the business, structures of the organisation, software applications, and computer systems.

According to Alaeddini and Salekfard (2013), all these functions belong to different classes of architectural layers, as shown in Table 2.6.

Table 2.6: Different classes of architectural layers

Different Classes of Architectural Layers
Business layer
Information layer
Application layer
Technology layer

In reality, EA models and deliverables are translated to inform fresh business trends, technology evolution, extended capabilities, and innovations (The-Open-Group, 2009; Alaeddini & Salekfard, 2013). The approach enables the smooth running of any organisation, which also focuses on system architecting. Therefore, it can be observed that EA translates all BITA elements into systems and processes, such as broader principles, capabilities and goals. As such, the enterprise is empowered by these processes to realise organisational goals. Similarly, Lucke, Krell and Lechner (2010) suggest that EA is a move towards enacting strategy in a manner that guides the architecting of solutions which are defined before development and project implementation, thereby providing better recommendations for systems operations.

Summarily, EA aims to define an organisation’s operating platform by providing guidelines for best practises and defining relationships, which include IT systems and business digitised processes that enable or automate the organisation’s core competencies (Ross, 2007; Tamm et al., 2011). Therefore, EA plays a crucial mediating role between business and IT strategy and provides a long-term vision for business processes and the effective use of IT systems in the organisation (Tamm et al., 2011).

2.6 Business and IT alignment (BITA)

According to Roberts and Grover (2012:581), alignment is “the degree to which the needs, demands, goals, objectives and/or structures of one component are consistent with the needs, demands, goals, objectives and/or structures of another component”. In studies conducted by Venkatraman (1989), Henderson and Venkatraman (1993), Luftman et al. (1993), Ciborra (1997), Broadbent et al. (1999), Smaczny (2001) and Silvius, Smit and Driessen (2010), alignment is aimed at linking IT and business plans. This is done to ensure the existence of a connection between IT and business strategies or to probe the fit between business needs and Information Systems (ISs).

The alignment of business and IT is crucial for organisations to manage and reduce complications in business processes (Bytheway, 2004; Valorinta, 2011). The argument for the concept of alignment in the context of resources is also supported by Opara and Tarabay (2010), who argue that alignment makes every effort to match an organisation's resources to the competitive context of the marketplace within which an organisation is situated. BITA thus enables organisations to leverage the benefits of an aligned focus, which provides direction to deploy IS effectively in organisations (Queiroz, 2018). However, different types of business alignment focus not only on the strategy and competitive context of the organisation but also on the IT alignment with the organisation's resources (Opara & Tarabay, 2010; Alaeddini & Salekfard, 2013; Alaeddini, Asgari, Gharibi, & Rad, 2017). Also, Chan and Reich (2007) observed that many organisations are becoming mindful of the importance of aligning business and IT, which has broadened the conceptualisation of alignment in business.

Over the years, research has led to the classification of alignment into five major components that are identifiable in the operational structures within business operations (Opara & Tarabay, 2010), as further expounded on in section 2.7.

2.7 Alignment classification

Alignment is classified into five major categories, viz.: IT, business, structural, contextual, and strategic alignment (Opara & Tarabay, 2010). These classifications of alignment in relation to achieving BITA are further described below.

2.7.1 IT alignment

In the business disciplines, it is observed that, as business strategy gains recognition, IT strategy also experiences the same recognition in IT departments (Baker & Jones, 2008; Zhang et al., 2018). Sabherwal et al. (2001) further noted that as the alignment of strategy and organisational resources produce performance benefits, IT resources and strategy alignment should also produce a positive result. The argument is attributed to the fact that IT strategy guides the deployment of resources and positions the organisation for better strategy execution and output (Opara & Tarabay, 2010; Burton, Story, Raddats & Zolkiewski, 2017).

It has been contended that the effect of BITA is more visible in countries categorised as newly industrialised, such as India and China (Rahbar et al., 2013; Jorfi et al., 2017). A practical scenario in these countries is the high level of environmental pollution regulations being implemented by the public sector to curb effects of climate change (Xi & Bowen, 2014; Pei et al., 2018). Many of these policies are still in the developmental stage, supported by IT alignment to provide environmentally friendly

solutions such as green IT, which can reduce the negative impact of IT waste from business organisations (Jorfi et al., 2017). This is a practical example of how BITA contributes to the improvement of service delivery and governance in the public sector.

2.7.2 Business alignment

This aspect of alignment focuses on aligning organisational strategy and resources in line with business objectives. Alignment emphasises the need for a strategic organisational mission to gain support from the organisation structure for the required resources (Sabherwal et al., 2001). Chandler (1962) suggested that organisational functions should not be allowed to operate independently (Opara & Tarabay, 2010; Reynolds & Yetton, 2015). Instead, organisations should have a long-term coordinated strategy, as posited by Opara and Tarabay (2010) and Street, Gallupe and Baker (2017). Furthermore, a well-aligned business in a well-positioned organisation is ready for strategic execution of business plans to yield performance benefits that will increase organisational competitiveness.

2.7.3 Contextual alignment

Contextual alignment is the harmonious relationship between the internal and external environments of the enterprise as a whole (Gajek & Sandberg, 2017). According to Khisro and Sundberg (2018:8), contextual alignment is the “connection between the enterprise as a whole, its boundaries and interaction with the external environment”. This classification enunciates architecture in terms of internal and external values to EA. Contextual linkage bridges the gap in terms of multiplicity legal regulations, intellectual property principles, and language multiplicity used between the internal and external environments (Magoulas, Hadzic, Saarikko & Pessi, 2009; Khisro & Sundberg, 2018). Contextual alignment, as described by Chan and Reich (2007) and Tai et al. (2019), focuses on macroeconomic and industry contexts in addition to cultural and national factors.

2.7.4 Structural alignment

Structural alignment refers to the degree of “structural fit” between IS and the business (Schlosser et al., 2015). Structural alignment relates to organisational structure, including IS decision-making, reporting relationships, (de)centralisation of IS services and infrastructure, and deployment of IS personnel (Donaldson, 2006). Chan (2002), as well as Lee and Lee (2016), assert that structural alignment aims to develop the business structure and IT support’s organisational objectives, and not to work against their purposes. The aim of structural alignment is for IS and business structures to support organisational objectives, not to have opposing purposes. Structural

alignment measures the fit between IT and organisation resources and their performance benefits (Chan, 2002; Opara & Tarabay, 2010).

2.7.5 Strategic alignment

Strategic alignment is the link between organisational and IT strategies (Baker & Jones, 2008; Sabherwal et al., 2001). Both the IT and organisational managers produce a strategic alignment that suits their organisational objectives. Strategic alignment has been shown to affect the success story of every business or organisation (Burton et al., 2017). Thus, information system researchers continue to focus on strategic alignment (Opara & Tarabay, 2010; Street, Gallupe & Baker, 2017). Strategic alignment draws more interest from the private sector, given the understanding that it plays a significant role in their financial balance sheets (Street et al., 2017). Large organisations, corporate consortiums and emerging small businesses have been able to successfully prioritise and effect strategic alignment to the benefit of their business operations (Burton et al., 2017). The private sector thrives on maintaining strategic alignment of business goals, unlike the public sector where success stories of strategic alignment are still in the initial stage, especially in developing and third world countries (Opara & Tarabay, 2010; Burton et al., 2017). Thus, the importance of strategic alignment to achieve BITA led the study to adopt the use of strategic alignment model to examine the status of linkage or alignment between business and IT in an organisation.

2.8 Strategic Alignment Model

Practitioners and researchers view the Strategic Alignment Model (SAM) as playing a crucial role in the direct and indirect outcome of IT governance (Turel, Liu & Bart, 2017). There are four divisions in the SAM, each comprising three major components and made up of two distinct areas (business and IT) and two divisions (intellectual and operational) as shown in Figure 2.2. The interactions between these components determine the degree of alignment in an organisation (Henderson & Venkatraman, 1990; Papp, 2001). Furthermore, SAM is visually depicted in Figure 2.2.

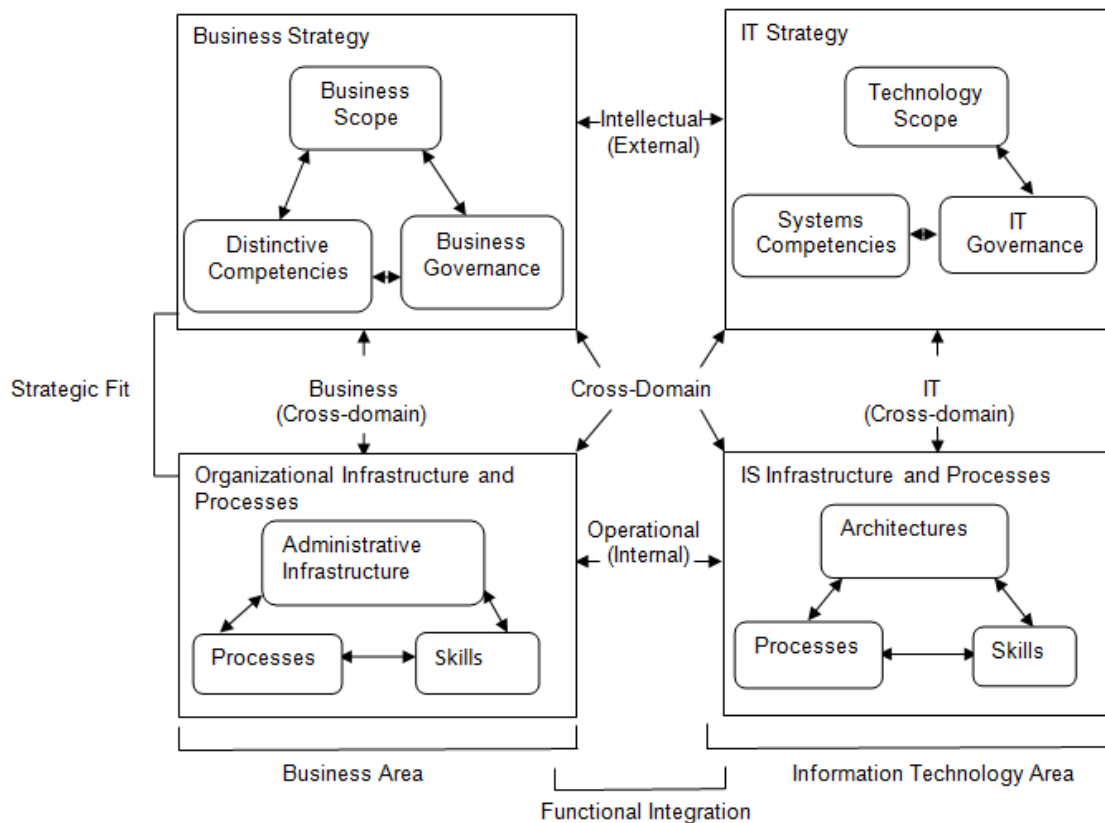


Figure 2.2: Strategic Alignment Model (adopted from Henderson & Venkatraman, 1999:476)

2.8.1 Business area

As shown in Figure 2.2, there are two divisions in the business area, namely the business strategy and the organisational infrastructure. These two divisions are mainly concerned with the core business management and processes of the organisation. The business strategy aims to match the organisation's internal potential with its external environment (Scherer, Palazzo & Seidl, 2013). This type of strategy reveals organisational objectives, statements and components needed to achieve organisational goals when business model tools and strategy statements are applied (Versteeg & Bouwman, 2006). Also, the strategy reveals the pathway an organisation can take to achieve its set goals and objectives to meet the stakeholders' expectations. Thus, Ateke and Chijindu (2015) and Ateke and Kalu (2016) assert that the business strategy strengthens the operational wellness of an organisation. The business strategy comprises three components, namely business scope, business governance, and distinctive competencies.

Business strategy is mainly concerned with business scope within the organisation and the application of unique business governance skills (De Bruyn, 2017). According to Coleman and Papp (2006), business scope refers to the phenomena that strengthen businesses and determine the end product of the business environment. Furthermore, business scope helps the business or organisation to know what

product to release into the market space, when to release the product, and how to market it. The authors further argue that the enablers within the business environment – clients, products, markets, services, business location, buyers, suppliers, and competitors – must be given due consideration. The business scope is subdivided into distinctive competencies and business governance (Katz, Louw, & Du Preez, 2016).

Distinctive competencies within the business strategy incorporate significant features that contribute to business success in the market space (Katz et al., 2016). Katz et al. (2016) observed that distinctive competencies are also considered core proficiencies or capabilities that allow businesses to compete favourably in the market space. Other considerations, such as cost, pricing structure, sales and business distribution channels, are all incorporated into typical business competencies. Senior management, primarily the Board of Directors and organisational stakeholders, is responsible for making business rules and decisions that govern the organisation. Business governance means that other strategic business partners and government regulations are also considered (Coleman & Papp, 2006).

Organisational infrastructure is the second division within the business arena of SAM. The components of this division include administrative structure, business processes, and human resource skills, which focus mainly on the operational and administrative aspects of the business (He, Deng, Zhang, Zu & Antony, 2017). The administrative structure is concerned with the system of decentralisation, centralisation, matrix, geographic, vertical, and functional organisation styles. Törnroos, Halinen & Medlin (2017) state that the administrative structure depicts every business activity and how they operate. This refers to the process of business component and value-added change activities, which brings improvement to the business processes (Törnroos et al., 2017). Furthermore, administrative structure involves consideration for staffing matters, training, motivation, organisational culture, and education of their employees, which is often referred to as the human resources (HR) skills component (Coleman & Papp, 2006).

2.8.2 Information Technology area

IT is divided into two major divisions, the IT strategy, and IS infrastructure. The two divisions are made up of complementary components, that support the strategic application of IT and the supporting infrastructures within the organisation. The role and importance of the IT division in an organisational context are further discussed below.

The first division of the IT area is known as the IT strategy, which focuses on the strategic use of IT to improve business performance (Leonidou, Christodoulides, Kyrgidou & Palihawadana, 2017). This enables IT managers to understand and derive benefits from IT and information management within an organisation. According to Albeladi et al. (2014), the complementary use of business and IT strategy is to improve organisations' competitiveness. Such is the impact on the organisation's status, which is visible in the improved responsiveness, reliability, and capability to live up to stakeholder expectations. The IT strategy division comprises three components, namely technology scope, systematic competencies, and IT governance. It is important to note that this division handles all the critical technologies and information applications, which is applied in various units of the organisation.

Systematic competencies coordinate and manage how the business accesses vital information, which is essential to the functionality of each business unit and strategy (Leonidou et al., 2017). On the other hand, IT governance defines the formulation of the expert observer coordinating the usage of IT resources. This describes how resources and risks are circulated amidst IT management, business partners, and service providers. Coleman and Papp (2006) state that IT governance involves prioritising and selection of IT projects in the business, which forms part of the IT governance component. Information technology scope describes the types and range of IT systems and capabilities (e.g., electronic imaging systems, local- and wide-area networks, expert systems, robotics, etc.) which are potentially available to the organisation.

IS infrastructure (same as IT infrastructure) is the fourth division within the Strategic Alignment Model. It is also sub-divided into three components: architecture, processes, and skills. The technological policies, priorities, software, networks, hardware, adoptions that inform the incorporation of applications and data management into one business platform are referred to as the architecture component (Coleman & Papp, 2006; Alaeddini & Salekfard, 2013). The process component under IS infrastructure relates to the process component under the organisation's infrastructure division; however, the IS infrastructure process component is majorly IT based (Leonidou et al., 2017). Process component refers to the activities, and actual practices, performed by the IT personnel to develop the organisation's IT infrastructure. The skills component refers to the internal human resources (knowledge) handling the organisation's IT (Coleman & Papp, 2006).

2.8.3 Strategic fit and functional integration

The strategic fit and functional integration are other key components which connect the SAM divisions. These two components ensure the harmonious functionality of the strategic divisions and relating components. As shown in Figure 2.3 (in section 2.8), the strategic fit describes the vertical association/alignment between the business strategy and organisational infrastructure division. Strategic fit emphasises the need for businesses to make decisions that influences their status in the marketplace. Furthermore, strategic fit refers to the usage of strategy to decide on the suitability of business infrastructure (Henderson & Venkatraman, 1990; Coleman & Papp, 2006; Lorin, 2018).

Functional integration is the second association within the business and IT divisions. The business and IT strategies are directly connected through this mode, a necessity for technology flexibility to adapt to business changes to sustain the business processes. The capability of the business to situate itself successfully in the marketplace by maximising the potential of IT is described in this association (Coleman & Papp, 2006). Functional integration thus brings a competitive advantage to the business and also maximises IT value (Henderson & Venkatraman, 1990; Ives, Jarvenpaa & Mason, 1993; Coleman & Papp, 2006). Therefore, the nature of the successful alignment of both divisions strategically and functionally influences the degree and levels of BITA achievable by the organisation.

2.9 Different alignment perspectives in the Strategic Alignment Model

The degree of alignment between business and IT can be viewed from different perspectives. Based on the Strategic Alignment Model (SAM), there are three levels of alignment, namely:

- Strategies (external integration or intellectual alignment)
- Infrastructures (internal integration or operational alignment)
- Strategies and infrastructures (cross-domain integration)

2.9.1 External integration/intellectual alignment

External integration or intellectual alignment is described as the alignment between IT and business components focusing on external levels of strategy (King, 1978; Peppard, Galliers & Thorogood, 2014; Coltman et al., 2015). The definition by King (1978:27) describes a one-way relationship, where IT strategy was planned to accommodate businesses, where alignment was considered as a bridge, linking an organisation's "strategy set" to the IS "strategy set". Other researchers have further defined 'strategy set' with the addition of 'missions, objectives, and plans' (Reich & (Reich & Benbasat, 1996; Gerow, Thatcher, et al., 2014; Coltman et al., 2015),

'plans/planning' (Henderson & Sifonis, 1988; Kearns & Albert, 2003; Tan et al., 2006; Gerow, Thatcher, et al., 2014) and 'orientation' (Chen, 2010). However, a number of researchers afterwards emphasised that business and IT strategies are a two-way link, where IT strategy could impact the objectives of business strategy (Teo & King, 1997; Piccoli & Ives, 2005).

Similar to the use of the phrase 'strategy sets', the word 'link' from the original definition of King (1978), has grown into a more exceptional distinction since the 1970s. A number of terms were recently introduced, further explaining the concept of 'link' with reference to alignment. When describing the concept of business and IT link, Luftman et al. (2010) introduced 'alignment', Tan and Gallupe (2006) used 'integrated', while Chen (2010) introduced 'harmonise'.

The focal point by King (1978) and every other related researcher since then has been based on business and IT strategies coming together in one accord. This type of alignment is referred to as strategic, intellectual, or tactical alignment (Reich & Benbasat, 1996). However, Chan and Reich (2007) clearly defined intellectual alignment as the connection between business and IT strategy, with particular reference to the external components (Henderson & Venkatraman, 1999).

2.9.2 Internal integration/operational alignment

The scope of IT strategy research was extended in the early 1990s to accommodate the 'corresponding internal domains' of alignment, as stated by Henderson and Venkatraman (1999). Three components were considered and illustrated by Henderson and Venkatraman (1999), namely, processes, administrative infrastructure or architectures, and skills. More explicitly, operational alignment incorporates 'procedures' (customer service or workflow), 'policies' (employee hiring or security), 'systems' (data centre operations), 'personnel' (existing employees), 'structure activities' (product/IT development), and 'structure' (centralisation vs. decentralisation) (Henderson & Venkatraman, 1999; Barua, Konana, Whinston & Yin, 2004; Heim & Peng, 2010; Gerow, Thatcher, et al., 2014). Hence, this specific type of alignment rests on the capability of the management to consolidate infrastructures and processes of business and IT rather than aligning other sets of strategies. The view of Lee and Ledfer (1992) on alignment has been extended to include concerns on 'coordination' (Brown, 1999), 'fit' (Barua et al., 2004; Thrasher, Byrd & Hall, 2006; Cragg, Tagliavini & Mills, 2007), 'integration' (Kang, Park & Yang, 2008; Lee, Kim, Paulson & Park, 2008), and 'extent of adoption' (Heim & Peng, 2010). Thus, it has been established that achieving alignment requires considering the relationships between corresponding internal domains, organisational infrastructure, and

processes alongside the IS infrastructure and processes (Henderson & Venkatraman, 1999; Gerow, Thatcher, et al., 2014).

2.9.3 Cross-domain integration/alignment

Cross-domain alignment is a more comprehensive view of examining alignment, which improves the paradigm of intellectual and operational alignment (Gerow, Thatcher, et al., 2014). It is advocated in the cross-domain alignment paradigm that strategy and infrastructure components be concurrently examined (Henderson & Venkatraman, 1999; Sabherwal et al., 2001). The cross-domain alignment paradigm is more practical because changes in business strategy may necessitate an alignment of multi-level components, objectives, and processes (Main & Short, 1989; Broadbent, Weill & Neo, 1999; Gerow, Thatcher, et al., 2014).

A cross domain consideration proves useful when a change in IT strategy requires an alignment of business or IT infrastructure and processes (Jordan & Tricker, 1995). The cross-domain paradigm can be executed via the combinations of strategy execution, technology transformation, competitive potential, and service level (Henderson & Venkatraman, 1993). Thus, strategy execution depends on the actualisation of the business strategy, which influences the IT infrastructure and subsequently leads to the cross-domain alignment being constrained by business infrastructure.

Other significant components of their interactions are considered in the cross-domain paradigm: competitive potential and service level components. The competitive potential combines IT-strategy to business infrastructure and is constrained by the business strategy. This implies that the service level component combines IT strategy and business infrastructure, which is constrained by the IT infrastructure (Gerow, Thatcher, et al., 2014).

2.9.4 The Generic Alignment Model Framework

Similar to other models, SAM has encountered some restrictions. Maes, Rijsenbrij, Truijens and Goedvolk (2000) debated that the SAM model did not reflect all the major dynamics that control the alignment of business to IT, arguing that it is not only the horizontal dimension that affects the alignment. The authors argue that the process of aligning business into IT is controlled by various factors, including financial, political, social, and cultural influences. As a result, the authors proposed a Generic Alignment Model, an expansion of SAM splitting the internal domain into strategy operational and infrastructure levels, adding a vertical information column within the business and IT approaches (Avison, Jones, Powell, & Wilson, 2004). The new infrastructure

column is representative of long-term architectural components, proficiencies, and infrastructures, while the vertical column serves as the communication channel between technology and business (Avison et al., 2004). In this model, information sharing acts as a bridge between business and technology because it is believed that the use and the distribution of information, instead of the provision of information, are the real bases for competitive advantage. The structural level of the Generic Framework is focused on architecture and capabilities, while processes and skills are the focus at the operational level (Avison et al., 2004; Maes et al., 2000).

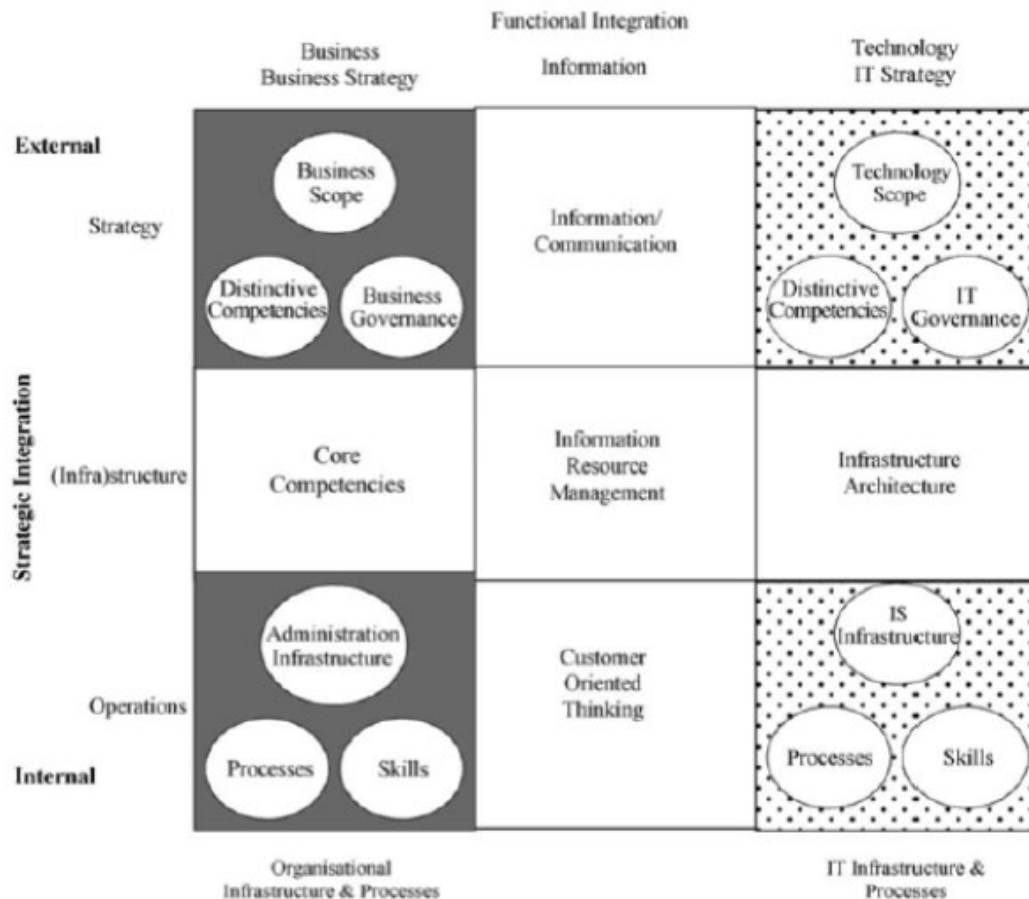


Figure 2.3: A Generic Framework for Information Management (Maes et al., 2000; Avison et al., 2004)

The Generic Framework Model is deemed more appropriate in examining external factors, hence, applying this model in PuOs might be limited in the scope of addressing issues relating to internal resources (Maes, 1999; Theron, 2011; Reynolds & Yetton, 2015). For instance, the issue of accountability to foster transparency within the public organisation is a crucial factor that requires a tenacious and rigorous process. Furthermore, the vagueness in the primary origin of information needs to be dealt with, in order to enhance resource management and IT risk management (Maes, 1999; Stewart, Coulson & Wilson, 2007; Reynolds & Yetton, 2015).

2.9.5 Inhibitors and enablers of strategic alignment

Luftman (2000) posits that strategic alignment may be accomplished by the timely and appropriate application of IT consistently through business strategies, objectives, and requirements. The study shows that various organisations nosedived to utilise IT potential for their long-lasting advantage because of two major concerns; inhibitors and enablers need to be decreased and increased correspondingly to link IT and business efficiently (Luftman, Papp & Brier, 1999). Ascertaining inhibitors and enablers of strategic alignment and determining ways to manage them has been a growing source of concern for most business executives. A total of 1,051 executives from different industries in the United States were requested to recognise significant inhibitors and enablers of strategic alignment; Table 2.7 shows the top six responses.

Table 2.7: Inhibitors and enablers of BITA (Luftman et al., 1999)

Enablers of Business IT Strategies Alignment	Inhibitors of Business IT Strategies Alignment
<ul style="list-style-type: none"> • Senior executive support for IT • IT involved in strategy development • IT understands the business • Business-IT partnership • Well-prioritised IT projects • IT demonstrates leadership 	<ul style="list-style-type: none"> • Senior executive does not support IT • IT/Business lack close relationship • IT does not understand the business • IT fails to meet commitments • IT does not prioritise well • IT management lacks leadership

Since BITA is dependent on diminishing the inhibitors and get the best out of the enablers, a six-stepped method was created to accomplish this (Luftman et al., 1999; Balhareth, Liu, & Alsoud, 2013):

- i) Set the goals and start a team
- ii) Understand the relationship between business and IT
- iii) Analyse and prioritise gaps
- iv) Specify the actions
- v) Choose and assess success criteria
- vi) Sustain alignment

Typically, BITA takes a longer time because of the complex and dynamic nature of the alignment process. Luftman et al. (1999) suggested that executives concentrate on a six-step method to abate inhibitors while getting the best out of enablers, correspondingly.

2.10 Strategic Alignment Maturity Model (SAMM) six categories

As shown in Figure 2.4 below, there are six criteria for evaluating the Strategic Alignment Maturity Model (SAMM), namely, communication, competency/value measurements, governance, partnership, scope and architecture, skills, with multiple

attributes contained in each criterion. Maturity levels for each area are clearly defined, such that, to attain maturity, the alignment of business and IT for all aspects must be given full consideration for relevancy and applicability (Chen, 2010; Chen, Wang, Nevo, Benitez & Kou, 2017).

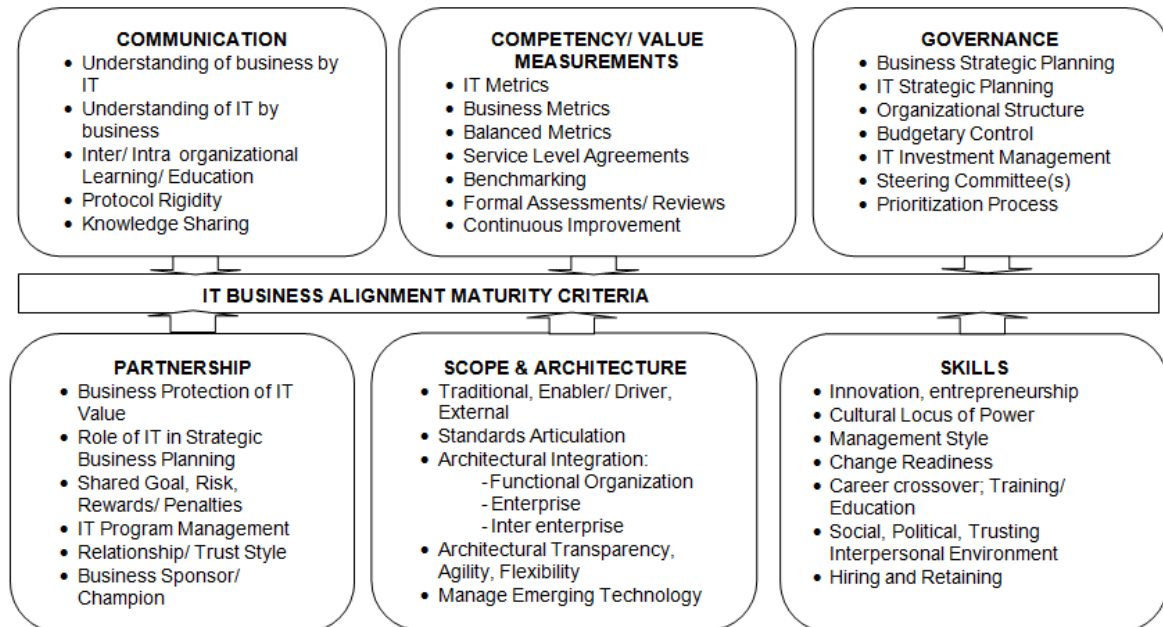


Figure 2.4: Luftman Model's six alignment areas (Luftman, 2000:12)

2.10.1 Communications

The communication component assesses the role of knowledge and information exchange between business and IT domains in a firm. Communication is the act of exchanging or informing information, and the information exchange implies people or processes connecting with each other (Opara & Tarabay, 2010; Street et al., 2017). According to Luftman (2000), the effect of communication inadequacies between IT and business affect the organisation's BITA maturity. Hence, Luftman (2000) observed that the building and improving the existing relationship and communication between staff in an organisation should be of core interest and value to the strategic alignment of business goals and IT strategies. On this premise, the study sought insights into **how communication influences the level of business and IT alignment of a PuO in South Africa.**

2.10.2 Competency/value measurements

Competency assesses the degree of IT contribution to business in a way that is mutually beneficial. The business's organisational values should be well understood among stakeholders in the firm (Luftman, 2000). The business and IT metrics for organisational value are different in many cases (Luftman, 2000; Reynolds & Yetton,

2015). The Luftman (2000) framework emphasises the need to build a dashboard that showcases an organisation's values, and proper assessment of the IT service level that shows the commitment to the business. However, the assessment of a service level ought to be done together with the decisive factors that specify penalties and rewards (Luftman, 2000). This simply means determining how well the performance is and realising that the project value of an organisation is self-measured at the time of completion. Thereafter, the organisation needs to evaluate and know what goes right or wrong based on the lessons learned, thus obtaining a better result as the next opportunity arises.

2.10.3 Governance

The governance component consists of business and IT governance. Business governance describes how relationships and roles are set between the management in an organisation such as the Board of Directors and the stakeholders. Whereas IT governance describes how the IT functions support strategic decision making, operational levels and authority for resources are shared and allocated among stakeholders such as services providers and business partners (Luftman & Brier, 1999; Luftman & Kempaiah, 2007).

Also, rules and regulations are an important part of governance, in conjunction with the management of strategic partner alliances (Luftman & Brier, 1999). The clarity in decision making on resource allocation is the reasoning why both business and IT governance work together as an entity to fulfil organisational goals, thereby achieving BITA (Luftman, 2000). Thus, it was important that the study investigates **how IT governance influences the business and IT alignment of a PuO in South Africa?**

2.10.4 Partnership

The partnership component reflects the quality of trust and the relationship between business and IT, showing the degree of IT functions in driving or supporting business strategy. Luftman (2000) informed that partnership is highly influential as an IT alignment enabler and inhibitor; it promotes equal opportunities for the participation of IT and business strategies to achieve organisational goals. IT enables and coerces the transformation of strategies and business processes, which builds a good partnership between the business and IT units, with both business and IT sharing risks and rewards because of their trust-based relationship (Opara & Tarabay, 2010). The partnership is essential in building and fostering healthy relationships and collaborations to achieve BITA, towards the ultimate aim of realising set objectives. Therefore, the study found it essential to examine **how partnership influences the business and IT alignment of a PuO in South Africa?**

2.10.5 Scope and architecture

The scope and architecture are described as the degree to which technology presents opportunities, with the prospect for organisations to carefully design its business structure. This component assesses IT infrastructure elasticity, emerging technology application, and also supports or drives business processes (Opara & Tarabay, 2010). It involves the integration of standards across organisations that impresses on the EA implementation and integration process. The scope and architecture create a platform in the organisation for the evaluation of the futuristic and scalable role of IT, together with the understanding of the traditional role (back and front office role) (Luftman, 2000). Also, the component lays down plans on how the organisation can maximise profit, implement cost reduction, and further develop the ability to compete in the marketplace.

Thus, the scope and architecture are seen as a pivotal component in discerning IT's role in relation to organisational objectives, which informs the selection and implementation of applicable EA frameworks. Since the subject of the research did previously implement the EA framework successfully, **the scope and architecture were not explored in this study not to replicate previous research that has already been carried out.**

2.10.6 Skills

The skills component focuses on concerns for organisational human resources which go beyond traditional skills, such as training and performance feedback (Luftman, 2000). The skills components also measure human resource practices, their readiness for change, organisational learning, and other practices such as recruitment, support, training for innovation, and advancements in a career (Luftman, 2003; Luftman & Kempaiah, 2007).

2.11 The five levels of the Strategic Alignment Maturity Model

According to Luftman (2000), the five levels of SAMM as described in Figure 2.4, indicate attainable levels of processes that summarise the maturity of the implemented EA in an organisation. There are five (5) levels, namely: the initial, committed, established, improved and optimised process. The various levels are further explained in detail in sections 2.12.1 – 2.12.6.

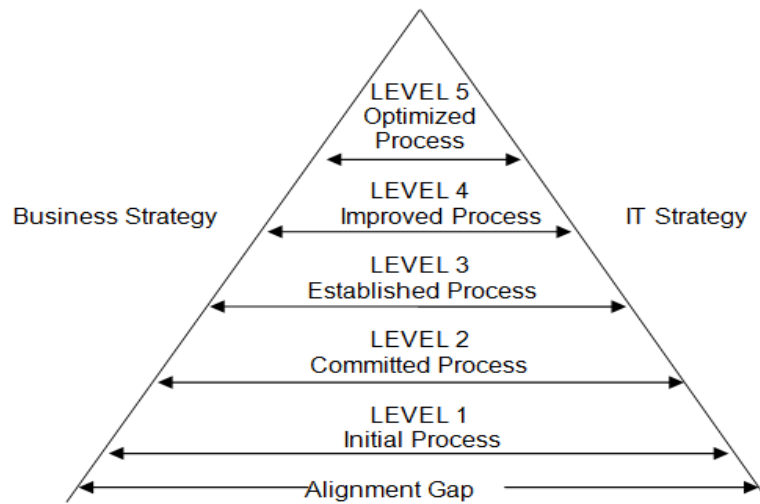


Figure 2.5: Climbing the ladder of the Strategic Alignment Model (adopted from Coster, 2010:3)

2.11.1 Level 1 – Initial/ad hoc process

Level 1 of SAMM is placed at the lowest maturity level; any organisation at this level of alignment is unlikely to achieve proper BITA because the organisation's IT investment is deemed considerably unleveraged. The business and IT communications of organisations at Level 1 are generally poor. The organisation's business and IT relationships tend to be rigid and formal, such that, instead of having business-oriented metrics, it is perplexed and overwhelmed with unnecessarily technical IT planning and with service level agreements displaying a tendency of irregularity. This level of alignment maturity may also imply that business perceives IT as a cost burden and not as an enabler with potential. Thus, the degree of partnership and trust between the two parties is minimal, with IT projects rarely being championed or sponsored from the business group, effectively leading to no crossover of career between them. At this level, the applications only focus on the traditional or routine back-office support, including accounting, e-mail, and HR, without business process integration. Ultimately, the IT-business strategy of Level 1 organisations does not align towards a common goal.

2.11.2 Level 2 – Committed process

The organisations that meet a range of characteristics of SAMM Level 2 can be considered as having committed to initiating best practices to attain strategic alignment maturity. The focus of SAMM Level 2 is on local or functional units, such as marketing, manufacturing, finance, and human resources, in the enterprise's overall operation. At this level, alignment achievement tends to be challenging because of inadequate awareness of the different functional units' use of IT by the business and IT departments. Enterprise-wide alignment is not naturally influenced

because the alignment that occurs between business and IT is at the local level. Nonetheless, the possible prospects start gaining some traction and acknowledgement.

The understanding of the roles and obligation of IT and business is limited to each individual unit. Service levels and IT metrics are not correlated to business metrics because they are cost-oriented and technical, although a small number of uninterrupted enhancement programmes do exist. IT and business management exchanges tend to be based on the transaction instead of on a functional partnership. Also, at this level, the IT expenditure is focused on basic operations of the organisation; therefore, IT projects have limited sponsorship from the business division. Nevertheless, the business and IT units experience some degree of career crossover at the functional level.

2.11.3 Level 3 – Established focused process

The organisations at SAMM Level 3 are considered as having established a focused strategic alignment maturity process. Communication processes and governance in alignment with particular business objectives are paid attention to at this level, and IT is becoming rooted in the business operations. The influence of IT assets on an enterprise-wide scale reveals strategically positioned IS used for business decisions, which is a shift from the traditional transaction processing. Enterprise-wide IT assets integration is more inclusive at Level 3, leading to increased appreciation of IT-business consciousness by IT management at the senior and mid-levels. The materialisation of service level agreements (SLAs) is shared across departments or acted on. Strategic forecast or planning will likely be done at the business unit level, while a number of inter-organisational forecast or planning activities can be embarked on. IT is progressively more observed as an asset by the business, although project prioritisation still more often than not acts in response to 'the loudest voice'.

Official IT planning committees are constituted and meet regularly, and there are budget provisions for IT expenditure, even though IT is still considered as a cost centre. IT awareness in the firm's 'investment potential' is rising, business is willing and ready to share risks with IT by means of partnership, and IT projects start attracting sponsors to the business. There is a growing increase in IT and business career crossover at the unit levels, where managers of IT and businesses regard technical and business skills as vital to growth. The knowledge of architecture and technology standards becomes known at both the enterprise level and by key external stakeholders.

2.11.4 Level 4 – Improved/managed process

Organisations at Level 4 of SAMM reveal services and effective governance using IT concept reinforcement as a value centre. This level of organisations affects IT assets on an enterprise-wide scale, with their focal point of systems application on robust business process improvements to achieve a competitive advantage that is sustainable. The organisation considers IT as an imaginative and innovative strategic provider to facilitate the achievement of crucial objectives. The processes required for strategic alignment are managed inside the enterprise, with an understanding of gap closure in business, and the IT units are a significant development at this level. Also, benchmarking becomes an everyday practice, such that SLAs are applied enterprise-wide. Official IT navigation committees meet regularly, and decisions are effectively carried out at tactical and operational levels.

IT is regarded by business as an esteemed service contributor and also as an enabler, which drives change towards success. The business unit provides a campaigner and effective sponsorship for every IT project and shares rewards and risks with IT in a healthy partnership. In general, change management is extremely effective with IT, and business career crossovers occur at all functional levels. Therefore, technical and business skills are mutually acknowledged as extremely significant to the synergy of business and IT strategies.

2.11.5 Level 5 – Optimised process

Organisations that feature at the pinnacle of SAMM (Level 5) are categorised as having attained optimal strategic alignment maturity within their business processes. At Level 5, there is a continuous governance process that aligns the strategic business and IT processes. Level 5 organisations' enterprise-wide operation is propelled with IT assets to extend their reach, especially towards suppliers and customers' supply chains. At this level, organisations have optimised strategic BITA, indicated by thorough governance processes that incorporate strategic business and IT planning. The alignment level reaches further than the enterprise, as IT influences operations of the company's business partners, clients, and customers as well. The value chains of outside suppliers and customers are inclusive, as IT's reach is extended beyond traditional organisational boundaries. IT and business relationships are fluid, as is the sharing of knowledge among external partners. Business and IT metrics and SLAs are also extended to external partners, and benchmarking is consistently carried out with these partners.

2.12 Maturity model

IT business alignment correlates with an enterprise's ability to fully benefit from its own IT investment. Maximising the IT investment contributes to the enterprise's capability to realise more potential within its IT infrastructure (Luftman, Ben-Zvi, Dwivedi & Rigoni, 2010). An enterprise's ability to take full advantage of its IT investment delivers increased business value (Luftman et al., 2010; Alaeddini & Salekfard, 2013). It has been demonstrated that the Strategic Alignment Maturity Model can be used as a measure of the organisation's performance (Luftman & Kempaiah, 2007; Rahbar et al., 2013; Zhang et al., 2018). Reports point out that organisations with lower alignment maturity also have corresponding lower company performance, and consequently, lower returns on investment (ROIs) (Zhang et al., 2018). The establishment of this correlation shows that a company desiring to improve its performance should continually examine its BITA and the role of IT governance in organisational decision-making processes (De Haes & Van Grembergen, 2009; Lorin, 2018).

Organisations are able to assess their performance and effort in achieving BITA via the BITA maturity assessment measures. These measures can be used to determine the alignment maturity within an organisation (Luftman, 2003; Rahbar et al., 2013; Zhang et al., 2018). Maturity assessment models for BITA enable the organisation to recognise its current position, thus making proper plans for improvement. Measuring the maturity level of an organisation's strategy is not merely a system that addresses current lapses in BITA, but also helps in understanding and increasing the BITA maturity level for the future (Gutierrez, Orozco, Serrano, Alan, Serrano & Azael, 2006; Alaeddini & Salekfard, 2013). BITA maturity models developed by different researchers such as Luftman (2000), Papp (2001), Gutierrez et al. (2006), Tapia (2007) and Tapia, Daneva and Van Eck (2007), have proven to be more practical in an organisational context and are perceived as acceptable models in related research because of their recurrent citations.

The Luftman model is widely applied in evaluating the BITA maturity of an implemented EA framework, because it meets the criteria for use in industry and academic research (Chen, 2010; Alaeddini & Salekfard, 2013; Lorin, 2018). Furthermore, the Luftman model may also assist a researcher with data collection and data analysis because of its applicability to empirical data, using the model's six categories within the enterprise. The Luftman model simplifies the Strategic Alignment Maturity Model (SAMM) by the fusion of 12 elements into six (6). SAMM's applicability in research is established through the understanding of the process role used for the strategic alignment. Therefore, the Luftman model was used to review and consider

the BITA of the PG in this study because of the robust adopted EA. The performance advantages of the Luftman model compared to other models is shown in Table 2.8. The table shows the above-listed models in comparison with the number of citations in other related studies, as indicated on Google Scholar.

Table 2.8: BITA maturity models (adapted from Alaeddini & Salekfar, 2013)

Scholar	Model	Characteristics	Cited
Luftman (2000)	Luftman	<ul style="list-style-type: none"> • Qualitative approach • Multi-level assessment • Using a Likert scale (1–5) • Experienced in many organizations (Luftman, 2000; Luftman & Kempaiah, 2007) 	1447
Papp (2001)	Papp	<ul style="list-style-type: none"> • Qualitative approach • Based on SAM (Henderson & Venkatraman, 1993) • Single-level assessment • Using a Likert scale (1–7) 	118
Gutierrez et al. (2006)		<ul style="list-style-type: none"> • Qualitative approach • Based on Luftman’s model (Luftman, 2000) • Multi-level assessment • Assessing strategic, tactical and operational alignment 	118
Silva et al. (2006)	SBITA-TD	<ul style="list-style-type: none"> • Quantitative approach • Based on SAM (Henderson & Venkatraman, 1993) • Multi-level assessment 	36
Tapia et al. (2007)	VITALMM	<ul style="list-style-type: none"> • Qualitative approach • Single-level assessment • Focusing on workflow structure, IT governance, enterprise architecture, IT and business processes, and coordination 	26

2.13 Achieving BITA in a public sector organisation

The means of achieving alignment between business and IT has been successfully implemented with high impact in some developed, developing and less developed countries, including SA (Table 2.9). Examples of such alignment can be seen in different areas of their economy and services to their citizens, e.g., electronic voting for the citizens of a country living in another country, implementing car plate number recognition cameras for traffic monitoring, and online classes for students. Table 2.9 highlights a few countries that have implemented EA to align their business processes and IT expectations, including Zambia, where EA frameworks have been successfully implemented for business-IT alignment (Mtongana, 2012).

Table 2.9: Some of the countries that have implemented means of achieving alignment

Country name	Less developed country	Developing country	Developed country
Australia			√
China		√	
England			√
Europe			√
Finland			√
Japan			√
South Africa		√	
United States			√
Zambia	√		

The success story of achieving alignment between business and IT is yet to be recorded on the implemented framework in Zambia, one of the less developed countries in Africa. In Zambia, infrastructure upgrade planning and implementation are ongoing for the realisation of achieving alignment between business and IT (Adam & Mubila, 2017). South Africa, seen as a developing countries in Africa, has recorded some success stories on achieving alignment between business and IT. In 2009, Iyamu (2009) claimed that the means of achieving alignment between business and IT had been reported to be successful in the private sector in terms of profitability and scalability for future business expansion in SA. Nevertheless, thoughtful efforts to deploy a means of achieving alignment in public sectors, such as the provincial governments (PGs) in South Africa, have recorded limited success (Mtongana, 2012).

Most countries currently use technologies to develop e-government solutions to reduce operational costs and complexity in their government. The use of technology also helped curb corruption through improved accountability and transparency (Alhujran, 2009; Dang & Pekkola, 2016a). As a result of working knowledge of business and IT, many nations of the world (67%) were employing means of achieving alignment programs in 2007, and not only that; 93.3% of the nations of the world planned to unveil their means of achieving alignment initiatives in the years to come (Dang & Pekkola, 2016a). This development resulted in an increase in the number of methods adopted to achieve alignment in several nations of the world. Finland is an excellent example of this – a country designed to aligning structures central government, municipalities, and universities (Republic of Finland, 2011).

2.13.1 Current state of BITA in the context of a PG in South Africa

The PG as the subject of the investigation has experienced some degree of dissatisfaction in the delivery of service to its citizens before and after 2009 EA (TOGAF) implementation. In the last ten (10) years, the improved positive impact of BITA has been reffective across all sectors of the PG's business processes and service delivery to the citizens in areas, as shown in Table 2.10.

Table 2.10: Distribution of departments in the PG

Departments in the PG
Department of the Premier
Provincial Treasury
Development of Planning and Environmental Affairs
Community Safety
Sports and Culture
Local Government
Economic Development and Tourism
Human Settlements
Health
Education
Social Development
Agriculture and Transport
Public Works

However, despite increasing research in the use of implemented EAs (TOGAF) in business processes and IT, the alignment status is still unknown. Hence, it is essential to ensure that alignment is achieved in public and private sector enterprises in a manner that overcomes complexities and uncertainties. This research focused on the public sector and not the private sector because there have been significant contributions to the realisation of alignment in private sectors' applications of EA frameworks. However, little EA framework success has been achieved in the public sector in South Africa (Iyamu, 2009; Mtongana, 2012). Since South Africa has recorded a provincial government's (public organisations) implementation of EA frameworks as stated by Mtongana (2012), this research examined the state of the implemented framework in a PuO in SA and proffered an evaluation of the status of BITA achieved. The question that was posed for this research is: **"How has the implemented EA strategy influenced the state of business and IT alignment of a PuO in South Africa?"** Figure 2.6 presents the conceptual framework that guided the study and the gap being investigated.

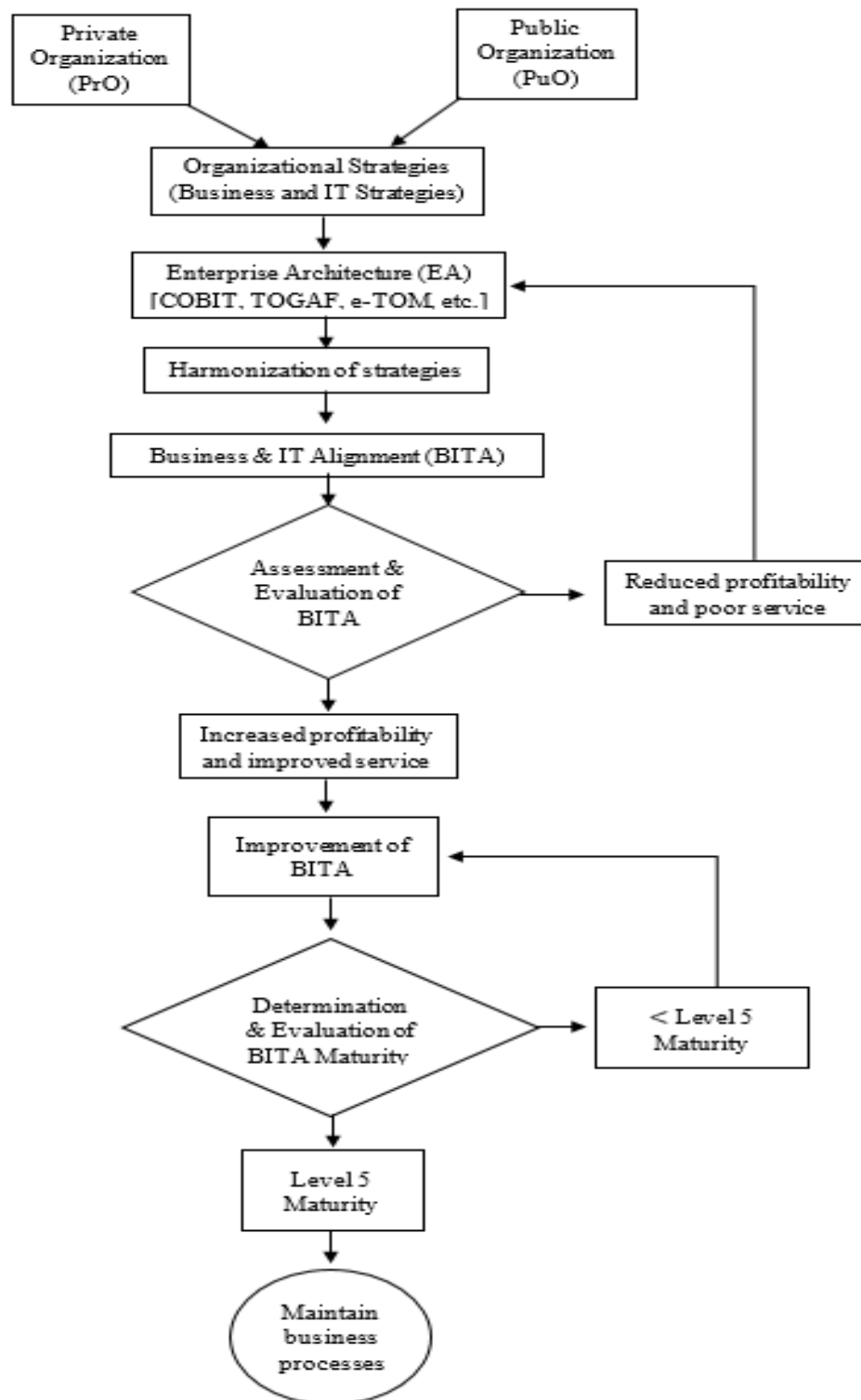


Figure 2.6: Conceptual framework

2.14 Summary

In this chapter, the reviewed literature carried out to develop an assessment model for business, and IT alignment maturity in a selected public organisation was presented. The review covered areas related to the study, which included but were not limited to IT, business (organisation), alignment (business and IT), the Maturity Model and the underpinning theory.

The positive effects of the usefulness of IT filter through all aspects of human activity, from the beginning to the end. These include economics (business) and health, among many other human activities. The business processes are transformed, and the organisation enjoys fast service delivery to its customers through the right IT appropriation to business. Organisations also gain a competitive advantage over their competitors through the dynamic capabilities of IT.

CHAPTER 3: RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

Hughes (2006) defines research as a systematic inquiry that is conducted to understand real-life problems. Research is carried out to propose solutions that drive knowledge creation using scientific and empirical methods. These methods consist of observation, classification, and data interpretation (Creswell, 2009; Akker, Van den Bannan, Kelly, Nieveen, & Plomp, 2010).

This chapter discusses the research study's underpinning philosophy, which includes the ontological and epistemological philosophical foundations, which influence the chosen research design and methods. The methods to collect the primary data, coupled with the sampling procedures of selecting participants aligned with the scope of the study, as well as the data analysis and the ethical considerations are also discussed.

The chapter is divided into nine sections. In the first section, the research methodology is introduced. The second, third, and the fourth sections focus on the research philosophy, research approach, and research design. In sections five and six, the research strategy and data collection adopted are described. Section seven focuses on the data analysis; in section eight, the ethical considerations are described, and in section nine, the chapter is summarised.

3.2 Research philosophy

Research philosophy describes how a researcher envisions constructing a study, as influenced by the researcher thoughts and beliefs (Saunders et al., 2009). The philosophical position of research is perceived through the researcher's ontological and epistemological stance (Saunders et al., 2009). The ontology describes a researcher's inherent view of reality, while epistemology involves understanding relationships and acquiring knowledge (Orlikowski & Baroudi, 1991). Ontology and Epistemology are essential features of research philosophy, and the following sub-sections further explain these stances, as well as their application to the research study.

In figure 3.1, an overview of research philosophy is presented, and the way this philosophy is linked to a research study is demonstrated.

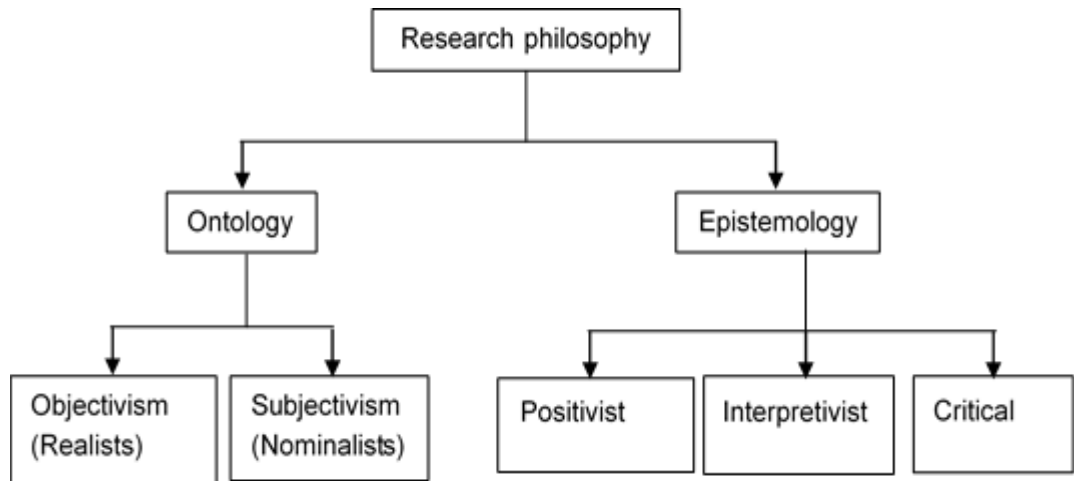


Figure 3.1: Research Philosophy (adapted from Myers 1997:4)

3.2.1 Ontological position

Ontology discusses the nature of reality or the things that exist based on an unbiased perspective of the topic (Saunders et al., 2009). Two notions sway the ontological view in research, namely objectivism, which is supported by the realists, and subjectivism, which is favoured by the nominalists (Neuman, 2011). Realists (objective ontology) posit that the “real world” is not reliant on persons and their perspectives of the existence of reality, while nominalists (subjective ontology) opine that persons have their own, personal and independent interpretation of reality (Neuman, 2011). The stance of subjective ontology is that social actors create reality through their perceptions and interactions with social phenomena (Burrell & Gareth, 1979), while a realist’s ontological opinion of phenomena is devoid of social influence, regardless of several other social players responsible for its form (Saunders et al., 2009).

Objectivist ontology is said to be the central pillar of naturalism or scientism, and advocates for the view of natural science to be applied in societies (Burrell & Gareth, 1979). Objectivism is furthermore regarded as equally ontology and epistemology. Ontologically, an objectivist posits that reality exists in ‘itself’, independent of individual thoughts (Burrell & Gareth, 1979). According to Norvig and Lakoff (1987), reality contains secure properties and relationships, bonded together. Norvig and Lakoff (1987) further state that reality exists because of these properties and relationships’ arrangements and is self-governed in basic human knowledge. Contrary to this, it is argued that reality is created by the human mind (Neuman, 2011). Being ‘in the know’ of reality’s existence results from being exposed to these representations (Burrell & Gareth, 1979; Chipangura, Van Niekerk & Van Der Waldt, 2016).

Objectivism may be attained by viewing the world through spectra of subjects and objects and then observing the resulting phenomena as a simplified study of collective objects (Kumar, 2011). The positivist stance grounded in objectivism produces objective knowledge by gathering and analysing experimental data (Saunders et al., 2009). Positivism is built on the belief that there is only one objective reality wherein knowledge can be observed and measured (Orlikowski & Baroudi, 1991).

The stance of **subjectivist** ontology, contrary to objectivism, is that the nature of existence and reality is expressed through the lens of the subjective awareness and social observations of social beings (Saunders et al., 2009). Subjectivity assumes that social phenomena are not static, but dynamic, because of the social movements and interactions surrounding these phenomena (Orlikowski & Baroudi, 1991; Saunders et al., 2009). The philosophical stance of subjectivists is that social actors create their own individual reality through everyday social actions (Saunders et al., 2009). For this study, the researcher adopted the subjectivism ontological stance, which infers that the existence of an observed situation is attributed to humans creating and recreating observed phenomena (Orlikowski & Baroudi, 1991; Neuman, 2011).

3.2.2 Epistemological dimensions

Epistemology is the philosophy of describing “how we know the world around us, or what makes a claim about it true” (Neuman, 2011:93). In research, epistemology is primarily associated with positivism, interpretivism, or critical realism (Orlikowski & Baroudi, 1991). Positivism assumes a realist stance adopted when the research focuses on hypothesis testing (Orlikowski & Baroudi, 1991). Interpretivism, on the other hand, is the interpretation of phenomena through the eyes of subjects (people), which means there exist several dynamic perspectives of reality within a social setting (Orlikowski & Baroudi, 1991; Neuman, 2010). Critical realism is a meta-theory that adopts a non-positivist stance of diverse social scientific causal-base explanations (Kurki, 2007; Gerard, 2015). Critical realism provides an understanding of the mechanisms, structures and relations, causing the occurrence under investigation (Gerard, 2015). Ontologically, critical realism is based on the notion that reality occurs independent of social observations, while, from an epistemological stance, critical realists stress diversity and resourcefulness (Kurki, 2007). Kurki (2007:365-366) posits that “critical realists prefer ontologically holistic accounts that explain how and why complex causal factors come together. They also prefer non-deterministic metaphors in their causal accounts: causes for them are those things that produce, generate, create, constrain, enable, influence or condition”.

The interpretivist stance differs greatly from the positivist stance because it accommodates subjectivity, social activities (ontology), researcher insight, and human experiences. These factors are considered during the contextual study of the phenomena, which retains empirical observation and considers the role of social influences in deriving subjective meaning and interpretations on a subject (Burrell & Gareth, 1979; Neuman, 2011; Bhattacharjee, 2012). In this case, the phenomenon (research subject) is not viewed in an isolated manner but embedded in a social context, a view contrary to the positivist who believes knowledge is gained by accurately testing the validity of theories (Orlikowski & Baroudi, 1991).

Interpretivists focus on creating meanings of phenomena through subjective interpretation, incorporating others' experience (Saunders et al., 2009). Unlike positivistic researchers, interpretive researchers aim to enhance understanding of how knowledge is gained within a social context (Neuman, 2011). The critical realist shares some common ground with the interpretivist in acknowledging that social interactions shape the underlying meaning ascribed to a phenomenon. On the other hand, the critical realist attempts to critique or critically appraise existing societal systems to make known any inconsistencies in the structures (Orlikowski & Baroudi, 1991). A critical realist evaluates society using the existing societal values, norms, and history to effect a social change. Thus, neither the positivist nor the critical realism stance was deemed suitable for the study.

The study adopted an interpretive epistemology, where the researcher created meanings from different actors' opinions in a social context. Inductive inferences were then drawn from the instances observed. The study followed the nominalist worldview because the subject matter requires participants' opinions and experiences to arrive at a logical interpretation, deduction and conclusion.

3.2.3 Research paradigms

A paradigm is a system of examining observed phenomena to make inferences. These inferences help to improve the understanding of the concerned phenomena. The paradigm also influences how to explain the phenomena' observations (Saunders et al., 2009). Paradigms influence the research design and the choice of belief system used to interpret, make deductions and perform observations (Bhattacharjee, 2012). The researcher's perspective of acquiring knowledge is another factor that sways the selection of a research paradigm. According to Burrell and Gareth (1979), the researcher's paradigm and belief system can be categorised into four quadrants: positivism, interpretivism, critical realism, and pragmatism.

3.2.3.1 Positivism

The positivism paradigm embraces that data are only acceptable when informed by practical and provable proof. Positivism trusts that knowledge is fashioned merely from surveillance, and scholars are not included in the research process; hence, their beliefs and experience are immaterial (Burrell & Gareth, 1979). Bhattacharjee (2012) relates that positivism has a coinciding reliance on other varieties of theories, and it can only be validated via observations. Furthermore, positivist inquiry aims to examine concepts via measurable forms of observations and statistics to improve the knowledge of a specific phenomenon being investigated and applying them to a population. The study did not relate to the positivist paradigm since positivist researchers use quantifiable tools and properties, which do not have researchers and participants (Neuman, 2011). The study aimed at interpreting patterns and relationships captured by the scrutiny of participants' data to build an enhanced understanding of the topic.

3.2.3.2 Critical realism

Critical realism is built on the principle that truth is linear (straightforward); nevertheless, this notion is not enthusiastically acknowledged as being accurate, even if the actuality exists (Bhattacharjee, 2012). Critical realism denounces social realism and endeavours to change the validity and accuracy of data obtained through feelings and impressions (Orlikowski & Baroudi, 1991). Critical realists have the standpoint that history is made up of individuals who create and recreate our social reality; therefore, critical realism is focused on transforming the harmful and destructive aspects of social realism (Walsham, 1995). Similarly, Orlikowski and Baroudi (1991) detailed that the critical realist does not concern him/herself with clarifying the sentiments of social perspectives, but rather actively criticising these sentiments through research in order to change the social perspective. Critical realism and interpretivism have a closer association than critical realism and positivism since it aims to change the existing perspectives of social reality, hence, admitting that subjectivity is present in the reality of a social creature (Neuman, 2011).

Critical realism can be associated with positivist and interpretive inquiry models (Saunders et al., 2009). Neuman (2011) argues that critical research is often based on negativities such as conflict, resentment, and inconsistencies happening in modern-day surroundings, in order to find feasible solutions. Critical realism was not adopted for this research, as its beliefs vary from the study's intention, which is to investigate and understand the phenomena being studied based on subjective interpretations of the context. Neuman (2011) asserts that the most important

theoretical postulation to consider when conducting research is the fundamental epistemology by which the inquiry is guided.

3.2.3.3 Interpretivism

Contrary to the positivist paradigm, interpretivism accommodates subjectivity and acknowledges social activities, the researcher's perception, and human experiences to pursue, create, discover knowledge, and understand reality. Interpretivism acknowledges empirical data collection and observation, but the focus is primarily on investigating social influences; hence, the phenomena are not perceived as independent, but embedded in the context's social interpretation (Orlikowski & Baroudi, 1991). Interpretivists focus on creating perceptions of the phenomena through a subjective interpretation by including others' experience in defining their own meanings (Saunders et al., 2009).

A further difference between interpretivism and positivism is that interpretivists aim to improve their understanding of knowledge that was acquired in a social context by interaction with social elements through the lens of multiple perspectives (Neuman, 2011). Interpretivism's objective is to comprehend phenomena subjectively via pragmatic reflection of the events, actions, and activities in the social life cycle (Saunders et al., 2009). Thus, interpretivists conduct research on the way individuals create, interpret and convey knowledge, based on their interactions within their own respective environments (Burrell & Gareth, 1979; Neuman, 2011).

Interpretive research is founded on the notion that the social world is free from impartiality or inflexibility, yet, it is still an acceptable paradigm that represents the social actions (ontology) and knowledge of people, and it is investigated within the milieu of subjective social meaning and interpretation (epistemology) (Bhattacharjee, 2012). Interpretive research perceives reality as phenomena within social reality, which are investigated subjectively (Orlikowski & Baroudi, 1991). The interpretivist scholar intends not to make sweeping statements, but rather to understand how individuals acquire knowledge within a social milieu (Neuman, 2011). As such, the researcher adopted an interpretive stance for this research, where the scholar recognises the various perspectives of the interviewees within a social setting, and where abstract interpretations are omitted.

The study's epistemological position is founded on an interpretivist approach, where knowledge and experience attained from previous experiences are also considered (Bhattacharjee, 2012). The philosophical groundwork of interpretive research is founded on the concepts of phenomenology and hermeneutics, which relates to this

research's aim to derive deep insights and meanings from the phenomenon under investigation (Walsham, 1995). The study adopted an interpretivist research paradigm to evaluate the BITA status of the subject of study. The interpretive method was deemed appropriate because it considered PG's personnel's subjective opinion to understand better the EA influence on the current status of BITA in the PGs business processes.

3.3 Research approach

The significance of an effective research methodology that enhances the validity of this social study is swayed by an appropriate research model (Creswell & Clark, 2007). There are two distinct approaches adopted in the study: deductive and inductive (Burney & Saleem, 2008).

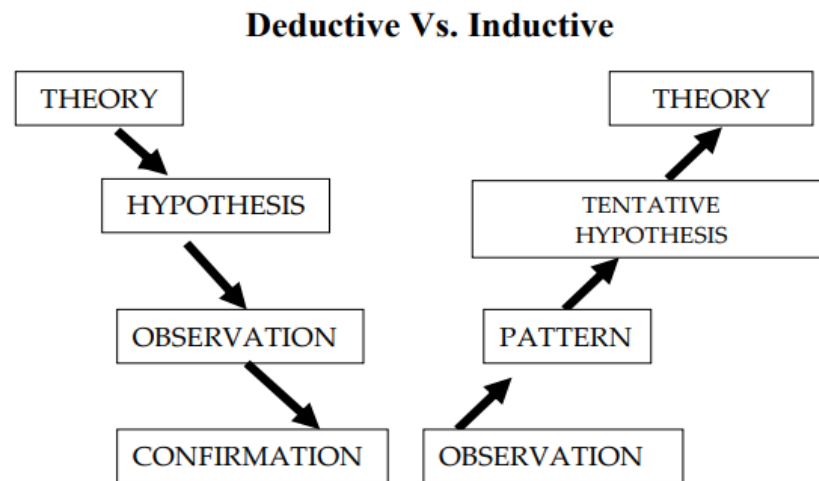


Figure 3.2: Research approaches (Burney & Saleem, 2008)

The two approaches are distinctively different from each other; the deductive approach is more associated with positivism, while the inductive approach leans towards interpretivism (Burney & Saleem, 2008). Saunders et al. (2009) posit that the research approach should be seen and understood as a tool that favours the ultimate choice of a research method. Therefore, the researcher needed to focus on adopting the right approach for this study in order to address the research problem correctly and adequately (Bhattacharjee, 2012).

The deductive approach is considered suitable for developing theories or a solution to the research problem and, subsequently, tests these theories or hypotheses with empirical observation (Creswell, 2009). Theorising, developing hypotheses, observation, and confirmation are important steps considered in applying the deductive research approach (Saunders et al., 2009). The deductive approach enables the use of different arguments to provide sufficient reasoning to prove specific

facts, and these arguments are embellished in a specific law, regulations, and rules, which is used to develop or confirm a theory (Bhattacharjee, 2012). Thus, the goal of a deductive research approach is to validate empirical evidence in order to derive abstract concepts and theoretical relationships (Neuman, 2011).

According to Burney and Saleem (2008), the inductive research approach is defined as a procedure where more precise notions are scrutinised in a broad-spectrum mode. An inductive research approach does not begin with a predetermined theory because the inductive approach seeks to provide flexibility for investigating the research problem (Burney & Saleem, 2008). Observations, pattern identification, and theory building are steps followed for the inductive research approach (Cavana et al., 2001). The inductive approach emphasises the use of empirical data to provide inductive reasoning and the building of explanations of plausible scenarios from the interpretation of data. Unlike the deductive approach with a focus on testing theories, the inductive approach allows the building and expansion of knowledge by inferring from empirical observations back to existing theory (Cavana et al., 2001).

Combining both the deductive and the inductive research approach provides a unique advantage of exploring different perspectives to the research problem (Saunders et al., 2009). This combined approach is synonymous to mixed-methods research, where the researcher concurrently uses quantitative and qualitative methods to investigate a research problem (Creswell, 2009). According to Kumar (2011), the reasoning amassed via inductive research is established on a subjective approach with elements of interpretive meaning, while reasoning acquired via the deductive research approach is established on objectivity and follows causation (Orlikowski & Baroudi, 1991; Bhattacharjee, 2012). The aim of the researcher combining both approaches is to find a balance in terms of perspectives. Figure 3.2 provides an illustration of the process-flow of combining inductive and deductive research. According to Bhattacharjee (2012) in the illustration below (Figure 3.3), the inductive and deductive approach can be adopted and used separately or jointly to investigate the phenomenon (Neuman, 2010).

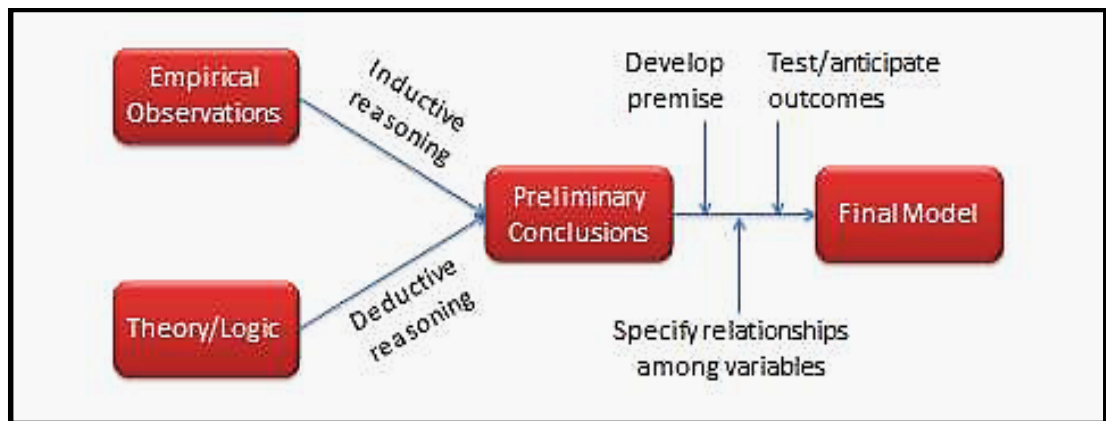


Figure 3.3: The Theory and Model Building Process (adopted from Bhattacharjee, 2012:15)

Based on the need of the research to acquire knowledge through empirical observation of data from stakeholders of the study, the inductive research approach was thought suitable and adopted to explore the case of the influence of the adopted EA on the selected PGs BITA status

3.4 Research design

Research design is described as the preparation for data collection and analysis in a manner that focuses on the emerging importance of the investigation while ensuring meaningful research resource allocation (Kothari, 2004). As stated by Yin (2003), research design handles logical and non-logical difficulties. Research design helps the scholar ensure that the proof (evidence) obtained from the inquiry location would suffice to answer the introductory interrogation as understandably as possible. Attaining pertinent facts (evidence) necessitates representing the nature of the evidence required to address the research question, which is essential for studying a theory, assessing a program, and for an accurate portrayal of occurrences (Yin (2011)). The research design involves a series of steps that execute interlocking sets of procedures to address the problem under consideration (Creswell, 2009). The formulation of a suitable research design provides a better understanding of the phenomenon, which contributes to existing knowledge by generating new insights to analyse the problem and the proposed solutions (Saunders et al., 2009).

Research design structures the research model and develops a plan that shows the relationship between components of the research process and procedures (Bhattacharjee, 2012). Creswell (2009) posits that research design describes how research components work together to realise an objective by identifying the relevant tools and processes used in data acquisition, analysis, presentation, and interpretation. The research design's choice is influenced by the researcher's

worldview, the research problem, questions, and aim of the study. Figure 3.3 depicts a layered approach to research design, as described by Sanders et al. (2009).

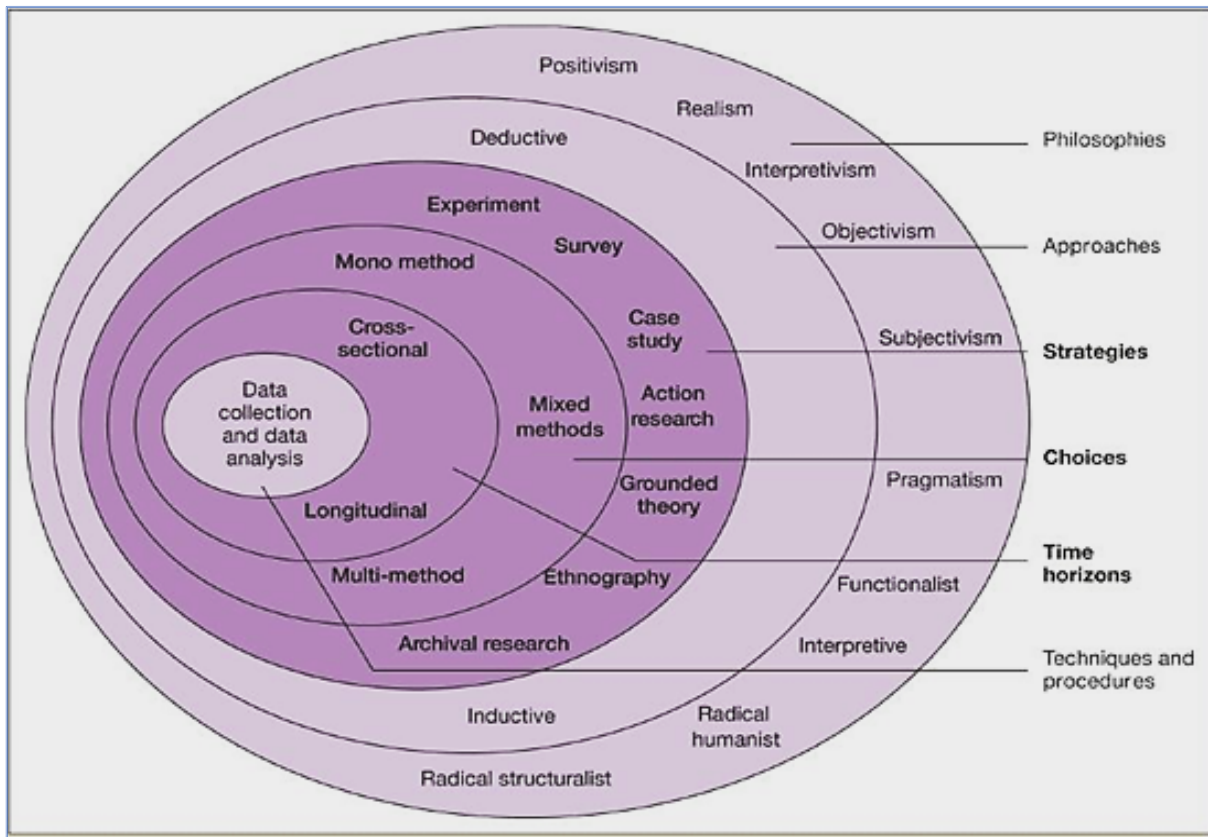


Figure 3.4: The Research Onion (adopted from Saunders et al., 2009)

Adapting the research onion layers as illustrated by Saunders et al. (2009) to the study, the scholar examined the study through the subjective philosophical view, utilising an inductive approach and adopting a single qualitative research case study strategy. Data were then collected using a mono method semi-structured interview. Different authors from a different school of thought have attempted to structure research design to fit paradigms and beliefs, with many adopting the methods to be either qualitative or quantitative (Kothari, 2004). A widely used and accepted generic classification of research design in social research is broadly categorised into three types: exploratory, descriptive, and explanatory (Kothari, 2004), which are further discussed in the following sections.

3.4.1 Exploratory research design

Exploratory research design focuses on gaining an understanding of, and insights into the problem for future investigation. The use of the exploratory design in investigating a research problem is appropriate for instances where there are a small number of related studies, or none (Venkatesh & Brown, 2013). It is also suitable for investigating problems at a preliminary stage (Kothari, 2004).

Exploratory research aims to achieve the following objectives:

- Enable the researcher to become familiar with the necessary details, settings, and concerns (Kothari, 2004)
- Lead to the era of novel thoughts, hypotheses, norms, or undefined theories (Kothari, 2004)
- Determine project feasibility at a later date in the future (Kothari, 2004)
- Analysis of relevant issues to enable the systematic investigation and examining new research questions (Kothari, 2004)

Strengths and applications of exploratory research:

- The use of exploratory design is suitable to obtain background information on the phenomenon under investigation (Flick, 2009).
- It is flexible and suitable for addressing different research questions (Kothari, 2004).
- It advances research by enabling the definition of new terms and clarification of existing concepts (Sukamolson, 2007).
- It helps to generate formal hypotheses and develop research problem statements accurately and precisely (Flick, 2009)
- It helps to provide a good structure for research via research priorities designation (Kothari, 2004)

Drawbacks of exploratory research:

- Exploratory research uses small sample sets and delivers results that may not be generalised to a larger population (Kothari, 2004; Sukamolson, 2007)
- Results arising from using exploratory research techniques have limited value in decision making because of its unstructured nature due to its inherent flexibility of methods (Kothari, 2004)
- It is challenging to standardise the exploratory design approach because it is difficult to establish the most suitable method or methodologies for different research problems (Sukamolson, 2007)

3.4.2 Descriptive research design

Descriptive research design intends to provide answers regarding the role of actors, dependencies, and environmental considerations to a given research problem (Kothari, 2004). Descriptive research is unable to provide definitive answers with regard to the interplay of underlying factors that influence the subject of research (Flick, 2009). A useful application of descriptive research is obtaining information concerning the status of the research subject and describing scenarios concerning variables or conditions in a situation (Kothari, 2004). Descriptive research is

associated with experimental research, large scale surveys, numbers, quantitative metrics and basic research (Creswell, 2009). Data tools could include closed ended metric and scale questionnaires, experimental procedures, scientific naming conventions, among others (Creswell, 2009).

Strengths and applications of the descriptive research method:

- Descriptive research investigates the subject of research in its unmodified native environment. This is also better than experiments because the research's normative behaviour is captured (Sukamolson, 2007).
- The use of descriptive research can enhance quantitative investigation when used to give a general overview and identify valuable pointers to suitable variables (Sukamolson, 2007; Bhattacharjee, 2012).
- The descriptive research method can be used as a suitable tool for developing a more focused study when limitations are known (Sukamolson, 2007).
- The use of descriptive research can provide broad data that enables making essential recommendations on a large scale (Sukamolson, 2007; Creswell, 2009).
- Descriptive research gathers a significant amount of data for a detailed prognosis analysis into a problem's applicable state (Sukamolson, 2007).

Drawbacks of the descriptive research method:

- Findings from a descriptive research cannot be used to verify the validity of the hypothesis or research questions (Kothari, 2004; Sukamolson, 2007)
- Research results obtained by using descriptive design cannot be replicated, because descriptive design utilises observational methods (Sukamolson, 2007)
- Descriptive research relies on the use of observational methods. Hence, it requires instrumentation for measurement and observation (Sukamolson, 2007, Bhattacharjee, 2012)

3.4.3 Explanatory or causal research design

Explanatory research studies aim to understand the relationship between factors that influence observed trends (Saunders et al., 2009). Explanatory design requires analysing cause and effect relationships between interacting variables (Creswell & Clark, 2011). Causal research is useful in assessing how specific changes influence existing norms that influence various processes (Kothari, 2004). It aims to analyse a specific problem by scrutinising the patterns relating to the underlying variables. The goals of the explanatory research study can be realised through experiments (Bhattacharjee, 2012). The following are instances of explanatory research design:

- Assessing how foreign direct investment influences Taiwanese economic growth
- Analysing how the implementation of re-branding influences customer commitment and loyalty to a product or service
- Understanding the relationship between the work process re-engineering and differing levels of employee motivation

Advantages of causal research (explanatory research):

- Causal studies are essential in analysing the factors that influence processes and assessing the impact of changes on existing norms (Sukamolson, 2007; Saunders et al., 2009)
- The causal research approach enables the repetition of analysis in assessing the impact of changes due to varying underlying factors (Sukamolson, 2007, Bhattacharjee, 2012)
- The use of systematically selected subjects improves the internal validity of causal research studies (Kothari, 2004; Sukamolson, 2007)

Disadvantages of causal research (explanatory research):

- Explanatory research links events that may be known as cause-and-effect relationships (Sukamolson, 2007).
- Explanatory research focuses on analysing reason and result; the causal research is not suitable for analysing coincidental events. Co-incidental events are those that occur in similar patterns but are influenced by independent underlying factors (Sukamolson, 2007; Saunders et al., 2009).

It is challenging to establish a conclusion using the results of causal studies in social research because of the large number of factors and variables that influence the occurrence of a variable in a social environment. The design followed the aim of the study to explore. The next sub-section presents the research strategy as applied in this study.

3.5 Research strategy

Research strategy is an essential portion of any research, and it provides material on the processes or techniques applied to derive answers to the research questions (Saunders et al., 2009). There are diverse sorts of research strategies that can be used in the research process, dependent on the nature of the research aim and objectives, some of which are grounded theory, experiment, survey, action research, ethnography, archival research, and case study, among others (Creswell, 2009; Saunders et al., 2009). Research strategy could inform the choice of qualitative or

quantitative methods. This research was carried out using the qualitative research method, due to its various advantages based on the research context. Because of the research study's exploratory environment, a case study was employed to better understand the research subject matter. The following sub-section provides an illustration on the context of "case study" as applied in this study.

3.5.1 Case study

A case study is used to empirically conduct a rigorous study about a phenomenon, an individual, an assembly of persons or an entity, which is intended to generalise entities (Yin, 2009; Gustafsson, 2017). Case studies are often used to conduct an in-depth organisational study to obtain desired detailed information on a given phenomenon (Zikmund et al., 2010). This type of study is conducted by analysing multiple evidence from a single data source or related units of similar cases, enhancing data dependability and substantiating the data collected from additional sources (Yin, 2009). Furthermore, case studies are more aligned with qualitative research because of the focus on the context of a phenomenon, which gives researchers more control over the phenomenon and the considered environment. The case study has been argued to be a foremost tool in qualitative research because it allows researchers to study the phenomena in its natural surroundings, capturing the experience and feelings of the subject of a studied phenomenon by raising new questions (Orlikowski & Baroudi, 1991). The consideration of these questions motivates the design of new theories that interact with the research logic and unites data and proposition (Saunders et al., 2009).

Case studies can be either a single case or multiple cases (Yin, 2009; Gustafsson, 2017). Single case studies investigate a single case, while researchers study multiple cases to understand similarities and differences in the cases (Gustafsson, 2017). An example of a single case study involves investigating a specific phenomenon in an organisation (Kothari, 2004). A single phenomenon can be investigated in a multiple case study across various organisations concerning different contexts (Flick, 2009). Single case studies can be further classified as all-inclusive or embedded design (Yin, 2009), while a single case can also be embedded when the unit of analysis present in the organisational context is more than one application to this research study.

Case studies are suitable for discovering new insights, where common knowledge is limited to enhancing the understanding of a particular situation (Yin, 2003). The case study also uses numerous groupings of techniques to encourage a balanced perspective (Flick, 2009). Given the evidence of restricted experimental research in the aspect of BITA in the South African public sector, the study was exploratory

designed, aimed at determining new knowledge on the BITA status in a South African PG. Thus, the case study technique was a well-thought-out and appropriate research strategy for probing the phenomenon inside an organisational context prescribed by Yin (2003). The researcher adopted a case study as a research strategy to understand the role of employed EAs on the BITA status of a chosen PG, because of the need for an in-depth understanding of the EA influence on the current status of the PG's BITA.

3.6 Research methods

Research methods are phases of processes and practices which combine all-encompassing logical and well-defined ideologies that state-specific methods and techniques, which may be applied to scrutinise, presume, evaluate and interpret diverse ideas and challenges or problems within the scope of a precise discipline (Creswell, 2009; Saunders et al., 2009). Research methods also describe the precise process of acquiring research data using appropriate tools (Neuman, 2011). The three commonly established research methods used in scientific inquiry, and prevalent among scholars, are qualitative methods, quantitative methods, and mixed-methods. Data for this research was sourced primarily using a qualitative research method because the study aimed to explore the effect of the implemented enterprise architecture (EA) on the business and information technology alignment (BITA) of a public governmental organisation's businesses processes, which can be achieved best through the qualitative research method. Previous concepts from relevant literature were applied as a focal lens to structure the investigation, design the data collection, and analyse the data. The resultant findings from the in-depth case study of the subject matter were used to develop a good knowledge of the subject's current state. The three research methods mentioned are further discussed in the sub-sections below.

3.6.1 Quantitative research

Quantitative research places the emphases on numeric values. Data are collected by applying techniques such as surveys through questionnaires, and the analysed data are presented through graphs or statistics (Saunders et al., 2009). Quantitative research is usually employed when the data sample is very large. The collected data are analysed quantitatively via the usage of numeric facts to explain the phenomena being studied to a broad-spectrum audience (Bhattacharjee, 2012). The positivist researchers favour quantitative research because of the investigation and interpretation (Orlikowski & Baroudi, 1991). According to (Saunders et al. (2009), although quantitative procedures relate to figures and statistics, data may still be examined and presented in a descriptive format without numeric interpretations.

The descriptive research can be recognised by the exhaustive depiction of each of the classifications established by the survey. The quantitative study design was not deemed suitable as a research method for the study, which can be attributed to the view of Kaplan and Maxwell (1994) who said that the intention of understanding a phenomenon based on the opinion of participants within their natural social and organisational settings is disrupted when written data (text) are habitually quantified.

3.6.2 Qualitative research

Qualitative research is a technique that depends on intangible scrutiny and presentation, and critical and interpretive paradigms are usually linked to qualitative data collection techniques (Saunders et al., 2009). Both qualitative and quantitative data can be analysed empirically (Saunders et al., 2009). However, qualitative research focuses on information that discovers groups or individuals' intent and presents non-numeric information (Yin, 2011). In furtherance, qualitative research takes note of individuals and to issues that determine their actions and reactions within the context of their natural environment (Yin, 2011). Flick (2009) argues that the purpose of qualitative research is, therefore, to realise and develop new pragmatic studies in order to progress a new understanding of theories.

There are five (5) key features to consider in qualitative research, as described by Yin (2011:7-8):

- “Studying the meaning of people’s lives, under real-world conditions;
- Representing the views and perspectives of the people in a study;
- Covering the contextual conditions within which people live;
- Contributing insights into existing or emerging concepts that may help to explain human social behaviour; and
- Striving to use multiple sources of evidence rather than relying on a single source alone.”

Qualitative research depicts an interactive way of data collection, which focuses on describing or explaining importance rather than statistical interpretations (Saunders et al., 2009). Qualitative research offers an understanding of the subject matter, obtaining knowledge by considering the phenomenon's actions and perception (Bhattacharjee, 2012). The associated research procedures concentrate on gathering, analysing, and interpreting information with a small focus on a numerical framework and an in-depth focus on the research's qualitative value (Saunders et al., 2009). The use of qualitative research and related data methods is classified by Sherman and Webb (1988) and Strauss and Corbin (1990) into three categories, as highlighted below:

- Understand any observable fact about the little that is yet known
- Gain new viewpoints on things of which a significant amount of information is previously known
- Gain additional, comprehensive information on something that seems to be difficult to express quantitatively

The qualitative research method is referred to as one that encompasses (i) pictures and word videos, (ii) data collection by means of interviews, and (iii) categorisation analysis (Saunders et al., 2009). According to Myers (1997), qualitative research methods are suitable for information systems research, as it helps researchers comprehend individuals' behaviour within their cultural and social settings. Qualitative methods place importance on gaining a wide-ranging understanding through continuous sampling in anticipation of obtaining fresh, relevant facts (Miles & Huberman, 1994). Patton (2001) asserts that the qualitative method is positioned to accomplish an in-depth understanding, while quantitative methods are projected to attain the scope of understanding. Several established research strategies are associated with qualitative research, such as Ethnography, Phenomenology, Grounded Theory, and Case Study research (Flick, 2009; Yin, 2011). This study used a case study to comprehend features that predominantly impact BITA maturity in the public sector. This in-depth understanding was required to explain the rationale behind the chosen PG's social behaviour on the implemented BITA's current status. Thus, the qualitative research method was adopted for this study to understand the interpretation of human experience and social influence concerning the subject matter.

3.6.3 Mixed-methods research

Creswell (2009) describes the mixed-methods approach as a combination of qualitative and quantitative methods prearranged as the inquiry technique before the study commences. Creswell further posits that alternative methods are implemented in research because of possible challenges or shortcomings in the initial approach. Saunders et al. (2009) opine that a research technique can adopt both the qualitative and the quantitative research approach, which includes the secondary and primary data, in order to acquire the right information based on a combined research topic. Thus inquiry can be prearranged in such a manner that the results and interpretation of the preliminary quantitative segment lead to developing the qualitative segment of the research, and *vice versa*.

3.7 Population and sampling method

Population describes the entire data set (e.g. people or items) to be studied, while sampling is the process of deciding on a sample of units from a data set to determine the beliefs, attitudes and characteristics of the data (Hair, Babin, Money & Samouel, 2003). When sampling, a structured or semi-structured questionnaire could be used to collect data that evaluate the selected population or sub-groups beliefs and attitudes, and the questionnaire may comprise both theoretical and practical questions. Malhotra and Birks (2017) highlighted that a researcher could inference a larger group from data obtained from a smaller group of the population. This type of selection is beneficial because it reduces the work challenges and budget that would be involved if the entire target population had to be studied.

Similarly, Hair et al. (2003) indicate several reasons for sampling, including faster data collection, accuracy and cost-effectiveness. Morse and Niehaus (2009) state that whether the methodology used is quantitative or qualitative, sampling procedures are projected for the research study's efficiency and validity. The selection of sampling technique depends on the background and surroundings of the study. There are largely two types of sampling approaches, namely probability sampling and non-probability sampling. Each procedure has different prospects and norms for defining the number of participants required to accomplish its aim (Saunders et al., 2009). Whether the probabilistic or non-probabilistic method is adopted, sampling is the process of shaping the sample size of a study (Saunders et al., 2009).

The study's research population was employees working in the core business unit and the IT operational unit across different PG departments. The following defines the main sampling procedures and sampling method usually used in business studies:

3.7.1 Probability sampling method

In probability sampling design (which is also known as 'random sampling' or 'chance sampling'), every item in the population has the same chance to be selected as part of the sample. The probability sampling method shows the importance of random sampling design. Random sampling furthermore guarantees statistical regularity. Probability sampling is when each sample has an equal chance of being selected. This method could either be a random, stratified, cluster or systematic (Morse & Niehaus, 2009).

i) Simple random sampling technique

Simple random sampling is perceived as the most straightforward approach to probability sampling (Bhattacharjee, 2012). To achieve simple random sampling, all

a scholar has to do is ensure that all populace members have an equal chance to be selected for the sample. This can be done by compiling a list with all their names and then use an algorithm that randomly chooses the names from the list (Saunders et al., 2009). However, according to Morse and Niehaus (2009), simple random sampling can be extremely timely and exhaustive when sizable samples need to be drawn.

ii) Stratified sampling technique

Stratified random sampling is deemed a proportionate random sample (Creswell & Clark, 2011). In stratified random sampling, the subjects are categorised initially into various groups (or strata) with differentiating characteristics, such as gender and socioeconomic or education status (Bhattacharjee, 2012). It is significant to note that these categories should not have similar characteristics (Saunders et al., 2009). Through random selection, scholars choose the final list of participants or subjects from these groups to have a good, reliable example (Creswell & Clark, 2011). The probability sampling approach is applied anytime the investigation aims to study a specific smaller group inside a larger populace (Saunders et al., 2009). It also offers more accurate results than a simple random sample of a large population (Flick, 2009). Stratified random sampling separates the population into homogeneous clusters (groups), and then samples are drawn from each group, making the collective sampling extremely accurate. However, the drawback is that this sampling method may be too time-consuming and tedious, especially when the population is very large (Bhattacharjee, 2012).

iii) Systematic sampling technique

Systematic random sampling is frequently likened to a mathematics sequence in which the change (or difference) between two successive figures is of equal worth (Saunders et al., 2009). For example, if a scholar is studying a hospital with 200 patients, the initial action with systematic random sampling is to select a lower number than the overall total of the patients' populace, say for example number 4. Next, a new number is chosen to indicate the difference between consecutive numbers of patients, for example, 6. By following the systematic sampling technique, the survey would focus on patients 4, 10, 16, 22, 28, and so on (Saunders et al., 2009). The systematic random sampling lets scholars select samples based on initially random numbers, but the results are not nearly as random as they would be if a software program were used (Creswell & Clark, 2011; Bhattacharjee, 2012).

iv) Cluster sampling technique

Random cluster sampling is used once population size becomes too large for simple random sampling (Saunders et al., 2009). For example, like examining the entire African population's nutritional habits, the populace is just too big to handle such a project successfully (Bhattacharjee, 2012). Random cluster sampling is used to delimit the population by setting boundaries (Creswell & Clark, 2011). For instance, in the nutritional habits project, the boundaries could be the borders of the various African countries, which enable the scholar to choose known boundaries (Bhattacharjee, 2012) randomly. It is of the utmost importance to note each delimited cluster; in this case, African nations must have the same likelihood of being chosen for the sample (Saunders et al., 2009). The scholar carrying out the study can then include all the potential respondents to be selected within the designated areas and apply simple random sampling (Bhattacharjee, 2012). Random cluster sampling is the main benefits of the method's suitability and the easiness of applying it. Simultaneously, it might be extremely challenging to conduct this sampling technique if the clusters' participants are not equal, which means the scholar might conclude with a smaller amount of precise data (Saunders et al., 2009; Bhattacharjee, 2012).

v) Multistage sampling technique

Multistage sampling comprises an amalgamation of more than one probability sampling approach (Barreiro & Albandoz, 2001). With more advanced studies, randomisation, which is essential to guarantee the outcomes, cannot be accomplished by applying just one probability sampling method (Saunders et al., 2009). By combining various probability sampling procedures at different phases of the study, scholars can rest assured that biases are mitigated as much as possible (Bhattacharjee, 2012).

3.7.2 Non-probability sampling method

Contrary to probability sampling, non-probability sampling is applied when the scholar chooses a particular sample based on a certain pre-set condition to represent the population (Barreiro & Albandoz, 2001). Non-probability samples are selected based on non-random considerations, such as accessibility and composition within an environment, among many other criteria (Bhattacharjee, 2012). Data and information generated from a non-probability sampling technique cannot be generalised back to the population of interest; it can only be used within the actual sample context (Saunders et al., 2009). Respondents have chosen in a non-random manner usually have in-depth knowledge of the subject matter, with ample experience of the studied phenomena. This technique lets the researcher choose a source that possesses in-depth, credible information because of the nature of the wealth of knowledge and

experience the respondent has on the subject of study (Zikmund et al., 2010). The method applied in this study was non-probability sampling based on qualitative research methods, which included convenience, snowball, judgmental (purposive) and quota sampling, which in turn offer a variety of techniques to constitute a sample based on subjective judgment (Saunders et al., 2009). The different sampling approaches are discussed in more detail next.

i) Convenience sampling technique

In non-probability sampling, the samples are chosen from the populace solely because it is more suitable and easier for the scholar to extract information from the samples' respondents (Saunders et al., 2009). These samples are chosen because this technique does not place stress on the employee (respondent), and there is no need for the scholar to select a sample that is a fair representation of the entire populace (Creswell & Clark, 2011). It is preferable to choose a sample representative of the population, but in practice, this is not always feasible or obtainable (Flick, 2009), because the population may simply be too large to research with (Saunders et al., 2009). Scholars have valid reasons for opting for convenience samplings, such as the speed with which data can be collected, cost implications when huge samples are chosen, and the conform and ease with which data can be obtained from the respondents (Creswell & Clark, 2011). A conveniently selected sample of respondents could be participants who volunteer to be part of the sample because they are well known to the researcher (or scholar), for example, the examiner (scholar) can survey undergraduate learners (respondents of the sample) (Bhattacharjee, 2012).

ii) Consecutive sampling technique

This non-probability sampling method is parallel to convenience sampling, but with a minor difference (Saunders et al., 2009). The scholar chooses a particular individual (subject) or a cluster as the sample, which is studied over some time to examine the outcomes, and then, if needed, move on to a new subject or cluster (Creswell & Clark, 2011). Consecutive sampling offers the scholar the chance to work with and study many subjects by gathering meaningful results (Bhattacharjee, 2012).

iii) Quota sampling technique

A scholar desires to examine the objectives or reasons why male and female workers specifically selected to work in a specific company (Saunders et al., 2009). The total number of workers in the company is 600, which constitutes the entire population for this example (Creswell & Clark, 2011). To conduct the research, the scholar needs to draw a sample because its limitations are that it is not feasible to include all 600

workers. Also, the scholar is concerned with specific layers inside the population. This is the point where quota sampling supports dividing the population into strata or clusters (Saunders et al., 2009). For studying the work objectives of 600 workers, theoretically, the sample chosen must have an equivalent number of men and women; thus, there should be 300 men and 300 women. This, however, is improbable, and therefore clusters or layers are formulated so that quotas are assigned from which respondents are then selected for the sample (Bhattacharjee, 2012).

iv) Snow-balling sampling technique

Snowball sampling assists scholars in finding respondents when it is challenging to detect the sample. Scholars apply this procedure when participants are not readily available and/ or not easily obtainable (Saunders et al., 2009). Also, this sampling method entails the nomination of participants, where the scholar asks one interviewee to nominate the next interviewee who may also be knowledgeable on the topic of investigation (Creswell & Clark, 2011). For instance, this kind of sampling can be applied to perform a study with respondents whom all have the same (uncommon) illness or display similar symptoms. The scholar needs to identify at least the first subject (interviewee), and this subject may be able to refer the scholar to someone else who seems to have the same symptoms (Saunders et al., 2009; Bhattacharjee, 2012).

v) Purposive sampling technique

With purposive or deliberate/non-probability sampling, the scholar deliberately selects participants whom all display the same characteristics important to the study (Saunders et al., 2009). Anytime respondents with the same characteristics are purposively selected to be part of the sample, the method can be termed deliberate or purposive sampling (Creswell & Clark, 2011). The purposive sampling technique allows a researcher to conduct interviews at specific sites depending on the interest site (Bhattacharjee, 2012). Purposive sampling is a procedure extensively applied in qualitative studies to recognise and choose information-rich cases (Patton, 2001). It comprises finding and choosing individuals or groups of persons that are experienced in and knowledgeable on the phenomenon of concern (Creswell & Clark, 2011). In this study, a non-probabilistic method of purposive sampling was applied to choose the intended participants. The investigation involved experienced high-ranking managers and junior managers who are engaged in business and IT operational processes in the PG. The researcher (scholar) selected participants holding the following positions in the PG: Director/Head, Deputy Director, Service Managers' Coordinator, Services Manager, Project Manager, Business Analysts Team Leader, Enterprise Architect, and Business Analysts.

3.7.3 Sample size

The choice of sample size is widely studied. However, selecting the correct sample size is still an immense challenge for researchers (Marshall, Cardon, Poddar & Fontenot, 2013). Since statistical techniques have a strong influence on sample size, the researcher must be careful when considering a sample size (Rahi, 2017). Collis and Hussey (2013) highlight the significance of this, postulating that sample size should be based on the analysis method selected for a study. For instance, structural equation modelling that further investigates confirmatory factor analysis, causal modelling with dormant variables, structural path analysis and multiple regression analysis should be handled carefully (Marshall et al., 2013; Rahi, 2017).

Marshall et al. (2013:11-12) stated that:

“Most qualitative methodologists openly recognize the lack of standards for sample size. Simultaneously, some qualitative methodologists are not troubled by the lack of guidelines, even considering the vague nature of sample size guidelines as a reflection of the qualitative orientation to research. This orientation is not only theoretical but also psychologically fitting for people with more tolerance for ambiguity.”

Patton (2001: :242-243) claimed that,

“Qualitative inquiry is rife with ambiguities. There are purposeful strategies instead of methodological rules. There are inquiry approaches instead of statistical formulas. The qualitative inquiry seems to work best for people with a high tolerance for ambiguity ... Nowhere is this ambiguity clearer than in sample size. There are no rules for sample size in qualitative inquiry. Sample size depends on what you want to know, the purpose of the inquiry, what’s at stake, what will be useful, what will have credibility, and what can be done with available time and resources”.

Whereas qualitative methodologists are doubtful to come to an agreement on precise sample sizes required for qualitative studies, they commonly agree that there are a couple of issues that may impact the number of interviews required to attain saturation (Marshall et al., 2013). Factors that can affect the sample size required to attain saturation include the nature and scope of the research, the quality of the interviews, sampling procedures, number of interviews per participant, and researcher experience (Lincoln & Guba, 1985; Morse, 2000; Patton, 2001; Richardson, 2003; Marshall et al., 2013). In light of the issues stated above, the sample size for this study selected is 16, due to the respondents’ positions and years of experience on the subject matter.

3.7.4 Sample frame

The sample frame is described as the entire list of sampling units in the populace (population) from which the study sample will be chosen (Rahi, 2017). If the populace is fixed (i.e. static) and the timespan is in the past or the present, then the possibility exists that for the selected timespan, the populace might be impossible to tell from the sample frame. In extreme situations, the frame and the populace are not distinguishable since it is continuously difficult to draw a sample directly from the population. As such, this sample frame may be fictitious (i.e. made up) by the researcher for a specific study, or the researcher may comprise the existing list of the population. For example, the telephone directory may be selected as a frame to pilot a city survey, but whatever method is used to select the sample frame. Whatever the frame might be, it must be a trustworthy and credible representation of the city population (Kothari, 2004). The Department of the Premier in the specific province selected for the study is accountable for managing all 13 PG departments' ICT needs, as shown in Table 3.1.

Table 3.1: Distribution of departments in the PG

Department of the Premier	Human Settlements
Provincial Treasury	Health
Community Safety	Education
Sports and Culture	Social Development
Local Government	Agriculture and Transport
Economic Development and Tourism	Public Works
Development of Planning and Environmental affairs	

3.7.5 Unit of analysis and unit of observation

With specific functions related to PG's business and IT strategies, the units were selected from which participants were drawn. The Centre for e-Innovation (Ce-I) is a unit within the Premier Department coordinating business and ICT services for all other departments. Table 3.2 showcases all five divisions of Ce-I that are directly involved in aligning business and IT strategies within the PGs business processes.

Table 3.2: Divisions in Centre for e-Innovation (Ce-I)

Centre for e-Innovation (Ce-I) divisions
Ce-I: Policy and Strategy
Ce-I: Planning and Development
Ce-I: Data Support
Ce-I: Infrastructure
Ce-I: Economic, Governance, and Administration

This study required professional employees' involvement, which included senior managers and mid-level managers involved in the strategic organisational business processes planning and operations in the PG. The following position holders were selected: Director/Head, Deputy Director, Service Managers' Coordinator, Services Manager, Project Manager, Business Analysts Team Leader, Enterprise Architecture Specialists, Enterprise Architect, and Business Analysts. The participants selected were based on their knowledge, having worked within areas concerning business and IT strategic processes in the PG, with a minimum work experience of 3 years in the PG.

Twenty (20) employees with a minimum work experience of three (3) years were initially targeted to participate in the study. However, only fourteen (14) of these employees were able to participate, which can be attributed to their busy schedules and portfolios' reassignment.

Table 3.3 displays a representation of the participants selected for this study.

Table 3.3: Participant profiles

Respondent	Category (Business or IT)	Departments	Operational Department / Section	Position in the PG	Years of experience (year)
R1	(Joint Business interview, 5 participants)	Education, Agriculture & Transport, Social Development	E-Innovation	Business Analysts	3 - 7
R2	Business	Development of Planning & Environmental Affairs	E-Innovation	Deputy Director	12
R3	IT	Planning & Development	E-Innovation	Enterprise Architect	5
R4	IT/Business	Governance & Administration	E-Innovation	Director	15
R5	IT/Business	Governance & Administration	E-Innovation	Deputy Director	13
R6	Business	Economic Development & Tourism	E-Innovation	Deputy Director	12
R7	Business	Economic Development & Tourism	E-Innovation	Service Manager	10
R8	IT	Education, Culture & Sport	E-Innovation	Director	12
R9	Business	Health	E-Innovation	Deputy Director	15
R10	IT	Provincial Treasury	E-Innovation	Service Managers' Coordinator	15
R11	Business	Local Government and Community Safety	E-Innovation	Service Manager	14
R12	IT	Public Works and Human Settlement	E-Innovation	Business Analysts	7

3.8 Data collection

Data collection methods are designed to align with the research aim and objectives of a study to obtain the required data needed to offer responses to the research questions and, ultimately, address the research problem (Saunders et al., 2009). Data collection methods commonly applied in qualitative research include interviews (unstructured and semi-structured), focus groups, observation and the use of semi-structured questionnaires (Flick, 2009).

In this exploratory qualitative research, data for the study were obtained primarily through conducting semi-structured interviews. According to Kahn and Cannell (1957), an interview is a discussion between two or more persons. Miller and Glassner (2009) regard the interview as interactive rapport between a questioner and the respondents, with the intent to obtain knowledge from the participants in congruence

with the objectives of the research study. The interview was necessary to understand the BITA status of the PG after the EA was implemented.

3.8.1 Interviews

Interviews are described as communication between two different individuals or entities or group members to collect information (Neuman, 2011). Various interviews can be conducted, including unstructured interviews, semi-structured interviews, structured interviews, telephone interviews, and Internet interviews, as depicted in Figure 3.5 (Saunders et al., 2009). Interviews are used to extract comprehensive thoughts and viewpoints of the person(s) being interviewed on the subject under investigation, thereby providing a synchronised and dynamic representation of the interviewee's knowledge on the study's topic (Simons, 2009). Semi-structured interviews enable the researcher to conduct rigorous investigations that could reveal opinions which the other party may not be willing to share (Kothari, 2004), thereby exposing prevailing beliefs or events that cannot be conveyed by simple assessment and review (Saunders et al., 2009).

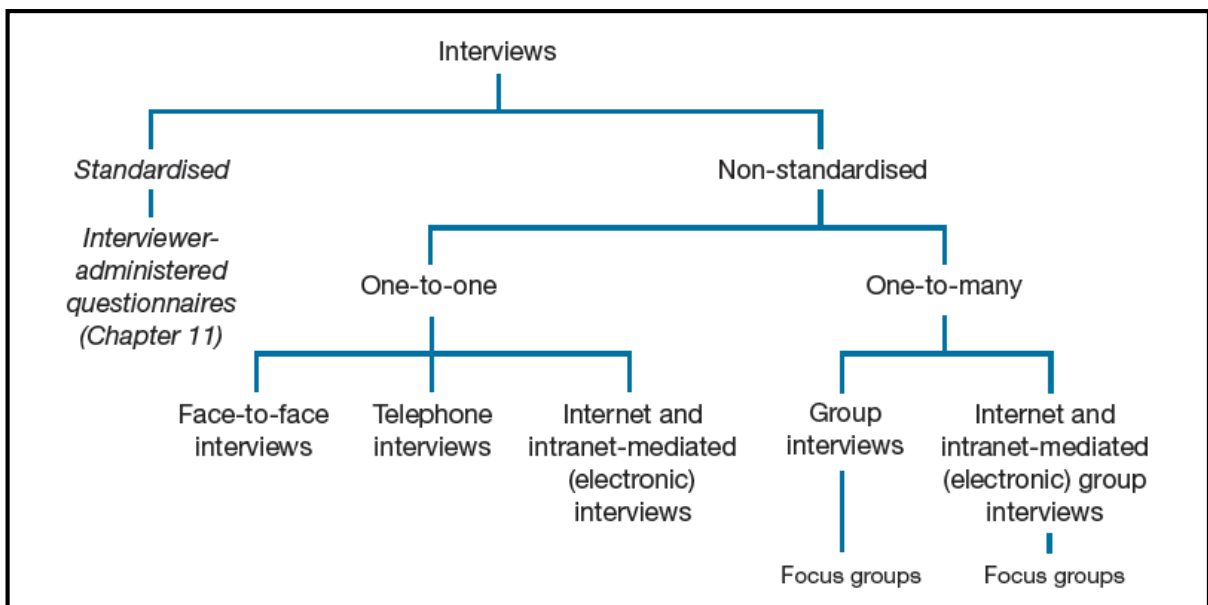


Figure 3.5: Types of interviews (adopted from Saunders et al., 2009)

3.8.2 The interview process

Interview process aims to acquire in-depth insight and knowledge on the research subject (Myers & Newman, 2007). For this research, an investigation by means of a semi-structured interview was carried out. The interview was necessary to understand factors that influence the BITA status through the PG's implemented EA.

Prospective interviewees selected for the study were contacted by means of telephone calls and email. Letters of invitation containing a request to participate in

the research study and describing the study's rationale and significance were sent to prospective participants. A list of pre-arranged questions was drawn up from the research questions and was used to guide the interview process. The administration of the questions set out in the interview process varied slightly from one session to the next, depending on the participants' responses. How questions were posed was flexible in order to set the interviewees at ease. The interviews followed ethical research guidelines, a consent letter was given to consenting participants to sign, and permission was sought to record each interview before it commenced.

3.8.3 Recording the interviews

All digital recordings of interviews were made with interviewees' authorisation, and observation notes of the interview environment were taken. The interview was recorded for both verbal and non-verbal communication, as prescribed by Saunders et al. (2009). According to Myers and Newman (2007), a verbal communication record can be created by using an audiotape, while written notes may also be used to record facial expressions or gestures that cannot be recorded by audiotape Vaismoradi, Turunen & Bondas (2013).

Creating a non-verbal communication record is useful for generating context for the transcript (Saunders et al., 2009). The interviews were conducted at the offices of the participants in the PG over two months, and each session lasted between 45 minutes and one hour. Interview data were captured and stored for further analysis by taking notes of non-verbal observations and using audiotapes.

3.8.4 Guidelines for interviews

Myers and Newman (2007) indicated that guidelines for qualitative interviews involving sensitive data collection were adopted to collect data and design the interview protocol for the study. According to the authors, the interviewee's initial feeling is an essential factor for determining an interview's success. The interviewee should be relaxed in order to build the individual's confidence while keeping public interactions during the interview to the minimum (Myers & Newman, 2007; Rahi, 2017). Figure 3.6 represents guidelines for qualitative research interviews, prescribed by Myers and Newman (2007).

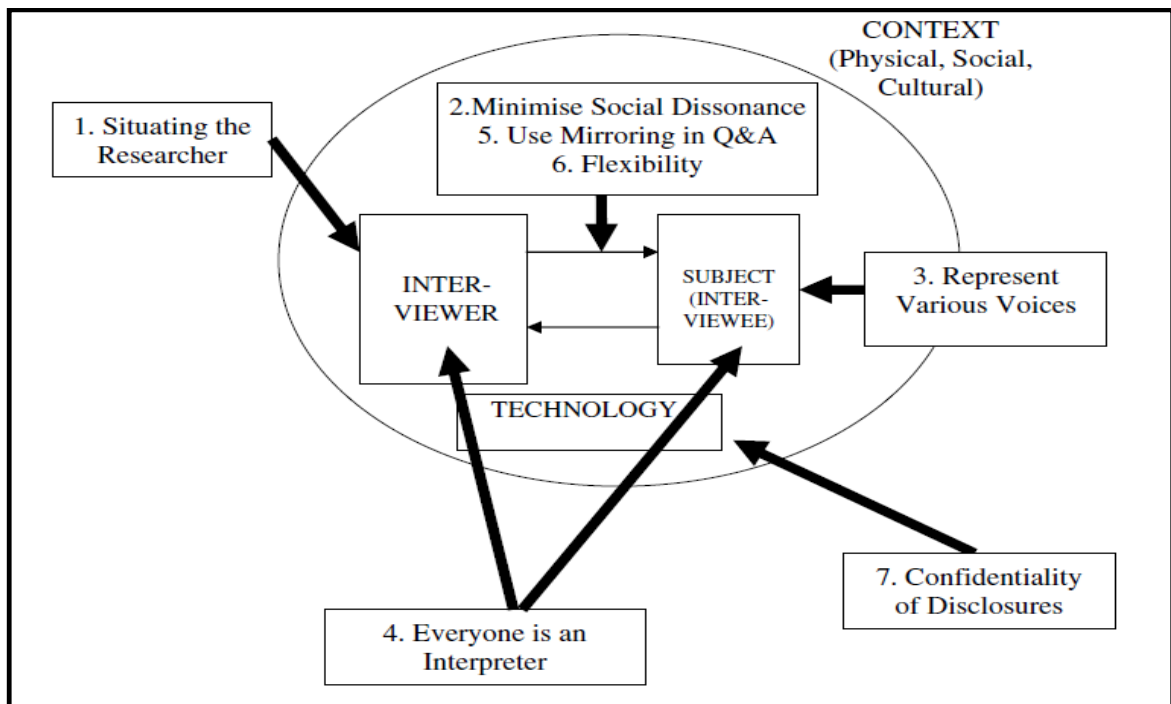


Figure 3.6: Guidelines for qualitative research interviews (adopted from Myers & Newman, 2007:16)

3.8.5 Mapping guidelines for qualitative research interviews to the study

A brief description of the guidelines for qualitative research interviews, as outlined by Myers and Newman (2007) and mapped to the study is provided below:

- **Situating the researcher** – The interviewer should be relaxed and well positioned so that difficult questions are asked in a calm, relaxed, informal manner to the interviewee. The process should start with the researcher asking the respondent personal questions, such as the person's name and background, to establish a reasonable familiarity level. Such details could dovetail into authenticating the results of the investigation. For this study, the interviews commenced with the researcher asking the interviewees questions regarding their designation, job responsibilities, personal years of experience, organisation business background, and managerial experience. All interviewees were made comfortable by exchanging cordial pleasantries, creating an amicable and comfortable environment for the researcher to extract relevant information on the topic of discussion (Myers & Newman, 2007).
- **Minimising social dissonance** – Since interviews are often conducted in public spaces, it is essential to reduce public interference that can distort the interview process. Interviews should be carried out in a serene environment with minimal exposure to disruptions, which advances the value of the information being revealed. Both interviewer and interviewee were positioned

in a serene and quiet environment, to reduce public interference and maximum concentration during the interview; reserved office spaces within the organisation were used for interviews. The interviewees were relaxed and comfortable in the space and were allowed to respond in a preferred manner. Conscious attention was paid to the physical appearance and interviewees' mannerisms to ensure seamless communication between interviewee and interviewer (Myers & Newman, 2007).

- **Representing various 'voices'** – In a sensitive and high-value investigation, it is better to have several people interviewed than solely relying on the detailed facts extracted from one individual. This concept is also referred to as 'subject triangulation'. IT relates to including diverse subjects for interviewees to extract a well-rounded or at least an average opinion (Neuman, 2011). Diversity in opinions and views of selected PGs personnel members were obtained during data collecting for this research study. During the interview sessions, all interviewees were excused from their official duties to take part in the research, and they gave a full account of their views and experience on the research topic. The interviewees cut across different units and departments, citing personalised experiences and interaction with the business processes from their perspective as employees (Myers & Newman, 2007).
- **Everyone is an interpreter** – This implies that the topics under investigation could be original or a version of the interviewees. Thus, interviewees have differing opinions on many topics given their level of knowledge, experience and exposure to the topic of discussion. At times, interviewees were allowed to express themselves by voicing diverse opinions on their business processes' perspectives. Their perceptions and experiences were all respected, which laid the foundation for the open-minded interpretation of data on the topic of discussion (Myers & Newman, 2007).
- **Mirroring in questions and answers** – Mirroring focuses on structuring follow-up interviews or inquiries based on the earlier investigation's responses and expressions. In such a situation, the interviewees focus on their personal views and opinion, communicating and using their speech to convey intended facts. Therefore, it is better to use open questions to probe from generic to specific responses and then narrow the questions down to relevance issues. Therefore, the interviewer should be able to listen, encourage, direct, and prompt the conversation until it produces rich data about the essence of the

research topic as intended. For this study, the interview process commenced with drawing up a list of prearranged questions mailed to the interviewees before the actual interview sessions took place. The manner in which questions were posed varied from one interview session to next because the style of engagement and clarity was sought if and when needed to expand on the true meaning of the responses. The way or manner in which questions were phrased was also adaptable to suit the interviewee's comfortability and ability to respond in a factual manner (Myers & Newman, 2007).

- **Flexible** – With semi-structured interviews, the researcher uses a script (or guideline) that is not complete due to openness, but with an actual outcome that could portray flexibility and innovativeness. The researcher has to be ready to accept other perceptions/interpretations of related interest and be observant of other aspects not relevant to the study. The interviewer should also be ready to uncover contrary feelings to inquiries while taking note of their common disposition in the interview context. The interviews were conducted over two months, and each session lasted between 45 minutes and one hour at the respective PG offices of the participants (Myers & Newman, 2007).
- **Confidentiality of disclosures** – It is essential that the researcher securely maintains all the tools, records, and transcripts used for the collected data. It is appropriate to give a rough extract of the data to the organisation to confirm a true representation of the collected data in some situations. The interview was conducted using ethical principles, and before the commencement of the interview, a consent letter was given to the participants, guaranteeing the privacy, confidentiality and anonymity of the interviewees' data. All data obtained during the interview process were transcribed and adapted into a manuscript, securely saved together with the audio version, and firmly contained in an access-controlled device that is accessible to authorised persons only (Myers & Newman, 2007).

3.9 Data analysis

In qualitative data analysis, several analysis techniques may be adopted, which include: thematic analysis, conversation analysis, social network analysis, grounded analysis, narrative analysis, discourse analysis, and content analysis (Saunders et al., 2009; De Casterle, Gastmans, Bryon & Denier, 2012). The content analysis procedure was adopted to gain a comprehensive insight into the subject matter, as it enables the classification of text information into more accessible, understandable, and meaningful information (Kothari, 2004; Kumar, 2011). This type of technique

allows the use of pre-determined categories and constructs to better structure data analysis. Data obtained was analysed by summarising participants' critical responses under relevant categories and themes using content analysis principles (Punch, 1998; Saunders et al., 2009). These pre-determined categories and themes were derived from Luftman's Strategic Alignment Model (SAM).

3.9.1 Thematic analysis process

Thematic analysis and content analysis are arguably the most commonly used methods for analysing qualitative research (Quinlan, 2011). The thematic analysis adopts a process of data coding, which enables the grouping of similar words or phrases captured from interviewees. The use of related words or phrases enables theme-based categorisation, useful to improve the understanding of the phenomena being investigated, and it aids interpretation based on available literature (De Casterle et al., 2012; Vaismoradi et al., 2013). The data coding process employed in data analysis, as described by Vaismoradi et al. (2013), is illustrated in Table 3.4.

Table 3.4: Data analysis coding process

Analysis Stage	Step	Description	Attribute	
A: Reduction or Breakdown of text	1	Code Material	(a) Devise a coding framework	
			(b) Dissect text into text segments using the coding framework	
	2	Identify Themes	(a) Abstract themes from coded text segments	
			(b) Refine themes	
	3	Construct Thematic Networks	(a) Arrange themes	
			(b) Select Basic Themes	
(c) Rearrange into Organizing Themes				
(d) Deduce Global Theme(s)				
B: Exploration of text	4	Describe and Explore Thematic Networks	(a) Describe the network	
			(b) Explore the network Step	
	5	Summarize Thematic Networks	Summary	
	C: Integration of Exploration	6	Interpret Patterns	

3.9.2 Content analysis process

The analysis of textual content is an essential task for qualitative data analysis, which can be achieved via the application of content analysis. The content analysis procedure categorises verbal or behavioural data to aid classification, summarization, and tabulation, captured by tapping into the conversation amidst the researcher and the participants (Graneheim, Lindgren & Lundman, 2017). The data from the

transcriptions of interviews/discourses, observation protocols, videotapes, written documents for communication, and categorised questionnaire responses are all applicable data sources suitable for content analysis (Neuman, 2011). The technique's strong point lies in its rigorous methodological control and step-by-step analysis of the material through structured categorisation and data classification (Saunders et al., 2009).

3.9.3 Data transcription

The transcription process involves deciding the detail level to be incorporated into the transcribed data (Vaismoradi et al., 2013). Additionally, factors to be considered in data transcription are the incorporation of non-verbal dimensions of interaction subjective data interpretation and data presentation (Datt & Chetty, 2016). The representation of audible and visual data in written format is the first step required for analysing audio data, and it is essential for considering the relationship between the project scale and the level of detail to be incorporated into the transcribed data (Quinlan, 2011). Data transcription is time intensive; for example, for this research, a one-hour interview took an average of six hours to transcribe, paying particular attention to capturing all aspects of relevant data to the topic being investigated. The method of data analysis comprises the following eight steps (Datt & Chetty, 2016):

- i) **Preparation of data:** Data for qualitative content analysis may be captured using different methods (Saunders et al., 2009). To commence the analysis process, data must be transcribed first and foremost (Quinlan, 2011). The choice of content needs to be clearly defined and justified (Vaismoradi et al., 2013). Before initiation of data preparation, the researcher needs to obtain answers to the following questions:
 - Should all collected data be transcribed or not?
 - Should articulations be transcribed literally?
 - Should annotations be written out properly?

Responses to these questions are dependent on the study's purpose (Vaismoradi et al., 2013). Nevertheless, all data should be appropriately transcribed to save time during analysis.

- ii) **Defining the unit or theme of analysis:** The unit or theme of analysis implies categorising content into themes, which can be a keyword, catchphrase, or a sentence. When determining the unit of analysis, one theme should represent an 'idea' (Orlikowski & Baroudi, 1991). Data related to the theme must be added and grouped accordingly. Furthermore, themes should be based on the study's objectives (Burrell & Gareth, 1979; Vaismoradi et al., 2013).

- iii) **Developing categories and coding scheme:** Developing categories and coding conventions are primarily derived from three sources: the primary data, theories on a similar topic, and related empirical studies (Elo & Kyngäs, 2008). Content analysis may be based on both the inductive and the deductive approaches; therefore, categories and codes need to be developed based on the approach adopted (Graneheim et al., 2017). Using the deductive approach, it is essential to link the interpretations with existing theories in order to draw inferences (Elo & Kyngäs, 2008). However, in the inductive approach, the objective is to develop new theories by gaining new insights and understanding of the subject matter (Vaismoradi et al., 2013). It is essential to evaluate secondary sources in order to stimulate original ideas and guarantee consistency in generating codes and categories (Kothari, 2004; Cho & Lee, 2014). The study adopted four major concepts from the Luftman (2000) SAM framework as predefined categories with relevance to the subject matter and to ensure consistency in data analysis.
- iv) **Pre-testing the coding scheme on the sample:** As with quantitative data, pre-testing qualitative data is also essential (Kothari, 2004). To guarantee consistency, research team members are required to code the sample of current data. If the level of consistency is low throughout for all researchers, then re-coding has to be done again (Cho & Lee, 2014).
- v) **Coding all the text:** After coding uniformity in the earlier stage, it is essential to apply the same coding level to the entire dataset (Kumar, 2011).
- vi) **Assessing the consistency of coding employed:** The entire dataset must be checked for legitimacy and dependability after the coding (Patton, 2001).
- vii) **Drawing inferences based on coding or themes:** This refers to the act of drawing the conclusion from the analysed data based on codes and categories generated. It is essential to explore the properties and dimensions, identify the association, and uncover patterns in order to extract intricate meanings from the data (Neuman, 2011).
- viii) **Presentation of results:** Results from the data analysis may be presented in the form of narratives, graphs, matrices, or conceptual frameworks (Vaismoradi et al., 2013). The outcomes should be submitted so that the reader understands the basis of interpretations (Kothari, 2004). The study's analysis and emergent findings were reported and presented in the form of narratives, supported by key quotes from the responses.

The use of content analysis before commencement of the interview study enabled the researcher to utilise parts of the six concepts of Luftman's (2000) SAM as an analytical

lens to analyse data in order to articulate meaningful information. The ensuing result provided the researcher with better insight to obtain an in-depth understanding of the subject matter.

3.10 Ethics consideration

The researcher complied with the Faculty of Informatics and Design at Cape Peninsula University of Technology's ethics principles as well as to the general principles guiding scientific research. The researcher committed to avoiding negligence and manipulation during data gathering (collection), data analysis, and data interpretation. The identity of the respondents and organisation were also protected in accordance with the research agreement.

3.10.1 Voluntary participation and consent

All participants were accordingly informed of the study's objectives, data collection method, and the manner in which the information obtained would be utilised. Participants were informed that their involvement in the research was voluntary, and they were advised of their lawful right to opt-out for whatever reason, at any point during the study without any consequence. The researcher collected information that was not detrimental to the participants of the study.

3.10.2 Confidentiality, privacy and anonymity

The researcher was committed to protecting the confidentiality of the participants. This was achieved by passwording confidential files, and safeguarding data from being used or read by persons other than the researcher. Access to both digital and physical data was restricted to the researcher. Devices and paper documents were never left unattended in public and were protected from misappropriation or theft by storing them in tamper-proof areas. Efforts were made to avoid obtaining sensitive information that could make the participants feel uncomfortable.

The researcher followed the basic cybersecurity principle of using anti-virus software, whitelist applications, device passcodes, and use whole-disk encryption, while also routinely patched software, suspended inactive sessions enabled firewalls.

When the collected data are no longer needed for research-related purposes, it will be securely disposed of by doing the following:

- Confidential data, such as ID numbers, will be securely erased to ensure that it cannot be recovered and misused
- Data on accessible university devices that were otherwise used to store sensitive information will be removed to guarantee that the initial research contents cannot be retrieved and misappropriated

- The paper files containing classified data will be shredded rather than dumped into trash or recycling bins

The right to privacy of all participants in the research was (and still is) protected by not disclosing participants' identity. In order to protect the identity of the interviewees who participated in the research, the data collected were coded by assigning pseudonyms to represent the actual participants.

3.11 Summary

Chapter 3 presented a discussion on the research philosophy and research design. The study adopted an interpretive epistemological stance and indicated that reality is constructed on an observer's subjective interpretation. The research applied an interpretivist paradigm to understand the reasons behind the limitations of PG's business and IT alignment status. The research followed an inductive approach that sought to infer the theory's findings to understand the phenomenon better. A single exploratory case study strategy of inquiry was adopted. The research design laid out the selected and related research strategy, sampling technique, data collection methods, and data analysis methods used in qualitative research. The unit of analysis and the unit of observation identified within the OG was also highlighted. The chapter concluded with a depiction of the ethical principles and considerations employed during the course of the study.

CHAPTER 4: DATA ANALYSIS AND RESEARCH FINDINGS

4.1 Introduction

This chapter is focused on discussing the case study, research interview, and findings. The case study in this research was the chosen provincial government (PG) for which the state of BITA implementation was investigated. The investigation is based on interviews conducted with selected staff of the PG. The selected staff are further referred to as participants or respondents as the case may apply. The selection process is randomised and focused on the department directly involved with BITA implementation in the PG. Sixteen (16) participants were interviewed, and the interviews' findings are also presented in this Chapter. For reading convenience, the problem statement, main research question, and study aim are restated below.

Problem statement: The status of the PG's BITA is relatively unidentified; therefore, the outcome of the deployed EA on PG's business processes and service delivery cannot be established.

RQ: How has the implemented EA strategy influenced the business-IT alignment (BITA) of a PuO's business processes in South Africa?

Aim of the study: To explore the effect of the implemented enterprise architecture (EA) on the business and information technology alignment (BITA) of a public governmental organisation's businesses processes.

The following sections explain the structure of the case study, how the EA was implemented in the PG, the research investigations and the findings.

4.2 The case study

This study was carried out on a provincial government in South Africa. As discussed in Chapter 3, the identity of the PG is herewith reserved. The head of the PG is referred to as the Premier. The PG comprises 13 central departments, tasked with the PG's primary functions' daily coordination, including Education, Health, Agriculture, and many others. The Department of the Premier consists of smaller functional units called directorates that regularise the 13 major departments' performance. The duties of these directorates cut across the business functions of the 16 departments. This research focused on the activities of the Centre for e-Innovation (Ce-I). The Ce-I is a directorate in the department of the Premier, responsible for providing ICT services to the provincial government (PG). The Ce-I provides e-services to the various departments of the PG. In order to be efficient, this directorate employ the services of business analysts who are also involved with the

various departments. The analysts continuously evaluate the business functions of the different departments in accordance with the EA of the provincial government. Thus, they serve as a significant link in the execution of the business-IT alignment of the PG. Thus, the participants interviewed in this research are the staff of the Ce-I across the various departments of the PG. In this chapter, the profiles of the participants that were interviewed and the interview outcomes are discussed. The steps of the analysis, interpretation, and presentation of the data findings are illustrated. The chapter also provides substantial findings based on the opinions of the interviewees on the BITA status of the selected PG.

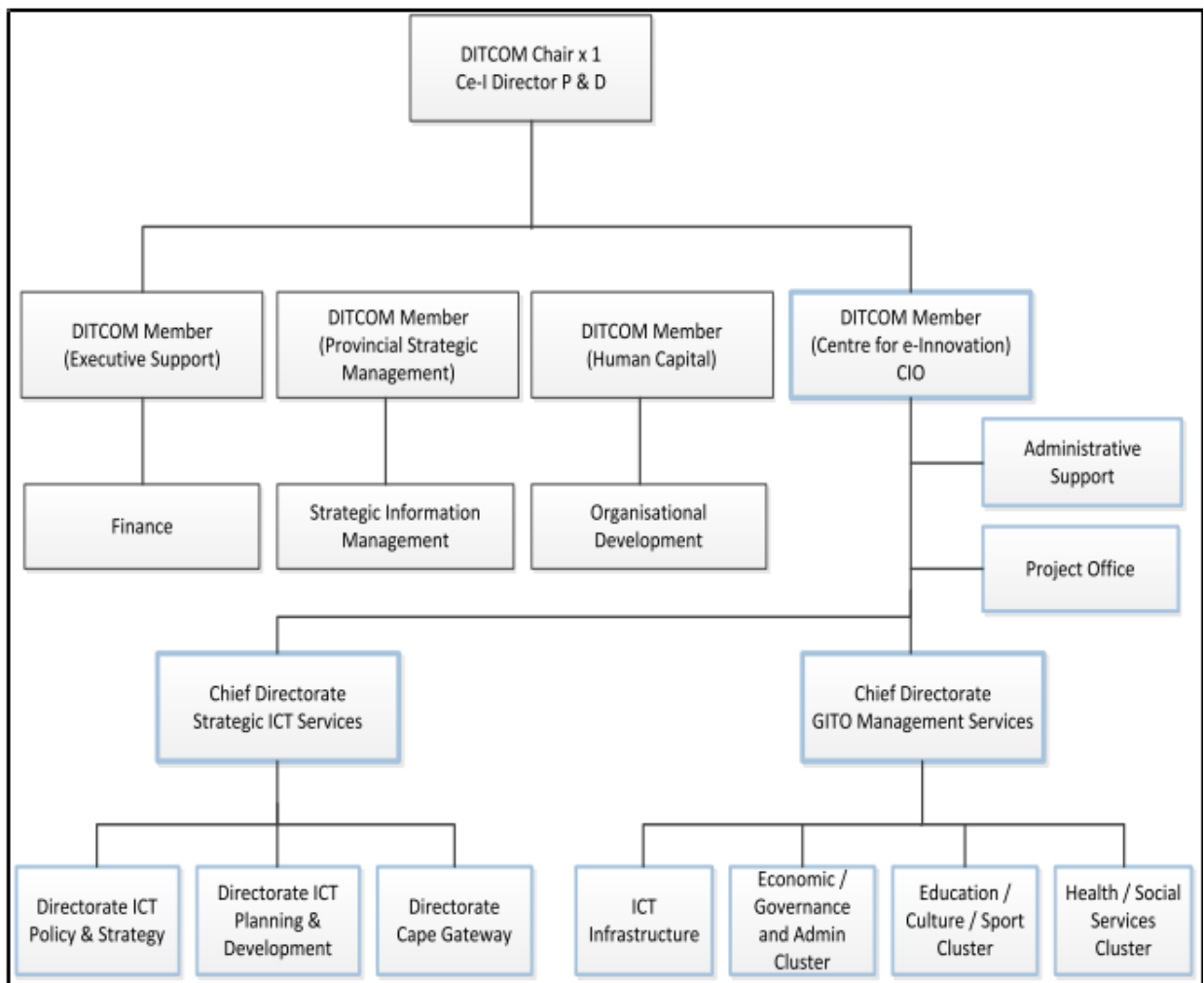


Figure 4.1: Structure of the Centre for e-Innovation in the PG

Figure 4.1 illustrates the structural organisation of the Ce-I. As shown in the figure, the activities of the Ce-I are overseen by the Department of Information Technology Committee (DITCOM) chair. The committee consists of four other members from the Provincial Strategic Management unit, Human Capital Group, Executive Support, and Ce-I unit. The Ce-I unit is further divided into two directorates, namely, Strategic ICT Services and the Governance Information Technology Organisation (GITO)

Management Services. The Strategic ICT Services is further sub-divided into ICT Policy and Strategy, ICT Planning and Development, and Cape Gateway (e-G4C) directorates. The GITO Management Services is sub-divided into ICT Infrastructure, GITO Health Social Development, GITO Education, Cultural Affairs and Sport and GITO Economic, Governance, and Administration offices.

The researcher selected the PG staff interviewed from the Ce-I directorate, and their profiles are further discussed in the next section.

4.3 Background profile of participants

On acquisition of the ethical clearance from the Faculty of Informatics and Design, the researcher approached the Department of the Premier, which granted ethical approval for data collection. All the participants were contacted via e-mail and phone conversations to set up appointments. The interview sessions were conducted on the office premises of the selected PuO and lasted from 40 minutes to 1 hour. A brief profile of the participants as related to this study is given in Table 4.1.

As highlighted in Chapter 3, the participants were mostly mid-level managers from the Centre for e-Innovation (Ce-I) department, which was at the core of the PG's EA strategy implementation. Interviews were conducted with 14 participants, with a range of 3-15 years of experience within the organisation. As highlighted in Table 4.1, the pseudonym R1, R2, R3, and so on represents a respondent that participated in the research study. The participant's functional unit (category), business type, positions, years of experience, and gender were also specified. Here, the notation "M" is assigned to "Male" and "F" to "Female".

On completion of the interviews, the voice recorded sessions between the researcher and participants were transcribed to text. The textual data enabled the qualitative analysis of the data using the content analysis technique. The content analysis technique involves identifying chunks of data (attributes) through the process of operationalisation. Through this process, words (or phrases or sentences) are used to determine variables that symbolise the categories that were pre-defined from the research sub-questions and components of Luftman's (2000) strategic alignment model (SAM). Thus, a single word, also known as a descriptive code, was allocated to chunks of data to develop themes from each sub-research question category. For example, communication between business and IT was represented by words or phrases that imply the exchange or interaction between business processes and personnel using information technology tools such as "Strategic ICT planning".

Table 4.1: Representation of the interviewees of this study

Respondent	Category (Business or IT)	Type of Business	Operational Department / Section	Position in the firm	Years of experience (year)
R1	Joint Business interview, 5 participants	Education, Health, Transport	E-Innovation	Business Analysts	3 – 7
R2	Business	Planning & Development	E-Innovation	Deputy Director	12
R3	IT	Planning & Development	E-Innovation	Enterprise Architect	5
R4	IT/Business	Governance & Administration	E-Innovation	Director	15
R5	IT/Business	Governance & Administration	E-Innovation	Deputy Director	13
R6	Business	Economic Development & Tourism	E-Innovation	Deputy Director	12
R7	Business	Economic Development & Tourism	E-Innovation	Service Manager	10
R8	IT	Education, Culture & Sport	E-Innovation	Director	12
R9	Business	Health	E-Innovation	Deputy Director	15
R10	IT	E-Innovation	E-Innovation	Service Managers' Coordinator	15
R11	Business	Economic Development & Tourism	E-Innovation	Deputy Director	14
R12	IT	Education, Culture & Sport	E-Innovation	Business Analyst	7

To focus on this study's core content, only three of the SAMM components were discussed in-depth. These focal components are *Communication*, *Governance*, and *Partnership*. The other three components of the Luftman (2000) framework, namely *Skills*, *Competence*, and *Scope & Architectural* components are not emphasised in this research, because the PG outsources most of the said components to external companies, as they specialise in these required services. Furthermore, because of the ethics clearance level granted for this research and the service level Agreements' sensitivity, information on the omitted three components was not allowed for publication. However, appropriate reference was made to the *Scope & Architecture* component during the semi-structured interview conducted with the participants, and inferences were drawn from interviews as detailed in this chapter. The researcher drew from Luftman's (2000) model to identify PG's business processes' BITA maturity, using the emergent findings from data analysis.

4.4 Narrative presentation of findings

This section presents participants' responses from the interview sessions relevant to the research questions and the study's objectives. The interview transcripts were analysed through the lens of the selected categories of strategic alignment maturity

model (SAMM) by Luftman (2000). As previously mentioned, the selected SAMM categories used in the data analysis are *Communication*, *Governance*, and *Partnership*.

Next, the respondents' narratives will be presented under the classification of each of the SAMM categories, together with the corresponding research sub-questions and the interview questions.

4.4.1 Communication between business and IT

The first Luftman (2000) component discussed in this research is the *Communication* criterion. This component is designed to provide insight into the levels of interaction between business and information technology (IT) as a means of achieving BITA. The component evaluates the exchange of information or interaction between the business and IT units of an organisation. It examines business understanding through IT, knowledge sharing, or transfer within the organisation's business and IT units. The participants interviewed demonstrated a sound knowledge of how business units and the IT department(s) interrelate through the ICT strategic and operational plan. The responses of the participants obtained from the semi-structured interview questions are as follows:

SRQ 1.1: How does communication influence the business and IT alignment of a PuO in South Africa?

Interview Question 1.1.1: How do the business and IT units currently communicate on the organisational goals and objectives?

According to **Respondent 1**, there is a process called “ICT strategic planning”. ICT strategic planning is the departments' engagement with the various business units to identify the critical ICT initiatives and solutions required to enable their specific goals. Similarly, **Respondent 9** stated that “the most explicit means of business communication with IT within the PG is in terms of the strategic and operational ICT plan. What we do is we draft out the ICT Plan per department to implement business objectives, and we review that every year”.

According to **Respondent 9**, this communication is essential as it dovetails into each department's budgetary allocation. The respondent further stated that a joint budgeting procedure is employed such that the details of the budget by each department would include both the business and IT requirements of all functions to be performed by the department. The same details would then be reflected in the

“ICT’s budget, which the department of Ce-I. monitors. This would ensure that ICT is well-positioned to support the respective departments”.

On strategic planning, **Respondent 2** also shed light on the business-IT communication process by emphasising the planning process by which they mainly communicate. **Respondent 2** stated that,

“different departments develop strategic business plans, which are five-year plans in-line with the PG’s goals and objectives. Once the business team develops the five-year plan, ICT then develops an IT plan, which has input from the various IT requirements of each business unit’s plan. This creates a feedback platform between business units and the IT unit”.

Respondent 6 clarified how each unit’s business plan feeds into the IT business plan using the social development planning of the PG, as follows:

“For social development, one of the business objectives is to get more social workers out on the field for larger outreach strength. This increase would surely come along with higher ICT requirements. This is because the new social workers might need to send an email to communicate or capture certain information or use a tool to capture the citizen’s information. This requires support from the ICT unit and therefore creates a feedback platform for strategic business plans into ICT”.

Based on the responses from the participants, essential facts were observed and are listed as findings below.

Finding 1: There is a standard process called strategic ICT plan developed by the Premier Office to facilitate collaboration between business process units and the IT department.

Finding 2: Business process units within the PG communicate their specific goals through the medium of a strategic and operational ICT plan/framework/guide directed by the PG management and managed by the IT department.

Interview Question 1.1.2: *What are the limitations of the joint planning processes employed by the PG units, especially with the ICT unit?*

In response to this question, **Respondent 10** made it clear that:

“Communication is only well understood at the top management level. This means that the staff at the bottom of the administration chain is expected to implement what has been discussed at the management level. However,

oftentimes, such staff does not always know what he is aligned to; there is a break in communication”.

According to **Respondent 2**, “there may be a gap when ICT plans may only be in the Department of the Premier’s plan; sometimes, they may not be communicated to all other departments or operation levels”.

Respondent 1 stated the following:

“When the strategic planning process was started, the various PG departments did not see the need or the priority for it. However, over time, they have understood that they can use ICT as an enabler to their benefit, such that spending time and effort into developing an ICT plan becomes equally important. This implies that communication between the departments and IT has improved. There is better clarity around the ICT initiatives”.

Finding 3: While the communication flow and the ICT plan is well understood at the executive level, the same amount of knowledge sharing about the ICT plan that gets to the other levels of administration does not explain the processes adequately, and communication across the board is insufficient.

Finding 4: Despite the PG’s effort to place the strategic ICT plan as a medium of communication, the process did not necessarily go as planned; this is observed from the response by Respondent 1, who stated that the departments are not potentially at the right point where they should be.

Interview Question 1.1.3: *What does the ICT planning process entail?*

Respondent 1 responded to the question on the ICT process’s composition, saying, “The ICT planning process is actually formal. It is really the engagement with each head of the department and his team. The process starts with a formal sensitisation and engagement of the HODs and the directors to understand the critical needs of their units”.

Respondent 2 had also stated that “different departments develop strategic business plans, which are five-year plans in-line with the PG’s goals and objectives. Once the business team develops the five-year plan, ICT then develops an IT plan, which has input from the various IT requirements of each business unit’s plan”.

Respondent 7 described the ICT planning process as a platform that enabled the collaboration of business and IT units towards fulfilling goals and objectives, stating

that it is an avenue where “IT and business meet face-to-face to discuss the process, and this is done using a workshop format”.

Finding 5: The ICT planning process begins with IT requirements by business units; this further evolves into a proper ICT plan by the PG, which is eventually budgeted for by the PG.

Interview Question 1.1.4: *What are the challenges of business-IT communication?*

Respondent 1 answered the question as follows:

“What I can say is that obviously from a business perspective. They do not understand its role or the other way around; they do not understand how they can use IT. I think younger people coming to the organisation understand, but many of the senior generations see IT as a barrier”.

According to **Respondent 2**, a significant challenge for business-IT communication is how staff often want to bypass the established governance structures. Some business departments say that the IT unit is too technical when discussing with the business unit, while some other business units want to take IT decisions on its behalf. “In essence, there is a communication barrier concerning the technical language barrier between the business and IT departments or units” (**Respondent 2**).

According to **Respondent 3**, the purpose of “the ICT plan is often misunderstood and negatively impacts on implementation processes”. **Respondent 7** remarked that “the main challenge is availability and access to the correct stakeholders”. This statement was supported by **Respondent 10**, who mentioned that “there are times you suddenly realise there is more work to do or more people to train. Sometimes, staff may not know why the extra task or training has to be done”. This creates “a little bit of friction” between staff members because of their lack of understanding of why they need to perform or operate in the same role since the reasons for this role, or knowledge share were not adequately explained by stakeholders who are supposed to do so.

Finding 6: There is a misunderstanding of the roles IT plays in business – a level of resistance or competency-related challenges is often experienced; nevertheless, the younger generation of staff is more comfortable than the older staff members in applying IT to solve business challenges.

Finding 7: A major challenge is the unavailability or accessibility of high-level management staff or stakeholders to properly disseminate the decision made at top-level management.

Interview Question 1.1.5: *Has there been any improvement in communication between IT and business over the years?*

Respondent 1 answered the question by stating “Yes”, and clarified this as follows: “I think the communication between the departments and IT has improved. There is better clarity around the ICT initiatives. So, for the large part, departments are coming to the party”.

Respondent 2 stated that “now we have reached the point where the communication and how it is received is very positive because people are beginning to understand the value of having the business and IT alignment”.

Furthermore, **Respondent 5** revealed that there have to be improvements over ten years: “I can only speak from about 2006, and there was work done prior to that. However, because my engagement with that unit started only from 2006, I can only speak from that point forward. So, from 2006, every year, there were improvements made”.

Finding 8: Over time, there has been a significant improvement in communication between the business and IT units.

Interview Question 1.1.6: *What tools are used for communication?*

Respondents 1, 2 and 8 answered as follows:

Respondent 1: “We capture our information using the Word document and spreadsheet. That Word document will encapsulate the strategic intents as one of the ICT enablers, and that gets signed off by the HOD of the department with the relevant IT senior management, which will deliver the service to them”.

Respondent 2: “We use emails to track communication. If there is a necessity to set up an appointment or communicate with a department, we do it via email or Word documents for internal memos”.

Respondent 8: “There is an intranet website, where we place all new information about IT, standard guide about the set-up of your little USB modems, devices, and application forms for IT services. All of that is on the intranet”.

Finding 9: The IT communication tools used include Microsoft Word, spreadsheets, e-mail, and an intranet within the provincial government.

Interview Question 1.1.7: *What are the challenges to the business-IT communication alignment?*

Major challenges to business-IT communication alignment were highlighted by **Respondents 3, 4, 6, 7, 8 and 10:**

Respondent 3: “The purposes of the ICT plan are misunderstood and negatively impact implementation processes”.

Respondent 4: “IT either misunderstanding business or focusing on the technical, but that is often rare. Sometimes, the business does not know what EA can give, so they cannot clarify information. However, that is because there is no proper communication”.

Respondent 6: “Because of financial constraints, negotiation becomes a challenge because you are under many business pressures, and you need to prioritise.”

Respondent 7: “The main challenge is availability and access to the correct stakeholders”.

Respondent 8: “Challenges are the availability of people and also the problem [of] bureaucracy because only certain people can give the go-ahead, and if that person is not there (on sick/annual leave) we have to wait for that person to come back.”

Respondent 10: “There are times you suddenly realise there is more work to do or more people to train. Sometimes, the staff may not know why the extra task or training has to be done. This creates a little bit of friction since the reasons were not adequately explained”.

Finding 10: Major challenges to business-IT communication alignment include bureaucracy, financial constraints, prioritisation process and ineffective communication between business and IT due to the level of technicality that may be required.

While at face value there is a formal process (ICT planning) in place to enable business units or departments to strategise with the IT unit in line with organisation goals on a 4-5-year basis, there are indications of communication gaps. These communication gaps occur between the Premier Office, which handles the ICT planning and other departments down to the provincial government’s lowest administration levels. There is inadequate clarity on purpose, misunderstood responsibilities, and a lack of readily available access to appropriate stakeholders.

The reasons for this miscommunication gap and how it affects the maturity level of business, and IT alignment are discussed in detail in Chapter 5.

4.4.2 IT governance

This criterion in Luftman's (2000) strategic alignment maturity model deals with management roles in an organisation and the utilisation of IT for strategic decision-making, resource planning, and allocation among stakeholders and business partners. Also, to determine the effectiveness of IT governance on the BITA maturity level, this research focused on the organisation's view of IT governance structure and functionality in the selected PG's business approach and conduct. The semi-structured interview process was further used to investigate this criterion from the respondents, as discussed in section 4.3. This section presents the response of the interviewees and the findings from the various responses.

SRQ 1.2: How does IT governance influence the business-IT alignment of a PuO in South Africa?

***Interview Question 1.2.1:** What is the organisation's view of IT governance?*

Respondent 6, a PG's service manager, explained the PG's understanding of IT governance and what it entails. The respondent stated that,

“IT governance is to measure and value IT investment which you have spent lots of money on. IT governance is basically about controlling and measuring and see if there is value in the IT”. IT governance is understood as measurement and value-added because of investment in technology. The respondent indicated that “governance is about strategy, performance, security, benefit, risk, resource optimisation. What is it they need to do with IT strategically and does it perform up to the performance indicator, are they in line with the annual performance plan?”

These six areas mentioned are being used as performance indicators to evaluate the effect of IT governance and increase the chances of achieving organisational goals in the provincial government. According to **Respondent 6**, “the PG has an IT department and an IT governance unit, and all departments have IT units which participate in the IT governance structure. We take the chairperson of each committee, and they sit with other chairperson and whatever they discuss and recommend they take to their departments”.

Several respondents also supported the position of Respondent 6. **Respondent 2** stated that:

“We have IT governance structures in place. Every department has a Department of IT committee (DITCOM). The DITCOMs are headed by a chairperson who is either business champion or ICT personnel within the department. The chairpersons of all the DITCOMS (Dept. of IT committee) constitute another committee known as the Central IT committee (CITCOM). Usually, the IT governance structures and anything governance-related is communicated at that level, and they will need to get it across to the various departments”.

Respondent 1 also mentioned that “there is an IT governance strategic committee constituted of the head of IT and his chief directors. They deal with issues related to governance and improvement of governance and areas that will impact IT”. However, the respondent believed the IT governance is not taken as seriously, and as such, there has not been much impact. Respondent 3, who is the head of the IT governance unit, stated that the IT governance now exists as a different unit under the IT department instead of a joint function previously being executed.

Finding 11: All departments have IT committees that form part of a central IT unit, which governs PG's IT processes.

Finding 12: All the departments and units are expected to participate in IT governance to evaluate their progress based on PG's set goals and objectives.

Finding 13: There may be some redundancy in the system as some staff may be of the opinion that the impact of IT governance is not being realised.

Interview Question 1.2.2: *What is IT governance's effect on the provincial government's BITA maturity level?*

Respondent 7 said:

“We follow a formal process informed by the PG's policies, methodology, and frameworks concerning all. We use case-wise as our central artefact mapping tool, and we are guided by extracts of the TOGAF and COBIT enterprise architecture framework. This has greatly improved the effectiveness of our business processes. However, there is still a need for some level of clarity in each party's roles involved in the IT processes management”.

Respondent 5 stated that the “IT governance process had been used to govern the IT investment. This has enabled prioritisation and investment control via budgeting. IT governance is basically about controlling and measuring and see if there is value in the IT”.

According to **Respondent 6**,

“Previously, every department used to have their processes. They just did things whichever way. The departments used to have the structures, but they did not have the right persons on the committee to make informed decisions. Some departments may sometimes have as the chairperson a deputy director, who does not have the mandate and authority to make certain decisions. So, what the IT governance unit did was that they outlined what the committee should consist of and the chairperson's level because the chairperson must be able to make certain decisions at that level. So, this has put much structure into the IT process and has positively impacted the business processes”.

Finding 14: The PG is aware of the importance of governance and has put mechanisms in place to ensure the realisation of the strategy and operational plan; however, in some cases, the IT governance processes are yet to be fully implemented in such a way that everyone would be well carried along, and this has some negative impact on BITA maturity.

***Interview Question 1.2.3:** What is the IT governance maturity level in the provincial government?*

According to Respondent 8, “the PG has a sound level of maturity aligned to COBIT”. However, **Respondent 7** thought that “it is less mature than the ICT planning, but then ICT planning and framework has been going on for longer than IT governance. People are beginning to understand it, but maybe not giving it the necessary importance”.

According to **Respondent 5**,

“Business is expected to take ownership of IT and not IT taking ownership of the business. The various business departments need to implement ICT policy framework governance as part of their meetings' agenda. The departments align, but I must say it is still ongoing since we now have awareness and discussions on such issues. For example, the ICT governance directorate assists the departments, and they ensure the departments understand documents sent out to them, how to complete it, and how to interpret it. The IT risk person from the IT governance team meets with the departments every quarter and goes through each of the IT risk items. This is an ongoing exercise and would continue until the PG reaches the required maturity level”.

Finding 15: The IT governance structures put in place are beginning to positively shape the PG's business implementation landscape due to the synergy put in place by the IT governance unit. IT governance is still at a basic level of implementation and is yet to reach any substantial maturity level.

Interview Question 1.2.4: *What can you say is the level of staff knowledge on BITA and its implementation in the PG?*

Respondent 3 indicated that,

“There is some disjoint between the strategy component of IT and operational component. So here, we are dealing with the strategy component. To ensure that IT artefacts are maintained, we have to get the people to buy into that process of updating it to maintain the relevance. Moreover, given that opportunity, most of the staff do not want to do that, and the results are a major drawback to having the most current information”.

This was also supported by **Respondent 1**, who discussed that there are generational differences. This is emphatic when you realise that some elderly staff have been using a specific application for many long years and are now made to change software or strategies. It is difficult to convince such people of the need to change strategies or tools.

Respondent 8 said, “I guess it is difficult for the provincial government to define a single enterprise architecture, which is a one-size-fits-all because it is not going to fit like just like that. The PG previously adopted the Zachman (1987) framework to align its business and IT processes. However, the adopted framework did not meet business expectations. Thus, the TOGAF was introduced to cater to IT governance, while COBIT was adopted to develop and align the ICT strategy and implementation plan to organisational objectives.

Respondent 4 said that “as I understand it, we are using best practices, and we are making use of the COBIT 5 framework that we launched to make sure that we align with that. Based on that, we implement certain frameworks in the governing body to align ourselves. We are not there yet, but we are trying to get some of the frameworks and governing bodies in place”, while **Respondent 8** stated that “the PG has a sound level of maturity which is aligned to COBIT”.

Finding 16: There is an acceptable level of staff knowledge of BITA; however, there is some resistance to the implementation of the new BITA strategies by some staff within the PG.

4.4.3 Partnership between business and IT stakeholders

The relationship between business and IT stakeholders can either positively or negatively affect the organisational goal and objectives. This relationship is dependent on the satisfaction obtained by each partner in the relationship. This relationship could be to satisfy a mutual interest or a one-sided interest. Hence, this

criterion's objective is to investigate how partnership influences business and IT alignment and how this translates to PG's desired BITA maturity level. To establish if there are any forms of partnership, the researcher investigated possible collaborations, how the partnerships were formed, and the challenges experienced in these partnerships.

SRQ 1.3: How does partnership influence the business and IT alignment of a PuO in South Africa?

Interview Question 1.3.1: *What collaborations or partnerships exist for business-IT stakeholder relationships in the PG?*

Respondent 7 stated, "...every department partner with different organisations. These can be at the National Government, NGO, or inter-departmental level". The respondent further elaborated on the platform through which business and IT units work in partnership besides formulating the strategic and operational plan processes:

"Besides the Strategic-Planning process, business and IT units also collaborate in various forums. Specifically, we have different IT governance structures for departments, the IT Strategic Committee (DITCOM) which is chaired by the administrative head of the department, the IT Steering Committee, which is chaired by the IT governance champion (CITCOM) and is represented by the Chief Directors representing the various departments. The partnerships are formed in a bid to share information, achieve common goals and objectives".

Similarly, on the relationship between business and IT processes, **Respondent 5** stated that "what we do is co-planning. When you have a plan that you developed and planned together, the relationship becomes better. It brings a level of stability and predictability".

"Of worthy note is that the Department of the Premier plays a sort of overall role to ensure that from a strategic perspective that things are happening that there is alignment between what we as a province want to do and what the departments require" (**Respondent 1**).

Respondent 1 made it clear that since the Office of the Premier is in charge of the IT and is primarily involved in the ICT strategy and implementation plan, it generally oversees the partnership between departments or external organisations. This is to ensure that their purpose for collaboration aligns with the strategic ICT plan and communicated appropriately.

Respondent 9 explained that,

“It is the business’ responsibility, but it is the IT governance unit’s job to assist them in achieving that, and that is where we come in. So, we have different managers with different responsibilities. Some managers are service managers; so, they will look explicitly at the services we offer and manage them. Other managers are development managers”.

Finding 17: Within the PG, various forms of inter-departmental and external partnerships are tasked with responsibilities to manage services delivered through IT.

Interview Question 1.3.2: *Have you experienced challenges in relationships between business and IT stakeholders?*

Respondent 3 revealed that “sometimes there is a good level of trust, but it is not there at some other level, so they do not involve IT. So, there is a mix”.

Respondent 6 claimed that “the developed partnerships are not a fully trusted relationship yet, but there is some understanding”. The respondent attributed mistrust to human behaviour and the emergence of information technology as a PG's driving force. The relationship’s growth is a continuous process. According to the respondent, “because IT is intangible, people are still trying to understand and learn various IT strategies”.

Respondent 9 clarified that:

“The business does not understand IT governance and IT capacity issues. While business is involved at a different IT level, the system delivers on the core needs as defined in the business service level agreement (SLA) with its vendor. Irrespective of the differences between business and IT processes, there is an attempt to synchronise the units' responsibilities to realise the strategic ICT plan's goals. The implications are that one of the units (either business or IT) eventually makes decisions that might or might not be a well-received development, depending on the unit, which is on the receiving end. It is always a very competitive process because you may have business needs, but it depends on whether those needs are funded or not. The Ce-I addresses the common needs in terms of infrastructure, transversal systems, and central architecture to host the shared systems/platforms”.

Finding 18: There exist challenges in relationships within the PG’s departments and even other collaborators because the participants are still learning to rely entirely on the IT structure or processes.

4.5 Summary of findings

For the ease of reading, findings are listed per the research question below. Based on the findings, the developed themes are indicated in Section 4.2.

RQ: How has the implemented EA strategy influenced the business-IT alignment (BITA) of a PuO's business processes in South Africa?

SRQ 1.1: How does communication influence the business and IT alignment of a PuO in South Africa?

Table 4.2 show the findings for SRQ 1.1.

Table 4.2: Findings of SRQ 1.1

Finding #	Description
Finding 1	The Office of the Premier developed a standard process called strategic ICT plan to facilitate collaboration between business processing units and the IT department.
Finding 2	Business process units within the PG communicate their specific goals through the medium of a strategic and operational ICT plan/framework/guide directed by the PG management and managed by the IT department.
Finding 3	While the communication flow and the ICT plan are well understood at the executive level, the same amount of knowledge sharing about the ICT plan that gets to the other administration levels does not explain the processes adequately, and communication across the board is insufficient.
Finding 4	Despite the PG's effort to place the strategic ICT plan as a medium of communication, the process did not necessarily go as planned; this is observed from Respondent 1, who stated that the departments are not potentially at the right point should be.
Finding 5	The ICT planning process begins with IT requirements by business units; this further evolves into a PG's proper ICT plan, which is eventually budgeted for by the PG.
Finding 6	There is a misunderstanding of the roles IT plays in business – a level of resistance or competency-related challenges is often experienced; nevertheless, the younger generation of staff is more comfortable than the older staff members in applying IT to solve business challenges.
Finding 7	A major challenge is the unavailability or accessibility of high-level management staff or stakeholders to properly disseminate the decision made at top-level management.
Finding 8	Over time, there has been a significant improvement in communication between the business and IT units.
Finding 9	The IT communication tools used include Microsoft Word, spreadsheets, e-mail, and an intranet within the provincial government.
Finding 10	Major challenges to business-IT communication alignment include bureaucracy, financial constraints, prioritisation process and ineffective communication between business and IT due to the level of technicality that may be required.

RQ 1.2: How does IT governance influence the business-IT alignment of a PuO in South Africa?

Table 4.3 show the findings for SRQ 1.2.

Table 4.3: Findings of SRQ 1.2

Finding #	Description
Finding 11	All departments have IT committees that form part of a central IT unit, which governs PG's IT processes.
Finding 12	All the departments and units are expected to participate in IT governance to evaluate their progress based on PG's set goals and objectives.
Finding 13	There may be some redundancy in the system as some staff may be of the opinion that the impact of IT governance is not being realised.
Finding 14	The PG is aware of the importance of governance and has put mechanisms in place to ensure the realisation of the strategy and operational plan; however, in some cases, the IT governance processes are yet to be fully implemented in such a way that everyone would be well carried along, and this has some negative impact on BITA maturity.
Finding 15	The IT governance structures put in place are beginning to positively shape the PG's business implementation landscape due to the synergy put in place by the IT governance unit. IT governance is still at a basic level of implementation and is yet to reach any substantial maturity level.
Finding 16	There is an acceptable level of staff knowledge of BITA; however, there is some resistance to the implementation of the new BITA strategies by some staff within the PG.

SRQ 1.3: How does partnership influence the business and IT alignment of a PuO in South Africa?

Table 4.4 show the findings for SRQ 1.3.

Table 4.4: Findings of SRQ 1.3

Finding #	Description
Finding 17	Within the PG, various forms of inter-departmental and external partnerships are tasked with responsibilities to manage services delivered through IT.
Finding 18	There exist challenges in relationships within the PG's departments and even other collaborators because the participants are still learning to rely entirely on the IT structure or processes.

4.6 Summary

Chapter 4 presented the interview data and a descriptive presentation of the findings. To realise research objectives, determine the business-IT alignment maturity level of the provincial government (PG). The research questions asked were to determine the communication between business and IT; IT governance; the partnership between business and IT; and staff knowledge on Enterprise architecture.

On communication between business and IT, the respondents acknowledged a process called ICT strategic and implementation plan. This plan entails engagement between business departments or units and the Premier's IT department-Office to identify how ICT solutions can be used as a potential enabler to achieve the goals from a business perspective. The respondents admitted that the communication process is formal, but the plan does not always correlate with the business plans or objectives of individual departments or units within the organisation. The findings also reveal that, while the plan is understood at the top management level, it is not always translated or simplified adequately to the lower operating levels. This suggests a communication gap between the premier office, which handles the ICT strategy and implementation plan, and the lowest administration levels in the business departments or units within the provincial government. The other challenge mentioned is a lack of access and availability to the relevant stakeholders within the organisation.

Concerning IT governance, governance structures are in place, represented by the various head of departments to measure IT investment value. IT governance enables the PG to appraise their strategy, performance, security, benefit, risk, and resource optimisation as critical indicators to evaluate IT governance's effect and increase the chances of achieving organisational goals. To this effect, a separate department was created to monitor the impact of governance on PG's operations. Enterprise architecture – TOGAF was adopted and aligned with COBIT to serve as a guide to achieving alignment between business and IT operations.

Most respondents mostly believe that there is an alignment between their business operations and IT's role in PG's services delivery. It can be assumed that the PG is aware of the importance of governance and has put mechanisms in place to ensure the ICT strategy and operational plan's realisation. However, the IT governance structures are yet to be fully incorporated in line with the organisational strategic plans and goals, or the importance thereof is inadequately communicated to the various departments. The implications are that there seems to be a degree of disagreement between the business and IT units of the PG.

The findings show a degree of partnership either within the provincial government or externally with other organisations due to common interests, objectives, or extension of services and resources to achieve set goals. While a connection exists between business and IT, respondents have mixed reactions. In essence, it is not an entirely seamless relationship mainly due to human behaviour and disparities in the mandate of several department's mandates or specific goals.

Further, the findings show that the provincial government combines the TOGAF framework to allocate IT governance and COBIT to align IT management governance. The belief is that the provincial government is tending towards business and IT alignment maturity. While it has been established that there is an alignment between business and IT processes, this study seeks to determine the maturity level. Chapter 5 discusses the findings from this Chapter, in a bid to determine business and IT alignment (BITA) level of maturity in the provincial government.

CHAPTER 5: DISCUSSION OF FINDINGS

5.1 Introduction

This research was focused on determining the maturity level of business and IT alignment within a PuO in South Africa, using a case study of a PG in South Africa. With the increase in population and demand on public resources, the PG is tasked with meeting demands through the effective use of its business channels and ICT. However, as discussed in Chapters 2 and 3, business and IT are oftentimes not in alignment for the best way forward. While alignment is vital to the business, this alignment's maturity level also dictates the pace at which work is done and the mutual benefit derived by all parties involved in the business transaction. In this research, a qualitative approach was adopted to investigate PG's business processes' BITA maturity. As discussed in Chapters 2 and 3, the Luftman (2000) 5-level BITA maturity model was used to analyse the research findings and the classification.

In order to achieve an objective analysis and maturity level classification, a semi-structured interview was first conducted with participants, as discussed in Chapter 4, and notable observations were made and tagged as findings. For ease of discussion of the findings, appropriate themes were identified from the findings presented in Section 5.2.

For reading convenience, the problem statement, main research question, and aim of the study are restated below.

Problem statement: The status of the PG's BITA is relatively unidentified; therefore, the outcome of the deployed EA on PG's business processes and service delivery cannot be established.

RQ: How has the implemented EA strategy influenced the business-IT alignment (BITA) of a PuO's business processes in South Africa?

Aim of the study: To explore the effect of the implemented enterprise architecture (EA) on the business and information technology alignment (BITA) of a public governmental organisation's businesses processes.

5.2 Findings and themes development

As discussed in section 3.10 and further summarised in the research findings, appropriate themes were identified to ease data coding.

The themes are:

- Strategic ICT planning
- Strategic planning transition and implementation
- Stakeholder engagement
- Governance structures
- Human behaviours

The themes were developed from the findings made in Chapter 4. Tables 5.1 and 5.2 present the findings and related themes linked to the research questions. The findings were first analysed and categorised by relating them to the Luftman (2000) model's relevant components. These components are classified as sub-categories in Table 5.1. The sub-categories describing the interviewee's responses to the interview questions were then developed into themes using the same Luftman (2000) model. The development of the sub-categories into appropriate themes is shown in Table 5.2.

Table 5.1: Findings and related themes for the RQs

SRQ 1.1: How does communication influence the business-IT alignment of a PuO in South Africa?	
Research Question Findings	Sub-categories
Finding 1: There is a standard process called strategic ICT plan developed by the Premier Office to facilitate collaboration between business processing units and the IT department.	IT metrics Business metrics Shared goal IT programme management
Finding 2: Business process units within the PG communicate their specific goals through the medium of a strategic and operational ICT plan/framework/guide directed by the PG management and managed by the IT department.	Business strategic planning IT strategic planning Shared goal Role of IT strategic business planning Balanced metrics Standards articulation
Finding 3: While the communication flow and the ICT plan is well understood at the executive level, the same amount of knowledge sharing about the ICT plan that gets to the other levels of administration does not explain the processes adequately, and communication across the board is insufficient.	Knowledge sharing Protocol rigidity Cultural locus of power Management style
Finding 4: Despite the PG's effort to place the strategic ICT plan as a medium of communication, the process did not necessarily go as planned; this is observed from the response by Respondent 1, who stated that the departments are not potentially at the right point where they should be.	Understanding of business by IT Understanding of IT by business
Finding 5: The ICT planning process begins with IT requirements by business units; this further evolves into a proper ICT plan by the PG, which is eventually budgeted for by the PG.	Budgetary control IT strategic planning The role of IT in business planning Strategic business planning

Finding 6: There is a misunderstanding of the roles IT plays in business – a level of resistance or competency-related challenges is often experienced; nevertheless, the younger generation of staff is more comfortable than the older staff members in applying IT to solve business challenges.	Career crossover Change readiness Managing emerging technology
Finding 7: A major challenge is the unavailability or accessibility of high-level management staff or stakeholders to properly disseminate the decision made at top-level management.	IT programme management Management style Knowledge sharing
Finding 8: Over time, there has been a significant improvement in communication between the business and IT units	Knowledge sharing and role of IT strategic business planning
Finding 9: The IT communication tools used include Microsoft Word, spreadsheets, e-mail, and an intranet within the provincial government.	IT programme management Traditional enabler/ driver
Finding 10: Major challenges to business-IT communication alignment include bureaucracy, financial constraints, prioritisation process and ineffective communication between business and IT due to the level of technicality that may be required.	Organisational structure Management style Cultural locus of power
SRQ 1.2: How does IT governance influence the business-IT alignment of a PuO in South Africa?	
Research Question Findings	Sub-categories
Finding 11: All departments have IT committees that form part of a central IT unit, which governs PG's IT processes.	Steering committee(s) Governance structure IT strategic planning Organisational structure
Finding 12: All the departments and units are expected to participate in IT governance to evaluate their progress based on PG's set goals and objectives.	Organisational structure Formal assessments and reviews Shared goal Risk reward/penalties Business metrics
Finding 13: There may be some redundancy in the system as some staff may be of the opinion that the impact of IT governance is not being realised.	Hiring and retaining Interpersonal environment Inter/ intra organisational learning/ education
Finding 14: The PG is aware of the importance of governance and has put mechanisms in place to ensure the realisation of the strategy and operational plan; however, in some cases, the IT governance processes are yet to be fully implemented in such a way that everyone would be well carried along, and this has some negative impact on BITA maturity.	Organisational structure Lack of understanding of IT by business Formal assessment/reviews
Finding 15: The IT governance structures put in place are beginning to positively shape the PG's business implementation landscape due to the synergy put in place by the IT governance unit. IT governance is still at a basic level of implementation and is yet to reach any substantial maturity level.	The functional organisation Understanding of IT by business Formal assessment and reviews

Finding 16: There is an acceptable level of staff knowledge of BITA; however, there is some resistance to the implementation of the new BITA strategies by some staff within the PG.	Change readiness Career crossover Hiring and retaining
SRQ 1.3: How does partnership influence the business-IT alignment of a PuO in South Africa?	
Research Question Findings	Sub-categories
Finding 17: Within the PG, various forms of inter-departmental and external partnerships are tasked with responsibilities to manage services delivered through IT.	Organisational structure IT programme management Shared goals/ risks
Finding 18: There exist challenges in relationships within the PG's departments and even other collaborators because the participants are still learning to rely entirely on the IT structure or processes.	Understanding of IT by business Relationship/ trust style business The role of IT strategic business planning

The themes developed from the sub-categories are shown in Table 5.2 and further discussed in section 5.3.

Table 5.2: Luftman's (2000) sub-categories and related themes for the RQs

Research Question	Sub-categories	Themes
SRQ 1.1: How does communication influence the business-IT alignment of a PuO in South Africa?	IT metrics Business metrics Shared goal IT programme management IT strategic planning Shared goal Role of IT strategic business planning Balanced metrics Standards articulation Management style Understanding of business by IT Understanding of IT by business Budgetary control The role of IT in business planning	Strategic ICT planning
	Knowledge sharing Protocol rigidity Cultural locus of power Career crossover Change readiness Managing emerging technology Traditional enabler/ driver Organisational structure	Human behaviour

Research Question	Sub-categories	Themes
SRQ 1.2: How does IT governance influence the business-IT alignment of a PuO in South Africa?	IT strategic planning Formal assessments and reviews Shared goals Risk reward/ penalties Business metrics Hiring and retaining Interpersonal environment Inter/ intra organisational learning/ education Understanding of IT by business	The transition of strategic planning to implementation
	Change readiness Career crossover	Human behaviour
	Steering committee(s) Organisational structure	Governance structure
Research Question	Sub-categories	Themes
SRQ 1.3: How does partnership influence the business-IT alignment of a PuO in South Africa?	Organisational structure IIT programme management Shared goals/ risks Understanding of IT by business Relationship/ trust style business The role of IT strategic business planning	Stakeholder engagement Human behaviour

5.3 Research themes evaluation

By examining the responses recorded from the interviews conducted on the research objectives, connecting strings were observed, called 'sub-categories' (Table 5.2). From these sub-categories, a resonating theme was then derived in alignment to the research objectives.

5.3.1 Strategic ICT planning

Based on the responses to the question, "How does business and IT units currently communicate on the organisational goals and objectives?" it was observed that most provincial governments (PGs) have an established communication process between business and IT units. The PGs communicate on shared goals through IT strategic planning. The IT strategic planning is the product of IT programme management, which is drafted based on a shared organisational goal, IT metrics, and business metric.

According to the respondents, this plan starts with a formal sensitisation of the various heads of departments in the PG on the need to have an organisation-wide strategic ICT plan. Therefore, this is often followed by directly or indirectly engaging each head of the department (HOD) and their respective teams, to identify their IT department's needs. Once the needs are itemised, the HODs and other Directors in the PG must evaluate requests from each department and understand the critical needs. The evaluation outcome is a 'priority list', relayed back to all the organisation's teams. According to a respondent, this process is termed 'standards articulation management style'. Therefore, it can be deduced that communication of the ICT plan in a given PG is formal and intentional, especially among management representatives of the various departments and business units. However, communication from management level to operational or implementational level is usually unclear and unintentional. According to Chege (2014), IT requires the support of top management for effective communication, as well as a thorough understanding of business operations.

The lack of clarity on the strategic ICT plan at the operational level is because of the existence of gaps. This view is validated by the answer from **Respondent 2**, stating that after the central unit has developed the first draft of the strategic business plan and distributed it to the various units within the department for inputs, a revised version of the strategic business plan is developed based on received inputs and afterwards redistributed for finalisation. The final document, residing in the Premier Department, includes references in terms of business and IT communication. However, a gap is often identified because this comprehensive perspective is only in the Premier's departmental plan and not effectively communicated to all other departments. In the worst scenario, the description of responsibilities is given minimal attention at the lowest administration levels within the PG, which implies that there is a limited understanding of IT by business and *vice versa*. If this is the case, alignment through the strategic ICT plan across all departments needs to be included and given sufficient priority. The findings support the argument that given the complexity of achieving business and IT alignment in an organisation, there tend to be communication gaps – which will have to be prioritised to improve business operations for the services delivery.

5.3.2 Transition of strategic plan to implementation

Based on the research respondents' perceptions, it was observed that the final strategic business plan is riddled with implementation issues arising from the ICT governance structure and staffing limitations. According to the respondents, implementing ICT governance via the Premier's department gives a false feeling that

the IT governance drives the business units or departments through the ICT plan, regardless of the business units' goals/objectives. Likewise, there is a shortage of staff due to resource constraints, such that personnel who do not necessarily possess adequate skills or who are not well briefed about the purpose of the ICT plan are asked to perform dedicated duties meant for skilled experts. The ultimate result is that people might not understand their roles or responsibilities irrespective of the ICT plan. This, in turn, negatively affects the alignment of business and IT, as well as the realisation of the provincial government objectives. Therefore, according to **Respondent 7** and **Respondent 4**, IT governance, which aims to achieve the shared organisational goal through capacity and funding, can be limited by the allocated human, financial and technical resources.

Furthermore, the interviewed respondents opined that there is a need to standardise frameworks being used across different PGs to complement each other and to fix lapses that might occur within IT governance; or lapses that tend to hinder the realisation of organisational goals. For instance, **Respondent 8** mentioned that currently working with one of the best practices frameworks, the COBIT 5 framework, and aiming at achieving alignment, there has been some review of the preferred framework over the years. These reviews were necessary to eventually actualise alignment in the governing bodies. According to national policies, the DPA, a national body that governs all provinces in terms of standardisation and implementation needs, recommends that organisations carry out the IT framework's periodic corporate governance. The DPA often prescribes the ICT policy framework's corporate governance that is needed for better service delivery. Over the years, it has been accepted that co-ordination can be enhanced through standardisation of business and IT processes, such that the value of investments and performance can be measured and re-evaluated where necessary. Hence, in the provincial government's case, a non-profit organisation (NPO), IT governance's primary objective is to enable service delivery through a uniform infrastructure across the board for information management and business operations. This argument about the role of IT within the business is supported by (Chege, 2014).

5.3.3 Stakeholder engagement

According to the respondents, there is a collaboration between business and IT departments within the considered provincial government (PG). **Respondent 8** mentioned that the business and IT units function in the planning process and collaborate in various forums to achieve specific tasks and shared goals. For instance, in an individual PG, each department has a unique IT governance structure, where the administrative head of the department chairs the IT Strategic Committee

(DITCOM), which, in turn, is chaired by the IT governance champion (CITCOM) and represented by the Chief Directors who represent the various departments. The partnerships are formed to share information, facilitate collaboration towards programme management, and achieve common goals and objectives with each business transaction's stakeholders. Therefore, it can be deduced that a relationship exists between IT and business and that they work together on various levels.

Stakeholder engagement is further extended to partnerships with external companies. Also, to sustain a productive business-IT relationship, it often becomes necessary to include external partners, who then become stakeholders at some levels on specific projects. This point was further buttressed by **Respondent 4**, who mentioned that the effective service delivery of a PG is directly related to the series of engagements with numerous partners that provide a range of services, such as consulting, hardware, and support. Also, it was mentioned that once a business or IT, which the internal PG departments cannot provide, is identified, the need is published to all partners providing the specific function. The task/duty could then be outsourced to the best partner. This is done to ensure that all business needs are catered for, not just for partnership sake, but to achieve the PG's objectives. Consequently, the service provider company selected based on laid-down principles becomes a stakeholder in such business transactions, and proper communication lines must be enabled with such a company to achieve the desired result.

5.3.4 Governance structures

It was observed that respondents regarded IT governance as a responsibility of all the departments within the PG. According to **Respondent 7**, "governance is not the responsibility of IT; it is the responsibility of everyone who uses IT". Also, **Respondent 7** reiterated that "governance is a part of everyone's day job". **Respondent 1** confirmed that,

"Each department has a role in fulfilling in the department itself dealing with IT. I mean, IT becomes another area of management within the portfolio. So, somebody does HR management, Asset management, finance management, and IT management becomes what a manager needs to manage. The manager must understand the implications for making decisions in IT. It is equally important that managers should understand the implications of decisions for the department and the province as well".

This gives the impression that IT governance has been taken seriously and regarded as an integral component, essential to attaining a strategic business-IT alignment maturity level. However, governance is yet to be seen as a means through which business and IT decision-making are complemented.

Respondent 8 clearly stated that awareness and educational disadvantages are reasons why IT governance experiences difficulties in some scenarios. IT governance can be made more efficient by bringing IT-related information closer and having a definite road map of the anticipated goal. For instance, if the PG is considering launching into the 'cloud', each stakeholder should be aware of this, and there should be a continuous communication sequence about the initiative. Since IT governance plays a vital role within the organisation, it can be suggested that there is a need for continuous awareness across all units of how IT is expected to complement their business decisions and corresponding developments in this regard.

5.3.5 Human behaviour

The respondents mainly attributed challenges of communication to social factors. For instance, Respondent 6 believed that among every identified factor limiting communication flow, human behaviour such as change readiness, knowledge sharing and protocol rigidity are significant inhibitors. The response was stressed that even cultural locus of power and language differences could trigger sufficient resistance to communication or even miscommunication. For instance, a respondent reported that her responsibility and passion for implementing IT policies were perceived as an additional disturbance to some colleagues, particularly elderly colleagues. At the same time, others felt unease with managing emerging technology and potential career crossover. With these scenarios, sufficient time to follow the process is required. Therefore, it can be concluded that specific issues are based on the human perception of various circumstances that may affect IT communication and implementation. There is a need to decide how to navigate such issues to ensure that they do not negatively affect the PG's service delivery demand or compromise the administration's integrity.

5.4 Business-IT Alignment Assessment Model

Based on the findings derived from this study, three themes were emphasised; these are *Communication*, *IT governance*, and *Partnership*. Although each theme has some specific characteristics, human behaviour/relations were observed to influence all three themes, one way or the other. For instance, it was observed that the successful implementation of IT strategy is dependent not only on strategy formulation but also on the human behaviour/relations of the stakeholders. Authors argue that it could be more challenging to implement a strategy than to formulate a strategy. According to Bytheway (2004), strategy formulation is easy, as it entails a discussion on ideas and accurate, appropriate documentation. However, implementing the strategy could be affected by the complexities of the organisation's culture, particularly human behaviour (Tallon et al., 2016). Besides formulation and implementation, another area

where wrong human behaviour could be disastrous is in partnership. It was observed that the degree of partnership with a provincial government (PG), or externally with other organisations, could be affected by human behaviour and disparities in the mandate or specific goals of specific departments. Finally, it was also observed that communication, which is fundamental to a successful business, may be negatively impacted by dysfunctional human behaviour, such as change readiness, knowledge sharing and protocol rigidity are significant inhibitors.

One of the identified causes of dysfunctional human behaviour is mistrust, which can be further affected by direct or indirect misunderstanding. Also, to address human behaviour, trusted relationship and understanding among stakeholders is highly required, which can be continuously developed and monitored. Strategic flexibility is also required in intra- and inter-department relations to minimise friction between IT's strategy component and operational component. Lastly, to eventually eliminate, or at least minimise to the absolute minimum the impact of negative human behaviour, all participants need to be adequately and continually educated on the organisational goals, and departmental objectives as figure 5.1 graphically depict the BITA Assessment Model and figure 5.2 the three elements of human behaviour.

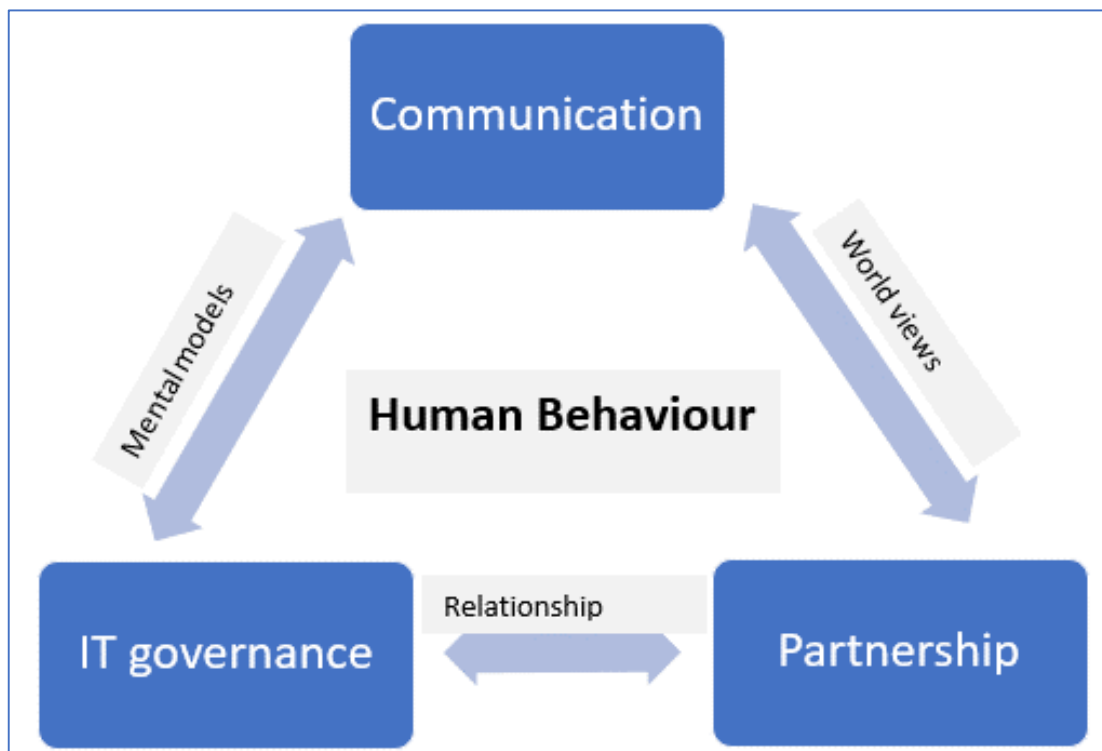


Figure 5.1: Element of Human Behaviour in Relation to Business-IT Alignment

Furthermore, from the Business-IT Alignment Assessment Model of this study, as shown in figure 5.1, three elements of human behaviour have been identified, which could positively affect the interrelationship between *Communication*, *IT governance*, and *Partnership* well managed. As shown in figure 5.2, these three elements are *Mental Models*, *World Views*, and *Relationship*.

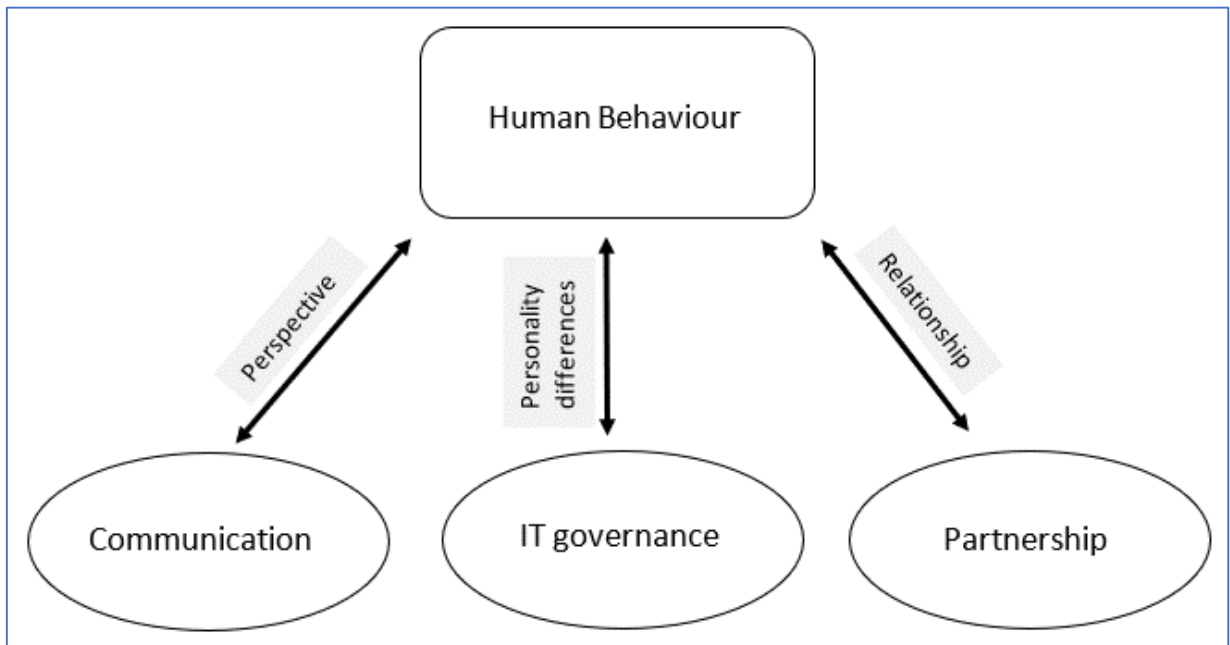


Figure 5.2: Three elements of human behaviour

5.5 Answering the research questions

RQ: How has the implemented EA strategy influenced the business-IT alignment (BITA) of a PuO's business processes in South Africa?

Business-IT alignment is fundamental to business process efficiency in any organisation, whether private or public businesses. In this research, many components (or elements) that must be well-managed for successful business-IT alignment have been identified and discussed. An objective evaluation of the answers provided by the interview respondents for SRQ is discussed next. The objective evaluations have been derived from the summaries extracted from the research theme development (sections 5.2 and 5.3).

SRQ 1.1: How does communication influence the business and IT alignment of a PuO in South Africa?

Response Summary: As previously defined, business and IT units are integral components of EA. Usually, EA comprises the operating model, business processes, standardisation, and their integration. Also, high-quality EA affords an organisation

the accurate pictorial view of a successful operational strategy and the vision for future operating platforms in line with the organisation's strategic goals and the pathway in moving towards achieving the organisational mission. The communication stemming from its business, and IT units must be examined to determine the level of maturity and effectiveness of an organisation's EA. In other words, when the business and IT units communicate effectively by applying the identified organisational goals and objectives, the EA is stated to be efficient. In this context, the communication function is the free-flow of knowledge and information between a given firm's business and IT domains. Also, the communication function is paramount as it is often reflecting in each department budgetary allocation. In some cases, in order to facilitate the smooth operation of the organisation, the budget for the business and IT units have been merged.

Based on the respondents' feedback, ICT strategic planning and the operational ICT plan are common ways business and IT units currently communicate on organisational goals and objectives. Particularly, ICT strategic planning is the departmental engagement within various business units to identify the critical ICT initiatives and solutions required to attain specific goals. According to **Respondent 9**, the operational ICT plan is a draft that outlines the objective of each department of an organisation together with the associated ICT actions, procedures and processes needed to fulfil the plan. It is important to note that the plan is subjected to reviews and updates, sometimes yearly. For instance, according to **Respondent 2**, the organisation's strategic planning emphasises the planning process through which communication is primarily done. Each department is expected to develop five-year strategic business plans, which align with the PG's goals and objectives. The strategic business plan that has been developed is then utilised as a guide for the ICT team to assist with developing its IT plan.

It should be noted that the developed IT plan is expected to have input from each business unit's plan. In other words, the communication process between business units and the IT unit is enabled through a feedback process. This communication method can be applied to different PGs' planning, such as social development planning, where the corresponding business objectives determine the type and magnitude of ICT needs.

It is important to point out that the communication flow between business and ICT units is dependent on the managerial level. It was recorded that the higher the management level, the better is the flow of communication and *vice versa*. Although the communication flow appears to be seamless at the executive level, the same

amount of information transferred to other administration levels fails to adequately explain the process. Age, technical know-how, and lack of value for the established governance structures and personal perspectives have been identified as potential barriers to business-IT communication. In some instances, the ICT plan is even misunderstood, and this is often coupled with the fact that very few qualified stakeholders in this space are able to effectively disseminate decisions made at top-level management. Also, other challenges to business-IT communication alignment include bureaucracy, financial constraints, and prioritisation processes.

In summary, competency-related challenges are often experienced in one form or the other. Based on these challenges, it can be expected that the BITA processes would experience some difficulties. In order to avoid this unfavourable scenario from occurring more often, the ICT processes need to be properly planned. According to **Respondent 1**, the ICT planning process is the formal engagement of each head of the department (HOD) and directors with the ICT team to understand their units' critical needs. In other words, as indicated by **Respondent 7**, the ICT planning process is a platform/workshop that accommodates business and IT units collaboration aimed at fulfilling the organisational goals and objectives. The information gathered from this workshop is further developed into a complete PG ICT plan, together with the budget allocation required to achieve this plan.

Most respondents stated that there had been some measure of improvement over the years with respect to the communication flow between IT and the business units. The improvements were attributed to increased clarity on the ICT initiatives by most stakeholders. Presently, though expensive and financial intensive, the flow and perception of communication between IT and the business units have been extremely positive, and the advantages are increasing. It is important to note that the communication system's improvement should be the goal of all concerned stakeholders. For most correspondence, tools such as MSWord documents and spreadsheets have been used to execute the strategic ICT planning, where the document is acknowledged and signed-off by both departmental business heads and top IT stakeholders. For progress tracking, emails have been very helpful in setting up appointments and enhancing departmental communication. In more advanced organisations, the Intranet, called PG intranet, is used as a repository for new IT-related information, standard guides, and IT services application forms.

In conclusion, although a level of formal processes (ICT planning), which enable business units or departments to periodically (on a 4-5-year basis) strategise with the IT unit in line with organisation goals, has been institutionalised in assessed

organisations, there are still fragments of the existence of communication gaps. In reality, the communication gap is often from the Premier's Office (ICT planning departments) down to the provincial government's lowest administration levels. The communication gap occurs because there are: inadequate clarity on purpose, misunderstood responsibilities, and a lack of readily available access to appropriate stakeholders.

SRQ 1.2: How does IT governance influence the business-IT alignment of a PuO in South Africa?

Response Summary: IT governance is the term that describes the role of IT in supporting strategic decision making, operations at various levels, implementation strategies, and resource allocation. Each function of IT governance is implemented by rules and regulations, together with the management of strategic partner alliances. Starting with decision making, IT governance promotes strategic and clear decision making in agreement with the organisational goals. Also, it advocates for effective resource allocation through the business and IT alignment. IT governance can be viewed from six viewpoints; namely: strategy, performance, security, benefit, risk, and resource optimisation. These six areas are an indicators test to evaluate the effect of IT governance and, probably, to increase the chances of achieving organisational goals in the PG.

Most respondents of this study agreed that IT governance exists in their organisation. The IT governance structure/committee composed of the IT head from each department and governed by a chairperson who is either the business or ICT champion of the organisation, while on a few occasions, IT governance existed as a different unit under the IT department as opposed to the joint function of different departments' IT personnel. The IT governance strategic committee's leadership is saddled with the responsibility of dealing with governance-related issues and governance improvement. Besides constituting a committee to handle IT governance issues, the Central IT committee (CITCOM) is tasked and mandated with seriously discovering efficient ways to communicate agreements to various departments; otherwise, the purpose of constituting IT governance, which is to evaluate each department's progress based on the PG goals and objectives, may be defeated.

According to the findings of this study, IT governance affects PG BITA maturity. Specifically, IT governance tools such as policies, methodology, frameworks (TOGAF and COBIT), and central artefact mapping tools were used to improve the business processes' effectiveness. In order to make the processing more excellent, there is a

need for more clarity on the roles of each party involved in the IT process management. One significant advantage of IT governance is its ability to rightly allocate IT investment and control budgeting. Before discovering and applying IT governance, IT-related investment and control have been determined by each relevant department. Although each department has a structure, investment allocation and decision making is often left to chance. Now, with IT governance, the committee requirements can be outlined together with the leadership level of competence. With this structure in place, there has been more strategic positioning of the IT process, which has resulted in a positive ripple effect on business operations. However, it should be noted that in some cases where the IT governance processes are yet to be fully implemented to accommodate each department and its functions, negative influence on BITA maturity is expected.

Also, other factors that determine if IT artefacts would be maintained include people perception, maintenance activities, and generational differences. Most of the challenges focus on human behaviour, which ultimately results in major drawbacks to receiving current information. A measure of strategic flexibility should accompany this phenomenon; otherwise, more friction between IT strategy components and IT's operational component will become evident. In another finding, the provincial government finds it very difficult to define a single enterprise architecture which perfectly fits its organisational needs and objectives. For instance, in a particular PG, the Zachman (1987) framework was adopted to align the business and IT processes, but it eventually failed. This scenario has led the PG to adopt two frameworks simultaneously to address the complexity of the situation – TOGAF was introduced to cater for IT governance, while COBIT was adopted to develop and align the ICT strategy and implementation plan to organisational objectives.

On the other hand, another organisation utilised the COBIT 5 framework as well as certain other frameworks for the governing body to implement the alignment. Although the final desired outcome has not yet been attained, the organisation is determined to keep at it until the results are evident. Hence, there must be some degree of flexibility in addressing IT governance issues.

The PG's IT governance maturity level is said to be sound if the structure is aligned to COBIT. Another feature of a good maturity level is when the business takes ownership of IT and not the other way around. It is also expected that various business departments implement ICT policy framework governance as part of their in-house agenda. To facilitate this, it is anticipated that the delegate from the IT governance team meets with the departments every quarter to access each of the itemised IT

items. It should be noted that this is an ongoing process and it is expected to continue until the PG reaches the required/substantial maturity level. In the long run, the established IT governance structures will possibly shape the landscape of business implementation in PG. Based on this study's findings, there is an acceptable level of staff knowledge of BITA, though some staff displayed a degree of resistance to the implementation of new BITA strategies within the PG.

SRQ 1.3: How does partnership influence the business and IT alignment of a PuO in South Africa?

Response Summary: The partnership between two entities reflects the quality of trust and relationship between them. In this scenario, the two entities are business and IT, and one is incomplete without the other. The quality of partnership displays the degree of IT functions and its support in developing business strategy. According to Luftman (2000), partnerships are highly influential and can either act as an IT alignment enabler and inhibitor. Also, it promotes equal opportunities for the participation of IT and business strategies to achieve organisational goals. IT enables and coerces transformations of strategies and business processes, which builds the proper partnership between the business and IT units and rightly shares the risks and rewards between business and IT units. The partnership is essential to build and foster healthy collaborations in order to eventually achieve BITA, and in turn, help realise set objectives.

Partnerships influence the strategic and operational plan processes as well as communication operations, which together works towards achieving common goals and objectives. Another respondent stated that the business and IT units of her organisation plan strategically together. In the long run, the relationship between them becomes better with an accompanying measure of organisational stability and predictability. Also, alignment between PG and organisational departments often results as a by-product of this relationship – in the considered PG, the partnership business and IT units and external organisations, are overseen by the Premier's Office. Also, the Office of the Premier is primarily involved in the ICT strategy and implementation plan and ensures that the purpose of all collaboration aligns with the strategic ICT plan. Another respondent clearly stated that achieving organisational goals is the business's responsibility, but the implementation of the objective's milestone is the IT governance unit's job. Some department within the PG has the responsibility to manage services, development, and maintenance through the IT tools deployed from the IT governance unit and in alignment with the organisational policy.

As widely accepted, partnership productivity depends on trust and understanding. Whereas some respondents confirmed the existence of substantial trust and understanding, others were certain that no tangible trust exists in their organisation's business and IT partnership. The mistrust issue was attributed to varying human behaviour and information technology's emergence as a PG's driving force. Therefore, as in most partnerships, time is needed to build trust and to solely rely on the IT structure or processes. This build-up will be a continuous process partly because IT is perceived to be intangible, and there is still a lot about IT to be learnt and comprehended.

Lastly, besides being optimistic about the business and IT units' partnership potential, another respondent recorded a view that business does not understand the IT governance and IT capacity issues as it would have been expected of it. Although the business is involved with the IT units, it fails to deliver core needs as defined in the business service level agreement (SLA) with concerned stakeholders. This is because one of the units (either business or IT) eventually makes decisions that might or might not be a well-received development by the receiving correspondence. Irrespective of the differences between business and IT processes, there is an attempt to synchronise the units' responsibilities to realise the strategic ICT plan goals. The mentioned process is often competitive, and the distribution of responsibilities is based on infrastructural needs, the existence of transversal systems, and central architecture.

Of the factors that negatively affect business-IT alignment, human behaviour seems to be a significant driving factor. All participants need to be adequately educated to ensure an understanding of the need for a challenge-free business-IT alliance towards a successful enterprise. In the same vein, unhindered communication channels among stakeholders, partners, business executives, and lower cadre staff who implement business directives must be ensured.

It can be observed that in this PG, despite the implementation of a suitable EA and governance structure, the impact of the EA strategy is yet to evolve to the desired level it should be. This is supported by statements of several participants who have been able to realise the level of the communication gap and a slow rate of business strategy implementation within the PG.

5.5 Conclusion

This study aimed to explore the effect of the implemented enterprise architecture (EA) on the business and information technology alignment (BITA) of a public

governmental organisation's businesses processes. Notably, the current maturity status is important to understand since there is a maturity level once an organisation implements an EA to align their business and IT strategies.

Findings indicate that there is a formal means of communication captured within the strategic ICT plan. The plan was developed to involve all management representatives from each business and IT unit as a committee. The ICT plan was adopted as the mechanism for all units to discuss and align their plans in order to achieve organisational goals through the application of IT. It is also clearly observed that communication from management to operational or implementation level is usually not clear. The plausible explanation is that the communication methods between the different organisation levels are not suitable, or specific information is not given the required priorities. If IT is to be applied to business, it requires the support of top management for effective communication as well as a thorough understanding of business operations. The support of top management is required for governance structures that enable both business and IT units in the organisation to be accountable and responsive in achieving organisational goals. This gives the impression that IT governance is taken seriously and regarded as an integral component, which is essential to attain a strategic business and IT alignment maturity level that will ensure the return of investment in the form of added value.

It can also be concluded that there is minimal attention to responsibilities at the lowest levels of administration within the provincial government, and such communication levels are accommodated in the ICT plan. Also, the resistance among staff could be a significant challenge for BITA in the PG as the PG workforce needs to buy into the ICT and business strategy of the PG for efficient service delivery to the citizenry.

Also, there is currently a shortage of staff due to resource constraints such that personnel who do not necessarily possess adequate skills or who are not well briefed about the ICT plan's purpose are doing the work. The ultimate result is that irrespective of the ICT plan, people might not understand their roles or responsibilities, which, in turn, negatively affects the alignment of business and IT operations and a lag in the level of BITA maturity, as well as the non-realisation of the PG's objectives. While it seems that all stakeholders are involved in business and IT alignment through partnerships, the degree of trust is relative due to organisational bureaucracy and perhaps the lack of awareness of how the ICT strategy plan should be implemented. There is also a need for standardisation of business and IT processes and coordination, such that the value of investments and performance can be measured and re-evaluated when and where necessary.

Ultimately, there is a strong argument for the need to prioritise communication strategies and ensure its effectiveness, while IT governance should be maximally utilised as a means to ensure business sustainability in the PG.

CHAPTER 6: CONCLUSION AND RECOMMENDATION

6.1 Introduction

This chapter provides a conclusion and recommendations for the study. The researcher aimed to explore and determine the business and information technology alignment (BITA) maturity level of the Strategic Alignment Model (SAM). The research conclusion and recommendations are presented in section 6.2 and section 6.3, respectively, while Section 6.4 discusses some of the limitations to the study are discussed in section 6.4.

6.2 Conclusion

The authors of several literature publications have observed that BITA achievement is a recurrent issue. The BITA maturity level of an organisation usually correlates with the strategic IT decisions and management practices concerning the six concepts of the strategic alignment maturity model (SAMM). In this study, the ultimate goal of investigating the business and IT alignment maturity was to determine the current status of BITA, and the effect of IS investment in services delivery. The discussion provided answers to the research questions, which reviewed Human behaviour as a common factor that affects communication, IT governance and partnership.

The cost of investment in information technology is cited as a significant barrier; it reduces organisational management's interest to invest in technology innovation for business and decision-making processes. Therefore, it is necessary to re-assess IT periodically to re-evaluate and reposition its value and how it supports organisational goals.

The research objective is (to determine how the implemented EA strategy influenced the BITA of a PuO's business processes in South Africa), and it does address in terms of the communication between business and IT, there is an established communication process documented in the ICT strategy and implementation plan. However, there are communication gaps between top management and the lower administration levels, which could serve as a drawback to business and IT alignment. These gaps are mainly attributed to the inadequate dissemination of the ICT plan from the top management down to the lowest administration levels. Therefore, the process of communication is not enhanced enough to enhance communication.

The importance of IT governance is realised and is receiving attention. To this effect, IT governance is recognised as a means to measure strategy, performance, risks, benefits, security, and resource optimisation. This will assist the provincial

government with re-evaluating its technology investments to enable businesses and enhance services delivery.

The findings confirmed that partnerships exist between business and IT stakeholders within the organisation; however, these relationships are not entirely without anomalies because of the technical language barrier and trust concerns. This has a negative effect on how the business perceives IT uses for decision-making to achieve their objectives. Therefore, the effect of existing concern and barrier of partnership affects the ability to achieve the desired BITA level.

Also, the provincial government’s maturity level can be described as being in its transitional stage from the initial/ad hoc processes (Level 1) and the committed process (Level 2) of Luftman’s (2000) strategic alignment maturity model (SAMM). In essence, the provincial government realises the need for alignment between business and IT; hence, it has taken progressive steps focused on this course.

6.3 Recommendations

Based on the findings of this research, as presented in Chapter 4, Table 6.1 states the study's recommendations for each of the research issues investigated.

Table 6.1: Recommendations

Issue Investigated	Recommendations
Communication between business and IT	<p>The ICT plan needs to be simplified such that it accommodates the business plans and objectives of the different service providing units or departments.</p> <p>It is recommended that the business plans/objectives of units should be given topmost priority during the development of the ICT plan. This would reduce the divide between the objectives of the different business units and the ICT plan of the organisation as an entity.</p> <p>Seminars or meetings, where the purpose and impact of the ICT strategy and implementation plan on provincial government operations and services delivery should be well-timed to keep staff members (new or old) updated and informed. This should be organised and coordinated through the collaboration of the government department, heads of departments, and the Office of the Premier after the ICT plan has been communicated.</p> <p>It is recommended that all possible stakeholders are identified in the process of developing the ICT plan. This will keep staff members informed of which individuals or groups or organisations have interests in, or influence services delivery or decision-making.</p>
IT Governance	<p>IT governance is regarded as every department’s responsibility. There should be a governance officer in each business unit. This will enable business units to tailor their objectives and goals towards the ICT plan, thus reducing the communication gap at the lowest levels of administration and operations.</p>

Issue Investigated	Recommendations
	Each business unit should develop its key performance indicators since they offer different services and have individual objectives. This will assist them in measuring their progress in line with achieving the ICT plan for the organisation.
The partnership between business and IT stakeholders	Partnerships should be given more attention, especially within the provincial government. This will allow business and IT to become more integrated while staff understand how their roles complement each other. Efforts should be targeted towards the IT department gaining the trust of business units without prejudice. This will boost mutual confidence in each other and facilitate accountability in achieving organisational goals.
Knowledge about enterprise architecture	The ICT plan needs to undergo a more all-inclusive approach, verified against the adopted frameworks in the development phase, to accommodate and simplify the transition to implementation at the operations level. This will allow roles and responsibilities to be as straight-forward as possible.

To improve on a sustainable BITA level of maturity, challenges and bottlenecks need to be addressed. It can be observed that governance-related matters need to be driven from the executive and across departments, not necessarily from an IT governance perspective. It is recommended that an IT governance officer be appointed in each business unit or department.

Furthermore, there is a need to continually improve the existing (and future) relationship between the highest and lowest management levels and staff in the provincial government through effective communication channels to build stronger ties from top to bottom. This will ensure that implementing the ICT strategic and operational plan is well articulated to mitigate communication gaps. Ultimately, this strengthens the tie between business and IT processes and relationships.

6.4 Limitations of the study

As discussed in the literature, most of the BITA studies focused on quantitative methodologies based on statistics. There is limited literature available on a qualitative study of business and IT alignment in the public sector. While the researcher gained extensive knowledge during this research, the findings contributed to the body of knowledge on business and IT alignment (BITA) in an organisation, especially in the public sector. However, because of the research design and the sampling technique selected, the results may not be generalisable. Hence, further studies may consider adopting more qualitative methods or mixed-methods research. This will enable selecting a more significant number of participants and provide more in-depth statistics (quantitative) of the participants' opinions (qualitative).

Because of time, availability, and cost constraints, the study was conducted as a case study, with a Governmental PuO in South Africa as the analysis unit. The availability of the participants for interviews was limited. Future studies may investigate other provincial governments' experiences and context-based factors and how they handle business and IT alignment, challenges, and mitigation plans, if any, in South Africa.

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APPENDIX A: SEMI-STRUCTURED INTERVIEW GUIDE TEMPLATE

RQ: HOW HAS THE IMPLEMENTED EA STRATEGY INFLUENCED THE BUSINESS-IT ALIGNMENT (BITA) OF A PUO'S BUSINESS PROCESSES IN SOUTH AFRICA?

SRQ 1.1: How does communication influence the business and IT alignment of a PuO in South Africa?

IQ 1.1.1: How do the business and IT units currently communicate on the organisational goals and objectives?

IQ 1.1.2: What are the limitations of the joint planning processes employed by the PG units, especially with the ICT unit?

IQ 1.1.3: What does the ICT planning process entail?

IQ 1.1.4: What are the challenges of business-IT communication?

IQ 1.1.5: Has there been any improvement in communication between IT and business over the years?

IQ 1.1.6: What tools are used for communication?

IQ 1.1.7: What are the challenges to the business-IT communication alignment?

SRQ 1.2: How does IT governance influence the business-IT alignment of a PuO in South Africa?

IQ 1.2.1: What is the organisation's view of IT governance?

IQ 1.2.2: What is the effect of IT governance on the BITA maturity level in the provincial government?

Q 1.2.3: What is the IT governance maturity level in the provincial government?

IQ 1.2.4: What can you say is the level of staff knowledge on BITA and its implementation in the PG?

SRQ 1.3: How does partnership influence the business and IT alignment of a PuO in South Africa?

IQ 1.3.1: What collaborations or partnerships exist for business-IT stakeholder relationships in the PG?

IQ 1.3.2: Have you experienced challenges in relationships between business and IT stakeholders?

APPENDIX B: EXTRACTS OF INTERVIEW RESPONSES BY PARTICIPANTS

RQ: HOW HAS THE IMPLEMENTED EA STRATEGY INFLUENCED THE BUSINESS-IT ALIGNMENT (BITA) OF A PUO'S BUSINESS PROCESSES IN SOUTH AFRICA?

SRQ 1.1: How does communication influence the business and IT alignment of a PuO in South Africa?

IQ 1.1.1: How do the business and IT units currently communicate on the organisational goals and objectives?

Respondent 1: We have a process called ICT planning. What ICT planning particularly entails, is the engagement with the various business units within each department to identify the key concern and what ICT initiatives and solutions they are looking at to enable that goal.

Respondent 2: In terms of communication on proposed business and IT, it is clearly stipulated in the strategic document of the specific case, the premier's department, it is documented. There is a possibility of a gap because it is only in the Department of the Premier's plan because the forward is in the department, and it may not be communicated to all other departments. Different departments develop a strategic business plan, a five-year plan with the outline of the organisation's goals and objectives, right? Similarly, on the IT side, they will do the same. However, because the IT unit, in this case, falls within one of the departments, the goals and objectives of the IT unit are included...when the business team develops the five year plan, ICT then comes and says okay we need to develop an IT plan which is in line with your business plan, in terms of where you are going, what is it that you want to achieve and how can we as IT assist you and enable you to achieve your goals and objectives.

Respondent 6: For social development, one of the business objectives is to get more social workers out on the field for larger outreach strength. This increase would surely come along with higher ICT requirements. This is because the new social workers might need to send an email to communicate or capture certain information or use a tool to capture the citizen's information. This requires support from the ICT unit and therefore creates a feedback platform for strategic business plans into ICT.

Respondent 9: What we do is we draft out the ICT straight Plan per department to implement business objectives, and we review that yearly... We get our budget from the provincial treasury, which must have been aligned to the ICT plans and the department's needs to feed. So there is ordinarily joint budget, which must cover everything in the business and ICT. Alternatively, the ICT's budget must be covered by the department of Ce-I or the premier department. They must get the ICT budget to support us in doing our work.

IQ 1.1.2: What are the limitations of the joint planning processes employed by the PG units, especially with the ICT unit?

Respondent 1: When the strategic planning process was started, the various PG departments did not see the need or priority. However, over time, they have understood that they can use ICT as an enabler to their benefit, such that spending time and effort into developing an ICT plan becomes equally important. This implies that communication between the departments and IT has improved. There is better clarity around the ICT initiatives.

Respondent 2: There may be a gap when ICT plans may only be in the Department of the Premier's plan; sometimes, they may not be communicated to all other departments or operation levels.

Respondent 10: Communication is only well understood at the top management level. This means that the staff at the bottom of the administration chain is expected to implement what has been discussed at the management level. However, oftentimes, such staff does not always know what he is aligned to; there is a break in communication.

IQ 1.1.3: *What does the ICT planning process entail?*

Respondent 1: The ICT planning process is formal. It is the engagement with each head of the department and his team. The process starts with a formal sensitisation and engagement of the HODs and the directors to understand the critical needs of their units”.

Respondent 2: Different departments develop strategic business plans, five-year plans aligned with the PG’s goals and objectives. Once the business team develops the five-year plan, ICT then develops an IT plan, which has input from the various IT requirements of each business unit’s plan.

Respondent 7: IT and business meet face to face to discuss the process, and this done using a workshop format.

IQ 1.1.4: *What are the challenges of business-IT communication?*

Respondent 1: What I can say is that obviously from a business perspective. They do not understand its role or the other way around; they do not understand how they can use IT. I think younger people coming to the organisation understand, but many senior generations see IT as a barrier.

Respondent 2: You put governance structures in place, and you recommend ways of working it, but people still bypass it; they find ways of doing things in ways that are not prescribed. Another respondent indicated that the challenges are...twofold; it ranges from businesses saying that we are too technical when we speak to them; that is one end of the spectrum. The other end of the spectrum is that the business wants to take IT decisions on its behalf. In essence, there is a communication barrier concerning the technical language barrier between the business and IT departments or units.

Respondent 3: The ICT plan is often misunderstood and negatively impacts on implementation processes.

Respondent 7: The main challenge is availability and access to the correct stakeholders.

Respondent 10: There are times you suddenly realise there is more work to do or more people to train. Sometimes, the staff may not know why the extra task or training has to be done.

IQ 1.1.5: *Has there been any improvement in communication between IT and business over the years?*

Respondent 1: I think the communication between the departments and IT sort has improved. There is better clarity around the privatisation of ICT initiatives. So, for the large part, departments are coming to the party. Although, they are still not potentially at the right point where you want them to be”. The respondent also revealed that there have to be improvements for over ten years. “I can only speak from about 2006, and there was work done before that. However, because my engagement with that unit

started only from 2006, I can only speak from that point forward. So from 2006, every year, there were improvements made.

Respondent 2: Now, we have reached the point where communication and how it is received are very positive because people are beginning to understand the value of having the business and IT alignment.

Respondent 5: I can only speak from about 2006, and there was work done prior to that. However, because my engagement with that unit started only from 2006, I can only speak from that point forward. So, from 2006, every year, there were improvements made.

IQ 1.1.6: *What tools are used for communication?*

Respondent 1: I mean, in terms of capturing information, we use word document and spreadsheet. That word document will encapsulate the strategic intents as one of the ICT enablers, and that gets signed off by the HOD of the department with the relevant IT senior management, which will deliver the service to them.

Respondent 2: We only use emails to track communication. If they are attached to a department, and they have to set up an appointment. They do it via email. There is no other tool that we use.

Respondent 8: There is an intranet website, where we place all new information about IT, standard guide about the set-up of your little USB modems, devices, and application forms for IT services. All of that is on the intranet.

IQ 1.1.7: *What are the challenges to the business-IT communication alignment?*

Respondent 3: The purposes of the ICT plan is misunderstood and negatively impacts on implementation processes.

Respondent 4: IT either misunderstanding business or focusing on the technical, but that is often rare. Sometimes, the business does not know what EA can give, so they cannot clarify information. However, that is because there is no proper communication.

Respondent 6: Because of financial constraints, negotiation becomes a challenge because you are under many business pressures, and you need to prioritise.

Respondent 7: The main challenge is availability and access to the correct stakeholders.

Respondent 8: Challenges are the availability of people and the problem bureaucracy because only certain people can give the go-ahead, and if that person is not there (on sick/annual leave) we have to wait for that person to come back.

Respondent 10: There are times you suddenly realise there is more work to do or more people to train. Sometimes, the staff may not know why the extra task or training has to be done. This creates a little bit of friction since the reasons were not adequately explained.

SRQ 1.2: **How does IT governance influence the business-IT alignment of a PuO in South Africa?**

IQ 1.2.1: *What is the organisation's view of IT governance?*

Respondent 1: There is an IT governance strategic committee represented by the head of IT and his chief directors. They deal with issues related to governance and improvement of governance and areas that will impact IT. I can speak from a level of extreme confidence that this is regarded very highly that we have established an IT strategic committee. So, I think they are taking it very seriously and through the various audit processes that identify risks.

Respondent 2: We do have governance structures in place that is relevant to the CITCOMS and DITCOMS. The CITCOM is all the chairpersons of all the DITCOMS (Dept. of IT committee), the chairperson seats on the CITCOM (central IT Committee). Usually, the governance structures and anything governance-related is communicated at that level, and they will need to get it across to the various departments.

Respondent 3: In theory, it should be every department. However, there is a specific IT governance department.

Respondent 6: The HoD, who is the DG, is responsible for governance in the IT governance in the province, because the legislation, Public Service Act makes him responsible for information management. Therefore, he is responsible for the entire province. IT governance is to measure and value your IT investment, which you spend lots of money on. So you need to apply your governance to your IT investment. IT governance is basically about controlling and measuring and see if there is value in the IT. Governance is about strategy, performance, security, benefit, risk, resource optimisation. What is it they need to do with IT strategically and perform up to the performance indicator, are they in line with the annual performance plan.

IQ 1.2.2: *What is the effect of IT governance on the BITA maturity level in the provincial government?*

Respondent 5: IT governance process has been used to govern the IT investment. This has enabled prioritisation and investment control via budgeting. IT governance is basically about controlling and measuring and see if there is value in the IT

Respondent 6: Previously, every department used to have their processes. They just did things whichever way. The departments used to have the structures, but they did not have the right persons on the committee to make informed decisions. Some departments may sometimes have as the chairperson a deputy director, who does not have the mandate and authority to make certain decisions. So, what the IT governance unit did was that they outlined what the committee should consist of and the chairperson's level because the chairperson must be able to make certain decisions at that level. So, this has put much structure into the IT process and has impacted positively on the business processes

Respondent 7: We follow a formal process informed by the PG's policies, methodology, and frameworks concerning all. We use case-wise as our central artefact mapping tool, and we are guided by extracts of TOGAF and COBIT enterprise architecture framework. This has greatly improved the effectiveness of our business processes. However, there is still a need for clarity in each party's roles in IT processes management.

IQ 1.2.3: *What is the IT governance maturity level in the provincial government?*

Respondent 5: Business is expected to take ownership of IT without IT taking ownership of the business. The various business departments need to implement ICT policy framework governance as part of their meetings' agenda. The departments align, but I must say it is still ongoing since we now have awareness and discussions on such issues. For example, the ICT governance directorate assists the departments,

and they ensure the departments understand documents sent out to them, how to complete it, and how to interpret it. The IT risk person from the IT governance team meets with the departments every quarter and goes through each of the IT risk items. This is an ongoing exercise and would continue until the PG reaches the required maturity level.

Respondent 7: I think it is less mature than the ICT planning, but then ICT planning and framework has been going on for longer than IT governance. People are beginning to understand it, but maybe not giving it the necessary importance.

Respondent 8: the PG has a sound level of maturity which is aligned to COBIT.

IQ 1.2.4: *What can you say is the level of staff knowledge on BITA and its implementation in the PG?*

Respondent 1: There are generational differences. This is emphatic when you realise that some elderly staff have been using a specific application for long years and are now made to change software or strategies. It is difficult to convince such people on the need to change strategies or tools.

Respondent 3: There is some disjoint between the strategy component of IT and operational component. So here, we are dealing with the strategy component. To ensure that IT artefacts are maintained, we have to get the people to buy into that process of updating it to maintain the relevance. Moreover, given that opportunity, most of the staff do not want to do that, and the results are a major drawback to having the most current information.

Respondent 4: As I understand it, we are using best practices, and we are making use of the COBIT 5 framework, which we launched on to make sure that we align with that. Based on that, we implement specific frameworks in the governing body to align ourselves. We are not there yet, but we are trying to get some frameworks and governing bodies in place.

Respondent 8: I guess it is difficult for the provincial government to define a single architecture, a one size fits all because it will not fit like just like that. The evaluation is derived from assessing what is stated in the ICT strategic plan and operational plan.

SRQ 1.3: **How does partnership influence the business and IT alignment of a PuO in South Africa?**

IQ 1.3.1: *What collaborations or partnerships exist for business-IT stakeholder relationships in the PG?*

Respondent 1: Of worthy note is that the Department of the Premier plays a sort of overall role to ensure that from a strategic perspective that things are happening that there is alignment between what we as a province want to do and what the departments require.

Respondent 5: what we do is co-planning. When you have a plan that you developed and planned together, the relationship becomes better. It brings a level of stability and predictability.

Respondent 7: every department partner with different organisations. These can be at the National government, NGO, or inter-departmental level. Besides the Strategic- Planning process, business and IT units also collaborate in various forums. Specifically, we have different IT governance structures for departments, the IT Strategic Committee (DITCOM) which is chaired by the administrative head of the department, the IT Steering Committee, which is chaired by the IT governance champion (CITCOM) and

is represented by the Chief Directors representing the various departments. The partnerships are formed in a bid to share information, achieve common goals and objectives.

Respondent 9: It is the business' responsibility, but it is the IT governance unit's job to assist them in achieving that, and that is where we come in. So, we have different managers with different responsibilities. Some managers are service managers; so, they will look explicitly at the services we offer and manage them. Other managers are development managers.

IQ 1.3.2: *Have you experienced challenges in relationships between business and IT stakeholders?*

Respondent 3: Sometimes, there is a right level of trust, but at some other level, it is not there, so they do not involve IT. So there is a mix.

Respondent 6: It is not a fully trusted relationship yet, but there is some understanding. The respondent attributed mistrust to human behaviour and the emergence of information technology as a PG's driving force. The relationship's growth is a continuous process. Because IT is intangible, and it is a very young discipline. Like construction is being there for many years, you can physically look at the progress, but it is not like that for IT. People are still trying to understand it and learn it.

Respondent 9: The business does not understand IT governance and IT capacity issues. While business is involved at a different IT level, the system delivers on the core needs as defined in the business service level agreement (SLA) with its vendor. Irrespective of the differences between business and IT processes, there is an attempt to synchronise the units' responsibilities to realise the strategic ICT plan's goals. The implications are that one of the units (either business or IT) eventually makes decisions that might or might not be a well-received development, depending on the unit, which is on the receiving end. It is always a very competitive process because you may have business needs, but it depends on whether those needs are funded or not. The Ce-I addresses the common needs of infrastructure, transversal systems, and central architecture to host the shared systems/platforms.

APPENDIX C: CONSENT LETTER OF COMPANY TO CONDUCT RESEARCH



Branch: Centre for e-Innovation
E-mail: Lance.Williams@westerncape.gov.za
Tel: +27 21 483 5565 Fax: +27 21483 5539

Enquiries: Lance Williams

I, Lance Williams, in my capacity as Deputy Director-General (DDG) at Western Cape Government, Department of the Premier give consent in principle to allow Seun A. Ogundipe, a student at the Cape Peninsula University of Technology, to collect data in this company as part of his M Tech (IT) research. The student has explained to me the nature of his research and the nature of the data to be collected.

This consents in no way commits any individual staff member to participate in the research, and it is expected that the student will get explicit consent from any participants. I reserve the right to withdraw this permission at some future time.

In addition, the company's name ~~may~~ may not be used as indicated below.

(Tick as appropriate)

	Thesis	Conference paper	Journal article	Research poster
Yes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
No	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Lance Williams

DDG: Centre for e-Innovation

Date: 23 September 2014