Investigating the impact of institutional forces on the operations of an organisation-implemented ERP system in a developing country

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by

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Acronyms

BCEA	Basic Conditions of Employment Act
CEO	Chief Executive Officer
CIO	Chief Information Officer
CMMS	Computerised Maintenance Management System
CSF	Critical Success Factors
EM	Executive Manager
ERP	Enterprise Resource Planning
EXMA	Executive Management Committee
GNI	Gross National Income
HR	Human Resource
ICT	Information and Communication Technology
IDZ	Industrial Development Zone
IS	Information Systems
IT	Information Technology
LRA	Labour Relations Act
PC	Procurement Committee
PFMA	Public Finance Management Act
SA	South Africa
SAP	Systems, Application, Products
SARS	South African Revenue Services
UCT	University of Cape Town
UN	United Nations

Abstract

In response to the pressure of the ever-changing and dynamic global market, enterprise resource planning (ERP) systems have become the cornerstone for organisations of all sizes to compete internationally. However, implementing organisations in developing countries doesn't enjoy the same benefits as implementing organisations from developed countries, because ERP systems general originate from developed countries and these do not necessarily fit the requirements of implementing organisations in developing countries owing to the different business practices, legal and government regulations. ERP systems are built on institutional models, procedures and forces that set the rules of rationale and these forces serve to bind implementing organisations to fundamental choices about how organisational operations and processes should be organised. Limited studies have been done on the impact of institutional forces on implementing organisations from developing countries, particularly in South Africa, yet these organisations continue to invest huge amounts of their financial resources in ERP systems. Until implementing organisations understand the impact of institutional forces on their operations, misalignment will continue to deny realisation of the full benefits of these systems. This study aimed at exploring the institutional forces and their impact on the operations of the implementing organisation within the South African context.

A qualitative research approach was undertaken from an interpretive epistemological position. A single case study was conducted at Organisation X. Organisation X is a public sector organisation formed in 1999 and implemented an ERP system in 2006. Thirty employees participated in the study and the data were analysed using the thematic analysis qualitative technique. The selected participants only include those who joined the Organisation X before the implementation of the ERP system because they have a broad general knowledge of the ERP and have undergone the experience during this time. These include executive managers, senior managers and support staff. Major themes from the data illustrate that implementing organisations from the public sector resort to modifying the ERP because they operate in highly regulated environments. These themes also demonstrate that economic differences, sector requirements, organisational culture, IT infrastructure and operational differences are the institutional forces that affect the implementation and use of software packages.

The findings reveal that ERP-embedded institutional forces have a negative impact on the implementing organisational structures, bring changes to the process controls and procedures of the implementing organisation, affect the reporting structure of the organisation, create additional roles and responsibilities, bring undesirable changes to organisational culture and increase organisational spending in IT infrastructure. Institutional forces also have positive impact on implementing organisation operations, including improved availability, accessibility, accuracy and reliability of the information and, lastly, thus improve the effectiveness and efficiency of operations. The findings of this study help to build a body of knowledge on ERP misalignment for organisations planning to implement or adopt ERP systems. This study alerts implementing organisations of the need to systemically review regulations and national rules together with industry best practices prior to deployment.

Keywords: ERP, implementing organisation, institutional forces, public sector

CHAPTER ONE

1. Introduction

1.1. Background to the Study

Enterprise Resource Planning applications are a suite of application modules or software that provides generic enterprise-wide solutions to many organisations (Dezdar and Ainin, 2011). ERP systems have become the cornerstone of IT infrastructure in most large, medium and small organisations across the world, including government (Morton and Hu, 2008). In response to the pressure of dealing proactively with an ever-changing external environment, many organisations have changed their information system (IS) strategies by adopting ERP systems rather than in-house developed systems. According to Damijan, Andrej and Mojca (2009), ERP has become imperative for companies in order for them to be competitive in a turbulent and highly competitive business environment.

The ERP market has remained at the forefront and is the largest, fastest-growing influential player in the application software industry (Damijan, Andrej and Mojca, 2009). ERP vendors are now trying to extend their markets to companies in developing countries and developing countries' expenditure on ERP is growing rapidly (Hawari and Heeks, 2010; Dezdar, 2012), presumably because the market in developed countries is saturated. Many organisations from developing countries have adopted software packages in the past few years and ERP market continues to grow at a compounded annual growth rate of 11% (Dezdar, 2012).

Enterprise Resource Planning systems are designed to support standard and generic requirements rather than specific organisational requirements; hence these systems are unlikely to be a perfect fit with the implementing organisations (Strong and Volkoff, 2010). Many ERP systems are developed by developed countries and these do not fit the desires of the implementing organisations in developing countries owing to the different business practices, legal compliance and government regulations (Damijan, Andrej and Mojca, 2009). Strong and Volkoff (2010) reveal that, in the estimation of the best cases, full vendor ERP systems only address about 70% of needs of the implementing organisations from developing countries.

Enterprise Resource Planning implementation in developing countries like South Africa is likely to remain more problematic and challenging, given the fact that South Africa as a developing country is facing several challenges such as poor skills in ICT, low levels of ICT research and development investment, lack of a critical mass of high-quality research to enhance innovation, high telecommunications costs and lack of proper economic models for providing connectivity to the marginalised rural communities (Kyobe, 2011). The following section explains the problem statement as well as research questions.

1.2. Problem Statement

Many ERP failures in developing countries are associated with the misalignment of requirements between the ERP systems and the implementing organisations (Roseann and Weber, 2004; Morton and Hu, 2008; Strong and

Volkoff, 2010; Yen et al., 2011). Enterprise Resource Planning systems do not usually fit the requirements of the implementing organisations in developing countries due to the different business practices, legal regulations and government regulations. There is a significant gap between the assumptions and requirements built into the designs of ERP systems and the realities of the client.

However, ERP vendors and consultants strongly advocate and promote implementation of ERP systems with marginal and minimal customisation for many reasons, namely to minimise implementation risk, reduce implementation cost, avoid negative impacts on system performance, facilitate adoption of future package upgrades, reduce maintenance costs and foster adoption of process-oriented best practices (Brehm, Heinzl, and Markus, 2000; Hossain and Jahed, 2010).

Strong and Volkoff (2010) maintain that when organisations implement an ERP system that was developed in a different social context, they are more likely to experience misalignment. Software packages embody business models that their designers believe to represent best practices in certain contexts (Roseann et al., 2004). According to Gosain (2004), this is because software packages are subjected to institutional procedures, processes and forces that set the rules of rationality.

These institutional forces are an important embodiment of institutional commitments and serve to bind organisations to fundamental choices about how organisational activities should be organised (Sia and Soh, 2007). Institutional theory acknowledges ERP systems and implementing organisations as both being institutions. Institutions are patterns of social activity that give shape to collective and individual experience (Bellah et al., 1991) and influence how individuals behave and relate to others.

Organisational institutions may encompass organisational identities, structures and activity routines (Meyer, 1994) and, above all, implementing organisations are expected to comply with countries' laws, rules and regulations. Le-Nguyen et al. (2014) argue that there are limited or no empirical studies on ERP misalignment through an institutional perspective or lens. The limited understanding on conflicting institutional forces between implementing organisation's institutional forces and ERP-embedded institutional forces remain problematic. Ideally, the outcome of this study will benefit implementing public sector organisations of South Africa, as there are limited studies on this phenomenon in the South African context.

The limited empirical studies on conflicting institutional forces between ERP systems and implementing organisations identify the widespread ignorance of institutional forces; hence, misalignment. Understanding of this phenomenon will equip decision-makers (management) to prepare strategies that should increase the probability of realising sought-after benefits. The implementing organisations from South Africa require studies that will afford them with the opportunity to design gap analyses that can minimise the risk of misalignment when implementing ERP systems. ERP projects are characterised by a high rate of failure and this study will contribute directly or indirectly to the reduction in the failure rate.

1.3. Research Questions

Literature on ERP explicitly recognises the fact that software packages are unlikely to embrace all the functionalities an implementing organisation needs (Morton and Hu, 2008; Sia and Soh, 2009; Strong and Volkoff, 2010). From the literature, it is evident that ERP systems are designed to support standard and generic requirements rather than specific requirements; hence, these systems are unlikely to be a perfect fit with the implementing organisations (Strong and Volkoff, 2010).

Gosain (2004) and Sia and Soh (2007) conducted studies on ERP misalignment through institutional theory and they suggested that empirical evidence through qualitative studies that can verify these institutional forces and their impact is required. They made an appeal that the institutional lens needs to be validated by comparing the insights generated. The question of how well ERP systems are aligned with the business operations of global businesses is not very well established (Rajapaksha and Singh, 2012). Until implementing organisations understand these different institutional forces of ERP systems and implementing organisations and how they interact and compromise each other, misalignment will continue to deny or, at least, delay the realisation of the full benefits.

Furthermore, the benefits from these systems are likely to remain difficult and unpredictable from a practical perspective (Strong and Volkoff, 2010). The evidence from the literature depicts these critical differences between the ERP-embedded institutional forces and those of the implementing organisation result in negative consequences. Many studies reveal ERP implementation failures are rooted in the poor alignment with enterprises' needs and of the ERP system (Yen and Sheu, 2004; Hossain and Jahed, 2010). In response to the latter, this study sought to answer the following questions:

- What are the institutional forces embedded in ERP systems and implementing organisations?
- How do institutional forces impact on the operations of the implementing organisation?

1.4. Primary Objective

The major objective of this study is to explore the ERP-embedded institutional forces and those of the implementing organisation.

Moreover, the study provides the impact of ERP-embedded institutional forces on the operations of the implementing organisation. The study further provides a deeper insight into the differences between implementing organisation's institutional forces and ERP-embedded institutional forces.

1.5. Secondary Objective

To give effect to the primary objective of this study, the following secondary research objectives have been formulated:

- To verify if institutional forces are the real cause of ERP misalignment in South Africa context
- To provide a practical reference point on how to resolve conflicting institutional forces

1.6. Value of Research

This study provides an understanding of institutional forces and how they impact on the operations of the implementing organisation. The study explains why implementing organisations, especially from the public sector in developing countries, are more likely to experience ERP misalignment. The study contributes to the body of knowledge on ERP misalignment to implementing organisations from the public sector in developing countries in particular South Africa by:

- Providing empirical verification of institutional forces as the real cause of ERP misalignment in the South African context
- Alerting public sector implementing organisation of the need to systematically review national rules and regulations together with industry best practices provided with software package prior to deployment or implementation
- Providing a practical reference for those public sector organisations still planning or attempting to implement an ERP system in South Africa
- Offering insight into the impact of ERP-embedded institutional forces on the operations of the implementing organisations
- Alerting decision makers of the need to recognise current institutional elements and its implications prior to embarking on ERP implementation
- Assisting implementing organisations from the public sector in putting together gap analysis studies can increase the probability of successful implementation.

This study can provide useful guidance to both vendors and consultants, both of whom would have a direct commercial interest in the results and findings of the study, as the study might provide a baseline for gap analysis. Furthermore, this study might contribute directly or indirectly to the reduction of ERP system failures in developing countries particularly in South Africa. Successful implementation of ERP systems will help implementing organisations to realise ERP benefits like breakthrough reductions in working capital, severe decline in inventory and availability of information about customers' needs and wishes.

1.7. Research Outline

This study is organised as follows:

Chapter Two (literature review) offers the analysis of existing literature on ERP misalignment and alignment, ERP implementation, ERP adoption in developing countries, challenges faced by developing countries, ERP systems in the public sector, potential benefits associated with ERP systems and theoretical background accompanied by research framework. Chapter Three (research methodologies) discusses the research philosophy, research approach, sampling strategies, research method, data collection techniques, confidentiality issues and the approach used for data analysis.

Chapter Four (discussion and results) provides brief descriptive statistics and explanation of the themes that emerged. Furthermore, chapter four presents discussions following the identification of the themes that emerged from the data. Chapter Five (findings and conclusion) presents findings and conclusions followed by the implications of the study, limitations of the study, future research, reference list and appendices.

CHAPTER TWO

2. Literature Review

2.1. Definition of Terms

Dezdar (2012) explains an ERP system as a packaged business software system assisting a corporation in managing the efficient and effective use of resources (material, human resources and finance, etc.). On the other hand, Hawari and Heeks (2009) define ERP as a software system with integrated functions for all major business functions across an organisation, such as production, distribution, sales, finance and human resources management. Academics and practitioners limit ERP in many ways by using different meanings.

ERP development currently recognises several different development methods, namely best-of-breed, develop-in-house and full vendor system, etc. (Hossain and Jahed, 2010). For the purpose of this study, the following definition has been employed as a working definition: "An ERP system is a packaged business software system that assists a corporation in managing the efficient and effective use of resources (material, human resources, finance, distribution and sales, etc.) by providing a totally integrated solution for the organisation's information-processing requests through a process-oriented view that is uniform across the organisation."

All organisations have their own unique way of operating, so standardised software packages cannot be expected to wholly satisfy the specific needs of every organisation and is precisely how misalignment arises (Hossain and Jahed, 2010). ERP misalignment is an external manifestation of the differences between two worlds: the organisation's needs and the system's capabilities (Rosemann, Vessey and Weber, 2004).

Rosemann, Vessey and Weber (2004) refer to this as an ontological distance, which is the extent of the differences between the capabilities of an ERP system and the capabilities required by the implementing organisation. ERP misalignment is an ineffective, incomplete or inaccurate systems development project where stakeholder requirements are not met by the developed system. Developing countries are defined according to their gross national income (GNI) and per capita income per year. Countries with a yearly per capita income of US$ 11,905 or less are considered to be developing countries (World Bank, 2012). In the United Nations (UN) and World Bank lists, the number of developing countries ranges from 104 to 152 as of January 2014 and South Africa was classified as a developing country.

2.2. System Implementation

There is a significant body of research that has been devoted to the implementation of ERP as organisations have increasingly adopted ERP systems (Chen, 2009). Unlike the implementation of an in-house developed system, the implementation process of an ERP system is best conceptualised as a business project rather than the installation of a new system (Parr and Shanks, 2000; Presley, 2006; Chen, 2009).

Implementation activities include: detailed gap analysis, business planning, identification of complementary solutions, construction of a prototype, data conversion, clarity of work procedures, full implementation, user training, and acceptance tests (Raymond and Uwizeyemungu, 2007; Bajwa et al., 2004; Chen, 2009).

It is clear ERP systems have been considered to be a major determinant for many organisations around the world to gain competitive advantage. Above all, it has been accepted as a standard business application or software (Dezdar and Ainin, 2011). However, ERP implementations have been unsuccessful for many organisations (Shavarini et al., 2013).

Enterprise Resource Planning literature reveals ERP projects are, on average, 178% over budget, take 2.5 times longer than expected and only deliver 30% of the supposed benefits (Alhirz and Sajeev, 2015). Helo (2008) argues long project delays and over budget situations are commonly reported issues in the ERP literature. Even though ERP systems are characterised by high rates of failure, organisations continue to implement software packages, especially the big ones, and they invest enormous amounts of their financial resources in ERP systems.

The question of what factors may influence successful implementation of ERP systems remains relevant regardless of the countless attempts which have been made to determine and examine factors contributing to successful implementation of ERP systems. The ERP literature review indicates much research work on critical success factors (CSF) has been done repeatedly, irrespective of the high rate of failure (Nelson, 2004; Dezdar and Sulaiman, 2009; Ram at al., 2013). Different studies reported various factors in different categories, namely organisational, project and system-related factors.

ERP literature recognises the top 10 factors as being: organisational commitment to change, clear understanding of strategic goals, data accuracy, extensive education and training, excellent implementation of project management, commitment by top management, successfully coping with technical issues, focussed performance measures, implementation team, and multi-site issues resolution (Dezdar and Sulaiman, 2009; Dezdar, 2010; Maditinos et al., 2011; Ram et al., 2013).

Chen (2009) argues that a top concern on related implementation issues is alignment, yet there are several aligning mechanisms that should be taken into consideration, including strategic alignment, system and process alignment, and knowledge alignment. In spite of growth in the ERP market, recent research shows growing dissatisfaction with ERP in that these systems have failed to deliver the anticipated benefits (Sia and Soh, 2007; Ram, Corkindale and Wu, 2013). The following section gives more insight into the issue of alignment.

2.3. Alignment

Gibb and Wallace (2013) explain alignment as a degree of fit and integration between business strategy, information technology (IT) strategy, business infrastructure and IT infrastructure. Information systems (IS) literature reveals that the issue of alignment is among the top level concerns over the past three decades (Jolopane and Brown, 2004; Gartlan and Shanks, 2007; Silvius, 2007; Chen, 2010). The phenomenon of alignment is not only a concern to businesses, but is also an important area for scholars, researchers and practitioners over the above-mentioned period (Roux, 2014). The literature on alignment submits that some of the scholars or researchers are certain that earlier methodologies failed to capture the real benefits of alignment.

Many studies reveal that the concept of business and IT alignment became a key concept in management, as it could provide insights into the link between IT investment and business performance. Business and IT alignment are critical success factors in large IT projects such as ERP implementations (Bendoly and Jacobs, 2004; Chakraborty and Sharma, 2007). However, due to the ambiguity and complexity of the alignment mechanism, previous studies showed difficulties in developing the constructs of business and IT alignment, yet it is critical for any organisation.

Lee (2008) argues that business and IT alignment provides direction and organisational flexibility to allow businesses to respond to all threats and opportunities in the market. He further maintains that the social phenomenon of business and IT alignment includes the development of IT to produce the social and technical business values by aligning business and IT infrastructure: for example, aligning organisational infrastructure (administrative infrastructure, administrative process and administrative skills) and IS infrastructure (IT architecture, IT process and IT skills).

Business and IT alignment is critical for any organisation, as it provides a platform for an organisation to leverage organisational knowledge and expertise inherent in the existing management infrastructure, resulting in a competitive advantage that will positively affect business performance (Gandolfi, 2007). The next section explains the current situation on ERP adoption in developing countries.

2.4. ERP Adoption in Developing Countries

Developing countries have become a major target for ERP vendors (Dezdar and Ainin, 2011); nonetheless, the subject of misalignment has been infrequently or poorly studied in relation to developing countries. Developing countries' expenditure on ERP is growing and these systems can indisputably deliver benefits to organisations in developing countries (Hawari and Heeks, 2010). Many organisations from developing countries have implemented ERP systems in the past few years and the ERP market continues to grow at a compounded annual growth rate of 11% (Damijan, Andrej and Mojca, 2009). However, the continued growth of ERP implementation in developing countries is accompanied by a high rate of failure that is associated with a number of factors, such as lack of skills and absence of good-quality data, technology, user resistance, lack of money and cultural issues (Kamhawi, 2008; Soja, 2009; Hawari and Heeks, 2010).

ERP vendors continue to target developing countries for the purpose of identifying new sales growth locations (Hawari and Heeks, 2010), presumably because the market in developed countries is saturated. However, developing nations are still lagging behind in information and communication technology (ICT) adoption, because they suffer from human, social, economic and political challenges (Kamal and Qureshi, 2009; Kyobe, 2011).

South Africa in particular faces several challenges and these include limited skills in ICT, low levels of ICT research and development investment, lack of a critical mass of high-quality research to enhance innovation, high telecommunications costs and lack of proper economic models for providing connectivity to the marginalised rural communities (Kyobe, 2011). Clearly, developing countries are confronted by certain challenges that distinguish them from developed countries; the following section highlights and explains those challenges.

2.5. ERP Challenges in Developing Countries

2.5.1. Infrastructure

Developing countries are considered to be relatively poor and rank low in aggregate indicators like personal income, life expectancy and literacy (World Bank, 2012), and lacking in IT infrastructure like computers, telecommunications, internet, mobile telecommunication and servers, which constitute the basic prerequisites for ERP implementation. Developing countries have been reported by many researchers as suffering from poor infrastructure (Huang and Palvia, 2001; Kyobe, 2011).

Poor IT infrastructure in developing countries obviates the successful deployment of software packages (Maiye, 2012). According to Kyobe (2011), effective ICT adoption in developing countries is dependent on basic infrastructural requirements such as the availability and reliability of electricity supplies, commitment of government and other stakeholders, and affordable bandwidth.

2.5.2. Economic Factors

The economic status of a country is a broad indicator of its IT and IS development. A sound economy provides a solid foundation for IT and IS development as well as ERP implementation (Huang and Palvia, 2001). Economic growth and development fuels IT and IS development and deployment. Kyobe (2011) maintains that economics plays a key role in the adaptation of new technology. Organisations in developing countries lack sufficient financial resources to acquire new and up-to-date technologies and might not properly evaluate returns on IT investments due to a lack of technical skills. Pavon and Brown (2010) also maintain that economic development in a region impacts on accessibility and exposure to technologies, which, in turn, influences their adoption and diffusion.

2.5.3. Implementation Cost

Cost has remained one of the most crucial aspects of ERP implementation irrespective of the size or sector (Mukwasi and Seymour, 2014). Feng, Hu and Huang (2011) argue that ERP implementations are the most difficult projects to undertake due to their complexity, high cost and adaptation risks.

In the majority of ERP projects, direct or indirect costs rise well above anticipated figures. The price of proprietary software is economical when compared to in-house development and the total cost of in-house implementation might even be three to five times greater compared to the application purchase price. The literature on ERP divides ERP implementation costs into direct and indirect costs.

Direct costs include IT infrastructure, hardware costs (servers, clients, storage and networking) and software costs (operating system ERP license and data management system). Other direct costs include the cost of migrating data from the old system to the new system, customisation costs, initial cost of the system, cost of integrating modules, annual maintenance costs and vendor project management costs (Mukwasi and Seymour, 2014). Indirect costs cover costs of training, reorganisation costs, consultation fees, ongoing support and hidden implementation costs, costs of hiring, project management and business management (Mukwasi and Seymour, 2014).

According to a 2014 *Panorama* report, 54% of ERP projects were reported to have exceeded their allocated budget (Panorama Consulting Solutions, 2014). When the respondents were asked further questions as to why the projects went over budget, 17% of the respondents indicated that the project scope was expanded and 15% noted that unexpected technical and organisational issues created additional costs. ERP implementation is perceived to be very expensive, which delays or stops the greater deployment of the software packages.

2.5.4. Political factors and state policies

ICT adoption raises a number of political questions, and politics and government policy may also have serious implications for the adoption process (Corrales and Westhoff, 2006). Corrales and Westhoff (2006) studied the impact of political persuasions on ICT adoption and they claim that ICT adoption is associated with issues of civil liberties in many ways, for example, knowledge-based technologies may foster greater liberties, democratisation, human rights and social empowerment.

However, government often operates national communications directly, largely because the private sector is often incapable of operating such infrastructure. GDP, per capita income and human/physical capital are considered to play a major role in technology adoption. Corrales and Westhoff (2006) argue that levels of technology adoption respond to specific state policies. Government policies on tax and tariff subsidies, rules and regulations, restrictions, incentives and support for a particular technology, and social programmes that favour technical education in schools all play an important role in its acceptance or rejection. There is a need for government to implement relevant policies that can address the shortage of IT skills and human capital in developing countries.

2.5.5. Other Challenges

Nowadays, ERP systems are increasingly adopted by organisations of every kind and size, in order to avoid technical obsolescence and to create sustainable competitive advantages (Maditinos, Chatzoudes and Tsairidis, 2011), yet there is appreciable evidence of increasing global implementation failures in ERP projects.

As highlighted above, many ERP projects have been reported to be over budget and to have overrun the implementation schedule. According to recent research, challenges threatening ERP implementation are not technologically related issues like technological complexity, compatibility or standardisation, but are mostly organisational and human-related issues like resistance to change, organisational culture, incompatible business processes, poor project management and lack of top management support etc.

ERP implementations have sometimes failed to achieve the organisation's targets and desired outcomes, leading to a complete failure of the project. Sometimes, failures can be explained by the fact that ERP implementation forces companies to follow the principles of best practice, using as a model the most successful organisations and from appropriate reference models. Regardless of the above challenges faced by developing countries when it comes to ICT adoption, the following were found to be the ERP misalignment categories that manifested themselves during ERP implementation and the post-implementation stage.

2.6. Misalignment Categories

ERP systems are generally designed and programmed by independent organisations outside the client companies (Francoise et al., 2009). Hawari and Heeks (2010) conducted a study from a developing country's perspective and they discovered that there is a design-reality gap. The assumptions made when developing ERP systems do not address the reality or requirements expected by the implementing organisations, especially organisations from developing countries.

2.6.1. Information

Data or information misalignment occurs when data or data characteristics stored in or needed by the ERP system lead to data quality issues such as inaccuracy, inconsistent representations, inaccessibility and lack of timeliness or inappropriateness for the users' contexts (Strong and Volkoff, 2010). In a case study conducted by Hawari and Heeks (2010), the designer of the software package assumed the existence of data that was not, in fact, readily available.

In the case study, a list of accurate quantities of all items or materials stored in the company's warehouse, and a list of all the company's suppliers and core data related to the creation of a bill of materials for the products were not available. Some of the data required by the ERP system design simply did not exist in the company.

2.6.2. Technology

In the case study conducted by Hawari and Heeks (2010), the designer of the software package assumed the existence of a strong local area network, servers, personal computers and broadband internet connections. Developing countries are not on equal footing with developed countries when it comes to technology. Kaunda and Kennedy (2013) argue that developing countries are still far behind developed countries in many areas of technological environment and infrastructure, perhaps because the technology is manufactured in developed countries.

2.6.3. Roles and Skills

A role misalignment occurs when the roles in the ERP system are inconsistent with the skills available, creating imbalances in the workload, which leads to bottlenecks and idle time, or generating mismatches between responsibility and authority (Strong and Volkoff, 2010). Hawaii and Heeks discovered that assumptions built into the software required role changes that created organisational problems. Leavitt and Whistler (1958) predicted that information technology is likely to have a significant effect on the future nature of managerial jobs and the future shape of the organisation.

ERP design requires the existence of a modern management structure that allows decentralised decision-making by giving operational-level employees access to information and empowering them to make decisions (Rajapakse and Seddon, 2005). However, in Hawaii and Heeks' case study, it was very different. The firm had a centralised management structure with centralised data access and centralised decision-making, which still resulted in ERP failure, as some managerial positions were vacant and changes needed to be made to supervisory responsibilities.

Hawari and Heeks (2010) discovered that ERP developers assumed the full-time assignment of client staff members who would engage with the implementation process to explain current organisational processes and to help introduce best practice. They found that, in reality, some of the competencies and skills that were assumed were not present in the implementing organisation. Thus, there is a need for a clear understanding of enablers that can assist ERP implementation in capacitating IS practitioners; these are explained in the following section.

2.6.4. Processes

According to Yen and Sheu (2004), almost every organisation is likely to discover some inconsistencies between the ERP system and its current processes and organisational structure, because ERP system design assumes a set of organisational processes that match best practice in the industry (Strong and Volkoff, 2010).

Successful implementation of an ERP system generally requires an organisation to adopt the standardised business processes embedded in the software and to move away from a function-based organisational structure in favour of an integrated and process-oriented structure (Morton and Hu, 2008). The internal structure of an ERP system is not necessarily aligned with the implementing organisation's existing structure. Standard practice in many ERP implementations has been to force a match between client business processes and the ERP system design through business process re-engineering (BPR), which results in too much change and ultimately leads to failure (Hawari and Heeks, 2010).

2.6.5. Organisational Culture

ERP systems were mainly initiated by large organisations in the West (Rajapakse and Seddon, 2005). Due to different cultural and business practices in developing countries, these problems of fit may be more pronounced in developing countries (Heeks, 2002).

Business practices embedded in Western-based ERP systems are likely to reflect European organisational or national cultures (Martinsons, 2004), so, when such systems are implemented in Africa, problems may be experienced due to the misalignment between cultural assumptions and practices embedded in the software and those of the client organisation. Some of the controls embedded in the software packages provide too much control, inhibiting productivity, or too little control, leading to the inability to assess or monitor performance appropriately (Strong and Volkoff, 2010).

2.6.6. Other Resources

ERP implementation results in two types of expenditure: a one-time cost to roll out the system and ongoing operational costs (Hawari and Heeks, 2010). Developing countries suffer from a shortage of resources like computers, telecommunications, internet, mobile telecommunication and servers, which constitute the prerequisites for ERP implementation, and these resources require money.

Hawari and Heeks (2010) conducted a study on a developing country and came to the conclusion that money is a major issue for developing countries for ERP implementation. Differences in resource types will lead to differences in routines and structures for acquiring, deploying, maintaining and disposing of resources (Yen et al., 2011). The implementation of ERP systems is found to be different when comparing the public and the private sector; the following section provides the current context for ERP systems and focuses on the public sector.

2.7. ERP in the Public Sector

Implementation of ERP systems in the public sector has long been acknowledged as being problematic, with enormous investment and a high risk of failure, yet the public sector has remained an attractive customer, mainly due to its great size (Kelemen, 2014). The public sector is still growing and the peculiarities of the public sector make specific studies necessary (Alves and Matos, 2011). In response to the growing demand from the public sector, major ERP vendors have developed specific public sector functionality and have started planning public sector-oriented enhancements to their systems (Kelemen, 2014).

The continued increase in ERP adoption by the public sector is associated with various benefits, such as integrated real-time information, better administration and results-based management. However, the increasing adoption of ERP by public sector enterprises has significantly lagged behind the private sector. According to Beal and Prabhakar (2010), software vendors and system integrators have failed to adapt to the public sector's unique business requirements. When comparing ERP implementation experiences between the public and private sectors, culture has been identified as a major difference (Thomas and Jajodia, 2004).

Due to the fact that the private and public sectors operate in different contextual environments, public sector IT planning is obliged to bow to political pressure and is, thus, mostly focussed on the short-term (Uwizeyemungu and Raymond, 2007; Alves and Matos, 2011). ERP implementation by the public sector also suffers from barriers such as political subdivision, public scrutiny and statutory constraints (Beal and Prabhakar, 2010).

Regardless of these shortcomings, ERP systems continue to provide the information backbone to government organisations, including government itself, to cope with the complexities of modern business and the global nature of today's markets (Powell, 2013). ERP vendors are now trying to further extend their market to major companies in developing countries, including the public sector (Dezdar, 2012). Alves and Matos (2011) argue that ERP systems were primarily targeted at manufacturing companies, but now public organisations have invested considerable resources in the implementation of these systems, hence a public sector organisation was selected.

ERP systems have transformed private sector organisations for the better and are now gaining acceptance in the public sector (Kelemen, 2014). Even though ERP adoption in the public sector increased rapidly, developing countries are far less developed in many areas, particularly relating to technological environment and infrastructure. Regardless of the high rate of failure of ERP implementation, the following benefits are associated with ERP systems.

2.8. Potential Benefits

Many studies have been conducted on ERP benefits (Esteves and Pastor, 2001; Esteves and Borhorquez, 2007), yet low awareness of the benefits of an end-to-end system have been acknowledged as the biggest problem (Esteves, 2009). Many organisations have not fully realised the potential benefits of ERP systems (Feng, Hu and Huang, 2011).

Regardless of the size, sector or scale of business, the awareness of the benefits of an enterprise solution is critical. Many research findings continue to recognise the fact that organisations do not always realise the benefits they wish to gain when pursuing ERP implementation (Feng, Hu and Huang, 2011). The clear identification of the benefits associated with ERP systems is crucial, as this can help organisations to compare risks and costs versus the potential benefits (Schubert and Williams, 2011). ERP systems' benefits accrue at different stages, including, but not limited to, implementation and post-implementation. According to Annamalai and Ramayah (2011), industries of all sizes are using ERP systems in order to improve their efficiency, profitability and business performance or to replace legacy systems to achieve a competitive advantage. The identification of the benefits set out in Figure 1 did not consider the question: at what stage is a benefit likely to occur?

Benefits found in the literature are classified into four categories, namely operational, managerial, strategic and technical (see Figure 1).

Figure 1: ERP Benefits

Benefit Category	Benefit	Reference
	Cost reduction	Esteves and Pastor (2001); Esteves and Borhorquez (2007); Staehr (2007);
	Cycle time reduction	
	Productivity improvement	

Operational	Decreased financial closure cycle	Saatcıoglu (2009); Schubert and Williams (2011); Annamalai and Ramayah (2011); Feng, Hu and Huang (2011), Norton, Thomas, Thomas and Ashurst (2012)
	Lowered inventory levels	
	Quicker information response time	
	Improved order management/order cycle	
	Improved on-time delivery	
	More efficient business processes	
Managerial	Quality improvement	Esteves and Pastor (2001); Esteves and Borhorquez (2007); Staehr (2007); Saatcıoglu (2009); Schubert and Williams (2011); Annamalai and Ramayah (2011); Feng, Hu and Huang (2011) Norton, Thomas, Thomas and Ashurst (2012)
	Performance improvement	
	Better resource management	
	Improved decision-making	
	Improved cash management	
	Better management and controlling functions	
	Better control of flow of goods	
	Improved information flow control	
	Improved financial flow control	
Strategic	Supports business growth	Esteves and Pastor (2001); Staehr (2007); Saatcıoglu (2009); Feng, Hu and Huang (2011)
	Generates product differentiation	
	Improves interaction with customers	
	Improves interaction with suppliers	
	Increases revenue	
Technical	Increased IT infrastructure capability	Feng, Hu and Huang (2011)

2.9. Underpinning Theories and Research Framework

Looking at ERP misalignment through the lens of institutional experience provides fresh insights that may help organisations to better understand and manage ERP systems to achieve greater success. For the purpose of this research, the study will only focus on institutional forces that contribute to ERP misalignment from both the implementing organisation's and vendor's perspective.

The institutional theory lens provides valuable insights on how enterprise information systems serve as objects and instruments through which control is manifested (Sia and Soh, 2004). Moreover, the institutional perspective allows the distinction between country and industry level differences. In line with the institutional perspective literature recognises four sources of ERP misalignment (see figure2 below):

Figure 2: Sources of Misalignment

Source	**Description**
Implementing Organisational	Differences in the organisational structure, product and process;

Requirements	management practices
Industry Requirements	Industry regulations; standard practices
Country Requirements	Unique regulatory or social practices across nation or cultures
ERP System Requirements	Specific requirements of the software like organisational knowledge, reporting hierarchies, and standard operating procedures (best practices) as resources and rules, etc.

Yen et al., 2011 and Soh et al., 2000

The following three variables have been identified as the measure of ERP misalignment. These variables emerged from studies that have been undertaken in the ERP field (Strong and Volkoff, 2010; Hawari and Heeks, 2010).

Variables to be Employed

Figure 3: ERP Misalignment Measurements

Variable	Description	Reference
Process	Measure any enhancement or improvement to business processes as recommended by the ERP system or implementing organisation. This will look at the users' activity.	Strong and Volkoff (2010); Alhirz and Sajeev (2015)
Information/Data	Any changes to the data architecture either to the ERP system or implementing organisation. This will focus on data storage, data flows and any data-related aspect.	Strong and Volkoff (2010); Hawari and Heeks (2010)
Reporting	Measure all changes to reporting requirements as mandated by ERP system or implementing organisation. This will look at things like reporting structures, templates and all reported associated changes.	Alhirz and Sajeev (2015); Strong and Volkoff (2010)
Roles	Measure controls embedded in the ERP system or implementing organisation. This focuses on roles, not activities, for instance, approvers or requesters, etc.	Strong and Volkoff (2010); Hawari and Heeks (2010)

The recognition of institutional elements is crucial to implementing organisations located in developing countries, as these will alert implementing organisations to the possibility that they may be committed to and have help in formulating types of actions to be implemented. DeSanctis and Poole (1994) believe that software packages, as IT artefacts, embody structural or institutional properties. These institutional forces are an important embodiment of institutional commitment and serve to bind organisations to fundamental choices about how organisational activities should be organised (Sia and Soh, 2007).

Technology creators, together with the developers of software packages, inscribe their views of the world in the technology they build (Latour, 1992) and, as such, the designer's view of the world is subject to his or her own institutional context (Soh and Sia, 2004). Many studies agree that software developers draw on their existing sources of knowledge, resources and norms, including their own corporate vision, business strategies, and prevailing rules and norms about what constitutes good practices (Markus and Tanis, 2000; Soh et al., 2003; Gosain, 2004; Le-Nguyen et al., 2014).

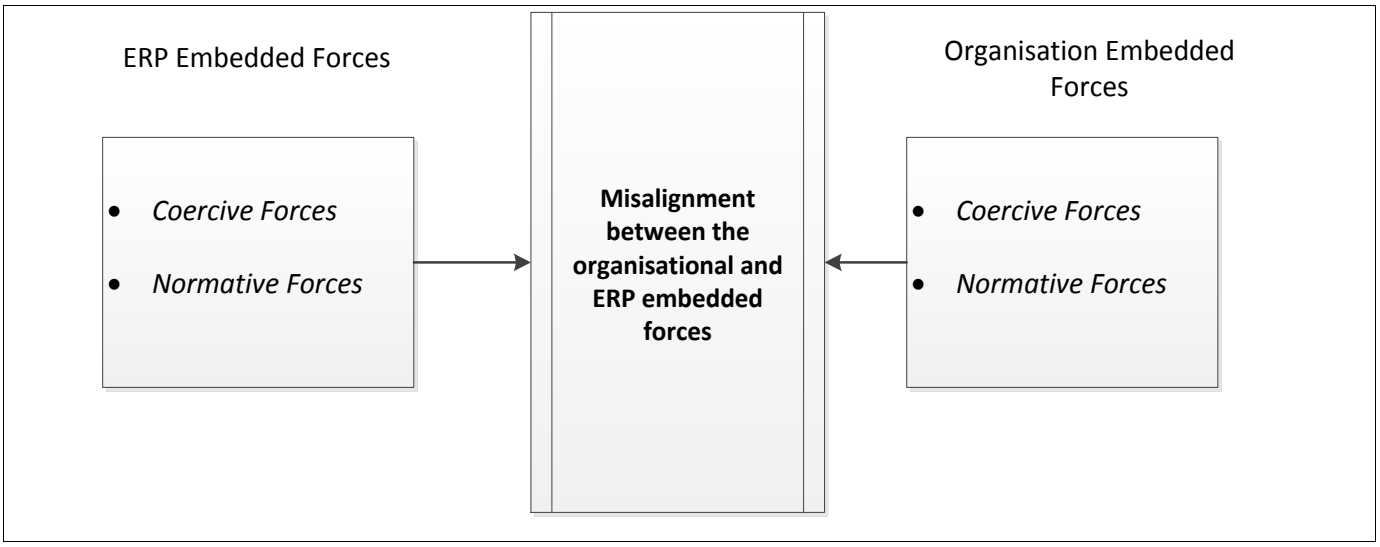
These structural features or properties then incorporate institutional structures such as reporting hierarchies, organisational knowledge and standard operating procedures as rules, resources and capabilities in the technology (DeSanctis and Poole, 1994). Empirical evidence suggests that critical differences between the rules, resources and norms embedded in ERP systems and in the implementing organisations can even result in negative consequences, such as the collapse of the ERP system (Kontzer, 2003; Le-Nguyen et al., 2014). Sia and Soh (2007) argue that the institutional context that software package developers attempt to represent is heavily influenced by their selected referent organisations and these referent organisations tend to be from the developer's own country.

Most ERP systems are developed by North American or North European organisations and these software packages that have been developed based on one institutional context might not fit organisations operating in a different institutional context; hence, misalignment is likely to occur. The implementing organisations are always governed by laws, regulations and policies of the country they operate in, but ERP systems embed best practices on how things must be done and these conflicts occur during implementation; hence, ERP misalignment.

Institutional theory acknowledges the fact that institutional context can differ. Differences are more evident when implementing organisations are from different countries, industries and sectors. Institutional theory treats software packages as institutions, since they embody the logic of organisations' activities, thus enabling certain actions while denying legitimacy to others (DiMaggio, 1997). Freeman (1982) posits that larger and older organisations reach a point where they dominate their environment (sector or industry) rather than adjusting to the environment. Hawleys (1968) describes this process as isomorphism, where one unit from the population forces other units that face the same set of environmental conditions to resemble it.

Meyer and Fannell (1980) maintain that there are two types of isomorphism, namely competitive and institutional. The other view is that there are three types of isomorphism through which institutional isomorphic changes occur, namely coercive, normative and mimetic forces (DiMaggio and Powell, 1983). However, for the purpose of this study, the focus will be on normative and coercive forces, since implementing organisations have no control over them.

Figure 4: Research Framework



Coercive forces stem from political influence and problems of legitimacy (DiMaggio and Powell, 1983). Both are the product of formal and informal pressures exercised by or exerted on organisations by other organisations upon which they are dependent and by cultural expectations in the society within which organisations operate (Gosain, 2004). Kling and Scacchi (1982) support the dominant argument that, indeed, ERP systems are complex social objects constrained by their context, history and infrastructure. As noted by Sia and Soh (2007), information systems are subjected to institutional forces, as political interests, structural constraints and human interpretation of their subjective situations impact them.

By promulgating laws and regulations, countries exert coercive pressures and organisations accept these mandatory structures and embed them in their business processes to maintain legitimacy in their environment (Le-Nguyen et al., 2014). According to Le-Nguyen et al. (2014), different countries exercise different types of institutional pressures and organisations will, therefore, need to adopt differing structures to operate in such environments. Organisations operating in different countries face different institutional pressures and will evolve different structures.

In some countries, the government could play a decisive and key role in knowledge and intellectual property activities (Le-Nguyen et al., 2014). If a software package is developed and designed in such a country, that software is likely to have some inherent features protecting the intellectual property rights and innovation. The knowledge and intellectual institutions, and the laws and regulations imposed by each country on the organisations operating within its boundaries, reflect its values and norms (Gosain, 2004) and these may differ immensely from those of the implementing country. Organisations operating in highly regulated domains tend to have information systems with similar mandated structures (Le-Nguyen et al., 2014). Latour (1992) argues that dominant interests are expected to be reflected in the form and functioning of the technology through an inscription process. These coercive forces are enforced by regulatory processes that press conformance upon constituent communities (Greenwood et al., 2002).

Any rules, laws and policies enforced by government on implementing organisations are regarded as normative forces, and all rules and best practices that require conformance by ERP systems are regarded as normative forces. Soh and Sia (2004) refer to these as imposed organisational structures, since they are imposed on organisations by authoritative sources (authority of nation states) in the organisations' environment.

The assumptions or understanding of the world by technology designers is influenced by the institutional properties of their particular work setting and draws on certain components of their institutional context, such as knowledge, resources and norms to design technology products (Orlikowski, 1992; Besson and Rowe, 2001; Gosain, 2004; Sia and Soh, 2007; Soh and Sia, 2004; Soh et al., 2003). For example, ERP vendors in America need to understand both America's laws and the industry's standards of maintaining personal privacy and identity as well as company information. Le-Nguyen et al. (2014) claim that, eventually, the structures embedded in the ERP systems will reflect the context of the association or cluster of organisations with which the developers frequently interacted during the system design and development. From an institutional perspective, the coercive forces (governmental regulations and legislation) of the implementing organisation might be different from those (rules of conformance and best practices) embedded in the ERP system; hence:

Proposition 1: The conflicting coercive forces between the ERP system and implementing organisation lead to ERP misalignment.

Normative forces are the product of professionalization. Professionalization is being interpreted as a collective struggle of members of an occupation to define the conditions and methods of their work, with the purpose of controlling and establishing a cognitive base and legitimacy for their occupational independence and self-sufficiency. It is evident that the diffusion of personnel throughout organisations results in the adoption of prevailing procedures and practices (Le-Nguyen et al., 2014).

Generally, professionals in organisations or those who interface with organisations, such as auditors and accountants, carry professional associations into those organisations. Professional and industry institutions are more likely to exert normative authority, for instance, through rules and guidelines on professional conduct and industry accreditation or recognition of organisations (Yen et al., 2011). In many cases, organisations use external consultants in the implementation of ERP systems in order for them to provide specialised expertise for business processes, configuration systems roll-out, design and other systems-related activities.

Consultants might not fully understand the culture and the client's business in detail or have low commitment to the client and tend to adopt the use of standard solutions and language that may not be context specific. To gain a certain level of recognition in their industry, organisations have to follow procedures that are appropriate for their operations (Le-Nguyen et al., 2014) and organisations operating in different industries or sectors may also possess different institutional structures; hence:

Proposition 2: Differences of normative forces between the ERP system and implementing organisation lead to ERP misalignment.

CHAPTER THREE

3. Research Methodology

3.1. Introduction

The purpose of this chapter is to give a full explanation of the research methodologies adopted in order to carry out this study successfully. The main focus of a research method is to provide guidelines on how a study should be conducted, and how the information should be collected and analysed.

A well-structured and designed methodology assisted in carrying out the study successfully by responding to the research questions and inferring valid conclusions (Rowe, 2008). This chapter discusses the philosophical assumptions that underpin this research (ontology, epistemology, research strategy, method, approach, sampling, data collection and analysis techniques).

Section 3.2 (research philosophy) presents the research philosophy. Section 3.3 (research strategy) presents the research strategy used. Section 3.4 (research method) presents the research method employed to address the research questions. Section 3.5 (sampling) presents the sampling method used. Sections 3.6 (data collection techniques) presents an overview on data analysis techniques that the study employed.

Section 3.7 (research ethics) presents the required ethics approval process that the study went through before commencing the data collection. Section 3.8 (data analysis) presents the followed data analysis process. The following sections discuss in detail the research methods adopted in carrying out this study.

3.2. Underlying Philosophy

The interpretive paradigm assumes that people create and associate their own subjective and intersubjective meanings as they interact with the world around them, said Orlikowski and Bardoudi (1991). The researcher thus attempts to understand phenomena through accessing the meanings that participants assign to them. Interpretivism declares that reality, as well as our knowledge thereof, are social products and, hence, incapable of being understood independent of the social actors (including the researchers) that construct and make sense of that reality (Ponterotto, 2005).

The interpretive paradigm has been found appropriate for this study, as a phenomenon of ERP misalignment can be well described or explained by those who have experienced it. The knowledge is assumed to be within the knower and people can assign different meanings. The chosen research paradigm is believed to be appropriate, as it will allow the exploration of unforeseen phenomena and offer better insights into the interdependencies among the factors to be explored. It is further believed that the interpretive paradigm is most appropriate in gaining the knowledge of practices and holistic understanding of the phenomenon.

The interpretive perspective emphasises the importance of subjective meanings and social-political as well as symbolic action in the processes through which humans construct and reconstruct their reality (Morgan, 1983, p. 396). The interpretive philosophy is premised on the epistemological belief that 'social process is not captured in hypothetical deductions and covariance. Instead, understanding social processes involves getting inside the world of those generating it (Rosen, 1991). The interpretive research approach towards the relationship between theory and practice is that the researcher can never assume a value-neutral stance, and is always implicated in the phenomena being studied.

Researchers' prior assumptions, beliefs, values and interests always intervene to shape their investigations (Orlikowski and Baroudi, 1991). The underlying philosophy of this research is an interpretive paradigm, as the purpose of the study is to subjectively explore the effects of conflicting institutional forces of ERP systems and implementing organisations and how they interact with each other. An exploratory and interpretive research design through qualitative method has been employed in this study. The research design for this study is an exploratory and interpretive case study that will be analysed through qualitative methods.

3.3. Case Study Strategy

A case study is an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between the phenomenon and context are not clearly evident (Yin, 2008). The case study research method is the most widely used qualitative research method in information systems research and is well-suited to understanding the interaction between IT-related innovations and organisational context (Orlikowski and Baround, 1991; Myers, 1998; Darke et al., 1998).

The case study method allows a researcher or investigator to retain the holistic and meaningful characteristics of real-life events, such as organisational and managerial processes (Yin, 2012). The case study strategy has the potential to deal with simple to complex situations as described by Yin (2008). It enables the researcher to answer how and why type questions, while taking into consideration how a phenomenon is influenced by the context within which it is situated. This study employs an exploratory case study method. The decision to adopt this case study method is supported by Yin (2008), who argues that a case study is used to explore those situations in which the intervention being evaluated had no clear, single set of outcomes.

The case study strategy suits this research well, as it attempts to understand human beings in a social context by interpreting their actions as a single group, community or event. Given the interpretive stance adopted in this study and the nature of the research questions, a case study approach is considered the most appropriate approach to use, because it provides a systematic way of collecting data, analysing information and reporting findings; hence, creating a better in-depth understanding of the phenomena.

3.4. Qualitative Method

There are limited numbers of studies on ERP misalignment that have been undertaken in developing countries, particularly in South Africa. Due to the fact that the researcher is uncertain about certain dimensions and issues relating to the phenomenon of ERP misalignment, the qualitative research method is found to be appropriate. Qualitative research is designed to help researchers understand people, and the social and cultural contexts within which they live (Myers, 2009). Different knowledge claims, enquiry strategies and data collection methods, and analyses are easily employed in the qualitative research method.

According to Lee at al. (2015) qualitative method allows participants to provide their understanding, experience and attitude within a particular issue. Furthermore, qualitative method is found appropriate because of its flexibility and it allows greater adaptation and spontaneity of the researcher and the research participants. Participants have the opportunity to provide response more elaborately and in greater detail. The researcher has the opportunity to respond immediately to what participants say by tailoring subsequent questions to information the participant has provided (Cochran & Patton, 2002). Qualitative method further explores meaningful and culturally salient responses that are rich and explanatory but not anticipated by the researcher (Cochran & Patton, 2002). In an attempt to answer research questions raised an inductive thinking or inductive reasoning has been employed and inductive reasoning through qualitative research allows rigorous approach in answering these questions.

3.5. Sampling

Purposeful sampling was recognised as having the same meaning as theoretical sampling (Higginbotham et al., 2001; Morse, 1991; Brink, 1991; Lincoln & Guba, 1985). Higginbotham et al. (2001) define purposeful or theoretical sampling as an attempt to select research participants according to criteria determined by the research purpose but also as guided by the unfolding theories. The researcher selected participant according to the needs of the study. The researcher chose to interview participants who have a broad general knowledge of the phenomenon, who have undergone the experience and whose experience is considered as typical.

In addition to experience and knowledge about the phenomenon, the importance of availability and willingness to participate, and the ability to communicate experiences and opinions in an articulate, expressive, and reflective manner were considered as suggested by Bernard (2002) and Spradley (1979).

The decision to adopt a purposeful or theoretical sampling was influenced by the fact that only participants who have undergone the experience would be in a position to answer the interview questions. A public sector organisation was selected and used for the case study. The selected organisation was established in 1999 and implemented an ERP system in 2006. Based on the above sampling criteria, technique and through the help of the CIO (former ERP project manager) of Organisation X, 30 participants were selected. The selected participants only include those who joined the Organisation X before the implementation of the ERP system and Organisation X implemented the system 10 years ago.

These participants include senior managers, executive managers and support staff, who joined the organisation before ERP implementation and those who were involved in the ERP implementation. This is an appropriate sample size for a qualitative study that is adequate in answering the research question raised. Participants were contacted telephonically or via email to request their participation in the study. Participants participating in the study were given the background to the study and an explanation of the purpose of the study. The interviews were done face-to-face using a recorder to ensure that all details of the discussion were captured and kept safely for the thorough review at a later stage.

3.6. Data Collection Techniques

The main type of data collection technique for this study was interviews supplemented by questionnaires to provide a wider perspective and raise the chances of a better understanding of the data. Denzin and Lincoln (1994) argue that interviews are a widely used tool to access people's experiences and their inner perceptions, attitudes and feelings of reality. According to Kvale (1996), interviews are particularly valuable for getting in-depth information around the topic and also getting the story behind participant's experience. Generally, interviews enable respondents to express their opinions easily. The interviewer can easily pursue in-depth information around the phenomena and make follow-up to certain respondents, said McNamara (1999).

The researcher employed semi-structured interviews and the choice of using semi-structured interviews is supported by Malbon (1997), who argues that semi-structured interviews helps in collecting detailed data about people's perspectives on information and its usage. Semi-structured interviews as the main data collection method are based on the researchers' epistemology and research objectives. Semi-structured interviews helped to reveal additional information that the researcher was not aware of and that is of the benefit to the study. Moreover, semi-structured interviews made participants feel comfortable in discussing their views and feelings, and more involved in the research.

The interview questions were open-ended (see Appendix A) which allowed the respondents to reveal every detail of information which they thought to be appropriate and helpful. Open-ended questions are appropriate and helpful for generating sufficient and detailed data about the phenomena defined in the research question, said Palvia, Mao, Salam and Soliman (2003). Open-ended questions were deemed appropriate for this research because these allowed participants to give rich responses to all the interview questions.

3.7. Confidentiality, Ethics and Approval

The identity and names of all the participants are kept anonymous and pseudonyms have been given to the participants and sampled organisation. All the information gathered has been kept strictly confidential and only the researcher has access to the raw data collected. The confidentiality and anonymity of data remain important and the maximum care of data is being exercised at all times. A covering letter of consent was drafted to participants to encourage voluntary participation and demonstrate the purpose of the data collected. The purpose of data collection was aligned with the purpose of the research to be conducted.

A formal letter requesting approval from Organisation X was drafted and submitted to the management. Permission to conduct the study on the selected organisation was obtained from the management of Organisation X. A formal ethics approval letter was obtained from UCT's ethical committee (see Appendix C).

3.8. Data Analysis

All the interview sessions were recorded and played back at a later stage for analysis purposes. The interviews were transcribed and interpreted using the researcher's notes made during the interview session. Thematic analysis was performed based on research propositions regarding the ERP misalignment as caused by institutional forces, and similar themes were formulated and grouped together. In ensuring the quality of the research's design and findings, several validity tests were carefully conducted, as indicated by Kidder and Judd (1986) and Yin (2008).

In ensuring the quality of the case study, the test of construction validity, external validity and reliability was conducted, as suggested by Yin (2012). Various ideas, perceptions, concepts and phrases were noted by the researcher. The discussions of the results and findings obtained from different participants is compared and also discussed in Chapter Five.

A theme-based approach was employed by the researcher for data analysis. Braun and Clarke (2006) explain that thematic analysis is a method for identifying, analysing and reporting patterns (themes) within qualitative data that can be presented in a number of forms, such as interview transcripts or field notes. The researcher used the thematic method to analyse qualitative data gathered from the interviews and questionnaires and then came out with the categories and themes. According to Rubin and Rubin (1996), thematic analysis is different from other analytic methods that pursue the described patterns within qualitative data, such as thematic decomposition analysis, IPA, thematic discourse analysis and grounded theory.

Braun and Clarke (2006) argue that thematic analysis is not a linear process where a researcher simply moves from one phase to the next, but is a more recursive process where a researcher moves back and forth throughout the phases. They further outline phases that must be performed when analysing qualitative data using a thematic analysis. The researcher accordingly performed all the following phases when analysing the qualitative data using a thematic approach:

Phase 1: *Familiarising yourself with your data*

The researcher correctly transcribed the recorded interviews into a Microsoft Excel document. Subsequently, the researcher went through the transcribed data in conjunction with records and the researcher further read it more than once until the overall meaning of the text was clearly understood.

Phase 2: *Generating initial codes*

The researcher read the transcribed data thoroughly and repeatedly and then produced a list of ideas about what the data says.

The researcher identified and gathered features of the data that could be assessed in a meaningful way regarding the phenomenon being studied. According to Auerbach and Silverstein (2003), a coding method is a procedure for organising the text of a transcript and discovering patterns.

Phase 3: *Searching, identifying and naming themes*

Immediately after the data has been coded and grouped, the researcher identified, categorised and named themes according to the meaning of the data. Braun and Clarke (2006) explain that the names of themes must be brief and punchy, and provide a reader with a sense of what the theme is about. The researcher went further to identify sub-themes within themes to provide a clear and better understanding of the themes.

Phase 4: *Producing the report*

After the completion of the theme identification process, the researcher began to group themes and sub-themes in categories, and, subsequent to that, the researcher began to write the report. As guided by Braun and Clarke (2006), the researcher began the write-up of the report once full worked-out themes had been concluded. Themes that have emerged from data analysis are discussed in chapter four.

CHAPTER FOUR

4. Discussion and Results

4.1. Introduction

This chapter is organised as follows: Section 4.2 presents general description of sample in terms of the participants' designation, years of service, level of education, gender, age, and industry and details of participants' details. Section 4.3 provides themes that emerged from data analysis. Section 4.3 provides high level view of themes that emerged from data analysis. Section 4.4 to 4.11 explains the emerging themes in detail and section 4.12 provides analysis of responses between technical respondents and respondents with more years of experience.

4.2. General Description of Sample

Table 1 provides details of all the interviewed participants. In coding the respondents, the researcher employed a coding strategy from Miller, Naidoo and Van Belle (2006) that provides a researcher with the platform of ensuring the confidentiality of individuals being interviewed and also offers a mechanism that allows links among individuals being interviewed together with the environment in which they operate. Respondents were given pseudonyms, starting from Ax to Ox.

Table 1: Participants' Details

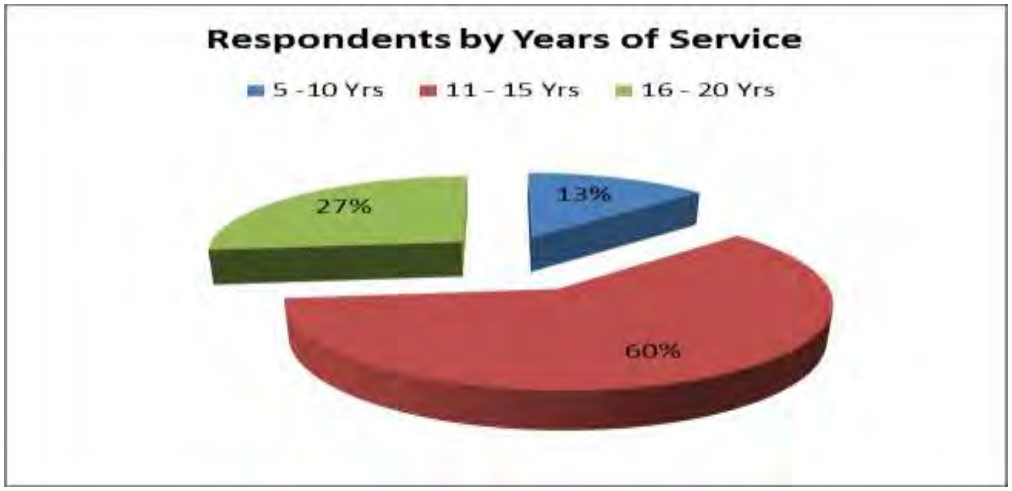
Participant	Designation	Qualification and Certifications	Years of Service
Ax	Executive Manager	MBA , IEDP, Prince 2	12
Bx	Remuneration Specialist	ND HR, Payroll,	16
Cx	Recruitment & Placement	Higher Cert HRM, BSP,Prince 2	10
Dx	Supply Chain Manager	Bcom, MBA, CIPP™, MFC™, Prince 2, MDP.B-BBEE	20
Ex	Senior Buyer	Public Procurement and Supply Chain Management	13
Fx	CIO- Executive Manager	MSc Eng,M Phil, PMP, CISSP, Prince2, ITIL V3	13
Gx	Facilities Manager	Msc (Buit Env: Facilities Management), APMG, Accredited Facilities Profession (AFP)	17
Hx	Personal Assistant	ND Exec Secretary, OPSA	11
Ix	Programme Director	PhD,MBA, ECSA	12
Jx	Company Secretary; Risk Manager	NHD Meteorology,MBA, BSP, Prince 2	14
Kx	Manager	Bcom , ND Labour Law	13
Lx	Oracle Applications DBA	BSc Computer Science, Oracle DBA 9i OCP, Oracle DBA 10g OCP, Prince2	5
Mx	Personal Assistant	ND Public Admin	12
Nx	Executive Manager	PrQS, PrCPM, BSc(QS), MBA	15
Ox	Personal Assistant	ND Marketing	10

Figure 6 illustrates an analysis of participants in terms of their designation: 13% of participants are at the executive level, 47% of participants are managers and 14% represent the support staff.

Figure 5: Participants by Designation

Figure 6 reveals an analysis of the participants in terms of their years of service: 13% of participants have between 10 and 13 years of service, 27% of participants have between 11 and 15 years of service and 60% of participants have between 16 and 20 years of service. Sixty percent of the participants had more than 10 years of service with Organisation X and it can be concluded that participants accumulated knowledge and experience that is relevant for the study.

Figure 6: Participants by Years of Service



Gender representation of all the interviewed participants is demonstrated by Figure 7: 47% represent females and 53% represent males.

Figure 7: Gender Representation

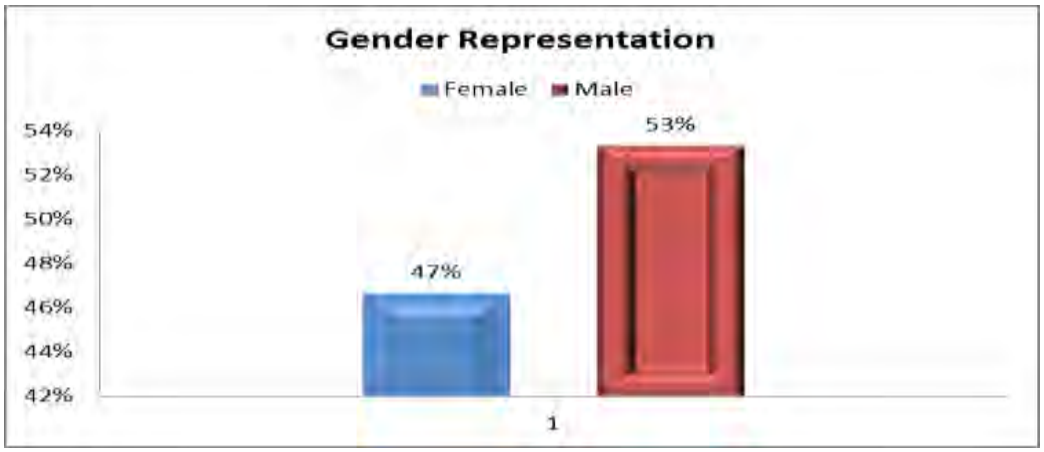


Figure 8 presents an age analysis of the participants: 27% of participants are between the age of 30 and 37, 13% are between 38 and 45, 27% are between 46 and 53, and 33% are between 54 and 61. A large percentage of participants are above the age of 50 and this age group possess more than 10 years of experience.

Figure 8: Age Analysis

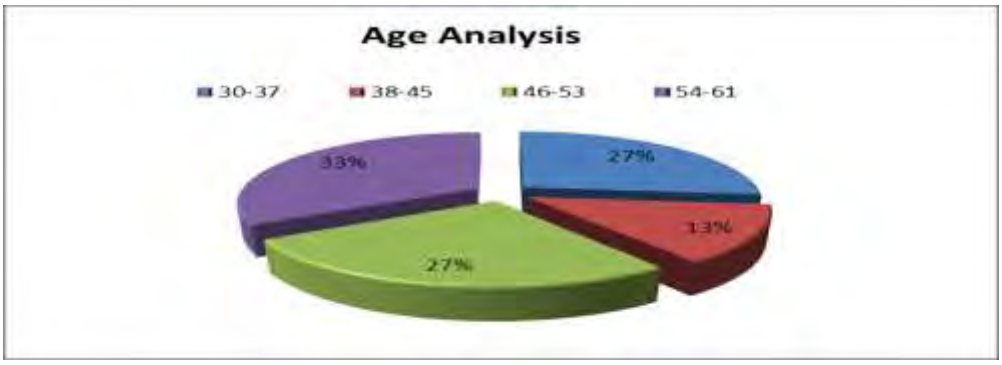


Figure 9 provides an analysis of the selected participants' qualifications: 20% of the participants are in possession of a university degree or diploma, 40% are in possession of a university degree or diploma together with certifications, and 40% have completed a university degree or diploma together with certifications plus Master of Business Administration (MBA) or higher. The latter 40% of participants are all at management level. It is important to note that education is one of the most significant characteristic that might affect the person's attitudes and the way of looking and understanding any particular social phenomena. It can be concluded that participants had a better understanding of the phenomena under study.

Figure 9: Qualification Analysis

Figure 10 illustrates industry representation: 20% of participants are from IT, 20% of participants are from finance and engineering, and 13% of participants are from marketing.

Figure 10: Industry

4.3. Emerging Themes

Data analysis began with the researcher listening to the recorded interviews and the researcher then tried to conceptualise and reduce the interview data by noting down the relevant concepts, textual phrases and quotes that relate to the major components of the research model. The participants' textual phrases were laid out under each participant's name, grouped under each concept in a tabular format and coded. These textual phrases were then analysed and grouped under categories and concepts in a Microsoft Excel spreadsheet. Figure 11 illustrates identified emerging key themes and categories that were revealed by studying the spreadsheet repeatedly. The detailed meaning and discussion of the emerging key themes is found in the next chapter.

Figure 11: Emerging Themes

Institutional Perspective	Theme
Coercive Forces	Sector Differences
Coercive Forces	System Built-in Component (Vendor Pressure)
Coercive Forces	Legislative Requirements
Coercive Forces	Organisational Culture
Coercive Forces	Economic Requirements
Normative Forces	Hardware Gaps
Coercive Forces	Operational Differences

4.4. Sector Differences

According to the Public Service Act of 1994 of South Africa, public service is explained as a service that is provided by government to people living within its jurisdiction, either directly (through the public sector) or by financing provision of services. Đulabić (2007) defines public sector services as activities used to satisfy public needs whereby the fundamental values of modern democratic societies are achieved. According to Đulabić (2007), the concepts of public service and services of public interest describe the principle of same activity.

Kelemen (2011) argues that one of the emerging markets in the software industry is the public sector and he further reveals that implementation of ERP systems in the public sector has already begun, regardless of some well-known ERP implementation problems, such as enormous investment and risk of failure in implementation itself.
According to Alves and Matos (2011), public sector organisations were not in the initial target zone of many ERP vendors, but these were developed for private companies. Respondent Dx (see Table 1 on Page 26) supports the above argument:

> *I am talking from the experience of 40 years working with different systems. I am going to base everything I say on Oracle we implemented; Oracle comes just like SAP with the base and that base is built on operations of JD Edward's model, which is a logistic type of company.*

The decision was between SAP and Oracle, so we fell on Oracle; there were lot of changes that we had to make for that system to talk to the public sector, because it's actually designed for the private sector. We had to do a lot of tweaking out of that system; basically we have the version of Oracle that doesn't always talk to what we should have. In terms of that Oracle itself is not the system for the public sector, because it's designed to for the likes of international logistics and private companies.

The task of ERP system implementation is the most difficult task for the public sector and not much research has been conducted in this space (Microsoft and GFOA Consulting, 2012).

4.5. System Built-in Component (Vendor Pressure)

Literature confirms that ERP systems offer the integration of business functions and processes across the organisation based on a way of working deemed the best practise for particular industries by software vendors and industry based experts. According to Wagner and Newell (2004), surprisingly, contemporary organisations continue to purchase standard software products that are designed on business practices that are deemed to be most appropriate in an attempt to achieve organisational goals.

Organisations adopting ERP software need to configure the software to meet their local needs, but are encouraged to adopt the 'vanilla' system (that is without modifications) as the best industry practices are supposedly embedded in this standard configuration. Respondent Bx (see Table 1 on Page 26) reveals that ERP systems are built in accordance with possible best practices:

I would agree with the fact that ERP systems are designed on practices, but you must also remember that an ERP system you can add on, but if you customise it too much you can lose the support from Oracle. I agree that ERP systems or vanilla systems made in accordance with possible business best practices and we found that in all the walk-throughs we had with SAP, PeopleSoft, Oracle and with all the ERP systems we investigated. The models are there and they are the best practices, but each organisation is different, so what happens is you have to use those best practices to put in your best practices without customising it too much and that is what the Organisation X did. But on the flipside of it, as the organisation grew and as Organisation X demands change, we had to customise it further in order to conform to our requirements.

Respondent Cx (see Table 1 on Page 26) further maintains that ERP systems are designed on a basic framework around a particular model:

Systems have a basic framework designed around a particular business model. When selling to clients, they always have a promise of how it will be moulded to suit the client's needs and requirements. Businesses are unique and, therefore, it does not provide 100% solution and the client has to make adjustments to cater for this.

ERP systems are built up with core business operations by integrating aspects such as sales and distribution operation, finance, business strategy, manufacturing process, accounting and human resources. ERP systems have a built-in component in them, says Ax (see Table 1 on Page 26):

> *Through the CIO, Organisation X was able to navigate through a number of systems that were available out there and as you have rightly said the biggest anxiety was not to have too much imposed on us that would ultimately change the way we work, but also not allowing us to do things the Organisation X way. I must say it was not a smooth process, because there was a built-in component of whatever was the best practise at that time.*

Respondent Jx (see Table 1 on Page 26) is of the view that ERP systems only address 80% of the implementing organisation's needs:

> *You see these systems are usually off the shelf systems so they don't capture the requirements of the organisation. In my view they do meet almost 80% of the requirements and I have experienced this at Organisation X and De Beers. The other 20% you need to factor the individual organisational peculiarity and the 20% I am saying you then induce change to the system.*

According to Kholeif, Kader and Sherer (2007), ERP systems embody institutional properties of the vendor that, in most cases, differ from the implementing organisation, because countries have different norms, powers and cultures, etc.

Respondent Bx (see Table 1 on Page 26) argues that ERP systems are failing to address all the needs of the implementing organisation:

> *The reality of the matter is that these systems are not addressing all of our demands; however, they bring efficiency and effectiveness in terms of operations. When it comes to HR, so many changes were proposed to the systems, so I agree with you that some of their functionalities do not match implementing organisational needs.*

Respondent Ax (see Table 1 on Page 26) has worked with both SAP and Oracle and he is of the view that these systems need to be supplemented with proprietary systems, because not all their needs are catered for:

> *I have worked with both SAP and Oracle and what I found these systems to contain is that effectively on the operationally excellence point of view, you must have them. And then if obviously you have pockets to deepen up and supplement what they don't have with proprietary system, but hang on to this one. Yes, our needs are not catered for and if you need them catered for you must be willing to invest.*

Respondent Gx (see Table 1 on Page 26) shares the same sentiment by stating that the organisation outsources systems for functions that could have been addressed by Oracle:

There are systems that are outsourced by the organisation, which I think were supposed to be catered for in Oracle if it was not tailor-made. For an example, CMMS system is designed to track all Organisation X assets such as properties, how they are maintained, planned and unplanned maintenance, movable assets, immovable assets, etc., but this system had to be outsourced, which in my view this could have been catered for in the Oracle system as the organisation has invested in this system.

Respondent Jx (see Table 1 on Page 26) reveals that there are unused modules on Oracle that the organisation has paid for and he further states that these modules didn't talk to their processes:

There are modules in the Oracle system that we cannot use like the asset module; we paid for it and the model is there as well as the project management module we paid for, but we cannot use it, because it does not talk to our processes we have and to align them will cost us more money. It's another question if it's possible to tweak the way we want it.

4.6. Legislative Requirements

According to Botta-Genoulaz and Millet (2006), government organisations face many specific challenges in ERP systems, because government organisations are subjected to higher legislative and public accountability and a unique culture. Soh and Sia (2006) argue that misalignment between embedded structures in ERP systems and implementing organisations arises from imposed structures and, when it arises, the decision will usually be to customise the ERP system in support of the existing institutional forces, because organisations are unable to change government legislations or regulations.

Respondent Bx (see Table 1 on Page 26) states that the Oracle system was subjected to customisation in an attempt to conform to certain government regulations, since they are operating under a regulated environment:

We bought what is called Oracle vanilla system so it was as-is. So we obviously had to align our processes, policy, procedures and all the relevant laws like Basic Conditions of Employment Act (BCEA) to Oracle so that's where these brown paper sessions came in. So we said in payroll this what the Oracle says, but this what we have to do in order to conform to South African laws. The South African Revenue Services (SARS) from a payroll perspective, to give you the perfect example of SARS, SARS upload tax patches so we had to obtain all the necessary tax patches and upload them into the payroll, create a person and put in a salary to see that the relevant information is there.

On skills development and workman's compensation, we had to upload that. So from the payroll perspective I think that was the main areas of concern. The HR side wasn't that critical, because obviously we had to align the leave management to our policy, bearing in mind that this is what the BCEA regulates, but from payroll perspective there is statutory requirements from the South African Government and we then had to upload that.

So basically we then said we need to put in correct tax tables, because we can't use the current system, because it wasn't talking to Oracle, so we had to kind of look at all that, so that's where these blueprint studies and brown paper sessions came from. So we had to customise it and upload all of our information to make sure that it conforms.

Soh and Sia (2006) state that organisational structures are institutional structures dictated by authoritative sources in the organisation's environment, especially the coercive authority of nation states, such as laws and regulations. Botta-Genoulaz and Millet (2006) came to the conclusion that implementing organisations in the public sector have one option, which is to modify the ERP system to accommodate their culture and regulations. The following respondents confirm that government regulations guide the way they operate and they both cited the Public Finance Management Act (PFMA) as one of the key regulations that the system had to embrace. Respondent Fx (see Table 1 on Page 26) states:

When we went through the selection process, one of the things we looked at was to say we fall under certain regulations, e.g. PFMA, and the question was how we are going to cater for these. Some of the entities we visited were government departments to try to *see how we are going to cater for these. In terms of what we experience at Organisation X, truth be told I think that the issue of misalignment either of countries' legal framework or best practices manifested itself.*

Respondent Ax (see Table 1 on Page 26) says:

If I need to remember well firstly the PFMA would have been quite key, but on the HR module you then have your own policies, because remember that you have alerts and things like that, but those alerts are triggered by things like whatever you say are the controls on your side.

Respondent Nx (see Table 1 on Page 26) also confirms that the issue of regulations is beyond the control of the implementing organisation from the public sector:

The processes remained the same because Organisation X does not have control over regulations because they are enforced by government and the Oracle system was customised to cater for those regulated processes.

Respondent Ax (see Table 1 on Page 26) argues that they had to redesign the finance module under procurement processes as guided by PFMA, since they are regarded as a parastatal:

It may not merely say it's the best practice that we have adopted, e.g. on procurement a couple of the modules within the system maybe talk to the way we would deal with it, but when you're at procurement in the South African sense and also for a parastatal you now have to look at the process that provides you with the space to comply with the requirements of PFMA, now instead of just adopting or minor modifications of the modules you almost redesigning the whole module.

4.7. Organisational Culture

Zhang, Lee and Huang (2004) define organisational culture as a set of commonly held values, beliefs and assumptions within an organisation. Deshpande and Webster (1989, p. 4) term organisational culture as a set of shared assumptions and understanding about organisation functioning, and Ke and Wei (2008) explain organisational culture as the way people think, and that has a direct influence on the ways in which they behave. According to Zhang, Lee and Huang (2004), the implementation of the ERP system is likely to produce widespread organisational culture changes due to its scope. Organisational culture is regarded as one of the important factors for the success of ERP implementation, because, when it conflicts with the implementing organisation's culture, ERP might face either rejection or modification.

According to Wagner and Antonucci (2009), the organisational structure of several public organisations tends to be more complex and less responsive. Fx (see Table 1 on Page 26) supports the latter in his statement when he argues that their organisation faced organisational structural issues:

> *There are things that created problems for us and one was the growth of the organisation, which created a new organisational structure. One of the pillars of ERP is that the structure of ERP must mirror the structure of the organisation and we were growing so fast, creating so many structures, such that it became difficult to maintain these things on the system.*

Alhirz and Sajeev (2015) came to the conclusion that the design of ERP systems does not talk to the actual realities of the implementing organisation in terms of cultural issues. The following respondent states that most of their processes are executed outside the system, because Oracle conflicts with their shared understanding in terms of organisation functions. Respondent Ex (see Table 1 on Page 26) says:

> *Oracle had its pros and its cons; the good thing about Oracle is when you raise a purchase order and you cannot overspend on that purchase order because it's a fixed amount. But hierarchy of approval on Oracle is a tedious process; if a manager is in a meeting and he cannot connect everything stops. The levels of approval are too much and Oracle is repeating the very same process I did outside the system.*

Respondent Dx (see Table 1 on Page 26) states that Oracle is failing to trigger approval stages of the purchase order:

> *For instance, if I raise a purchase order, Oracle does not alert me to ask if the value of this contract is 5 million, has it been approved by the procurement committee (PC) and please attach PC approval, if the value is over 10 million, it should trigger to say is this been approved by executive committee meeting (EXMA) and please attach EXMA approval before you can go a step further; it must actually block you, but all of this is outside system because once it gets to Oracle it's in our books.*

Ke and Wei (2008) state that ERP implementation might not be compatible with the organisational culture status quo; hence, ERP imposes on the implementing organisation a great challenge in fostering a set of right values. There is no software package that can entirely fit all organisations, because implementing organisations have different functions and goals, says respondent Hx (see Table 1 on Page 26):

> *You can have a certain package customised for certain companies, but [its whole entirety is not going to fit one specific organisation] because every organisation is different, has different functions, different goals and operates in different environments*.

According to respondent Cx (see Table 1 on Page 26), the latter might have unintended consequences:

> *Various levels of responsibility were introduced, e.g.* d*ata capturers; first authorisation (manager); final authorisation (EM). I could be using the wrong terminology; however, all items captured go through a process of authorisation before finalisation.*

A fit between organisational culture and the cultural assumption embedded in ERP is critical for ERP implementation success. Cabrera et al. (2001) and Yusuf et al. (2004) argue that successful ERP implementation requires that either the ERP packages be designed to fit the organisation's current structure and culture or the organisation's structure and culture be reshaped to fit the demands of the ERP system in question.

4.8. Economic Requirements

Sheu, Chae and Yang (2004) argue that national differences have a direct impact on the transfer of technology between different countries, information infrastructure building, role of technology and adoption of ERP systems. When an implementing organisation and vendor are geographically dispersed, the implementing organisation is more likely to experience unique technical and managerial challenges (Wagner and Antonucci, 2009). Operating processes remain likely to be different between developing and developed countries, because implementing organisations operate in different economic environments.

Respondent Dx (see Table 1 on Page 26) argues that developing and developed countries don't enjoy the same benefits from ERP systems, because these systems are aligned to developed countries:

> *These ERP systems do not talk to us as developing countries because people who develop these systems develop them in line with developed countries. All the little problems we have like the legislation of BEE and SMME to grow small black businesses economically do not exist in developed countries.*

> *They do not know why some contracts must go to SMMEs and they also do not know why we should keep track of how much money we spend and give to SMMEs so it's designed for countries that are ahead of in terms of economic development.*

Alhirz and Sajeev (2015) claim that ERP systems possess built-in components such as operating processes and business models and most ERP packages reflect European and US industry practices.

Respondent Bx (see Table 1 on Page 26) confirms that the ERP system they adopted in a United States-based system required them to collaborate with the consultant and the vendor itself in an attempt to align processes:

> *Oracle is a United States-based system and we decided to implement Oracle together with consultants we entered to what was called brown paper sessions; that means for the entire year we sat with developers and Deloitte.*

Without resolving national differences, implementing organisations are unlikely to implement ERP packages successfully, said Sheu, Chae and Yang (2004). They came to the conclusion that no universal ERP package can be successfully implemented in various countries without resolving misalignment on national differences.

4.9. Hardware Gaps

The designer of the software packages always assumes the existence of certain hardware technological infrastructure like a strong local area network, servers, personal computers and broadband internet connections (Hawari and Heeks, 2010). Participants indicated that their organisation had to invest more on technology infrastructure that was not there before the introduction of Oracle, for example, laptops, 3G cards, servers and networking. Respondent Jx (see Table 1 on Page 26) says:

> *Oracle had major implications I must say, as the organisation we had to provide additional ICT infrastructure things like servers, laptops, 3G cards, network, etc., because before Oracle people were using desktops. So selected individuals like project managers, programme managers and executive managers were given these so that they can be able to execute their functions remotely*.

Respondent Nx (see Table 1 on Page 26) agrees with respondent Jx that, indeed, additional hardware infrastructure was put in place:

> *If I remember well that year we had to review the budget to accommodate additional costs except licensing, consultants and training. You must remember we had PMs and PDs that operate on sites where projects are located. So we had to acquire laptops and 3G cards for internet connection.*

4.10. Operational Process Differences

Strong and Volkoff (2010) argue that process differences in ERP implementation occurs when there are inconsistencies between the ERP system and current organisational processes, because ERP systems are designed to assume a set of organisational processes that match best practices in the industry. ERP systems assume several assumptions about how organisational processes should work; however, the fit to organisational needs is often lacking.

Many ERP system implementation projects require implementing organisations to undergo an organisational business process re-engineering (Grabski et al., 2011). Respondent Dx (see Table 1 on Page 26) indicates that their reporting process changed significantly, which created problems for their suppliers:

> *In Oracle you cannot see the subsidiary ledger and that subsidiary ledger was very important, because the moment you process an invoice it will become a debit in your subsidiary ledger and when you process the payment it will become a credit so at any point when you draw this creditors ledger it will tell you what is outstanding at a glimpse and what has not been paid by us to the creditor. But in Oracle we have an aging report and the risk of an aging report is that it's not real time banking, because we could have processed the payment, but not actually paid through the bank, but it will show that its paid in Oracle. Oracle generates a remittance and the remittance will go to the service provider, but service provider can't see the payment in the bank.*

Grabski et al. (2011) stated that the implementation of an ERP system implies new ways for designing tasks, jobs and communications within the organisation, and leads to new work structures and procedures. Respondent Hx (see Table 1 on Page 26) claims that their control as personal assistants (PA) was taken away by Oracle and new roles were introduced, e.g. buyer:

> *Before Oracle we used to have more responsibilities than what we have now like we would have more over invoices, because we used to do receipting and all that. Like buyers do receipting now and the PA used to do it, so used have more of controls of our responsibility before it goes to finance for payment*.

Respondent Dx (see Table 1 on Page 26) explains the difference between an ERP system with an embedded procurement process and their organisational procurement process:

> *If for example I create a service provider in Oracle, I am supposed to add value in terms of the purchase order if the contract has been awarded and by the time I create a service provider I must have the credentials of the service provider like contact details, addresses, BEE credentials and the split of BEE status, etc., but the form we use to create a service provider on Oracle does not talk to that. It can only load contract number, but not the BEE split in terms of what we have. If we want to see now out of all the purchase orders we raised what is the value of the SMME portion so if they had a form like that in Oracle we would have been able to do an SMME report and BEE report*.

4.11. Audit Standards

Bae and Ashcroft (2004) argue that an ERP system requires a re-engineering of prior business structure and changes in general operating methods. They further argue that ERP systems are definitely changing the work environment of accounting and auditing. Respondent Ex (see Table 1 on Page 26) reveals that the implementation of Oracle dramatically changed their processes when it came to auditing process, because Oracle processes do not talk to their process as required by internal auditors:

Processes do not really talk to each other and especially now we have just come out of audit. Say auditors look for certain information they will first go to a finance person, who is responsible for paying suppliers; now they will look for a list of 100 companies from the payment history and they come to us and ask for requisitions, purchase orders, SOPs for each of those 100 companies. Now they're looking to 3 to 4 different pieces of information and all linked to the supplier that was paid, but now the information that finance have is just the invoice number, amount, and date of purchase and name of the service provider. Now we have to start the Oracle process from bottom-up. When the auditors ask for information it's a very a long process.

4.12. Technical Experience vs More Years of Experience of Respondents

Figure 12 provides general views of the respondents with more than 13 years of experience in institutional forces. In general, these respondents strongly believe that ERP systems don't usually fit the requirements of the implementing organisations and, in their case, a consultant was appointed to align their needs, and some of the respondents have experienced this with different organisations. According to these respondents, ERP designers develop these systems based on assumptions and these assumptions address only 80% of their problems. They further agree that, in most cases, the implementing organisation is required to modify the system, because some of the best practices might not be aligned to their business model and operations.

Figure 12: Respondents with More Years of Experience

Participants	Participants with more than 13 years of experience
Jx	ERP systems require too much customisation and improvements from the implementing organisations, because there are standard models in them.
Ix	ERP systems only address about 80% of the implementing organisation's requirements and respondent Ix has experienced this at Organisation X and De Beers.
Bx	The models are there and they are the best practices, but each organisation is different, so what happens is that you have to use those best practices to put in your best practices without customising it too much and that is what the Organisation X did.
Nx	HR was one thing we implemented almost wholesale, because loss of data, data security, HR sensitive data, delegation of authority and all of that was possible in an automated way.
Gx	The vendor came in to validate the assumptions made during the study and Organisation X appointed an independent consultant.

Figure 13 gives a brief summary of the views of the respondents with technical experience; they all agree that ERP systems have a built-in component and that made Organisation X experience misalignment. Respondents highlight the fact the misalignment is mostly associated with differences in legal frameworks or statutory requirements. These respondents argue that, even if certain packages can be customised for specific organisations, its whole entirety cannot fit every organisation, because different organisations operate differently, as mandated by environment. These respondents reveal that integrated systems are challenging and many changes were introduced to the system.

Figure 13: Respondents with Technical Experience

Participants	Participants with technical experience
Ax	I must say it was not a smooth process, because there was a built-in component of whatever was the best practise at that time.
Fx	In terms of what we experience at Organisation X, truth be told, I think that the issue of misalignment either of countries' legal framework or best practices manifested itself.
Cx	We had to dig deeper and make a decisive decision based on evidence so that we don't compromise the future state of the Organisation X.
Lx	You can have a certain package customised for certain companies, but its whole entirety is not going to fit one specific organisation, because every organisation is different, has different functions and different goals, and operates in a different environment.
Kx	The transition from a non-integrated system to an integrated system was challenging. We had a lot of changes we had to deal with.

CHAPTER FIVE

5. Findings and Conclusion

5.1. Introduction

The structure of this chapter is as follows;

The structure of this chapter is as follows; section 5.2 presents concluding remarks of the study which relates to the findings data analysis and results with relevant literature. Section 5.3 provides conclusion or summary of the study. Section 5.4 presents implications of the study followed by 5.5 with the limitation of the study and suggestions of the future research.

5.2. Concluding Remarks

This section provides a summary of the main research findings from the above discussions. The major objective of this study is to explore the impact of institutional forces on the operations of an organisation that implemented an ERP system in a developing country. The latter objective is achieved by answering the following research questions and the researcher believes the study met its objectives and has answered the research questions posed earlier:

- How do institutional forces impact on operations of an organisation that implemented an ERP system?
- How to deal with conflict institutional forces?

In answering the first question, the researcher found that institutional forces have an impact on the operations of an implementing organisation and the following has been revealed by Organisation X:

- *Organisational structures:* The system required organisational structure for Organisation X to mirror or reflect system structure and the latter created challenges for Organisation X because their structure was not aligned to the system structure and this costed them more many.
- *Process controls and procedures:* The introduction of the system changed the process control and processes. Personal assistants of Organisation X have lost control and ownership over their invoice process, because most of their work was allocated to the buyers.
- *Approval levels:* Participants repeatedly mentioned that several roles were introduced and the approval process changed. Participants revealed that authorisation process took longer after the implementation of the system and this negatively impacted the turnaround time for decision making.
- *Organisational culture:* Organisation X has approval gates or structures that are given different powers, for example, a project manager can only approve a purchase order that is equal to or less than 200k, the procurement committee (PC) can only approve a purchase order that is more than 200k, but less than five million, the executive committee meeting (EXMA) only approves between five million and 200 million, and the board can approve anything of more than 200 million. The system does not cater for these and this is the biggest risk for Organisation X.
- *Reporting:* The introduced system at Organisation X replaced a subsidiary ledger with the aging report and this created problems, because the finance department is struggling to tell the business what has not been paid by Organisation X to the creditors and vice versa. The system further generates a remittance to the service providers to say the payment has been made, yet the actual payment is not released by the bank.
- *Creation of new roles and responsibilities:* The introduction of the system created additional roles like data capturers, managers as the first layer of authorisation, a unit head as the second layer of authorisation and, lastly, executive managers as the last level of approval.
- *Increased budget on IT infrastructure:* Organisation X was compelled to increase their budget and spending on IT infrastructure; additional IT infrastructure such as computers, servers, networking and 3G cards were bought.

- *Improved operational excellence:* The introduction of the system improved the operations of Organisation X, for example, employees were able to work at home or outside the work premises, it eliminated the risk of the loss of data, it was easy to delegate authority, it eliminated the possibility of human errors, and it increased efficiency and effectiveness.
- *Availability of information:* After the implementation of the system, there was a significant change in the availability of information; the information became central, accessible, reliable and accurate, with no further manipulation, and it was transparent at all levels.

5.3. Conclusion

The intention of this study was to explore the impact of institutional forces on the operations of a public sector implementing organisation in South Africa as a developing country. The study draws conceptual framework from institutional theory, which provides refreshed and detailed explanations for ERP misalignment as far as institutional forces are concerned. The conceptual model has been helpful in explaining the problem, as it has provided the researcher with a context for the research questions as well as objectives.

It is believed that the research methodology and approach did achieve all the stated objectives, because this research provides a more comprehensive understanding about the impact of institutional forces on the operations of the public implementing organisations in a developing country.

The study provides a detailed understanding about the impact of the institutional forces that attempts to equip decision-makers of the potential implementing organisation to prepare better strategies to deal with the impact of institutional forces. The study seeks to facilitate a better understanding of the influence of economic differences, sector differences, organisational culture and operational differences.

The findings reveal that ERP-embedded institutional forces have a negative impact on the implementing organisational structures, bring changes to process controls and procedures, affect the reporting of the organisation, create additional roles and responsibilities, bring undesirable changes in organisational culture and increase organisational spending in IT infrastructure. Institutional forces further improve availability, accessibility, accuracy and reliability of the information and, lastly, these improve the effectiveness and efficiency of operations.

The literature confirms that these systems do not usually fit the requirements of the implementing organisations in developing countries, because of the different business practices, legal frameworks and government regulations. Respondents highlight that there is a significant gap between the assumptions built into the designs of ERP systems and the realities of the client. South Africa in particular faces several challenges and these include limited skills in ICT, low levels of ICT research and development investment, lack of a critical mass of high-quality research to enhance innovation, high telecommunications costs and lack of proper economic models for providing connectivity to the marginalised rural communities. Implementing organisations from developing countries need to invest more in IT infrastructure.

Implementing organisations from the public sector may respond to external institutional forces by modifying the ERP system to talk to the implementing organisational processes and procedures, because such organisations have no power to influence government legislations. Many researchers confirm that public sector organisations are expected to conform to certain government regulations, because they are operating under the regulated environment; hence, they are compelled to customise the system.

5.4. Implications of the Study

The study provides a better understanding about institutional forces that public sector implementing organisations must take into account when implementing Western-developed ERP systems. A better and detailed understanding is key for implementing organisations to ensure successful ERP implementation in developing countries, because these systems are characterised by a high rate of failure, yet organisations continue to invest an enormous amount of resources and money in these systems.

In today's international market, organisations that are aiming to attain a competitive advantage would need to have a robust and integrated ERP system and this single case study has provided the valuable empirical insights for the practices of ERP implementation.

The analysis of this case study provides a vocabulary that researchers and practitioners could employ by comparing and benchmarking their future ERP implementation. The findings of this study suggest that unique industries such as the public sector, where no ready-to-use ERP systems are available, need to be considered in pursuing the effectiveness of ERP implementation.

This study clearly depicts that institutional forces for a public sector organisation have a significant influence over ERP implementation processes and these should be taken into account in ERP decisions.

This study equip organisations in sectors with continuously evolving regulations by ensuring that such organisations understand the environment in which they operate before embarking on ERP implementation. The awareness may directly or indirectly result in the reduction of failure of ERP implementation, because many ERP failures are rooted from poor alignment of the implementing organisation's needs and that of the ERP system.

In addition, the study is going to equip decision-makers to better prepare strategies that will increase the probability of realising the desired results from ERP implementation. Successful implementation of ERP systems will help organisations to realise ERP benefits such as the severe decline in inventory, breakthrough reductions in working capital and abundant information about a customer's wishes and needs.

5.5. Limitations and Future Research

The researcher intended to interview 30 participants who joined the Organisation X before Oracle implementation, but, unfortunately, most of them have since left. Most of them have since left the Eastern Cape Province or/and the country, and it was difficult to secure and conduct interviews with them. In response to the latter, questions were forwarded to 15 participants via the email and all responded.

The sample size used in this study is one of the limitations to this research, and, therefore, it is recommended that future researchers try to include larger samples and hopefully include as many organisations as possible from different provinces and countries.

It is difficult to come up with a conclusive generalisation from the study, because the study does not represent a sizable population of implementing organisations from the public sector. The results of this research can be used as a basis for a longitudinal study.

The inclusion of other provinces and other developing countries in future studies will enable the implementing organisations from developing countries to gain a better and more comprehensive understanding of the impact of institutional forces on the operations of the implementing organisations. It remains unclear if ERP misalignment is evident in companies that are subsidiary companies of the European- and North American-based companies. Further empirical study can establish if subsidiary companies in developing countries experience ERP misalignment.

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Appendix A – Interview Questions

The structure of these questions is triggered by the constructs discussed in the research framework earlier on.

Open-Ended Questions

1. Describe how Oracle was implemented at the Coega Development Corporation.
2. Was there a gap analysis study prior to the implementation of Oracle?
3. If yes, how big was the gap between the requirements of Oracle and that of the CDC?
4. Why did CDC prefer Oracle over other ERP vendors?
5. Describe the policies that governed one of the processes you worked on prior to the implementation of Oracle.
6. How were those policies and the processes you worked on affected by the introduction of Oracle?
7. How did the implementation of Oracle specifically impact on your roles and responsibilities?
8. What changes needed to be introduced in your reporting, for example, the templates and formats, following the implementation of Oracle?
9. What changes occurred with the data flows and structures that you were interacting with?
10. When there is an Oracle upgrade, do you experience changes to your processes, roles, data and reporting?
11. Would you say that these changes are a consequence of Oracle's requirements or are government requirements and why?
12. According to the literature, generally, ERP systems are unlikely to include all the functionalities an implementing organisation needs, because these systems embody business models that their overseas designers believe represent best practices. Do you agree with this statement and please explain your perspective on this issue?

Appendix B – Interview Consent Form

Department of Information Systems

Leslie Commerce Building
Engineering Mall, Upper Campus
OR
Private Bag. Rondebosch 7701
Tel: +27 (0) 21 650 4028 Fax: +27 (0) 21650 2280
Internet: http://www.commerce.uct.ac.za/informationsystems/

09 March 2015

Dear Sir/Madam,

I am a student enrolled in the part-time Masters programme of the Department of Information Systems at the University of Cape Town. As part of the course requirements I am expected to submit a technical research report.
The purpose of this study to validate institutional forces or structures that contribute to or cause ERP misalignment and gain a deeper insight on the differences between implementing organisation institutional forces and ERP embedded institutional forces.
Your participation in this research will be greatly appreciated. Participation is entirely voluntary and all information will be treated as confidential, anonymous and will be used solely for the purpose of this study.
The findings of this research study will be compiled in a report that will be presented to the University of Cape Town for academic purposes. Participants' details will not be published as part of the report and all participants will remain anonymous. A copy of this research will be made available to all participants.
If you are willing to participate in this study please sign the attached consent form.

Thank you for your time and participation.
Sincerely,

Nkosinathi Bitsini

Masters Student
Department of Information Systems
University of Cape Town
Email: nko.bitsini@gmail.co.za

Prof. Michael Kyobe

Research Mentor
Department of Information Systems
University of Cape Town
Email: Michael.kyobe@uct.ac.za

Appendix C – Participant Consent Form

I, _____, consent to participate and be interviewed for the purpose of this research study.

I am aware that participation is voluntary and that I may choose to withdraw from this study at any time if I so wish.

_____ _____

Signature **Date**

Appendix C – Approval by Ethics in Research Committee

UNIVERSITY OF CAPE TOWN

Faculty of Commerce

Ethics in Research Committee

University of Cape Town Private Bag Rondebosch 7701
Email: kincaidharold592@gmail.com
Telephone: 071 823 7573

May 17, 2015

NKOSINATHI BITSINI
Information Systems

Project title: Investigating impact of Institutional forces on operations of the implementing organizations in developing countries

52-2015

Dear Researcher,

This letter serves to confirm that this project as described in your submitted protocol has been approved.

Please note that if you make any substantial change in your research procedure that could affect the experiences of the participants, you must submit a revised protocol to the Committee for approval.

Regards,

Professor Harold Kincaid

Commerce Faculty Ethics in Research Committee