INFORMATION TECHNOLOGY SERVICE MANAGEMENT PRACTICES, ENABLERS, INTEGRATION STRATEGIES AND SERVICE DELIVERY AMONG KENYAN STATE CORPORATIONS

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2015

DECLARATION

DECLARATION BY THE CANDIDATE

This PhD thesis is my original work and has never been submitted to any university for examination.

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DEDICATION

I would like to dedicate this thesis to my family, especially to my lovely wife and son with love and deepest appreciations and to my mother who always gave me encouragement.

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LIST OF ACRONYMS AND ABBREVIATIONS

AGOF	Average Goodness of Fit
BSC	Balanced score card
CFA	Confirmatory Factor Analysis
CFS	Critical Success Factors
CMMI	Capability Maturity Model Integration
CobiT	Control Objectives for Information and related Technology
GOF	Goodness of Fit
ICT	Information and Communication Technology
ICTA	Information and communication technology Authority
IEC	International Electrotechnical Commission
ISACA	Information Systems Audit and Control Association
ISO	International Organization for Standardization
ISO9000	Quality management systems standards
IT	Information Technology
ITGI	IT Governance Institute
ITIL	Information Technology Infrastructure Library
ITSCM	IT Service Continuity Management
ITSM	IT Service Management
itSMF	Information Technology Service Management Forum
KMO	Kaiser-Myer- Olkin
OGC	Office of Government Commerce (UK government)
RBV	Resource Based View
RMSEA	Room Mean square Estimation Error
SCAC	State corporations Advisory Committee
SEM	Structural Equation Modelling
SLA	Service Level Agreement
UK	United Kingdom
US/USA	United States of America

ABSTRACT

With the increased demand by the businesses for better and more disciplined provisioning of IT services to ensure smooth operation, information technology service management practices continue to be critical to the modern enterprises. The purpose of this study was to examine the relationship between information technology service management practices and IT service delivery in Kenyan state corporations, establish the moderating role of enablers and integration strategies on the relationship between ITSM practices and IT service delivery and to find the combined effect of ITSM practices, enablers, and integration strategies on IT service delivery. Through a cross-sectional survey, data was collected, analysed using multiple regressions and Structured Equation Modelling. The findings indicate a statistically significant relationship between disaggregated and aggregated ITSM practices and IT service delivery. The moderating effects of enablers were not statistically significant while the moderating effect of integration strategies was significantly on relationship. The study also established that the combined ITSM practices, enablers, integration strategies have high effect on IT service delivery than the individual variables. The study concluded that ITSM practices significantly enhance IT service delivery, however, when moderated by enablers and integration strategies the effects was higher, the effect was stronger when the three variables were combined together. The study therefore recommends that state corporations should combine, recombine and scale up ITSM practices to enhance ITSM benefits on IT service delivery. State Corporation should also use ITSM practices to guide day to day operations and development of appropriate policies on IT service management. Out of the limitations of the study, areas for further research have been pointed out. For instance, a study on private sector context with more variables than those in this study could be considered for future research.

Key words: IT Service Management practices, Enablers, Integration strategies, IT service delivery.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

In today's competitive business environment, there is pervasive use and dependency on information and communication technology (ICT) to enhance strategic and operational performance in organizations around the world (Brown, 2003). Information technology services are now a strategic asset and organizations are investing appropriate resources into development, support and management of ICT services to provide a competitive advantage on service delivery. Consequently, organizations with extensive ICT investment have noticed ever-increasing performance, gauged by improved service delivery and return on investment (Green, 2007). This strategic role of ICT has necessitated great attention and oversight from top management in an effort to provide ICT in a dynamic, effective and service oriented manner. As gauged by Iden and Eikebrokk (2014), businesses expect information technology (IT) departments to act as a key enabler of disciplined and systematic provisioning of IT services. Consequently, service oriented thinking in the provision of ICT services in form of information technology service management (ITSM) has emerged as a preferred and appropriate best practice towards a proactive and strategic IT services (Nfuka and Nzuka, 2010).

PWC (2008) affirms that the importance of ITSM practices almost doubled from 27% in 2005 to 51% in 2007. Further, the success rate of ITSM adoption increased from 43.9% in 2010 to 47.4% in 2013 (iTSMF, 2013). Evidence from IT governance global status survey reveal that the rate of using integrated ITSM frameworks increased to

24% in 2007 from 13% in 2005 and 6% in 2003 (ITGI, 2008). In government sector, evidence from ministry of justice in Ontario and state of Illinois which embraced ITSM in 2009 reported a 40% costs reduction which translated to over $130 million annual savings to the state as result of implementation of ITSM (Iden and Eikebrokk, 2014). These numbers demonstrate that ITSM implementation is becoming more crucial to modern enterprises and state corporations. Surprisingly, the ratio of actual adoption and performance on IT service delivery increased only by 3% from 29% in 2005 to 32% in 2007 (PWC, 2008).

Winniford, Conger, and Erickson-Harris, (2009) contend that utilization of ITSM practices in developing countries has been slow with limited studies quantifying the benefits in relation to firm performance. In Kenyan state corporations, the current study did not come across academic literature on ITSM practices and IT service delivery, although, information available in the iTSMF Kenya website reports increased uptake of ITSM training and certification of IT personnel in state corporations.

Strategic Alignment Theory (Luftman, 2004), has been widely used to address issues of strategic fit and adaptations of ICT innovations in organizations especially ITSM while focusing on resources and strategies through resource based view (Barney, 1991) with an aim of improving organizational performance. With paucity of studies done in this domain, a study on ITSM practices, integration strategies and IT service delivery is extremely important in providing deeper insights to a prior line of inquiry on information systems research in state corporations.

1.1.1 Information Technology Service Management Practices

IT Service Management (ITSM) refers to a part of service science that concentrates on IT operations (Young, 2004). ITSM fundamentally shifts the focus from the traditional technology-centric approach to IT management to a focus on the people, process, tools and governance capabilities that enable delivery of that technology in the form of services (Pollard, Gupta and Satzinger, 2010). The main purpose of ITSM is to align IT services to business requirements in order deliver effective IT services to business. ITSM therefore focuses on defining, managing and delivering IT services in a customer-focused manner by offering information systems under contract to customers and managing IT performance as a service. Various industry-recognized ITSM frameworks and maturity models are available to help IT organizations improve service management functions and processes. Most common ones include; ITIL, COBIT, CMMI and ISO practices.

The Information Technology Infrastructure Library (ITIL) a set of concepts and practices for ITSM is the most widely adopted framework for service management in the world. ITIL version 3, published in 2007 and later revised in 2011, explains in five practices the various tasks an IT services supplier must perform (Gacenga, Cater-Steel and Toleman, 2011). The service strategy (SS) practices guides service providers to build a strategy for delivering and managing services to support business. Service design (SD) practices guides the design of appropriate IT services by considering business objectives. The service transition (ST) practice offers guidance to ensure that service releases are implemented successfully into supported environments. Service operation (SO) practices guides the delivery of services to business users and customers. Finally, the continuous service improvement practices offers guidance for

achieving improvements in service quality, operational efficiency and business continuity (Van Bon et al, 2007).

The Control Objectives for Information and Related Technology (COBIT) specifically address governance and controls of an IT organization. The practice is based on seven enablers; principles, policies and frameworks; processes; organizational structures; culture, ethics and behaviour; information; services, infrastructure and applications and people, skills and competencies (Ahmada and Shamsudin, 2013). The COBIT process reference model subdivides the IT-related practices and activities into two main areas: governance and management. The governance domain is: Evaluate, Direct, and Monitor; while the four management domains are; The Planning and Organization domain (APO) covers the use of information and technology and how best it can be used in an organization to help achieve the organization's goals and objectives. The Build, Acquire and Implement domain (BAI) covers identifying IT requirements, acquiring the technology, and implementing it within the company's current business processes. The Deliver, Service and Support domain (DSS) focuses on the delivery aspects of the information technology. The Monitor, Evaluate and Assess domain(MEA) deals with a company's strategy in assessing the needs of the company and whether or not the current IT system still meets the objectives for which it was designed and the controls necessary to comply with regulatory requirements (Gacenga, Cater-Steel and Toleman, 2011)a..

Capability Maturity Model Integration (CMMI) is an approach to process improvement that focuses on helping organizations improve their performance. CMMI framework is organised into four practice areas namely; process management which contains the cross-project activities related activities. Project management areas

that cover the project management activities related to planning and controlling the project. Engineering process areas address software development and maintenance activities and support process areas which cover the activities that support product development and maintenance.

The international electrotechnical commission (IEC)/international organization for standardization (ISO) 20000 is an international standard for ITSM that is used to measure how well ITSM practices are being adopted (Marone and Kolbe, 2010). ISO framework is sponsored by the International Organization for Standardization (ISO) and refers to a set of quality management standards that enable an organization to fulfil 'the customer's quality requirements and applicable regulatory requirements, while aiming to enhance user satisfaction, and achieve continual improvement of its performance in pursuit of these objectives. ISO/IEC 20000 is an IT service management standard that defines requirements for planning, establishing, implementing, operating, monitoring, reviewing, maintaining, and improving the service management system. ISO 9001 focus on quality management systems while ISO: 27001/2 focus on IT security. Even though ITSM has gained a wide acclaim implementation success seems to vary across organization and regions (Winniford et al, 2009). The current study is of the view that these practices significantly affect firm performance on IT service delivery.

1.1.2 Enablers

Enablers are factors that, individually and collectively, influence effectiveness and success of governance and management over enterprise IT (ITIG, 2008). According to Pollard and Cater-Steel (2009), enablers are factors that influence and contribute to the success of an ITSM projects. Enablers are driven by the goals

cascade, whereby higher-level IT-related goals define what the different enablers should achieve. Rockart (1979) asserts that enablers are essential parts that must be addressed by the management or the manager to ensure that organizations achieve management objectives and business needs. Therefore enablers must be achieved in order for the business to succeed. Tan et al., (2009) argue that enablers could have an overall positive or negative impact on others and to the overall IT service delivery. Unfortunately, for many organizations these enablers can also represent constraints and fatal blockages that paralyze and then terminate their ITSM initiatives prematurely before yielding any benefits on IT service delivery.

Montoni and Rocha (2010) provided a comprehensive, well-grounded list of ITSM enablers, Iden and Eikebrokk (2014) listed the ITSM enablers as; 1) top management support; 2) a project champion; 3) staff expertise; 4) broad involvement; 5) ongoing information; 6) ITSM-aligned culture; 7) willingness to change; 8) external consultant; 9) ITSM software; and 10) firm size. COBIT 5 re-grouped enablers into seven key areas emphasizing their importance in providing the vision, direction, energy and resources to initiate sustain and realize IT service delivery benefits. whereas a range of theoretical and empirical research such as Montoni and Rocha (2010); Tan et al, (2010); Iden and Eikebrokk, (2014), have investigated the influence of enablers on ITSM there is still lack of consensus regarding the role of specific variables in facilitating or impeding firm's utilization of ITSM practices to improve IT service delivery. Consequently, the current study is of the view that organization size, people, culture, process, technology, government policy and management support impacts ITSM and IT service delivery relationship.

1.1.3 Integration Strategies

Integration strategies refer to a practice where an organization adopts and implements more than one ITSM practice to enhance IT operations (Praeg and Spath, 2011). Iden and Langeland (2010) posit that the diverse infrastructures within organizations have prompted IT management to take the option of combining various practices leading to a new phenomenon of frameworks integration in ITSM discipline.

The need for integration has existed since the development of enterprise systems. A lot of studies have been made focusing on implementation and integration of ITSM processes in organizations. These studies provide good technical knowledge about the technology and requirements but the higher level picture is missing (Praeg and Spath, 2011). Organisations have the option of combining various frameworks to ensure sufficient management practices (Praeg and Spath, 2011). ITIL also aims to guide the organisation with best practices in aligning business and IT, whereas CobiT aims to guide the organisation in terms of business needs and organisational goals. Cater-Steel, Tan and Toleman (2006) argued that CobiT and ITIL are complementary and when combined can provide an organisation with a powerful IT governance and best practices in IT support.

Due to the generic nature of the processes defined in CobiT, additional practises and standards can be easily attached to the CobiT framework, thereby creating a chain of guidance (Hill and Turbitt, 2006). ITIL has several pitfalls such as weak guidance for improving on infrastructure and lack of continuous improvement guidelines. These pitfalls can be overcome by features in CMMI, hence integrating these two complementary frameworks is beneficial to IT organization (Praeg and Spath, 2011).

observed that best practices for ITIL v3 should be incorporated into CMMI for services.

Cutis (2005) stated that CMMI for services and CMMI for acquisitions are complementary to CobiT, in that these aspects are not adequately covered by CobiT. Both CMMI and CobiT include a maturity model; however the CMMI standards include goals and procedures which are not part of the CobiT maturity model. Praeg and Spath, (2011) acknowledged that ITIL can be used in conjunction with CobiT, Six-Sigma, Togaf or ISO 27000. ITIL should be implemented as a project where PMBOK can be used as the project management approach leveraging off its code of ethics and guidelines, whereas ITIL is the continuous service improvement project. Furthermore, the project selection and change management guidelines can be elicited from PMBOK whereas operational and service management guidelines can be elicited from ITIL.

In the analysis performed between ITIL, CobiT, PMBOK and CMMI, it is apparent that all the frameworks are complementary. Cater-Steel et al. (2006) argue that, integrating multiple ITSM practices can be beneficial to organizations in terms of efficiency and waste reduction. Consequently, the current study is of the view that integration of ITSM practices may results to improved effectiveness of ITSM practices and IT service delivery.

1.1.4 Information Technology Service Delivery

IT service delivery involves objectively verifiable and quantifiable service outcomes by IT function to enable the organization to manage the relationship between people,

processes, technology and information in order for the business to run more efficiently (Gacenga, Cater-Steel and Toleman, 2011)b. Even though many definitions have been proposed, there seems to be general agreement that IT service delivery is not a unitary, but a multi-dimensional concept that taps on both economic and operational aspects of IT service to the organization. Latif et al., (2010) established that studies dealing with IT service delivery, also cover aspects of benefits, impact and performance, therefore overlaps are evident in the ITSM literature.

ITSM practices are measured as specific results delivered to customers and response to specific events. Cater-Steel et al. (2006) argue that service quality and user satisfaction as the key metrics for measuring ITSM performance on IT service delivery. Gacenga, Cater-Steel and Toleman, (2011)b adds that measures such as improved; response and resolution time, service availability/reduced downtime of IT systems, standardized services, IT resource utilization, business/IT alignment, staff productivity, IT governance and reduced cost are key variables of IT service delivery. In terms of measurement, both 5-point and 7 point Likert scales have been used (Montoni and Rocha, 2010).

The balanced score card (BSC) is one of the most widely adopted IT service delivery measurement methodologies because BSC uses a mix of financial and non-financial indicators for performance management and measurement especially in the monitoring of the effect of IT on business strategies (McNaughton et al.,2010). BSC has been used successfully in theoretical studies by many other ITSM researchers (Donko and Traljic, 2009; McNaughton et al. 2010). McNaughton et al. (2010) for instance categorized IT service delivery indicators into four BSC quadrants, while Marrone and Kolbe, (2011) demonstrated how to measure IT service delivery by

regression of ITSM practices with IT service delivery indicators and tracking the number of benefits along the level of ITSM maturity in the organization.

Marone and Kolbe (2011) affirms that the most common approach is assessment of the ITSM practices from the service provider perspective focusing on the aspects of performance that have direct impact on efficiency and operation of the service provider to the receiver of the services.

1.1.5 State Corporations in Kenya

A state corporation also known as State Owned Entity (SOE), government agency, government owned entity (GOE) or parastatals is a legal entity created by a government to undertake commercial, financial, non-financial or service or any other activities on behalf of an owner government. Established under State Corporation Act, the Kenyan state corporations have been important in promoting or accelerating economic growth and development (SCAC, 2015).

The state corporations were first established in Kenya by the colonial government to provide services that were not provided by the private sector. State corporations control key sectors such as agricultural exports, transport and communications, manufacturing and agricultural trade. The government exercises immense control over state corporations, as it has powers to appoint directors and issue directives of a general nature (Mworia, 2011). Public sector contributes to the GDP in of various sectors of Kenyan economy, in Agriculture, forestry and fishing 3% of the sector's contribution to GDP is attributed to public sector activities, in Transport and communication sector 4% of the sector's contribution to GDP in 2011 is attributed to public sector activities (KNBS, 2012). This numbers reveal the crucial role of the

sector in the national GDP, hence effective service delivery is very crucial.

From the foregoing, the performance of Kenyan state corporations remains crucial for micro and macro-economic development of the country. The Kenyan government acknowledges that over the years there has been poor performance in the public sector including state corporations, especially in the management of public resources which has hindered the realization of sustainable economic growth (SCAC, 2015). This is why performance of these state corporations has been of great concern to many stakeholders including management practitioners, government and the public at large.

The government of Kenya re-defined all state corporations and reduced the total number of state corporations to enhance efficiency. This benchmarking review identified six key imperatives for achieving transformation of government owned entities to effectively support the national development on regulatory and effective service delivery to the citizen. The study targeted a total of 178 operational state corporations as presented by State Corporation's advisory committee as at January 2015, spread in the 18 ministries (SCAC, 2015).

State corporations are implicated in most fiscal and governance problems of African governments because of their inefficiency, losses, budgetary burdens, and provision of poor products and services. Tremendous governance problems such as poor and inefficient service delivery have been reported in Kenyan state corporations partly due to problems in corporate governance, unreliable services and lagging behind in technology. Mworia (2011) observed that most state corporations in Kenya were typically at the computerisation stage and therefore there is little attention to best practices for effective management of IT resources and organisational strategies to control IT costs. This has led to ad-hoc ITSM practices, which has resulted to

enormous negative consequences to IT service delivery and huge IT investment loses given the magnitude of systems in such organisations.

The government of Kenya has provided various guidelines and standards to IT management. The most relevant is the Information and Communication Technology Authority of Kenya (ICTA) standard which was developed using a mixture of frameworks and standards such as IEEE, ISO, COBIT, among others. The key practices in this standard include, information systems security, data canters and cloud computing, ICT operation, performance and capacity management, IT governance, ICT project and portfolio management, ICT networks, data management, messaging and collaboration, software and hardware licensing (ICTA, 2013). The current study argues that the initiatives adopted in order to make state corporations more efficient are inadequate and will not realize the intended objectives unless governance practices are strictly enforced. The focus of the current study was therefore to determine the effect of ITSM practices on IT service delivery in Kenyan state corporations.

1.2 Research Problem

The debate on use of ITSM practices to improve IT service delivery seem to be gaining momentum globally. While the debate on their content and even definitions is inconclusive, there is no refutation by both practitioners and researchers on dominant role of ITSM practices on firm performance. ITSM practices have been positioned as tools which allow IT executives to deliver high-quality, low-cost and customer oriented services, however at the moment, IT executives are uncertain of what would be achieved when they implement ITSM practices (Praeg and Spath, 2011).

Although ITSM practices have been adopted successfully in developed countries, very few organizations have adopted ITSM practices in developing countries (Winniford et al, 2009). Further, popularity of ITSM practices has not matched IT service delivery gains and there is little research quantifying the IT service delivery outcomes. Consequently, IT service providers have very little visibility on their entire value network and it is hard to gauge the impact of singular ITSM improvements on firm performance especially with respect to IT service delivery (Wessels and Van Loggerenberg, 2006).

In Kenya, there is paucity of studies on IT service management practices. Although the government has provided guidelines and policies on IT service management, the question that arises is to what extents does ITSM practices enhance IT service delivery? A review of extant empirical literature reveals a number of study gaps the ITSM practices.

To begin with, the current studies reveal regional differences on studies related to ITSM discipline across different countries. Previous studies on ITSM have been skewed towards early adopters focusing on Europe and Asia (Pollard and Cater-Steel 2009; Iden and Langeland 2010). Marrone and Kolbe (2011) empirical study on the impact of ITSM frameworks focusing on benefits, challenges and processes to an IT organization is the only comprehensive study on ITSM practices; however the study has serious limitations. The study only focuses in US, Asia and UK organizations and specifically addresses the impact arising from ITIL and COBIT implementations. Only Nfuka and Rusu, (2011) and Lamrini (2012) focused on Africa in Tanzania and Morocco respectively, but their study focused on adoption of ITIL. Further, none of these studies have used state corporations as their context. Therefore, study covering

Kenyan context and State Corporations is timely to bridge the regional gap on ITSM studies.

Secondly, Gacenga, Cater-Steel and Toleman, (2011)a, study on ITSM performance measurement concurs that there is a gap in the empirical literature on the performance of IT organizations especially with respect IT service delivery. The same study support sectorial studies like in the public sector in different regions and recommend studies that tackle topics such as cost-benefit analysis and IT service delivery. Review of other studies reveal contradictory findings, for instance, Hill and Turbitt, (2006) reported that ITSM practices positively influence IT service delivery contrastingly, Wessels and Van Loggerenberg (2006), Yixin and Bhattacharya (2008) concluded that regardless of the long list of theoretical benefits identified, in practice organizations could only identify with a handful of these benefits, meaning that there no concurrence on the relationship between ITSM practices and IT service delivery.

Thirdly, in the current literature, the analysis of enablers was limited to countries like Australia, Germany, Norway, Switzerland, and the USA. However, there are many other countries in Africa, India or China that might need to be examined for enablers as well. This is important because based on contingency theories the local conditions might exert influence on these enablers. Ghayekhloo et al (2009) demonstrated how some local enablers such as organization size and industry could affect expected IT services. Moreover, they also recognized that a good localization of software tools is important. This raises the question whether there are enablers in other countries, which are sector specific. Likewise, studies on ITSM enablers on IT service delivery have provided mixed findings. Hochstein et al. (2005) reported a positive relationship and Cater-Steel et al. (2006) reported mixed relationship. The authors show that there

is no consensus regarding which enablers are capable of influencing the relationship between ITSM practices and IT service delivery. Therefore, this paper intends to go one step further by performing a study on enablers to clarify their role on ITSM and It service delivery.

Lastly, in terms of integrations of ITSM practices, ITSM is only mentioned in passing or is used as comparison for instance on ITIL and COBIT mapping or as supplement to the integrated IT management framework. Most studies focus on single ITSM framework providing a narrow approach on the constructs of ITSM (Supremic et al, 2008; Tan et al, 2010; Iden and Langeland, 2010). Further, studies on the phenomenon of ITSM integration have failed to provide a linkage on the effect of integrated ITSM on IT service delivery (Bittinger, 2005; Pollard and Cater-Steel 2009). The present study aims to provide a wider perspective on ITSM integration strategies and service delivery relationship with an intention of developing an all-inclusive model on ITSM practices. This study is therefore meant to answer the following research question on; what is the relationship between ITSM practices and IT service delivery in Kenyan state corporations taking into account the role of enablers and integration strategies?

1.3 Research Objectives

The purpose of this study was to examine the relationship between information technology service management practices and IT service delivery among state corporations in Kenya. The study was guided by the following specific objectives.

i. To establish the effect of IT service management practices on IT service delivery.

ii. To examine the effect of ITSM enablers on the relationship

between IT service management practices and IT service delivery.

iii. To examine the effect of integration strategies on the relationship between IT service management practices and IT service delivery.

iv. To establish the combined effect of ITSM practices, enablers and integration strategies on IT service delivery.

1.4 Value of the study

The findings of the study are valuable to various categories readers. To academicians, this study has contributed to theory building as well as developing empirical knowledge on ITSM practices thereby improving the limited academic knowledge base on the phenomenon within state corporations in Kenya. Specifically the study has contributed to the works of Sebaaoui and Lamrini (2012) in Morocco, Nzufa and Rusu (2011) in Tanzania and Marone and Kolbe (2011) detailed global studies on ITSM. The research outcome provides a structure and synthesis to the academic literature in the fields of IT Service Management by creating streams of research areas in information systems. The current studies are not theory driven but rather practice driven and practitioner white papers, therefore this study contributes in this line of study by providing an empirical inquiry into ITSM phenomena.

To policy makers, the research outcome has provided insight to the policy makers in making decisions on the IT service management especially for state corporations. The study findings is of assistance to the professional bodies such as ISACA, iTSMF, ICTA and Ministry of ICT in pushing standards of IT service management in public sector organizations as practice towards effective ICT service delivery. To the practice, the research aims to provide an understanding of the potential degree of

benefits realizable due to the implementation of the ITSM practices at different levels of maturity for benchmark.

1.5 **Organization of the Thesis**

This thesis is organized in six chapters. Chapter one provides an introduction of the study. It gives a brief synopsis of all the concepts of this study which are ITSM practices, enablers, integration strategies and IT service delivery. The chapter also describes the context of the study starting with the broader context which is the public sector in Kenya. The chapter then narrows down to providing an overview of the Kenyan state corporations. The chapter equally covers the statement of the research problem, the study objectives and the value of the study.

Chapter two of this thesis is dedicated to literature review. The chapter presents theoretical, conceptual and empirical review. Theories underpinning this study are discussed followed by a pairwise review of the concepts under study. The chapter also presents selected tabulation of previous studies and the gaps this study sough to fill. At the end, the chapter contains a conceptual model together with the conceptual hypotheses.

Chapter three of the study elaborates on the research methodology of the study. It describes the philosophy guiding the study, the research design, population of the study and data collection method.

The chapter equally demonstrates the operationalization and measurement of study variables together with the data analysis techniques used in the study. Reliability, validity and normality tests carried out on the data are also presented in this chapter.

Chapter four brings out the Preliminary data analysis and interpretation of the

results. It begins with the descriptive statistics of the variables. The descriptive statistics used include the mean scores, one sample t-tests and significance tests and corresponding p-values and structured equation modelling statistics.

Chapter five presents test of hypotheses and subsequent discussions. Here findings of tests on the hypotheses tested contrasted with interpretations. The discussions of the results are along the objectives, hypotheses, theory and previous conceptual as well as empirical studies. The discussions are based on extant literature and theoretical postulations.

Finally, chapter six contains the summary, conclusion and recommendations of the study. In the chapter, implications of the study for theory, policy, managerial practice as well as methodology are presented. These are linked to the key findings. Conceptual, contextual and methodological limitations of the study together with suggestions for future study conclude this thesis.

1.6 Chapter Summary

This chapter covers the background of the thesis, a brief discussion on the study variables and the context. The study concepts are ITSM practices; Enablers, integration strategies and IT service delivery. The Kenyan state corporations being the context of the study is equally described. The chapter also provides the explanation of the research problem from the known issues before delving in conceptual, contextual and methodological gaps.

The main objective which is to establish the effect of enablers and integration strategies on the relationship between ITSM practices and IT service delivery is also presented. Specific objectives drawn from the main objective are then summarized.

Finally, the chapter explains the value of the study. The next chapter covers a comprehensive literature review.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

To enable a deeper understanding of the concepts under the study, it was necessary to carry out a review of literature. This chapter covers theoretical and empirical review of ITSM practices, enablers; integration strategies and IT service delivery. The literature review is undertaken along key relationships between variables. Subsequently, various research gaps are exposed along contextual, conceptual and methodological. These gaps are summarized and tabulated. Later, a conceptual framework is extracted modelling the relationship of variables as conceptualized by the study and hypotheses stated. Subsequent subsections present detailed description of all these aspects. A conclusion on the review is drawn at the end of the chapter.

2.2 Theories on IT Service Management Practices and Service Delivery

This section of the study is based on a number of theoretical perspectives related to the study. Although ITSM practices are grounded more on practice than theory, previous studies on ITSM adoption, benefits and performance measurement have used a variety of theories, such as actor network theory (Cater-Steel and McBride 2007) institutional theory (Cater-Steel et al. 2009), resource based view (Wagner 2006), the current study will be grounded on the strategic alignment, contingency theory and Resourced Based View (RBV) theories.

2.2.1 Strategic Alignment Theory

Strategic alignment theory enables an IT organization to successfully align business,

technology and infrastructure to the business needs. The theory identifies that business success is dependent on the concurrence of business strategy, IT strategy, organizational infrastructure, IT infrastructure and processes (Chen, 2008). Therefore, the strategic alignment is not an event but a process of continuous change.

The importance of strategic alignment has been stated frequently (Corrall, 2000), indeed, Galliers and Newell (2003) call it a central tenet to the theory and practice of IS strategy. It is a key concern for business executives (Luftman et al., 2004) and is ranked among the most important issues faced by IT executives (Papp, 2001). However, despite the widespread acceptance that business and IT strategies should be aligned, the nature of alignment is inadequately clarified in the literature, Luftman et al., (2004) conclude that there remains a need for research into ITSM processes associated with alignment.

Critics of strategic alignment maintain that the implicit dominance of a structured strategy process is questionable in an era where uncertainty and flexibility predominate, and the articulation of the strategic intent is difficult (Ciborra, 1997). Real life and real strategizing is 'messy' and human thinking and actions rarely follow strict modular concepts such as strategic alignments.

A further debate concerns the measurement of alignment. Although alignment is a top management concern, no comprehensive model of the construct is commonly used. Reich and Benbasat (2000) contend that strategic alignment may be approached from a process (ITSM practices) or outcome (Service delivery) perspective. Process perspective involves investigating planning activities, while outcome research involves realized benefits and strategies. From the foregoing strategic alignments

theory provides the conceptualization of the linkage/relationship between ITSM and IT Service Delivery. Luftman, (2004) affirm that research of process and outcome of strategic alignment would either examine frameworks, strategies, structures and planning methods, or would focus on actors, values, communication and understanding which falls under the ITSM discipline. Therefore, through strategic alignment firms identify the standards, practices and policies that can be aligned to provide optimal effect on IT service delivery and organizational performance.

Ciborra (1997) argues that management, through knowledge and understanding of alignment, can classify their strategy in terms of boxes and linear relationships, but back in the real world, they have difficulty in measuring those relationships or formulating processes to apply the alignment maps in practice. Measures that align everyone within the organisation, business goals and their respective departments, are needed to achieve strategic alignment, but there are no indicators as to what these measures might be.

There is also disagreement as to whether strategic alignment should be viewed as an outcome or as a dynamic process. Papp (2001) concurs that alignment is the key to achieving improved profitability from IT. For Papp, alignment considers strategic fit between strategy infrastructure, processes and fundamental integration between business and IT. Strategic alignment assists firms to understand the processes which enable or inhibit realization of business goals (Luftman et al., 2004). The enablers such as top management support for IT and leadership from the IT department enable an IT department to prioritise workload and firms resources well. In contrast, the inhibitors lead to poor workload prioritisation, there is no close relationship between the IT department and the business, the IT department does not know the needs of its

customers and it does not meet its commitments, resulting in little executive support for IT.

Weiss and Anderson, (2004) contend that one possible way to achieve alignment is for IT organizations to transform themselves into service providers. Being a service provider means using IT as a solution to business problems and running the IT department as a business function. ITSM practices provides a framework to effectively structure these capabilities, the relationship and interactions of the IT organization with business customers and users to ensure quality service and business value to the organization (Galup et al. 2009). When an organisations advance to the IT service management stage, the IT function actively identify the services its customers' needs and focus on planning and delivering those services that meet IT service delivery requirements (Shang and Lin, 2010). Thus, a study on strategic fit and adaptation of ITSM practices, integration strategies, enablers and IT service delivery is well anchored on the strategic alignment theory by examining the suitable integration of ITSM practices and high impact practices that result in improved outcome on IT service delivery.

2.2.2 Contingency Theory

Contingency theory enables a researcher to relax assumptions underlying theoretical propositions and/or systematically introduce factors to explain or predict expected phenomena. Contingency theory is based on the premise that there is no universally appropriate performance measurement system that applies equally to all organisations in all circumstances. Using the contingency theory may lead to a better understanding of the relationship between ITSM and IT service delivery by enabling the

identification of specific aspects of ITSM that are associated with certain defined circumstances (Umanath, 2003).

Contingency theory states that the most effective organizational characteristics are those that fit the contingency variables. There are contingency theories of a diverse range of organizational characteristics, such as leadership, technology and people. Contingency theory claims that a process that is effective in some situations may not be successful in others (Saunders and Jones, 1992). The optimal structure is contingent upon the internal and external situation, thus providing the basis on the conceptualization of enablers. In ITSM, an organization's design and processes must fit with the environment, as well as the organization's various subsystems.

Contingency theory has been used in previous studies that focused on IS. Using contingency theory, Saunders and Jones (1992) provided a model of important dimensions and measures for evaluating IS performance. Their work was extended by Umanath, (2003) to assess the quality and productivity of the IS function.

Contingency theory has been criticised for taking a conservative stance, and providing an endless grouping of variables thus not conclusive and cumbersome to use in real-world settings. The theory is generally more subjectivist, less functional, less un-reflexive and less deterministic approach is needed. Further the contingency model does not take into account the percentage of intermediate favourability situations vs. extremely favourable or unfavourable situations, hence, does not give a complete picture of the comparison.

The current study addresses the criticisms levelled at contingency theory application in Management Information Systems (MIS) and follows the advice by Saunders and

Jones (1992) that an increasing use of case study methodologies, longitudinal research to investigate the phenomena provides contingent environmental factors, such as organisation size, industry sector and strategy that influence the performance of ITSM practices. The study is therefore set to establish internal and external contingencies universal for all IT functions in government owned entities for successful deployment and IT service delivery improvement owing to ITSM implementation. This study will investigate the external and internal contingencies embedded in ITSM and compare these with preconditions to identify contingency enablers under which firms are more likely to succeed in IT service delivery with ITSM.

2.2.3 Resource Based View

Resource based view (RBV) argues that sustained competitive advantage and improved performance of a firm is realised by exploiting resources that are valuable rare, imperfectly imitated and non-substitutable (Barney, 1991). RBV theory views a firm from its bundle of tangible or non-tangible resources rather than the long dominant market-based view. RBV emphasizes on the ability and capacity of organizations to combine, integrate, renew and reconfigure resources as needs arise. If control over scarce resources is a source of economic profits, then it follows that such issues as skill acquisition, management of knowledge, know-how and learning become fundamental issues. Organizations need more than just possessing resources. They must go an extra mile to ensure precise combination of such resources as needs arise or changes in the external environment occur.

The resource-based view (RBV) of the firm has been around for over 20 years during which time it has been both widely taken up and subjected to considerable criticism.

However, in response Wagner, (2006) contends that the prominent source of sustainable competitive advantages is causal ambiguity. While this is undeniably true, this leaves an awkward possibility, where the firm is not able to manage a resource it does not know exists, even if a changing environment requires this. Through such an external change, the initial sustainable competitive advantage could be nullified or even transformed into a weakness.

Wagner, (2006) contend that ITSM is regarded as a set of best practices derived from a selection of well-functioning IT organizations. Best practices will help IT functions deliver high-quality IT services and sustain a competitive advantage therefore ITSM frameworks are resources that fall well within RBV because it leads to improved IT service delivery and competitiveness. In this study ITSM practices are resources technology, processes and people which are required to meet a firm's business challenges. This study is of the view that higher level of bonding between ITSM and sustainability is directly associated with an organization's performance and profitability. Under RBV by exploiting ITSM practices, State Corporations build capabilities for competitive advantage in IT service delivery.

2.3 Information Technology Service Management Practices and Service Delivery

The mission of an IT organization is to provide an information processing capability that benefits the business. In order to fulfill this mission IT must provide the services while managing costs and prioritizing requests to optimize business value through operating and supporting the infrastructure required to process, store, secure, and communicate information(Pollard and Cater-Steel, 2009). Therefore the IT function must support business applications, provide technology consulting, training, plan

services, employ, train and deploy staff required to provide these services and develop/purchase, test and implement new infrastructure or software to fix IT problems (Bowena, Cheung, and Rohdeb, 2006). The success and effectiveness of IT department in executing the above mandate hinges on strategic alignment of IT objective to the business goals.

Ciborra, (1997) argue that strategic alignment positively influences IT effectiveness leading to greater performance on IT service delivery. Pollard and Cater-Steel (2009) posit that IT service management can be conceptualized as solution to a problem of aligning the relationships between the business and IT infrastructure domain in order to take advantage of IT opportunities and capabilities. Their results show that aligned firms have greater IT maturity and that the chief information officer's knowledge of IT service delivery is greater in aligned firms. Papp (2001) concurs that alignment is the key to achieving improved profitability from IT. For Papp, alignment considers strategic fit between strategy infrastructure, processes and fundamental integration between business and IT.

ITSM provides means through which an IT organization will structure these resources in order to realize the mission of an IT department (Tan et al, 2009). One possible proposition for this study was that firms would select and implement processes which would, in their opinion, provide the biggest benefits on IT service delivery, or processes that would help them deal with areas in which they are performing deficiently. The major challenge is on how the people responsible for ITSM practices can link ITSM practices to overall IT service delivery and business goals. The strategic alignment theory emphasizes on adaptation and fit of ITSM practices to IT and corporate needs. Marone and Kolbe (2011) contend that without tracking the

benefits of ITSM on IT service delivery, organization will hardly justify the impact of ITSM investments to the business executives. Limited empirical studies are available on these phenomena on the benefits realised through the implementation of ITSM practices.

The most detailed study in ITSM literature was conducted by Marone and Kolbe (2011) in the USA which concluded that maturity of ITIL increases with the number of IT service delivery benefits. Like the previous studies the Marrone and Kolbe (2011) study failed to explain the relationship of CMMI, ISO and COBIT on IT service delivery, in addition the study context did not provide focus on public sector although it underscored the need for study of the same variables in various industries and sectors.

Tan et al., (2010) reported that beyond the quantitative advantages, some qualitative benefits such as improved user satisfaction and staff productivity have been recognized by practitioners. Cater-Steel and Pollard, (2008) concluded that both user satisfaction and operational performance improve as the activities in the ITIL framework increases. Cater-Steel, Toleman and Tan (2006) study concluded that ITIL implementation provides more rigorous control of testing and system changes. This study failed to provide empirically weighted findings on the benefits identified.

Hochstein et al. (2005) study on ITSM implementation in Europe reported that ITSM implementation results in improved quality of IT services, which is only made possible by elevated efficiency, standardization, process optimization and transparency via continuous process monitoring.

In South Africa, Potgieter et al. (2005) conducted a case study with a government

organization to establish the effect of ITIL on customer service improvements. The authors contrasted an organization's perception of service quality with the number of calls per user, before, during, and after adding ITIL practices. The study however, only focused on ITIL and customer service thus adopting a narrow approach to ITSM study.

Tallon, Kraemer and Gurbaxani (2000) study on the impact of information technology on critical business activities found that IT service management practices lead to higher perceived levels of the value of IT to the business. Karimi, Somers and Gupta (2001) study on the impact of ITIL on customer service, found that IT-leader firms (firms where IT has potentially a high impact on business operations) have a higher ITSM practices and are able to improve their customer service through a number of IT-based solutions.

A study by Heart et al., (2010) reported a positive relationship between COBIT and IT-enabled enterprise adaptability. Similarly, Lazic et al. (2011) suggested that COBIT implementation is positively related to business performance through the mediators of IT relatedness and business process relatedness. The current study established that limited investigation has been conducted on the relationship between CMMI and IT service delivery. In order to explore this relationship the following Hypothesis is made;

H_1: Information technology service management practices have a positive effect on IT service delivery.

2.4 Enablers and Service Delivery

Delivering IT services depends upon complex configuration of people, process and technology. Contingency approach has been used to explain enablers the role of top management support, maturity of IS function, size of IS function, structure, culture and IS budget to the effectiveness of IT usage (Saunders and Jones,1992). Even though a number of authors have identified enablers that hearten ITSM frameworks implementation within the firm (Iden and Eikebrokk, 2014; Tan et al 2010; Cater-Steel and Pollard, 2008), the current studies have not assessed the extent to which the enablers influence the effect of ITSM on IT service delivery especially in different sectors and countries. Nonetheless, ITSM empirical literature points that enablers, influence successful implementation of ITSM practices in the organization.

Iden and Eikebrokk, (2014) research found that senior management involvement, organizational commitment and group efficacy are important for realizing the potential benefits of IT service delivery from ITIL, accentuating the role of management, group efficacy to be the strongest predictor, indicating the importance of the capabilities of the ITSM benefit realization.

Marrone and Kolbe (2011) found that senior management involvement, competence and training, information and communication to staff and stakeholders and culture were the most important factors for successful implementation of ITSM. Top management support, including a manager who acts as a project champion, training programs for internal staff, broad organizational involvement in process design, a culture that is aligned with ITSM characteristics for instance process thinking, cross-functional collaboration and willingness to change are the factors most frequently

mentioned in the extant literature. In addition, the same studies found that ITSM initiatives benefit from the involvement of an external expert and timely ITSM software package implementation.

Pollard and Cater-Steel (2009) compared enablers that have a positive influence on ITSM success and concluded that use of external consultant and tools influence was critical. Premkumar (2003) found that organizations are more willing to adopt new technologies where there is third party support for implementing them. The same study found a positive relationship between external support and adoption of innovation.

Kanapathy and Khan (2012) studied the correlation between implementation maturity and organization size and the findings revealed that implementation progress is positively associated with firm size, annual turnover and total number of employees and IT staff, indicating that large firms are more likely to succeed than medium and small firms, adopting a narrow approach that only focused on size.

Wang and Liang (2012), case studies on the factors which have negative influence on ITSM improvement initiatives verified by analysing the causal relationships among them, identified six factors that impact ITSM projects negatively. However, these studies did not provide the weighted scores on the ITSM effectiveness and concentrated only on ITIL practices. Overall, the findings were not conclusive, as they spread themselves over an array of barriers, further these studies failed to define the moderating effect of these enablers on ITSM's effect on IT service delivery. It's possible that enablers correlate to the ITSM implementation and IT service delivery (Wan and Liang, 2012). Therefore the following Hypothesis is made;

H_2: ITSM enablers have a significant moderating effect on the relationship between IT service management practices and IT service delivery.

2.5 Integration Strategies and Service Delivery

Curtis (2005) argue that although the academic community has been slow to research the phenomenon of multiple ITSM practices adoption, consultants and vendors have recognized the opportunity to reduce the complexity by providing services related to multiple ITSM practices. Curtis, (2005) affirm that in practice organizations are adopting more than one ITSM practice to meet their ITSM needs. Besides, practitioners urge organizations to adopt multiple frameworks such as COBIT and ITIL to enhance IT service delivery gains. Bittinger (2005) argue that technically ITSM frameworks are not mutually exclusive, when combined they provide powerful IT governance, control and best practice in IT service management. Empirical studies on ITSM practices integration strategies are limited in ITSM literature.

De Haes and Van Grembergen, (2009) qualitative study on the phenomenon on multiple practices implementations pointed that ITSM was effective in organizations that adopted a mixture of ITSM practices. Martin (2009) study on ITSM revealed that integration together with the introduction of related, best practices processes facilitate IT service management, governance and benefits realization.

Cater-Steel, Tan and Toleman (2008) observed that modularity theory may be useful in identifying interdependencies of myriad process and could help in determining how the various overlap, by defining how integrations can be linked, split, recombined and sequenced to achieve a successful outcome. The study also underscored the need for research to assess the impact of concurrent multiple adoptions. This research is of the

view that there is need to assess the correlations between concurrent multiple frameworks adoptions and IT service delivery. To understand this aspect better the following preposition is postulated;

H_3: Integration strategies have significant moderating effect on the relationship between IT service management practices and IT service delivery.

2.6 Practices, Enablers, Integration Strategies and Service Delivery

Gacenga, Cater-Steel and Toleman (2011)a studies in Asia, South Africa, North America, South America and Australia established that a rich variety of different theories and models that can be applied in measuring the effectiveness of ITSM such as BSC, SERVQUAL, RBV, NRA, Complexity Analysis and Financial Loss Functions. The study provided the importance of ITSM performance measurement and benefit realization. However, the study seriously failed to provide a framework on how various variables can be combined to measure the effect of ITSM on IT service delivery.

Cater-Steel, Tan and Toleman (2008) study on ITSM in Australia, revealed that a number of factors contribute to the success of the ITSM projects. Martin (2009) established that hybrid of best practices contribute to ITSM successes. Despite, these findings, the empirical literature failed to provide a linkage to other variables on IT service delivery. This study is of the view that combined effect will lead to higher effect than the individual variables. Accordingly the following hypothesis was formulated.

H_4: The combined effect of ITSM practices, enablers, integration strategies and service delivery has higher effect than the individual variables.

2.7 Summary of previous studies and knowledge gaps

Summary of previous studies and knowledge gaps is summarised in Table 2.1 as follows;

Table 2.1: Summary of previous studies and knowledge gaps

Author	Focus	Findings	Knowledge Gaps	current study
Marrone and Kolbe (2011)	ITIL Adoption – benefits and maturity Using survey design	As the level of maturity increases, so does the number of realized benefits.	Focused on maturity	Focus on the IT service delivery aspects
Chan et al. (2010)	ITIL measurement – using Six Sigma Using case study approach	Found that ITIL implementation reduce cost by minimizing "potential downtime and the adverse effects of system, network, and application failures, improving decision-making ability by facilitating access to information throughout the organization and by enabling the enterprise wide use of outputs and improving IT service levels by creating operational efficiencies.	Focussed on ITIL; The study did not also provide empirical effect of the variables on IT service delivery.	Focus on the effect of ITIL, COBIT, CMMI and ISO providing wider perspective.
Iden and Langeland, (2010)	Enablers for a successful ITIL adoption.	Identified critical success factors for ITIL adoption	Did not link CFS, to IT service delivery	- Studies on enablers Link and links to IT service delivery.
Mårten et al., (2010)	IT service delivery	Confirmed the correlation between IT governance maturity and IT governance performance. Defined IT service delivery and risks relationships.	Narrow focus on IT governance and Focused on risk	Focus on ITSM to provide a wider perspective on ITSM and IT service delivery relationship
McNaughton et al. (2010)	Benefits and value using SERVQUAL and IS Reverse SERVQUAL	Developed a framework that may be used to evaluate ITIL improvement efforts	Narrow perspective only focused only one variable quality	Includes Responsiveness of services, Intrinsic quality of service and Flexibility, and business value
Wang and Liang (2012)	Challenges of ITSM implementation using Multi-Case Approach	Elicited challenges and difficulties connected with ITSM implementation Identified internal barriers to ITSM adoption	Need to link the barriers to the level of IT service delivery	Establish the relationship of adoption enablers and ITSM practices.

Cater-Steel and Tan (2009)	ITIL adoption and benefits measurement using Surveys and Case studies	ITIL lead to more rigorous control of testing and system changes, more predictable infrastructure, improved consultation with IT groups within the organization, Smoother negotiation of service level agreements, reduced server faults, seamless end-to-end service, documented and consistent IT processes across the organization, an effective change advisory board and consistent logging of incidents.	Narrow perspective Focused on ITIL practices. The variables also focussed on technological benefits	Focus on the effect of ITIL, COBIT, CMMI and ISO providing wider perspective studying the effect of both technological and business effect.
Donko and Traljic (2009)	Quantitative approach to BSC on ITIL	Established Service improvement along the four BSC perspectives	Narrow perspective Focused on ITIL practices.	Focus on the effect of ITIL, COBIT, CMMI and ISO providing wider perspective.
Tan, Cater-Steel, and Toleman, (2010)	ITSM framework combinations	ITSM integrations and inter-organizational relationships.	Need to link the integrated ITSM practice to IT service delivery	Links the effect of integrated ITSM practices on IT service delivery
Spremic et al. (2008)	ITIL performance measurement Using case study	ITIL Practices Improved quality of IT services provided to users, Improved daily work procedures, better employee satisfaction and changed organisation culture.	Narrow perspective Focused on ITIL practices. Empirical effect of the variables on IT service delivery was not provided.	Focus on the effect of ITIL, COBIT, CMMI and ISO providing wider perspective.
Cater-Steel et al. (2006)	ITSM frameworks combinations	Described the phenomena of ITSM frameworks integration (ITIL, CobiT, CMMI, and ISO 9001) integrations	Did not link the Combination to IT service delivery outcome	Link ITSM practices integrations and IT service delivery outcome
Praeg and Schnabel (2006)	Conceptual framework for IT service performance management using the BSC	ITSM Improved service quality, user satisfaction.	Only focused on quality and user satisfaction	Focus on a wider perspective on ITSM practices looks More Variable and more than one framework.

As shown in Table 2.1, research on ITSM is increasing with a handful of studies

covering ITSM, integrations strategies and IT service delivery. The studies point that various ITSM practices are available in literature with ITIL and COBIT being the most popular. Studies on enablers, have taken forms such critical success factors, or success factors. The integration of ITSM practices is also becoming increasingly critical because of new services and resources in networked systems and because of the diversity of management architectures. Although ITSM integration has received considerable attention in research and industry, it is an area that is currently not well addressed (Tan et al., 2010). One challenge is that, at which level should integrations take place, what should be integrated and how should the integration interface look like and finally what is the impact of ITSM integrations on IT service delivery.

Similarly, IT service delivery measurement and performance is gaining interest, with recent studies and publications proposing concepts such as ITSM performance metrics (Spremic et al., 2008), IT service performance and quality measures (Praeg and Schnabel 2006), business value of ITSM (Yixin and Bhattacharya 2008), ITSM process capability and maturity assessment (Marone and Kolbe, 2011). One challenge is that the efforts done so far have mainly focused on developing ITSM performance metrics,(Donko and Traljic 2006; Potgieter et al. 2005; Spremic et al. 2008; Yixin and Bhattacharya 2008). Less than a handful of studies have explored the effect of ITSM practices and IT service delivery performance with a view to develop comprehensive framework or model (Donko and Traljic 2009; McNaughton et al. 2010).

Lastly, in terms of methodology, current studies on ITSM have used diverse methodology with majority supporting the effectiveness of mixed-method approach (Mingers, 2001). The proponents of the mixed-method approach argue that the

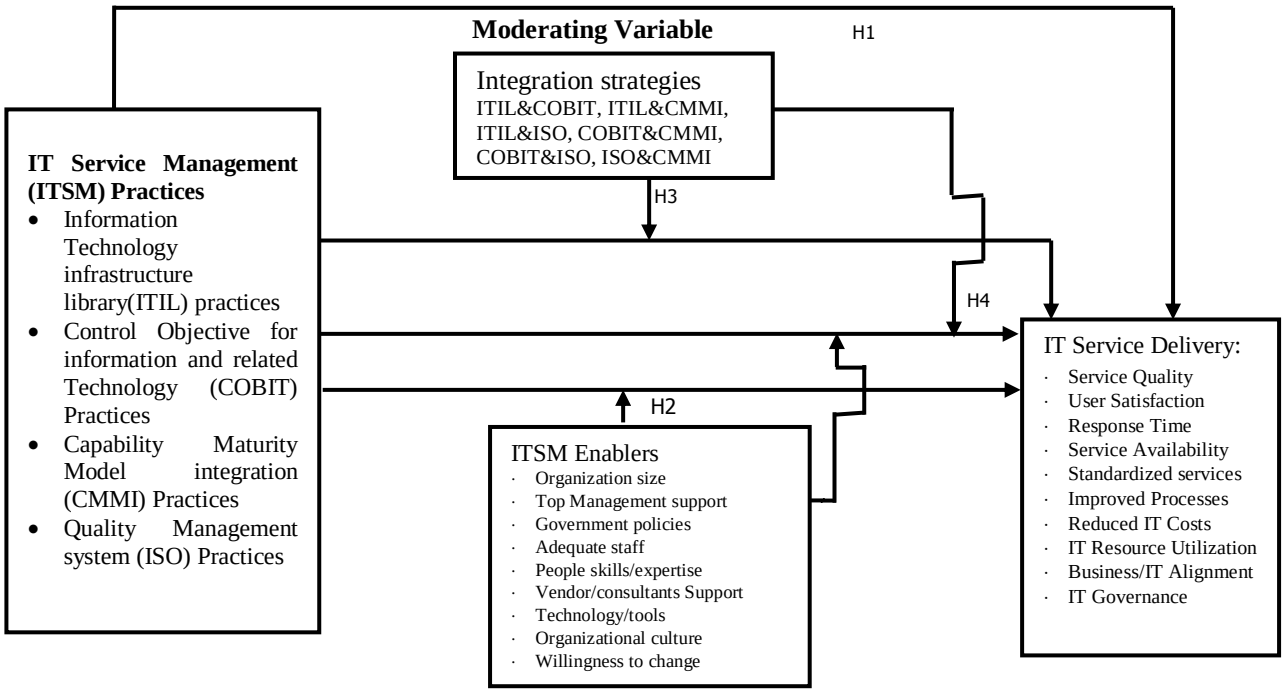
method provides a richer contextual basis for interpreting and validating results. The mixed approach promotes the dissemination of successful practices by systematizing and making explicit what practitioners are already doing (Lee 1999). Mingers (2001) for instance, showed how IS researchers reach out to referenced disciplines to borrow or adapt a large variety of theories or methods. The assertion was supported in the study conducted by Umanath, (2003) which concluded that it is a strength of the IS field to adapt flexibly to a changing environment recommend that IS researchers should adapt diverse and new theoretical lenses and methods ceaselessly; however, few studies have taken this stance.

From the foregoing, no study has established the effect of enablers and integration strategies on the relationship between ITSM practices and IT service delivery. Further, the empirical literature reveals both positive and negative relationships between ITSM practices and IT service delivery which can be attributed, to the context, method and variables used. This study is therefore set to bridge the identified gaps in the literature.

2.8 Conceptual framework

The conceptual model presented in Figure 2.1 captures the relationships between ITSM frameworks and IT service delivery. The schematic diagram presents linkage between sets of explanatory variables and their influence on IT service delivery. Also demonstrated is the link of ITSM integration on the relationship between ITSM implementation on IT service delivery and the various variables underpinning the relationship.

Figure 2.1 Conceptual Model



Source: Conceptualised from the Literature.

The following is a summary of hypotheses formulated for the study;

H1: Information technology service management practices have a significant positive effect on IT service delivery.

H2: ITSM enablers have significant moderation effect on the relationship between IT service management practices and IT service delivery.

H3: Integration strategies have significant moderation effect on the relationship between IT service management practices and IT service delivery.

H4: The combined effect of ITSM practices, enablers, integration strategies and service delivery is higher than the individual effects.

2.9 Chapter Summary

This chapter was devoted to a detailed literature review. The review was important to help the study appreciate what existed. The chapter provided a detailed description of various theories that guided the study which formed the foundation of the study. The main theories anchoring the study are the strategic alignment theory, contingency theory and resource based theory. Later, the chapter delved in assessing the conceptual and empirical relationship of the variables. The reviews carried out included; ITSM practices and IT service delivery, ITSM practices, enablers and IT service delivery and ITSM practices, integration strategies and IT service delivery. This yielded to exposition of gaps from previous studies along theoretical, conceptual and methodological spheres.

A summary of some of the previous studies and gaps were tabulated. A conceptual framework demonstrating the relationship among the variables of this study was then drafted along arguments in literature. An important section of this chapter was the stating of hypotheses. These were tested and presented in chapter five of this thesis. The next chapter presents the research methodology employed in this study.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter is a discussion of the methodology used in this study. It describes the steps, procedures and approaches followed in executing this study. It discusses research philosophy, research design and target population. Additionally, data collection methods, reliability and validity of measurement instruments together with operationalization of research variables are also discussed. Finally, data analysis is summarized.

3.2 Research Philosophy

The research paradigm offers a framework within which a researcher works. There are two main approaches to philosophies that inform how people come to know what they know. Ontology deals with questions concerning what entities exist or can be said to exist, and how such entities can be grouped, related within a hierarchy, and subdivided according to similarities and differences, while epistemology questions what knowledge is and how it can be acquired and the extent to which knowledge pertinent to any given subject or entity can be acquired (Habermas, 1984). There are two main epistemological research philosophies that underpin research in social sciences. These are positivism and interpretivism.

Positivists assume that the reality is objectively given and is measurable using properties which are independent of the researcher, instruments and knowledge is objective and quantifiable. This approach tends to view reality as objective and something that can be measured and uncovered by a neutral researcher (Cohen et al

2007). This approach includes data collection and organisation into quantifiable variables, the use of statistics as proxies for population parameters, and deliberate control for outside influences. According to positivistic school of thought, researchers need to remain disinterested by keeping their biases aside, and being emotionally uninvolved with the objects and participants of study.

Interpretive researchers on the other hand believe that the reality consists of people's subjective experiences of the external world who may adopt an inter-subjective epistemology and the ontological belief that reality is socially constructed (Becker and Niehaves, 2007). According to these qualitative purists, since there are multiple-constructed realities; therefore, time- and context-free generalisations are neither desirable nor acceptable. They further contend that it is not possible to differentiate fully the causes and the effects on which specific generalisations are based. Researchers of interpretivist school of thought assume that only the subjective interpretation and intervention in reality would enable the investigator to fully understand the reality. The interpretivist claim that reality is not objectively determined but constructed socially (Shanks, 2002).

Mingers (2001) argue that, to achieve complete understanding of a social phenomenon, we need to apply multiple paradigms in IS research. The assertation has been advocated by other IS researchers, (Galliers, 1991; Lee, 1991). Teddlie and Tashakkori (2009) contend that embracing diversity between different world-views and paradigms is one of the most exciting and potentially useful aspects in IS research. Venkatesh et al., (2013) argue that in order to find plausible and theoretically sound answers to a research question and to develop substantive theory for various phenomena related to information systems, IS researchers should mix and

match their paradigmatic views in order to conduct rigorous research.

The present study was carried out with the viewpoint that in most if not all IS research problems there may be an objective reality and a subjective reality and both of which may be essential in their contribution to understanding a particular phenomenon (Creswell and Plano Clark, 2011). Hence, one could argue that the present study falls under the banner of positivism. However, interpretive approaches and guidelines are also considered where appropriate. This approach was recommended by Shanks (2002) who advocates the embracement of post-positivist traditions to relax some of the positivist assumptions. This approach is considered fruitful especially in cases where contextual circumstances are strongly prevalent and interfere with theorised causal links that in the questionnaire do not appear to be as strong as predicted in literature as in the case ITSM practices context (Venkatesh et al., 2013). Therefore the study formulated a number of theoretical propositions and tested them using rules of formal logic and hypothetical-deductive logic and expounded the findings using qualitative data to extend the research findings

3.3 Research Design

The study used a cross sectional survey design. Cross sectional surveys help a researcher to establish whether significant associations among variables exist at some point in time (Lee, 2007). This allows patterns of convergence to develop and corroborate the overall interpretation of the relationships between the study variables. Accordingly the study adopted the approach suggested by (Creswell and Plano Clark, 2011) where both quantitative data in Likert scale and qualitative data captured in open ended were incorporated in the same questionnaire and analysed separately but

presented concurrently according to the study themes. According to Creswell and Plano Clark, (2011) the mixing during this approach, is usually found in an interpretation or discussion section, to actually merge the data or integrate or compare the results of two databases side by side in a discussion by providing quantitative statistical results followed by qualitative quotes that support or disconfirm the quantitative results.

The approach enabled the researcher to better understand the research problem by converging both quantitative (broad numeric trends) and qualitative (detailed views) on ITSM practices (Shang and Lin, 2010). This approach has been applauded in literature as suitable method for conducting study in new phenomena like ITSM (Teddlie and Tashakkori, 2009). With the rapid advancement of a new and complex array of information technologies, organizations constantly face new challenges related to their understanding of IT capabilities, ITSM practices, usage, and impacts. Further, the diffusion of the Internet, the proliferation of numerous nonwork related systems and social media, and the availability of myriad IT enabled devices have now made IT an integral part of individuals' lives. As a result of this rapidly changing environment, IS researchers often encounter situations in which existing theories and findings do not sufficiently explain or offer significant insights into a phenomenon of interest (Mingers, 2001).

Mixed methods design strategies provide a powerful mechanism for IS researchers to deal with such situations and subsequently make contributions to theory and practice. Mixed methods model is advantageous because it is familiar to most researchers and can result in well-validated and substantiated findings. In addition, the concurrent data collection results in a shorter data collection time period as compared to one of the

sequential approaches because both the qualitative and quantitative data are gathered at once at the research site.

3.4 Population of study

The population of the study was state corporations in Kenya. According to the State Corporations Advisory Committee as at 31st January 2015 (SCAC, 2015) there were one hundred and seventy eight (178) Kenyan State Corporations spread across all eighteen ministries as at 31st June 2015.

The State Corporations Advisory Committee of 2013 recommended the dissolution, merging and transfer of function for some state corporations. The process of their winding up, merger or transfer of functions had been activated when the data collection exercise was carried out. This posed a challenge since ITSM practices effect on IT service delivery can be discerned after achieving a given level of process maturity. Some were also having less than three (3) IT staff making it more difficult to execute ITSM practices. Appendix 2 presents a detailed list of the Kenyan state corporations. The unit of analysis was state corporations in Kenya.

3.5 Sampling and Sample Size

The role of sample size is crucial in all statistical analysis. According to Sivo et al., (2006), the more sophisticated the statistical analysis, the larger the sample size needed. According to the sampling tables by Bartlett, et al (2001) calculated based on Krejcie and Morgan's 1970 table and Cochran's 1977 sample size formula suggest at least 5 participants per construct and not less than 100 individuals per data analysis is suitable sample size for structured equation modeling (SEM). They further pointed out that when the sample size exceeds 400 to 500 participants, the SEM

analysis becomes too sensitive and almost any difference is detected, making goodness-of-fit measure show poor fit.

This study adopted criterion based sampling. Criterion sampling involves selecting samples that meet some predetermined criterion of importance. This sampling design was adopted because according to Patton (1990) one may learn a great deal more by focusing in depth on understanding a small number of carefully selected sample than by gathering standardized information from a large, statistically representative sample of the population. Accordingly, the study took this into consideration; hence questionnaires were administered to only those state corporations that had adopted at least one ITSM practice. In total only 108 state corporations had some form of ITSM practices in place, other state corporation were either having ad hoc ITSM practices or none at all, hence these organizations were eliminated to avoid blank responses.

3.6 Data Collection

The process of data collection involves collecting opinions and useful information from target participant about the research questions (Sekaran, 2000). The data for the present study was collected using a structured questionnaire which had both closed and open ended questions. This tool was suitable for this study noting that ITSM discipline in a new phenomenon in IS research, hence comments on the responses were deemed fit to shed more light and insight into the subject of study. The tool was fine-tuned through input from the supervisors and discussants at the proposals presentation at the Departmental, Open Forum and Doctoral Committee presentations.

The study targeted only one IT manager per State Corporation in Kenya. Newbert (2008) argues that one senior manager per organization is sufficient because they are

deemed to be in a position to understand an organizations internal operations.

The tool was administered through drop and pick method. For effectiveness, a personal letter of introduction was drafted (Appendix 1) and attached to the questionnaire with a letter of introduction from the University of Nairobi School of Business (Appendix 5), a letter of authorization (Appendix 6) and permit (Appendix 7) were also acquired from the National Commission for Science, Technology and Innovation (NACOSTI). The cover letter explained the purpose of the study and ensured confidentiality of the data gathered. The participants were explained that the research was being conducted to establish the effect of ITSM practices on IT service delivery on state corporations and that the participation in the survey was voluntary as part of the ethical practices in IS research. The respondents were also provided with the contact information of the researcher (i.e., telephone number and an e-mail address) so that they can do relevant inquiries or can obtain the results of the study, if they wished.

The semi-structured questionnaire is an efficient and economical tool used to collect the required data from the sampled population. The structured questionnaire was suitable because it was able to elicit respondent views on various items on the measurements variables. Further, they are well suited for the exploration of the perceptions and opinions of respondents regarding complex and sometimes sensitive issues and enable probing for more information and clarification of answers. Finally, the varied organization sizes, level of maturity and implementations of ITSM practices of the sample group precluded the use of a standardized interview schedule for all the items.

The questionnaire consisted of five main parts. In the first part of the questionnaire, the participants were asked to provide background information related to ITSM practices. In the second part, the participants had to provide information on the effect of ITSM practices on IT service delivery on five point Likert using items developed from various literature sources that have studied similar variables. Part three provided questions on ITSM integration strategies on five point Likert using items developed from various literature sources that have studied similar variables. Part four provided questions on enablers on five point Likert scale using items developed from various literature sources that have studied similar variables. Lastly, Part five provided questions on IT service delivery measures on five point Likert using items developed from various literature sources that have studied similar variables. To collect qualitative data as part of the intent of this study, each part had open questions that provided the respondents opportunity to provide comments on their responses along the study topics and objectives

The question items and response categories were designed so as to motivate the respondents to participate in the research study as recommended by Sekaran (2003). The researcher made utmost effort to keep the questions well-organized, simple, easy to read, and unambiguous, thereby enabling the respondent to comprehend the questions easily, reducing their chances to misunderstand the questions and keeping their interest alive in the survey. In terms of wording the reviewed literature and the discussions with the practitioners/experts helped in improving the questionnaire to ensure technical expressions were easily understood by the respondents.

In terms of formatting and scales, the questions were grouped by topic/practices and placed in a logical sequence by using a funnel approach, starting with broad questions

and narrowing down in scope, as suggested (Sekaran, 2003). The Likert scale with five categories was used for questions in this study as recommended by (Iden and Eikebrokk, 2014).

The pilot study to pre-test the data collection tool was done using the questionnaire. The participants in the pre-test survey responded to the questions. The items used in the pre-test survey were evaluated through both quantitative and qualitative analysis. Descriptive statistics were run on responses to the items and the responses had mean values which ranged from 3.02 to 3.83 on a five point Likert scale. Following the refinements, adjustments, modifications and revisions that arouse from the pretest study and subsequent analysis of the pre-test results, the main research was undertaken whose detailed analysis is an in the next chapter.

3.7 Operationalization of the research variables

Operationalization is the process of strictly defining variables into measurable factors. The independent variable was ITSM practices, moderated by enablers and moderated by integration strategies. The dependent variable was information technology service delivery. A summary of the constructs adopted in the study is captured in Table 3.1 including the coding strategy used.

Table 3.1: Operationalization of Variables and coding

Variable	Operational Indicators	Supporting Literature	Rating Measurement	Question
ITSM practices (independent variable)	ITIL Practices(PRA1): – Service Strategy(SS) – Service Design(SD) – Service Transition(ST) – Service Operation(SO) – Continual Service Improvement(CSI)	Marone and Kolbe(2011)	Five point rating scale: 1-Not at all 2-To a small extent 3-To a moderate extent 4-To a large extent 5-To a very large extent	Item-7 A

	COBIT Practices(PRA2): – Plan and organize (PO) – Acquire and Implement (AI) – Deliver and Support (DS) – Monitor and Evaluate(ME)	Sang and Lin (2010); Marone and Kolbe(2011)	Five point rating scale: 1-Not at all 2-To a small extent 3-To a moderate extent 4-To a large extent 5-To a very large extent	Item-7B
	CMMI Practices(PRA3): – Process Management(PC) – Project management(PM) – Software Engineering(EE) – Service Support(SP)	Marone and Kolbe(2011)	Five point rating scale: 1-Not at all 2-To a small extent 3-To a moderate extent 4-To a large extent 5-To a very large extent	Item-7C
	ISO practices(PRA4): – ISO:9001:2008 (ISO1) – ISO: 27001/2(ISO2) – ISO: 20000(ISO3)	Lazic et al(2011)	Five point rating scale: 1-Not at all 2-To a small extent 3-To a moderate extent 4-To a large extent 5-To a very large extent	Item-7D
ITSM Enablers (Moderating variables)	– Organization size(EN1) – Top Management support(EN2) – Government policies(EN3) – Adequate staff(EN4) – People skills/expertise(EN5) – Vendor/consultants Support (EN6) – Technology/tools(EN7) – Organizational culture(EN8) – Willingness to change (EN9)	Chan et al (2010); Iden and Eikebrokk, (2014)	Five point rating scale: 1-Not at all 2-To a small extent 3-To a moderate extent 4-To a large extent 5-To a very large extent	Item-10-12
ITSM Integration Strategies (moderating Variable)	Integration strategies – ITIL&COBIT – ITIL&CMMI – ITIL&ISO – COBIT& CMMI – COBIT&ISO – CMMI&ISO	Praeg and Spath (2011)	Five point rating scale: 1-Not at all 2-To a small extent 3-To a moderate extent 4-To a large extent 5-To a very large extent	Item-12-17

IT Service Delivery (Dependent Variable)	IT Service Delivery(ISD): – Service Quality(ISD1) – User Satisfaction (ISD2) – Response Time(ISD3) – Reduced Downtime/availability(ISD4) – Standardized services(ISD5) – Reduced IT Costs(ISD6) – Improved IT Resource Utilization(ISD7) – Improved Business/IT Alignment(ISD8) – Improved IT Governance(ISD9) – Cost reduction(ISD10)	Marone and Kolbe(2011) ;Gacenga et al (2011)a	Five point rating scale: 1-Not at all 2-To a small extent 3-To a moderate extent 4-To a large extent 5-To a very large extent	Item 18-23

Source: Conceptualized from literature

Operationalization of the variables as presented in Table 3.1 was guided by literature. ITSM practices were operationalized with 16 items presented in five point Likert scale with 1 representing not at all and 5 representing very great extent. The variables were captured from the ITIL, COBIT, CMMI and ISO practices (Marone and Kolbe, 2011, Lazic et al, 2011).

The moderating variables, (ITSM enablers) comprised of nine variables; organization size, top Management support, government policies, adequate staff, People skills/expertise, vendor/consultants Support, technology/tools, organizational culture, and Willingness to change measured in five point Likert scale (Chan et al 2010; Iden and Eikebrokk, 2014).

Six integration strategies were conceptualised from the combination of the ITSM practices as follows, ITIL&COBIT, ITIL&CMMI, ITIL&ISO, COBIT& CMMI, COBIT&ISO and CMMI&ISO as presented by Praeg and Spath, (2011) measured using a five point Likert scale.

Lastly, the dependent variable consisted of ten variables measured by service

quality, user satisfaction, response and resolution time, availability, standardized services, reduced IT costs, improved IT resource utilization, business/IT alignment, improved IT Governance and cost reduction using a five point Likert scale (Marone and Kolbe, 2011; Gacenga et al, 2011)b.

3.8 Data Analysis Method

The main goal of the statistical techniques is to assist in establishing plausibility of the theoretical model and to estimate the extent to which the various explanatory factors seem to be influencing the dependent variable (Sekaran, 2000). Various statistical techniques were used in this study. Both descriptive statistics were used to present the preliminary scores of the study variables. The descriptive mean scores were interpreted in a scale of 1-5 with 1 low influence and 5 very high influences. Multiple regressions (R^2), which represents the amount of variance in the dependent variable that is explained by independent variables, and Pearson's product moment correlation coefficient (r) was computed to provide a numerical summary of the direction and strength of the relationship (association) between variables.

The ANOVA was used to test whether the models overall results show significantly good degree of prediction of the dependent variable. The t-test was used to compare the magnitude of the standardized regression coefficient (Beta) with zero. If t-test is significant, then it means that the value of Beta is significantly different from zero and therefore the predictor variable is significantly associated with the criterion variable. Statistical package for socio science (SPSS) was used for the analysis. The study also used the Structural Equation Modeling (SEM) techniques to confirm the overall model. SEM has proven to be a successful analytical framework for complex,

interrelated, multidimensional models, including the moderating variables (Tomarken and Waller, 2005).

The study adopted the sequential statistical analysis technique (Malakmohammadi, 2010) that followed five steps. Step one the assumptions were tested, step two tested the exploratory factor analysis, step three tested the confirmatory factor analysis, step four tested the structural model and step five hypothesis testing. An important aspect of the explorative analysis is that a tentative number of reliable factors can be estimated, as well as the amount of variance explained by the factors. The EFA was therefore followed by confirmatory factor analysis (CFA) in order to confirm the EFA results. Each underlying factor that was revealed from the EFA was regressed on its items individually to verify appropriateness of the placement of indicators to each factor and the significance of the association. An error was attached to each of the observed variables to account for the disturbances in survey responses. In each step of SEM, model parameters were estimated, fit of the model to the data assessed based on goodness-of-fit statistics. The acceptability of the final structural model was decided based on the results of these model evaluations.

The study utilized the three main types of fit measure indices recommended in Structural equation modeling; that is the absolute fit indices, incremental fit indices, and parsimonious fit indices (Hair et al., 2006). The absolute fit indices consulted were the likelihood ratio statistic chi-square ($\chi 2$), Df, $p>0.05$) in association with root mean square error of approximation (RMSEA) (<0.05 good fit <0.08 acceptable fit), and the goodness of fit index (GFI > 0.90) (Hair et al., 1998). The incremental fit indexes consulted was the adjusted goodness-of-fit index (AGFI) which must be

greater than (0.90) for acceptable fit.

The standardized regression coefficients were also used to compare the intensity of effects of the different predictor variables on the dependent variable within the same group of respondents (Kline, 2010). The Analysis Moment of Structures Software (AMOS) was used for specification and analysis of the measurement and structural model to test the proposed hypothesized model. The following four models were analyzed;

Sub Model 1: ITIL Practices

IT service delivery = f (Service Strategy (SS), Service Design (SD), Service Transition (ST), Service Operation (SO), Continual Service Improvement (CSI), E1)

Sub Model 2: COBIT Practices

IT service delivery = f (Plan and organize (PO), Acquire and Implement (AI), Deliver and Support (DS), Monitor and Evaluate (ME), E1)

Sub Model 3: CMMI Practices

IT service delivery = f (Process Management (PC), Project management (PM), Software Engineering (EE), Service Support (SP), E1)

Sub model 4: ISO Practices

IT service delivery = f (ISO: 9001:2008 (ISO1), ISO: 27001/2(ISO2), ISO: 20000 (ISO3), E1)

ITSM Overall Model

IT service delivery = f (ITIL, COBIT, CMMI, ISO, E1)

Table 3.2 presents summary of the data analysis procedure.

Table 3.2: Summary of data analysis procedures

Research hypothesis	Analysis technique	Output and Decision
H1: Information technology service management practices have a significant positive effect on IT service delivery	Multiple Regressions Analysis SEM Analysis Content Analysis	R^2, F, β and P values. $R^2>0$; $p<0.05$ χ^2, GOF and RMSEA χ^2,$p>0.05$ GOF>0.90 and RMSEA<0.08
H2: ITSM enablers have significant effect on the relationship between IT service management practices and IT service delivery	Stepwise Regression Analysis. SEM Analysis Content Analysis	R^2, F, β and P values. $R^2>0$; $p<0.05$
H3: Integration strategies have significant effect on the relationship between IT service management practices and IT service delivery	Stepwise Regression Analysis Content Analysis	R^2, F, β and P values. $R^2>0$; $p<0.05$
H4: The combined effect of ITSM practices, enablers, integration strategies and service delivery has higher effect than individual effect	Multiple Regressions Analysis. SEM Analysis Content Analysis	R^2, F, β and P values. $R^2>0$; $p<0.05$ χ^2, GOF and RMSEA χ^2,$p>0.05$ GOF>0.90 and RMSEA<0.08

3.9 Chapter Summary

This chapter focused on the research methodology used in this study. The chapter presented the research philosophy and elaborated on the positivistic and interpretivist approach to the study employed. Further the chapter explained that this study was a cross sectional survey design because data was collected in a large number of organizations at one point in time. The population of the study was equally described.

Considerable focus was given on the operationalization of study variables giving a

detailed description of how the concepts were disaggregated for measurement. All the variables of the study were operationalized along evidence in literature. The next chapter (Chapter Four) presents preliminary data analysis and Results.

CHAPTER FOUR

DATA ANALYSIS AND PRELIMINARY RESULTS

4.1 Introduction

This chapter presents the results of the measurement model analysis and the test of the theoretical model presented in chapter three. A pre-test was used to analyse the initial study items to determine if any measurement adjustment were needed before the main study was launched. The main test was launched after the pre-test and data was collected using the modified questionnaire. For each study variable, respondents were presented with descriptive statements in a 5 point Likert scale and were required to indicate the extent to which the statements applied in their organizations. Analysis of the data collected from the main survey includes a review of the descriptive statistics and correlation of the constructs. The chapter has in detail presented the descriptive analysis using frequency distribution tables, descriptive statistics using the mean and the standard deviations, regressions and correlation coefficients.

4.2 Response Rate

The population for the study was all Kenyan State Corporations as at as at 31st January 2015 numbering 178 (State Corporations Advisory Committee, 2015). According to the SCAC (2015), seventy (70) state corporations had been earmarked for either dissolution or merger. These were eliminated from the study leaving a total of one hundred and eight (108) state corporations. Questionnaires were sent to all the one hundred and eight (108) out of which one hundred (100) questionnaires were filled and returned representing a response rate of (92.59%). This response rate was considered adequate for analysis. This response rate was facilitated by acquiring a

research clearance permit from the National Commission for Science, Technology and Innovation, a personal introduction letter and another one from the University of Nairobi.

4.3 Reliability Tests

Reliability is an index showing the extent to which an instrument can be relied upon in the research (Mugenda and Mugenda, 2003). The objective of reliability test is to ensure that the questions on the questionnaire are giving consistent answers. The most widely used test for internal consistency is Cronbach Alpha which should as a measure of reliability be higher than .70 (Nunnally, 1978), his suggestion is that of a value of not less than 0.7 to be acceptable while Sekeran (2003) posits that any values between 0.5 and 0.8 are adequate to accept internal consistency. Noting that ITSM practices are new concepts in IS research, this study adopted the alpha lowest alpha as 0.5 upwards. Table 4.1 shows the reliability scores for the study items.

Table 4.1: Reliability Analysis

Indicators	**Cronbach Alpha**	**Result**
ITIL Practices		
Service Strategy Practices	.745	Reliable
Service Design Practices	.858	
Service Transition Practices	.867	
Service Operation Practices	.906	
COBIT practices		
Plan and organize Practices	.759	Reliable
Acquire and Implement Practices	.902	
Deliver and Support Practices	.864	
Monitor and evaluate	.867	

CMMI Practices		
Process Management Practices	.905	Reliable
Project Management Practices	.848	
Engineering Practices	.824	
Support Practices	.896	
ISO practices	.814	Reliable
Enablers	.751	Reliable
Integration strategies	.710	Reliable
IT Service Delivery	.860	Reliable

The results of reliability tests gave a Cronbach Alpha coefficient of reliability ranging from 0.71 to 0.895. This result show that there is no a coefficient of correlation less than 0.50, concluding that all the items were reliable.

4.4 Validity Tests

The validity of an instrument relates to its ability to measure the constructs as purported. Validity is related with the accuracy of measures (Sekaran, 2000). In other words, validity determines the extent to which a construct and its corresponding measurement indicators are related and the extent to which these set of items actually reflect the construct they were designed to measure (Hair et al., 2006).

Construct Validity was addressed by the questionnaire having been developed based on similar prior studies with modifications aimed at addressing the study objectives. Content Validity was ensured through the guidance of the expert opinion/refinement and departmental, open forum and doctoral committee presentations.

Convergent validity is the extent to which varying approaches to measurement yield the same results. Convergent validity was tested using factor loadings, according to Fornell and Larcker, (1981) the factor loading is significant if it exceeds 0.60.

As shown in Appendix 4 all the tested disaggregated items had loading greater than 0.60 except Manage IT financial (0.383), Manage quality (0.20) and manage risk (0.189) which were eliminated in the final model.

Discriminant validity refers to the degree to which items of different constructs are unique from each other. In other words, discriminant validity tests if measures that should not be related are in fact unrelated. In the present study, the factor correlation matrices were used and the findings reported in Table 4.2.

Table 4.2 Inter-Construct Correlations

	ITIL	COBIT	CMMI	ISO	Enablers	Integration strategies	IT service delivery
ITIL	1						
COBIT	.594**	1					
CMMI	.638**	.705**	1				
ISO	.291**	.355**	.505**	1			
Enablers	.454**	.228*	.332**	.153	1		
Integration strategies	-.083	.118	.085	-.079	-.030	1	
IT service delivery	.499**	.331**	.288**	.173	.602**	-.245*	1

As shown in Table 4.2, the results of validity test produced the correlation coefficient (r) in the range of 0.085 to 0.705, which was less than 0.85 (Kline, 2010), indicating that there were no invalid items in the questionnaire. This was attributed to the pre-test where the tool was reviewed and any items that were found to be ambiguous removed or reworded to enhance understandability.

4.5 Tests for Assumptions

Various assumptions are made about variables during statistical tests. This is to ensure that the findings are worth using in decision making. Testing for assumptions is beneficial because it ensures that analysis meets associated assumptions and helps avoid Type I and Type II errors (Sekaran, 2003).

4.5.1 Normality Test

Many of the statistical procedures including structural equation modeling are based on the assumption that the data follows normal distribution. Thus, it is assumed that the populations from which the samples are taken are normally distributed. Normality is important because if the assumptions do not hold, it is impossible to draw accurate and reliable conclusions about reality. Since the assumptions are not always the case, the test of normality is usually carried out to assess the extent to which the variables of interest assume a normal probability distribution. In the event that normality is not achieved for some of the variables, then these variables would end up depicting the wrong picture of the relationships between the variables.

In this study, the Shapiro-Wilk and Kolmogorov-Smirnov statistics were used to test the fit of the variables to a normal distribution. For variables that assume a normal distribution, both the two statistics should be statistically insignificant. The results of the test for normality were as represented in Table 4.3.

Table 4.3: Shapiro-Wilk Test of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
ITSM Practices	.117	46	.138	.944	46	.089
Enablers	.113	46	.177	.976	46	.470
Integration strategies	.407	46	.200	.621	46	.700
IT service delivery	.130	46	.059	.958	46	.094

If the p-value is greater than the chosen alpha level, then the hypothesis that the data came from a normally distributed population cannot be rejected. The results of the tests of normality on the variables showed that all the p-values were greater than the alpha level of (0.05). Shapiro-Wilk Test results were greater than 0.05 confirming the data was normal.

4.5.2 Multicollinearity Test

The study checked multicollinearity, which is a statistical phenomenon in which two or more predictor variables in a multiple regression model are highly correlated. The greater the multicollinearity, the higher the standard errors. Kline, (2010) observed that when high multicollinearity is present, confidence intervals for coefficients tend to be very wide and t-statistics tend to be very small. Coefficients have to be larger in order to be statistically significant, that is it will be harder to reject the null when multicollinearity is present.

Multicollinearity tests for this study were carried out using the regression analyses. Absolute correlation coefficients among observed variables were less than 0.85 indicating no problem with bivariate multicollinearity. The Variance Inflation Factor (VIF) was used to test for linearity. If VIF is above 10 then it is indicative of

harmful collinearity. VIF were all below 5 meaning that the variables were not highly correlated, hence no harmful multicollinearity.

The study also tested the homogeneity of variance and the result the Laverne statistic for ITSM practices, enablers and integration strategies was 1.810, 0951, 0.490 with associated p values 0.053, 0.510 and 0.691 respectively which was greater than 0.05. The findings imply that, variances were not equal and the homogeneity of variance assumption was reasonably satisfied

4.5.3 Sampling Adequacy Test

Tabachnick and Fidell (2001) suggests Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's of Sphericity are the common measures of ascertaining whether scales are suitable for factor analysis. The KMO measure ranges from 0 to 1 and should be above 0.6 and Bartlett's test of sphericity should be significant if the p value is less than 0 .05 to justify the suitability of a dataset for factor analysis.

The result of Kaiser Mayer-Olkin (KMO) and Barlett's test shows that the KMO measure was 0.849>0.60, which was an indication that Barlett's test of sphericity was significant. The KMO value of 0.849 and associated probability was less than 0.00<0 confirmed sampling adequacy.

4.5.4 Missing data Analysis

The study also screened the data for out-layers and missing data. The univariate outliers were identified by determining frequency distributions of the observed data (Kline, 2010). Hair et al. (2006) suggests deletion of outliers to improve the

multivariate analysis but at the risk of limiting generalizability. However, no univariate outlier were identified for this study, because the study utilized a 5 point Likert scale ranging from (1) not at all to (5) very great extent.

Missing data minimizes the ability of statistical test to imply a relationship in the data set and it creates biased parameter estimates (Hair et al., 2006). Although there are no clear set of guidelines regarding what constitutes a large amount of missing data; Kline (2010) suggests that missing values should probably constitute less than 10% of the total data. Therefore, 5% or even 10% of missing data on a particular variable is not large. The current study analyzed the extent of missing variables. In spite of the amount of missing data being low, it was worth to investigate the randomness of missing data before moving to inferential analysis. This study used Little (1988) chi-square statistics for diagnosing the randomness of missing data. Little (1988) suggested that if the p value for the MCAR test is not significant then the data might be assumed to be missing completely at random (MCAR). The statistical results of the Little's MCAR test gave a Chi-Square = 363.827, DF = 448, Sig. = .999, which indicates that the test is NOT significant (p = 0.999). Thus, it was safely concluded that the missing data in this study was missing completely at random. The missing data for the study was handled using the technique recommended by Byrne (2001) that is to "replace missing variables with the mean".

4.6 ITSM Maturity

The study further sought to establish the level of maturity of state corporations in terms of ITSM implementation. Maturity level is important in the assessment of the effect of ITSM practices on IT service delivery. The maturity model for this study

was divided in levels which range from level (0) non-existent to level (5) optimized. Using this classification, at the lowest level of maturity model, ITSM process and practices are not applied at all; this level is known as non-existent (0) implementation. At the following level 1, named initial, processes are ad hoc and disorganized. Level 2 is referred to as repeatable, where the processes are intuitive and provide, in most cases, deterministic and repeatable results. Level 3 is where processes are documented and provide standard procedures and clearly defined Results/outputs. This level is known as defined. Level 4, known as managed, is based on critical success factors, where key performance indicators (KPIs) have been defined and are continually measured to quantify process performance. The highest level of maturity is known as optimized; this is where a continual improvement cycle has been implemented and is based on KPIs and internal audits. At this level the process is improved in effectiveness, efficiency and compliance. Companies would identify these levels as a description of their current state. The finding of the maturity levels are in Table 4.4.

Table 4.4 IT Service Management Practices Maturity Level

	Frequency	Valid Percent	Cumulative Percent
Level 0	12	12.0	12.0
Level 1	23	23.0	35.0
Level 2	48	48.0	83.0
Level 3	15	15.0	98.0
Level 4	2	2.0	100.0
Total	100	100.0	

The study findings in Table 4.4 imply that the uptake of ITSM practices in Kenyan State Corporation was slightly below average however, some processes were documented, generally understood and monitored for compliance. As reported by Marone and Kolbe (2011) at this level challenges are expected, marginal returns can

be observed on IT service delivery, however further returns will be expected as ITSM implementation reach high maturity levels.

4.7 Descriptive statistics of IT service Management Practices

The next section provides descriptive statistics on ITSM practices, enablers; integration strategies and IT service delivery. In order to capture data on the various information technology service management practices, statements were developed and presented on a 5-point Likert scale to the respondents who were requested to indicate the extent to which the statements were applied in their organizations. In some instances, the respondents were asked to state absolute figures/ numbers and comment on their responses. The findings for each of the information technology service management practices are presented in the subsequent subsections.

4.7.1 Information Technology Infrastructure Library Practices

The first variable of the study on ITSM frameworks was ITIL practices. The Information Technology Infrastructure Library (ITIL) is a set of concepts and practices for ITSM which is the most widely adopted framework for service management in the world. ITIL sets guidelines for the management of IT including its processes and organizational structures. ITIL Practices are classified as follows; Service Strategy, Service Design, Service Transition, Service Operation and Continual Service Improvement which were conceptualised as variables for this study (Gacenga, Cater-Steel and Toleman, 2011).

4.7.1.1Service Strategy Practices

Service Strategy forms the core of the ITIL V3 framework and its lifecycle. It plays a

central role compared to other services. To establish this effect of service strategy processes of information technology infrastructure library practices (ITIL) on IT service delivery, respondents were requested to indicate on a 5-point Likert scale, the extent to which the statements applied in their organizations. The results are presented in Table 4.5.

Table 4.5 Service strategy Practices

	N	Mean	SD	(t-value)	Sig. (2-tailed)
Strategy Management to manage and execute IT strategies	44	3.3636	.89159	25.025	.000
Service Portfolio Management to analyze and approve services	43	3.1628	.94944	21.844	.000
Risk Management to manage IT security risks	42	3.2619	.82815	25.526	.000
Demand Management to match business activity to IT capacity	40	3.2250	.99968	20.403	.000
IT Financial to manage an IT department's budgeting, accounting and charging requirements	42	3.3333	.84584	25.540	.000
Average Mean Score		**3.269**			

The results in Table 4.5 above indicate that the average mean score for service strategy processes was 3.269, the t-values ranged from 20.403 to 25.540, $p<0.05$ implying that these factors had statistically significant differences and variations across all organizations. This finding compares closely with an empirical study by Marrone and Kolbe, (2011) study which concluded that among the service strategy practices of ITIL Financial management was the best predictor of IT service delivery benefits with service portfolio being the least predictor.

4.7.1.2 Service Design Practices

After the Service Strategy practices of ITIL, Service Design follows. The main objective of service design practices is to create and develop service management processes, assuring a service offering meets the respective requirements. In view of that, the respondents were asked to indicate the extent to which their firms focused on specific service design processes statements where, a set of five items were used. The pertinent results are presented in Table 4.6.

Table 4.6 Service Design Practices

	N	Mean	SD	(t-value)	Sig. (2-tailed)
Service Level Management to maintain service catalogue, negotiates service level agreements and underpinning contracts	43	3.3488	.94827	23.158	.000
Supplier Management to categorize and manage supplier performance	43	3.0233	.96334	20.579	.000
Availability Management to define, analyze, plan, measure and improve all aspects of availability of IT services.	43	2.9302	.98550	19.498	.000
Capacity Management to ensure that the capacity of IT services and the IT infrastructure is able to deliver agreed service levels.	43	3.0000	1.06904	18.402	.000
Information Security to Manage Security, audits and penetration tests.	42	3.2857	1.06578	19.980	.000
IT Service Continuity to manage risks that could seriously impact IT services	42	3.0952	1.10010	18.234	.000
Average Mean Score		**3.114**			

The results in Table 4.6 had average mean score of 3.114 implying that service design practices moderately influence IT service delivery. This was a confirmation that the Kenyan state corporations apply service design processes to enhance IT service

delivery.

4.7.1.3 Service Transition Practices

Service transition makes sure that new or changed service satisfies the needs of customers and business expectations as documented in the service strategy and service design lifecycle stages. Various statements depicting the different manifestations of service transition processes were posed and respondents were required to indicate the extent of agreement to which these statements applied to their organization. The results are presented in Table 4.7.

Table 4.7 Service Transition Practices

	N	Mean	SD	(t-value)	Sig. (2-tailed)
Release and deployment to implement approved changes to IT services.	43	2.7674	1.01974	17.796	.000
Change management; to control the lifecycle of all changes	43	3.0233	.80144	24.737	.000
Transition Planning and Support and quality to prepare services for transition	42	3.0714	1.04515	19.045	.000
Asset and Configuration to maintain information about configuration items required to deliver an IT service, including their relationships.	43	3.0698	1.07781	18.677	.000
Service validation and testing of software	40	3.1250	.91111	21.692	.000
Knowledge Management to maintain knowledge	40	2.9250	1.16327	15.903	.000
Average Mean Score		**2.997**			

The results in Table 4.7 show modest agreement with respect to different

manifestations on service transition processes in Kenyan state corporations implying that service transition processes as an information technology infrastructure library (ITIL) processes are practiced by the Kenyan state corporations to low extent.

4.7.1.4 Service Operation Practices

The goal of Service Operation practices is to deliver the agreed level of IT services end-to-end through Service Level Management practices to the organization, including the maintenance and management of the services like updates, back up among others within the operational budget. All the practices were measured using a five Likert scale. The results were as indicated in table 4.8

Table 4.8 Service Operation Practices

	N	Mean	SD	(t-value)	Sig. (2-tailed)
Request Fulfillment and Service desk function and as the single point of contact for all IT incidents	42	3.4524	.99271	22.538	.000
Incident Management to restore normal service operations as quickly as possible.	42	3.3571	.95818	22.706	.000
Problem Management; to analyze root cause, prevent incidents from happening and minimizes the impact of incidents that cannot be prevented	43	3.0000	1.09109	18.030	.000
Access and Event Management to monitor all key configuration items	43	3.4419	.85363	26.440	.000
Application management for application development	42	3.1667	1.05730	19.410	.000

IT operations to manage IT resources and job schedules	34	3.2647	.93124	20.442	.000
Average Mean Score		**3.280**			

The findings in Table 4.8 revealed that despite the high mean scores, statistical significant differences were observed.

4.7.1.5 Continual Service Improvement Practices

In continual service improvement practices of ITIL lifecycle, services are continually monitored modified if required and adapted to the changing situations based on service measurement and service reporting. Data was captured on service improvement and the findings were presented in Table 4.9

Table 4.9 Service improvement Practices

	N	Mean	SD	(t-value)	Sig. (2-tailed)
Continual Service Improvement; for service measurement, reporting and improvement.	41	3.1463	.76030	26.498	.000

The service improvement practices statement was reported to be statistically significant $p<0.05$ with a t-value 26.498, (Mean=3.1463, SD=.76030). This is a moderate agreement, which imply that a service improvement practice in Kenyan State Corporation is moderate. Overall the finding was in agreement with the detailed study on ITIL by Lisa Erickson-Harris (2009), that strategy management and service operation practices are the greatest predictors of improvement on IT service delivery.

4.7.2 Control Objective for Information and Related Technology Practices

The second variable of the study on ITSM frameworks was COBIT practices. The statements depicting these aspects were posed to respondents. The findings were as discussed in different subsections herein.

4.7.2.1 Plan and Organize Practices

Plan and organize practices describes organizational and infrastructural needs that IT department has to implement in order to attain the optimal results and to generate benefits from utilizing IT. To capture data on the planning and organizing processes, statements regarding their manifestations were presented to the respondents. The results were presented in Table 4.10

Table 4.10 Plan and Organize Practices

	N	Mean	SD	(t-value)	Sig. (2-tailed)
Manage Strategy to ensure strategy is developed, disseminated and executed	45	3.0444	1.10691	18.450	.000
Manage enterprise architecture to design, update and manage data and information architecture	44	2.6364	.96668	18.091	.000
Manage innovation to identify, incubate and implement ICT innovations	45	2.9111	1.01852	19.173	.000
Manage portfolio to ensure IT projects are selected and implemented strategically	45	2.9778	.96505	20.699	.000
Manage budget and costs to ensure ICT budgets are analyzed, managed and reported	43	3.3488	1.06645	20.591	.000

Manage human relations to ensure IT personnel aspects are managed	43	3.2093	1.01320	20.771	.000
Manage Service Agreements to ensure SLAs are developed, negotiated, signed and regularly reviewed	44	3.2045	.90424	23.508	.000
Manage Suppliers to evaluate, establish, manage performance, renew and/or terminate, categorize suppliers and maintain supplier contacts database	44	3.2273	.93668	22.854	.000
Manage quality to ensure system tests and quality assurance is managed	44	4.2273	6.22397	4.505	.000
Manage risk to ensure IT risk are identified, mitigated and prevented	44	4.2955	6.19294	4.601	.000
Average Mean Score		**3.308**			

The results in Table 4.10 indicate that the average mean score for plan and organize processes was 3.308, which was a moderate agreement.

4.7.2.2 Acquire and Implement Practices

Acquire and implement processes is important to decision making of an organization. To capture data on the various acquire and implement practices, descriptive statements derived from literature were presented to respondents on a 5- point Likert scale. They were presented to respondents and were requested to indicate the extent of agreement to which the statements applied in their organizations. The findings were presented in Table 4.11

Table 4.11 Acquire and Implement processes

	N	Mean	SD	(t-value)	Sig. (2-tailed)
Manage Programs and Projects to ensure projects are controlled and managed	41	3.2683	.92262	22.683	.000
Manage requirements to ensure excellence in system and user requirements	42	3.2381	.90553	23.175	.000
Manage solutions identification and build to ensure applications designed meet the user requirements	44	3.0682	.87332	23.304	.000
Manage availability and capacity process to ensure systems are up and capacity plans for resources and infrastructure.	44	3.1591	.98697	21.232	.000
Manage changes acceptance and transitioning to ensure standardized procedures for all changes to production environment	43	3.0465	.95002	21.028	.000
Manage Knowledge to tab knowledge across the department	44	3.0455	1.14027	17.716	.000
Manage assets to ensure identification, tracking, and management of hardware and software assets (CIs), configurations, changes, patches, and new assets	44	2.9773	1.02273	19.310	.000
Manage configuration to ensure change and configuration management database is maintained	44	3.0000	.94006	21.168	.000
Average Mean Score		**3.100**			

All the acquire and implement processes were reported to be statistically significant $p<0.05$ with t-values ranging from 17.716 to 23.304. The finding concurred with

Marone and Kolbe (2011) large scale survey on in Europe, America, Asia and Africa that Manage projects had impact on IT service delivery, interestingly the same study agreed that Manage assets had the lowest effect on IT service delivery.

4.7.2.3 Deliver and Support Practices

To determine the level of deliver and support processes, the respondents had been asked to indicate the extent to which their firms IT service delivery has been influenced by deliver and support practices. A five-point Likert-type scale ranging from 1=not at all to 5=to a very large extent was used to collect the data. The pertinent responses were analysed using mean scores and the corresponding standard deviations of mean. Their responses are summarized in Table 4.12.

Table 4.12 Deliver and Support Practices

	N	Mean	SD	(t-value)	Sig. (2-tailed)
Manage operations to ensure IT governance is maintained	42	3.0952	1.07770	18.613	.000
Manage service request and incidents; to capture, track, assign, and manage incidents along with communication with the end-user.	44	3.3409	1.01025	21.936	.000
Manage problems to ensure root cause analysis, resolution and prevention of incidents.	44	3.0227	1.02273	19.605	.000
Manage continuity to ensure IT continuity for all IT services with recovery option such as (do nothing, gradual, intermediate, fast, hot standby).	43	3.0698	.85622	23.510	.000

Manage Security Services to ensure security incident and threats are managed	41	3.4634	.89715	24.719	.000
Average Mean Score		**3.198**			

The results in Table 4.12 show moderate agreement with respect to manifestation of deliver and support practices in Kenyan state corporations. The results show statistically significant differences across the corporations on the deliver and support processes (relatively high t-values, $p<0.05$), meaning that some organizations exhibit deliver and support practices. The findings supported, Kolbe (2010) large scale survey on COBIT that the most advanced practices in "Deliver and Support" practices is Manage Service Desk and Incidents followed by Manage Security Services.

4.7.2.4 Monitor, evaluate and assess performance Practices

Monitor, evaluate and assess performance ensures that activities are monitored and improvements are done based on analysis of data collected, to assess application of this process, A five-point Likert-type scale ranging from 1=not at all to 5=to a very large extent was used to collect the data. The pertinent responses are in Table 4.13

Table 4.13 Monitor, Evaluate and Assess Performance Practices

	N	Mean	SD	(t-value)	Sig. (2-tailed)
Monitor, evaluate and assess performance	45	3.27	0.863	25.381	.000

The results in Table 4.13 show moderate agreement with respect to manifestation of Monitor, evaluate and assess performance practices in Kenyan state corporations. Analysing the overall effect of each COBIT domain, it was noticeable that the domain with the highest impact was "plan and organize" and "deliver and support" practices

4.7.3 Capability Maturity Model Integration Practices

The third variable of the study on ITSM frameworks was Capability Maturity Model Integration for Software (CMMI) practices. CMMI models provide guidance for developing or improving processes that meet the business goals of an organization. Statements were presented to respondents on various manifestations of the CMMI practices in state corporations and the respondents were requested to indicate the extent to which the statements were applied in their organizations on various CMMI practices is the subsequent sections.

4.7.3.1 Process Management Practices

Process Management practices provide the means to measure and control quality and ensure the desired performance outcomes of IT process. Statements were presented to respondents on various manifestations of the process management processes in state corporations and the respondents were requested to indicate the extent to which the statements were applied in their organizations. The results are presented in Table 4.14.

Table 4.14 Process Management Practices

	N	Mean	SD	(t-value)	Sig. (2-tailed)
Configuration management process to establish and maintain the integrity of work products.	37	2.8378	.92837	-18.594	.070
Decision Analysis and Resolution process to analyze possible decisions.	40	2.9750	1.18727	15.848	.000

Product Integration process to assemble the product from the product components, ensure that the product is integrated, functions properly, and deliver the product.	40	2.8500	1.00128	-18.002	.060
Average Mean Score		**2.888**			

The results in Table 4.14 show moderately low ranking with respect to aspects of process management processes within Kenyan state corporations. These results are an indication that the Process Management practices within state corporations is not given a lot of consideration as an IT best practice to service management in Kenyan state corporations.

4.7.3.2 Project Management Practices

Project management practices provide guide on the management and appraisal of IT projects across the organization. The current study sought to establish the level of application of project management practices within the state corporations where questions were asked for the respondents to indicate their level of agreement. The results were as indicated in Table 4.15.

Table 4.15 Project Management Practices

	N	Mean	SD	(t-value)	Sig. (2-tailed)
Project Monitoring and Control to provide an understanding of the project's progress so that appropriate corrective actions can be taken when the project's performance deviates significantly from the plan.	39	2.9487	.99865	18.440	.000

Project Planning process to establish and maintain plans that define project activities.	40	3.0250	1.02501	18.665	.000
Average Mean Score		**2.987**			

The results in Table 4.15 indicate that the average mean score for project management practice was 2.987, which was a moderate agreement. All statements were significant at p-values <0.05. This indicates that project management practices of CMMI framework are moderately considered in state corporations.

4.7.3.3 Engineering Practices

The engineering practices of CMMI are methodical series of steps that that software engineers use in creating functional products and work packages. Various statements depicting the different manifestations of CMMI engineering practices were posed and respondents were required to indicate the extent to which these statements applied to their organization. The results were presented in Table 4.16.

Table 4.16 Engineering Practices

	N	Mean	SD	(t-value)	Sig. (2-tailed)
Software Quality Assurance to provide staff and management with objective insight into processes and associated work products.	39	3.0000	1.10024	17.028	.000
Software Quality Assurance to provide staff and management with objective insight into processes and associated work products.	40	2.9500	1.08486	17.198	.000

Software application management to achieve the project's established quality and process-performance objectives.	40	3.1500	.86380	23.064	.000
User Requirements to produce and analyze customer, product and product component requirements	40	3.0500	.84580	22.807	.000
Average Mean Score		**3.038**			

The results in Table 4.16 show statistically significant differences across the corporations on the engineering practices (relatively high t-values, $p<0.05$), meaning that engineering practices were applied to improve IT service delivery.

4.7.3.4 Support Practices

Support practices focus on the activities that support product development and maintenance. The study set to establish the importance and the applicability of support processes in state corporations. To this end, statements were presented to respondents on a 5-point Likert scale and they were required to indicate the extent to which these statements applied to their organizations. The results are presented in Table 4.17.

Table 4.17 Support Practices

	N	Mean	SD	(t-value)	Sig. (2-tailed)
Software application support and maintenance	40	3.2500	1.14914	17.887	.000
Risk Management to identify potential problems before they occur	40	3.0500	1.06096	18.182	.000

Supplier Agreement process to manage the acquisition of software application products from suppliers.	38	3.0526	1.13774	16.540	.000
Software validation to demonstrate that a product or product component fulfills its intended use when placed in its intended environment.	37	3.3243	1.20310	16.807	.000
Average Mean Score		**3.169**			

All the support practice statements were reported to be statistically significant $p<0.05$ with t-values ranging from 16.540 to 18.182. The low mean score was observed for the statements on Risk Management practices.

4.7.4 ISO practices

The last variable of study on ITSM framework was International organization for standardization (ISO) practices. To establish the level of application of ISO practices to enhance IT service delivery, respondents were required to indicate the extent to which these statements applied to their organizations. Table 4.18 presents the results.

Table 4.18: ISO practices

	N	Mean	SD	(t-value)	Sig. (2-tailed)
ISO 2008: 9001 Quality management standard	69	3.6087	.95821	31.284	.000
ISO 20000 Information technology quality management standard	70	3.2714	1.04841	26.107	.000
ISO27001/02 information technology security standards	69	3.2319	1.11335	24.113	.000
Average Mean Score		**3.371**			

The results in Table 4.18 show strong agreement with respect to manifestation of ISO practices.

The current study also asked the respondents to explain how ITSM practices affected IT service delivery in their organization with view to explain and extend the findings. The qualitative data was captured and collated according to the earlier coded themes where two themes emerged; the first theme that emanated was the practices that had significant effect on IT service delivery. From the qualitative data the respondents revealed that ITIL, COBIT, CMMI and ISO frameworks were used to enhance IT service delivery in state corporations. Among the ITSM practices, service operations specifically; service request fulfilment, incident management and access management had the greatest effect on IT service delivery agreeing with Marone and Kolbe (2011), study that ITSM practices improve IT service delivery. This can be attributed to the fact that the practices ensures that service disruption is restored on time and users are satisfied with IT services provided before incidents closure.

The second theme that emerged from the qualitative data was the effect of ITSM on IT service delivery. From the qualitative data, respondents confirmed that ITSM practices improved IT operations and hence IT service delivery. Importantly, ITSM practices have been used to guide IT departments in state corporations in restructuring and definition of roles and responsibilities for various ICT positions

The result from the qualitative data from those state corporations that had implemented ITSM practices emphasised that implementation of ITSM practices has greatly improved IT service delivery, clarity of roles and responsibility. In general the departments were more organised, effective and continuously improving on IT service

delivery. The qualitative data corroborated with the quantitative findings that ITSM practices had positive impact on IT service delivery in Kenyan state corporations. The preliminary findings supported, extended and contributed to filling the gaps identified in the global studies by (Marrone and Kolbe, 2011; Marrone and Kolbe, 2010 and Chan et al, 2008) that ITSM practices are beneficial to IT organizations in terms of IT service delivery.

4.8 Descriptive Statistics of Enablers

ITSM literature posits those enablers' impacts ITSM implementation success and IT service delivery (Tan et al, 2010). To capture this data, descriptive statements were presented to the respondents on a 5- point Likert scale. Respondents were required to indicate the extent to which these statements applied to their organizations. Table 4.19 presents the results.

Table 4.19: Individual effect of ITSM enablers

	N	Mean	SD	(t-value)	Sig. (2-tailed)
Organization size in terms of number of IT service users	89	3.4719	.81310	40.283	.000
Top Management support and commitment providing access to necessary project and process resources (time, people, funding)	97	3.4845	.79206	43.328	.000
Government policies and regulations on IT management.	96	3.4271	.73620	45.610	.000
Sufficient internal professional IT staff, with expertise to enhance organizational capability to deploy new polices processes and tools.	97	3.5670	.70574	49.779	.000

People knowledge, information and skill related to IT Service Management.	97	3.6804	.72953	49.686	.000
Support from capable and experienced external consultants.	97	3.0928	1.01121	30.123	.000
Availability of integrated IT Service Management Technology on software/tools to support automation of process and workflow.	97	3.0206	.98931	30.071	.000
Organizational culture/behavior in ensuring compliance to new practices over the long term (ITSM aligned culture).	97	3.3093	.83368	39.095	.000
Willingness to change	97	3.6907	.79531	45.705	.000
Average Mean Score		**3.416**			

The findings in Table 4.19 established that the average mean score observed for statements on ITSM enablers was 3.416. The results indicate that the Kenyan state corporations under study provided moderate enablement towards ITSM practices. Willingness to change had the highest mean score (mean score=3.6907, standard deviation=.7953), meaning that state corporations were willing to adopt ITSM practices, this was followed by knowledge and skill-set related to ITSM (mean score=3.6804), with availability of software/tools to support automation of process and workflow registering lowest mean (mean score=3.0206). The results also revealed that despite the high mean scores, statistical significant differences were observed. High t-values were noted for sufficient internal professional IT staff, with expertise to enhance organizational capability to deploy new polices, processes and tools (49.779) and knowledge and skill related to ITSM (49.686). Support from capable and experienced external consultants and availability of software/tools to support

automation were the main concern for most state corporations with standard deviations of 1.01121 and .98931 respectively.

The study also consulted the qualitative data, where the respondents were asked to comment on how the enablers had enhanced the effect of ITSM practices on IT service delivery in their organizations. Again the information was captured and collated where two themes coded as ENa=the effect of enablers on ITSM and service delivery relationship and ENb = challenges on the enablers to enhance ITSM and service delivery relationship were unveiled. The respondents explained using the qualitative data that management support was very critical in enabling their organization to embrace ITSM practices by providing funding on ITSM implementation, consultancy and software/tools. Capable consultants were observed to be important as they enabled the organization to walk through the ITSM journey and provided requisite skills and knowledge transfer to the staff in order to implement ITSM effectively. Change management enabled their organization to embraces ITSM by moving from silo based to process based operations and service orientation.

The respondents explained that the organizational culture was receptive to information technology service management practices. The government regulation and policies for state corporations to invest on ICTs to enhance service delivery coupled with demand to meet organizational performance goals had supported IT strategies towards improved IT service delivery, and thus enhanced organization pursuit to implement ITSM. Further the number of IT users (size) had increased tremendously in state corporations leading to the search for best practices to guarantee users effective IT service delivery. The respondents were optimistic that once the ITSM framework is fully automated with requisite tools IT service delivery will

improve greatly since they will be more proactive than reactive. These findings supports the quantitative data on the effect of enablers on ITSM and IT service delivery relationship.

From the qualitative data the respondents further revealed that first and foremost, due to lack of adequate skills on ITSM they did not know which approach to use in ITSM implementations. The inadequate number of IT staff within the organization made it difficult to execute ITSM practices as required thus constraining the realization of ITSM benefits. The respondents explained that IT governance issues, low staffing levels and poor skills set were hindering entrenchment of ITSM practices in their IT operations to improve IT service delivery.

The respondents explicated that in to some extent management was not seriousness towards ITSM practices. With regards to the availability of tools and consultants to support ITSM, most state corporations were at low level of ITSM hence investment on ITSM software/tools and use of consultants was minimal in their organization. The respondents from the organizations which had advanced in ITSM maturity explained that although they were in the process of ITSM automation with a view to provide service management visibility, end to end visibility challenges were evident.

The findings imply that, although ITSM enablers were critical on the relationship between ITSM and IT service delivery, however, their intervention was not adequate in Kenyan state corporations which can be attributed to the low level of ITSM maturity in most state corporations. As Marrone and Kolbe (2011) observed ITSM challenges were more at low level of ITSM maturity and hence the expected benefits on IT service delivery were minimal.

4.9 Descriptive Statistics of Integration Strategies

The study was aimed at establishing the extent to which integration enhance IT service delivery. The purpose was to later establish if there is a significant difference in the moderating role of integration strategies on the relationship between ITSM practices and IT service delivery. The results of the analysis are presented in Table 4.20.

Table 4.20: ITSM integration strategies

		Frequency	Percent
Valid	ITIL and COBIT	2	2.0
	ITIL and CMMI	1	1.0
	ITIL and ISO	2	2.0
	COBIT and CMMI	1	1.0
	COBIT and ISO	7	7.0
	ISO and CMMI	1	1.0
	ITIL,COBIT, CMMI,ISO	32	32.0
	No Integration	54	54.0
Total		100	100.0

The results in Table 4.20 show that 46 percent of Kenyan state corporations had integrated IT service management practices. The findings is in agreement with Cutis (2005), that although a lot of studies have been made focusing on implementation and integration of ITSM practices in organizations, in practice few organizations have adopted the strategy towards improvement on It service delivery. The qualitative data on ITSM integration revealed that ITSM practices have been integrated where ITIL is used to define the processes and procedures while COBIT is used to define best practices on IT governance, process roles and responsibilities while ISO is used to

provide standards for quality management system and CMMI to provide guideline on application management and process maturity. ISO 27001/2 was largely used for guidance of information system security policies and standards.

Consequently, the study sought qualitative data from the respondents who had indicated that ITSM integrations improved on the effect of ITSM on IT service delivery. The respondents explained that ITSM integrations enhanced alignments of IT goals to business goals by providing guidelines where one practices was not having strengths. The finding further supported the descriptive statistic that integration was beneficial to the state corporations.

The study also sought information from those who indicated that integrations did not improve the effect of ITSM on IT service delivery and the respondents revealed that although state corporations integrate ITSM practices such as COBIT, ITIL, CMMI and ISO there were no formal guideline/ framework to guide on what to implement and which integrations fits the need of respective state corporations, this has led to confusion and mix up thus negating the benefit of ITSM practices integration on IT service delivery. Therefore integrations were ad hoc, and not well structured. The finding demonstrates that ITSM integrations are manifested in state corporations with mixed effect on ITSM practices and IT service delivery relationship.

4.10 Descriptive Statistics of IT Service Delivery

The IT service delivery construct is measured as specific results delivered to customers and response to specific events (Gacenga, Cater-Steel and Toleman, 2011). The descriptive measures on IT service delivery were presented to the respondents on a 5- point Likert scale. They were required to indicate the extent to which these

statements applied to their organizations. Table 4.21 presents the results.

Table 4.21: Descriptive Statistics on IT Service Delivery

	N	Mean	SD	(t-value)	Sig. (2-tailed)
Service Quality	91	3.7033	.72256	48.891	.000
User Satisfaction	93	3.7312	.79591	45.209	.000
Response and Resolution Time	92	3.5761	.75932	45.173	.000
Service Availability	93	3.5161	.77478	43.765	.000
Standardized services	92	3.5978	.72718	47.456	.000
IT Resource Utilization	93	3.1935	.72619	42.410	.000
Business/IT Alignment	93	3.1613	.79796	38.205	.000
Staff productivity	93	3.6882	.65903	53.970	.000
IT Governance	92	3.2283	.75743	40.881	.000
Reduced cost of IT service delivery	93	3.30108	.748694	42.520	.000
Average Mean Score		**3.469**			

The results in Table 4.21 show moderately high ranking with respect to measures of IT service delivery in Kenyan state corporations (Mean scores above 3.0) and average mean score registering 3.469. There were statistically significant responses across the state corporations on the measures of IT service delivery (relatively high t values, $p<0.05$). Among the IT service delivery measures; user satisfaction had a mean of 3.7312 registering the highest, this was followed by service quality with a mean of 3.7033 while IT governance had a mean of 3.2283 being the lowest. Statistically significant responses were reported across the corporations on the level of IT service delivery (relatively high t values, $p<0.05$). The finding concurs with Marrone and

Kolbe (2011) that ITSM practices significantly improve user satisfaction and service quality.

The study sought qualitative data from the respondents on the extent to which IT service delivery benefits were realized in their organizations, the responses were captured and coded accordingly where two themes emerged and coded as ISDa=IT service delivery benefit, ISDb=IT service delivery benefit realization challenge and the finding was as follows; the respondents explained that effective customer service, user satisfaction, reduced downtimes, improved service delivery and timely decisions making had been achieved owing to ITSM implementation. The respondents explained that ITSM has helped on effective use of IT resources, thus reducing the cost of IT service delivery in state corporations. The respondents further indicated that through ITSM, IT governance improved, process and procedures were clearly defined and measured. Business IT alignment also improved greatly. The finding supports the findings by Bon (2007) that ITSM practices improve, service quality, standardized process, user satisfaction and IT Resource Downtime.

Despite this benefits the respondents explained that a few teething problems were being encountered such as the service desk function not being fully functional, as some incident were not reported to service desk hence not monitored, leading customer dissatisfaction and gaps in update of the ICT knowledge base. Incidents management were impacted by low number of staff in some organization thus affecting the response times to incidents and lastly low skills level among IT staff affected the momentum to service orientation. These two aspects have greatly affected the quality of service provided by ICT to the business. The findings imply that ITSM

practices improve IT service delivery, although a few challenges were encountered.

4.11. Structural Equation Modeling

This section presents the analysis of the relationship between the independent and dependent variables using the structural equation modelling. This study was to establish the relationship between ITSM practices and IT service delivery. The study was also to establish the moderating role of integration strategies and enablers on the above relationship. Based on the research objectives and the three relationships that were to be established, both significance levels are reported in the following tables.

Structural equation modelling provides a pictorial representation of the model variables. In accordance with Mulaik and Millsap's (2000) recommendations to structured equation modelling, a stringent four-step approach to modelling was conducted to test the measurement model, i.e. the relations between the manifest variables and the latent variables or constructs as specified and all latent variables or constructs were allowed to covary.

In step I: exploratory factor analysis was conducted to estimate the number of latent variables or factors as discussed in chapter three. The rotated component matrix loadings of each measured item on each of the nine latent factors identified shows that the measured items have high loadings on their hypothesized constructs.

The intent of this step was to identify and extract latent factors that explain the model. EFA and Kaiser's criterion of Eigen values greater than one and the scree plots were applied for factors' extraction. Table 4.22 presents results of factor extraction on the basis of the eigenvalues greater than 1 criterion, which resulted in identification of nine factors. The first factor explained 29.403% of the total variance and other eight

factors explained the remaining variance in the model. Table 4.22 show the total number of factors extracted and total variance explained in EFA model.

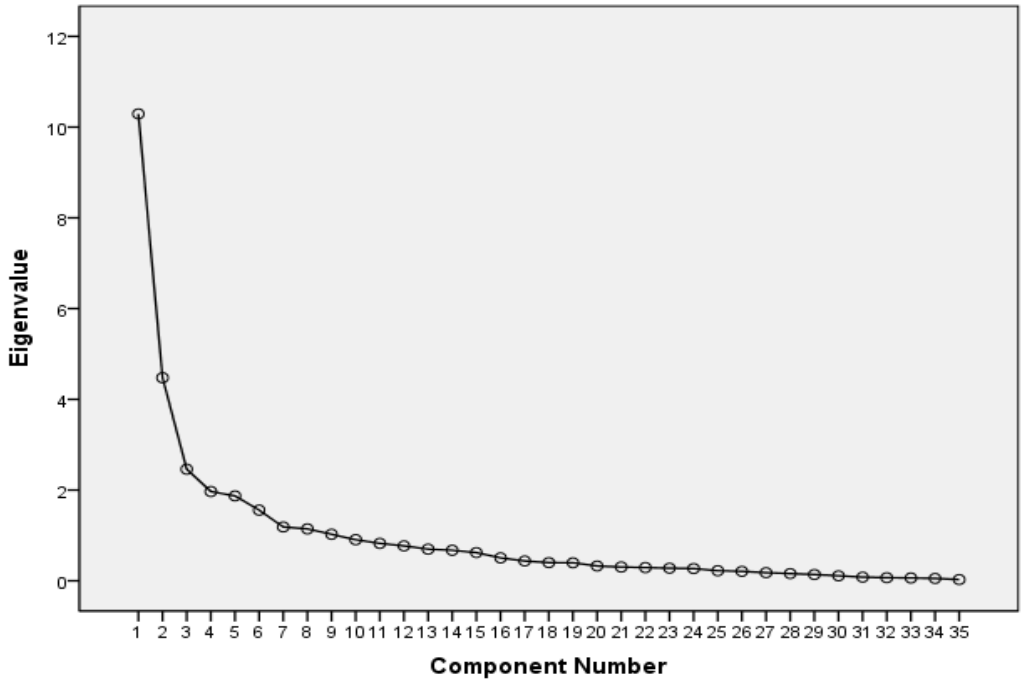
Table 4.22 Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	10.291	29.403	29.403	10.291	29.403	29.403	5.297	15.135	15.135
2	4.476	12.788	42.190	4.476	12.788	42.190	4.312	12.321	27.456
3	2.460	7.029	49.219	2.460	7.029	49.219	3.145	8.985	36.441
4	1.968	5.622	54.841	1.968	5.622	54.841	2.925	8.358	44.799
5	1.871	5.347	60.187	1.871	5.347	60.187	2.710	7.742	52.541
6	1.558	4.452	64.639	1.558	4.452	64.639	2.590	7.399	59.940
7	1.187	3.390	68.029	1.187	3.390	68.029	2.229	6.369	66.310
8	1.145	3.271	71.300	1.145	3.271	71.300	1.414	4.040	70.349
9	1.026	2.931	74.231	1.026	2.931	74.231	1.359	3.881	74.231
10	.906	2.590	76.820						
11	.825	2.357	79.177						
12	.769	2.197	81.374						
13	.698	1.993	83.367						
14	.673	1.922	85.289						
15	.622	1.777	87.066						
16	.505	1.442	88.508						
17	.437	1.248	89.756						
18	.401	1.147	90.903						
19	.398	1.136	92.039						
20	.328	.936	92.975						
21	.305	.871	93.847						
22	.292	.834	94.681						
23	.279	.797	95.478						
24	.270	.771	96.249						
25	.222	.635	96.884						
26	.209	.598	97.482						
27	.179	.511	97.993						
28	.160	.458	98.450						
29	.140	.399	98.849						
30	.111	.317	99.167						
31	.081	.231	99.398						
32	.068	.195	99.592						
33	.063	.179	99.772						
34	.053	.150	99.922						
35	.027	.078	100.000						

Extraction Method: Principal Component Analysis.

The study also examine the scree plot on the loading of the factors, Figure 4.1 shows the Scree plot test used to confirm the maximum number of factors extracted with eigenvalues greater than one criterion.

Figure 4.1: Scree plot



The slope of the Scree plot revealed extraction of nine factors, which confirmed extraction of the same number of factors through the eigenvalues criterion. Thus the analysis partly supports the constellation of hypothesized constructs and their manifest variables.

To establish the loading of the factors and the pattern, the rotated component matrix was used. The rotated component matrix loadings of each measured item on each of the nine latent factors identified shows that the measured items have high loadings on their hypothesized constructs. The results are presented in Table 4.23.

Table 4.23 Rotated Component Matrix[a]

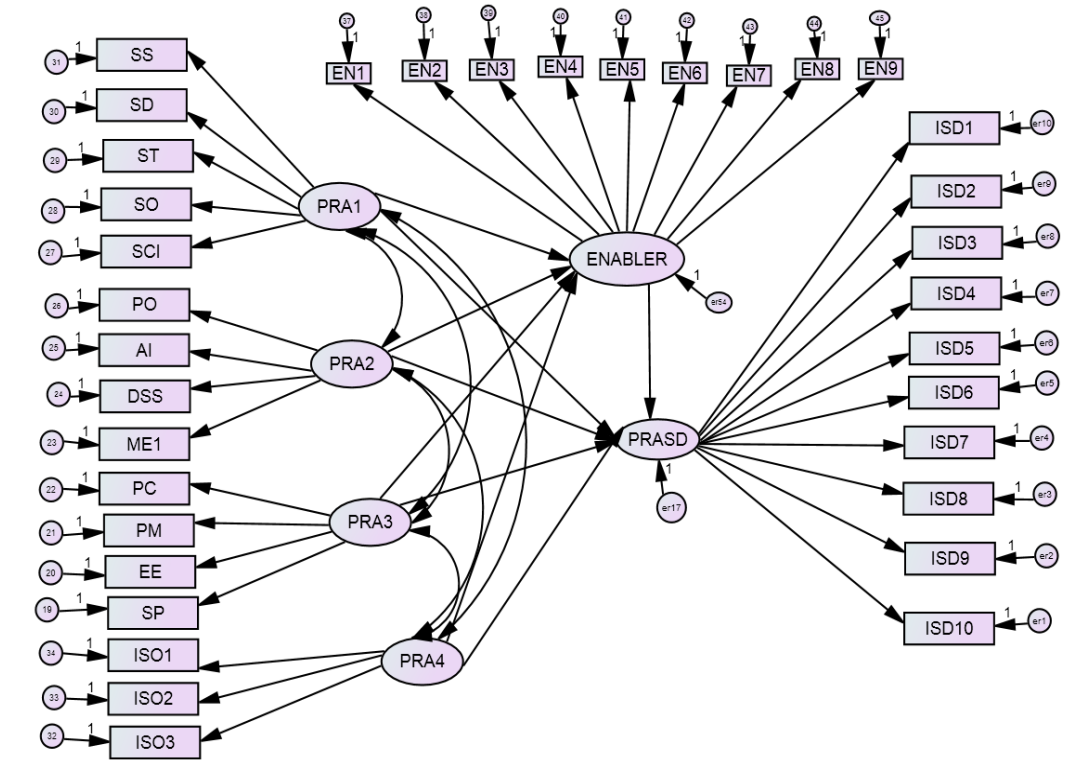
	Component								
	1	2	3	4	5	6	7	8	9
SS	.277	**.732**	.092	.100	.030	.140	.010	-.082	.107
SD	.303	**.845**	.067	.170	.099	.202	.099	-.016	-.038
ST	.380	**.751**	.135	.108	-.073	.108	.211	.027	.046
SO	.251	**.750**	.041	.162	.245	-.143	.226	.043	.086
SCI	.389	**.645**	.187	.215	-.104	.063	.127	.247	.107
PO	**.789**	.201	.202	.022	.135	.025	.055	.065	-.220
AI	**.800**	.238	.172	.084	.227	.084	.046	.038	-.213
DSS	**.658**	.265	.170	-.040	.224	-.038	-.132	-.224	-.303
ME1	**.818**	.104	.024	-.047	-.176	.133	.038	.036	.038
PC	**.735**	.210	-.163	.055	.164	.220	.234	.156	.247
PM	**.727**	.279	.019	.127	-.047	.388	.086	-.025	.154
EE	**.827**	.296	-.043	.153	-.122	.212	.080	.067	.123
SP	.331	.340	-.116	.354	**.557**	.283	-.139	-.075	-.043
ISO1	.256	.238	-.066	-.029	**.482**	**.509**	.006	-.200	-.137
ISO2	.268	.104	.090	-.010	-.022	**.855**	-.042	.073	-.099
ISO3	.227	.078	.118	-.019	.023	**.865**	.100	.005	.020
EN1	.327	-.013	.063	-.221	**.611**	-.319	.042	.161	.097
EN2	-.183	-.088	.230	.240	**.590**	-.046	.253	.152	.048
EN3	.102	-.128	-.034	.296	**.474**	.261	.418	-.195	.024
EN4	-.051	.180	.202	.124	.076	-.131	.036	-.048	**.837**
EN5	-.171	.489	.125	.209	**.580**	.254	-.205	.107	.045
EN6	.085	.170	.348	**.674**	.136	-.096	.215	-.055	-.007
EN7	.099	.207	.133	**.798**	-.008	.023	.140	.056	.005
EN8	.069	.193	.023	**.708**	.115	-.049	.260	.122	.075
EN9	-.130	.046	.242	**.598**	.301	.221	-.257	.110	.270
ISD1	-.047	.094	.335	.164	.552	-.024	.036	**.436**	.092
ISD2	.150	.053	.247	.098	.152	.017	.122	**.855**	-.069
ISD3	.083	.382	**.664**	.087	.092	-.026	.105	.125	.217
ISD4	.123	.041	**.717**	.295	.240	.015	.175	.041	-.021
ISD5	-.013	-.062	**.754**	.068	.040	.208	.018	.220	.179
ISD6	.166	.059	**.515**	.377	-.114	-.018	.495	-.115	.007
ISD7	.138	.414	**.615**	.106	-.034	.019	.287	.109	-.161
ISD8	.029	.094	.382	.019	.239	.201	**.483**	-.037	.307
ISD9	-.022	.327	.277	.310	-.030	-.066	**.634**	.161	-.024
ISD10	.202	.285	.183	.185	.078	.022	**.692**	.180	-.003

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 19 iterations.

ITIL, COBIT and CMMI constructs were revealed in the 1st and 2nd loading, IT service delivery in the 3rd loading while the other variables gave mixed loading. The findings implied that EFA partly supports the constructs chosen. Step two confirmed the measurement model using confirmatory factor analysis with further refinement of the factor loadings. In step three the study tested the structural model

leading to model rejection or acceptance in step four. Figure 4.2 shows the hypothesised structural model Combining ITSM practices, enablers, integration strategies and IT service delivery.

Figure 4.2: Hypothesised structural model



Where PRA1=ITIL practices, PRA2= COBIT practices, PRA3=CMMI practices, PRA4 =ISO practices. Enabler=ITSM enablers and PRASD= IT service delivery. Four structural sub - models that is; ITIL sub model, COBIT sub model, CMMI sub model, ISO sub model were developed and analysed separately to confirm the independent effect of each practice on IT service delivery, thereafter the overall model was assessed, refined and fitted to conclude on the findings in the next chapter.

4.12 Chapter Summary

This chapter presented the descriptive statistics and other findings. The study's response rate was 92.59 percent of the population of the study. This response

was compared to other studies and found to be representative of the whole population. Overview of the manifestation of the study's variables was also presented. This was through descriptive statistics such as the mean scores, one sample t-tests at test value 3 and significance levels. Interpretations were done and compared to extant literature.

Results indicate statistically significant differences in the manifestation of some of the study variables. The results mean that there were variations across organizations on the aspects presented to the respondents regarding manifestation of various variables across the studied state corporations. The results further indicate statistically significant differences on the effect of ITIL, COBIT, CMMI and ISO practices on IT service delivery. Only a few organizations had integrated ITSM practices. The next chapter presents results of tests of hypotheses and their discussions.

CHAPTER FIVE
TEST OF HYPOTHESES AND DISCUSIONS

5.1 Introduction

This chapter is built up from the preceding literature review, research results and correlation analysis which provided the background of ITSM practices, integration strategies; enablers and IT service delivery as presented in chapter two and four of this thesis. The chapter also supports the investigation into the research objectives as presented in chapter one. This study was purposely to establish the moderating role of the integration strategies on the relationship between the ITSM practices and IT service delivery and the moderating role of enablers on the relationship between the exogenous variables and the dependent variable. This relationship between constructs had been introduced in the theoretical model in chapter two which led to the development of four major hypotheses and model to be tested in this chapter.

This chapter therefore presents the results of hypotheses testing and quantitative analyses and the interpretation of relationships among the various variables derived from the above constructs of the study in four main sections: relationship between ITSM practices and IT service delivery in Kenyan state corporations; the extent to which integration strategies moderates the relationship between ITSM practices and IT service delivery in Kenyan state corporations; and the extent to which ITSM enablers moderates the relationship between ITSM practices and IT service delivery in Kenyan state corporations. Both SEM and multiple regression analyses were used to establish the influence of independent variables on the dependent variable. To test for moderating effects of the variables, the study used the Baron and Kenny (1986) model while hierarchical regression was used to test for moderating effects.

Regression analyses yielded various values including R, R^2, F ratio, t-values and p-values. The R-value reflects the strength of the relationship between the variables while R^2 values depict the extent to which variations in indicators are explained (Kline, 2010). The F-value shows the statistical significance of the overall model, while t-values represent the significance of individual variables. Additionally, beta values show the positive or negative effect of the independent variable on the dependent variable. Finally, p-values represent the significance level. This study tested the relationships at 95 percent confidence level ($p=0.05$) at which point a decision to confirm the hypothesis was made at values of F-ratio where $p<0.05$. Results that yielded p values > 0.05 led to rejection of hypotheses while, results with $p<0.05$ resulted in failure to reject hypotheses.

For the moderating effect, the study utilized step wise regression analysis where the moderating variables were added to independent variables to check the direct influence of independent variables on dependent variable. The results are presented in two broad categories. First, the results of the independent effects of the independent variables on the dependent variable are presented after which the results of the combined effect of the independent variable on the dependent variable are presented.

5.2 ITSM practices and IT service delivery

Objective one of the study was designed to establish the relationship between ITSM practices and IT service delivery in Kenyan state corporations. The literature and theoretical reviews supported the preposition that ITSM practices will be associated with IT service delivery. The influence of ITSM practices was evaluated based on the dimensions; ITIL Practices, COBIT Practices, CMMI Practices and ISO practices (Gacenga et al 2010; Iden and Eikebrokk, 2014). These were evaluated against IT

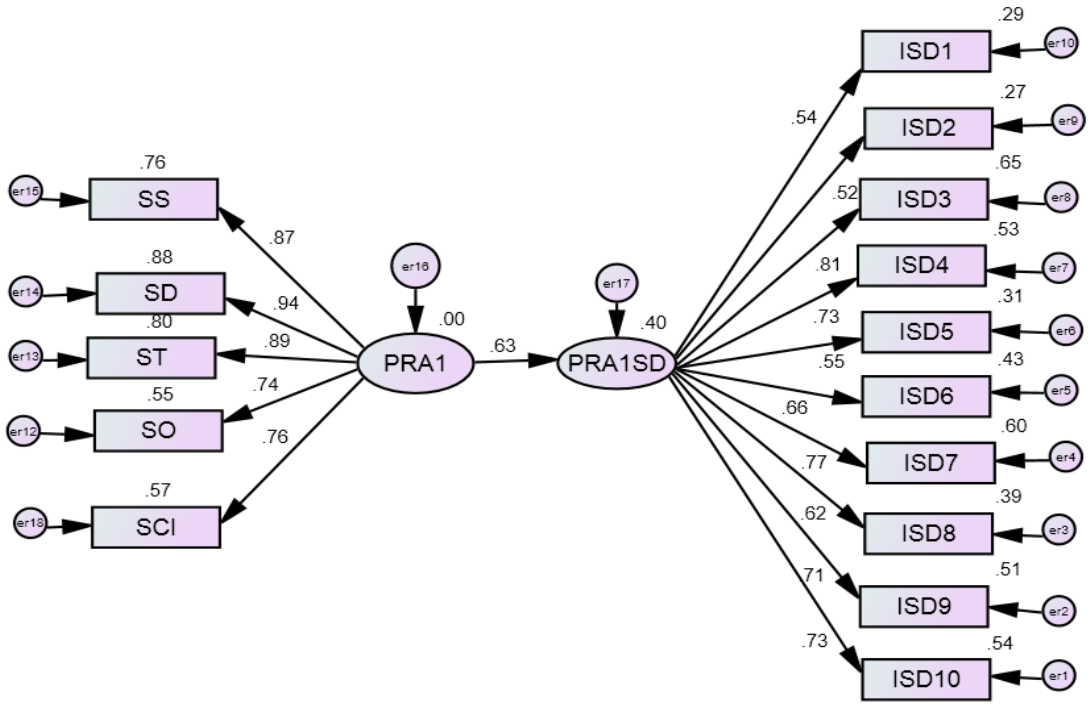
service delivery (Deare 2006; Marone and Kolbe, 2011). Hence, the following hypotheses were tested:

H1: Information technology service management practices has a significant effect on IT service delivery

The hypothesis was tested in two steps, step one tested the effect of the individual variables using the structural equation modelling. The purpose of choosing this test was to provide detailed multidimensional effect of the ITSM practices on the IT service delivery. Step two tested the combined effect was tested using regression analysis.

The study evaluated the effect of ITIL practices on IT service delivery as the first sub model of the study and generated the results shown in Figure 5.1

Figure 5.1: Structural Sub-Model 1 on the Effect of ITIL Practices on IT service delivery



χ^2 (16)=16.030 (p=0.451, χ 2 /df =1.002, and RMSEA=0.007

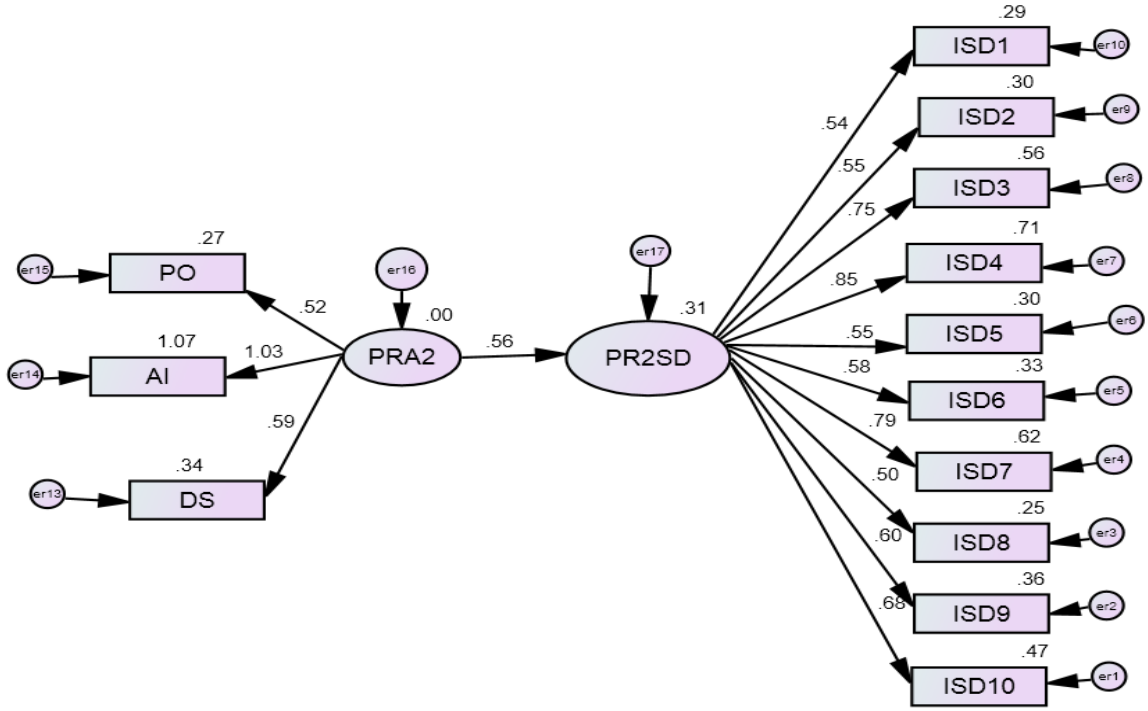
The goodness of fit indices indicates that the hypothesized Structural Sub Model 1 provides a good fit between the data and the model. The likelihood chi-square (χ

2 = 16.030; DF = 16; p = 0.451) was insignificant (p >.05), other fit measures showed that model adequately fit the observed data. The absolute fit measures i.e. GFI and RMSEA were 0.917 and 0.007 respectively indicating good fit of model. The study also analyzed the standardized path coefficients on the influence of ITIL practices on IT service delivery and β=0.63 was obtained. The five predictors together accounted for 40% of the variance on IT service delivery (R^2 =.40) which is a moderate influence.

The study further revealed that holding other nine factors of IT service delivery constant, ITIL practices had the highest impact on response time (ISD3) β=0.81 to incident resolution, this was followed by improved IT alignment with the business ISD7 (β=0.77). Other service delivery variables gave varied coefficients; service quality (β=0.54), service availability (β=0.73), standardized services (β=0.55), IT resource use (β=0.66), staff productivity (β=0.62), IT governance (β=0.71), and cost reduction (β=0.73). The lowest effect of ITIL was recorded on user satisfaction β=0.52. Overall this finding shows that ITIL practices affect IT service delivery positively, the findings concurs with Gacenga et al ,(2010) that ITIL significantly improve IT service delivery.

The study further sought to establish the independent effect of COBIT practices on IT service delivery. Figure 5.2 shows the relative effect of the COBIT practices on IT service delivery.

Figure 5.2 Structural Sub Model 2 on the Effect of the COBIT practices



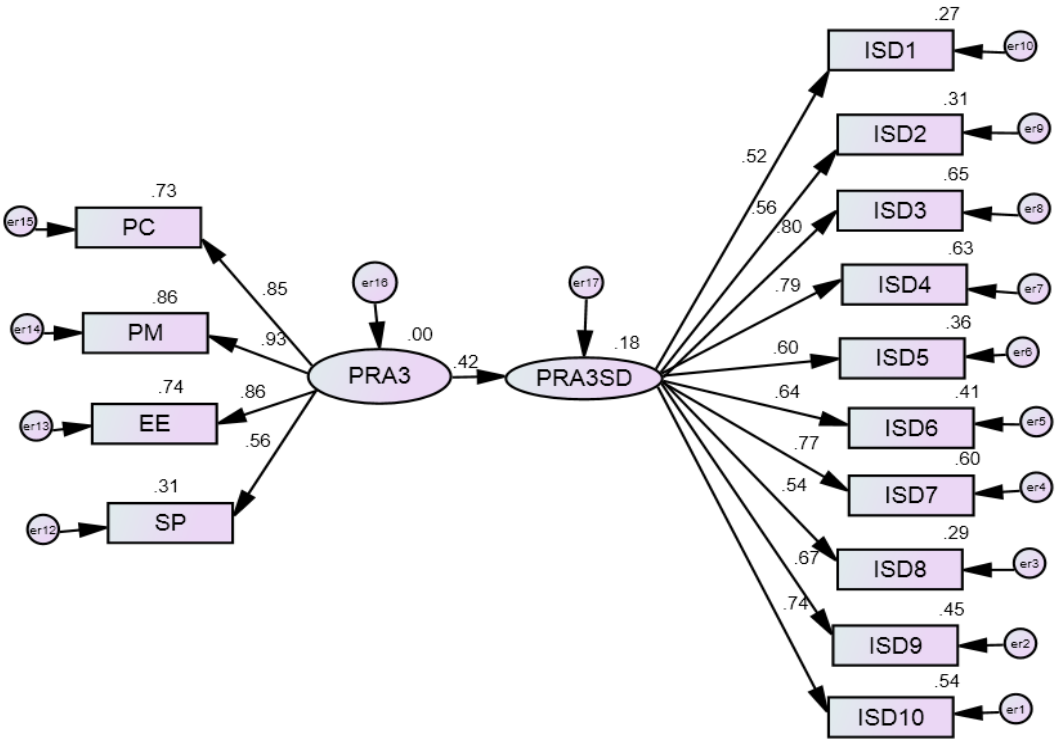
χ^2 (21) =22.201 *p=0.239*, χ 2 /*DF* =1.200, and RMSEA=0.067

The goodness of fit indices, indicated that the hypothesised structural Sub-Model 2 on COBIT practices provided better fit of the model and data after deletion of non-significant paths monitor and evaluate (ME), β =0.07). The likelihood ratio chi-square (χ^2=22.201; df =21; p = 0.239) was insignificant, other fit measures also showed that the model and the data had acceptable fit. The absolute fit measures i.e. GFI and RMSEA were 0. 960 and 0.067 respectively indicating good fit of model, incremental fit measures and the parsimony fit measure of AGFI was 0.942, which was also above the cut-off point (i.e., > 0.9). The standardized path coefficient for COBIT was β=0.56, the three predictors (COBIT practices, Plan and organize, align and Implement and deliver and support) together accounted for 31% of the variance on IT service delivery (R^2 =.31) which is a moderate influence. The standardized path coefficient to service availability (ISD4) had the largest standardized coefficient β=0.85, holding other nine IT service delivery constructs constant. This was followed

by improved alignment btween IT and the business(ISD7) β=0.79. This implies that IT service availability and IT Alignment with the business were the greatest IT service delivery impact from the implementation of COBIT practices in state corporations. The finding concurs with empirical literature (Marrone and Kolbe, 2011; Tan et al., 2010) that the greatest impact of COBIT practices is the strategic alignment. Further one of the themes and principle of COBIT framework is astrategic alignment of the business and IT thus supporting the strategic alignment theory. Other service delivery variables gave varied coefficients; service quality (β=0.54), user satisfaction (β=0.55), response time (β=0.75), service availability (β=0.85), standardized services (β=0.55), IT resource use (β=0.58), staff productivity (β=0.50), IT governance (β=0.60) and cost reduction (β=0.68).

The findings indicates that while plan and organize, Acquire and Implement and Deliver and Support practices (β= 1.03) explained the effect of ITSM practices in the predicted direction, Monitor and evaluate practices did not (β= 0.07). Overall, these findings show that COBIT practices positively improve IT service delivery, supporting Marrone and Kolbe, (2011) study on the impact of COBIT to IT organizations.Similarly, the study analyzed the influence of CMMI practices on IT service delivery. Figure 5.3 shows the relative effect of the CMMI practices on IT service delivery.

Figure 5.3: Structural Sub Model 3 on the Effect of CMMI on IT service delivery

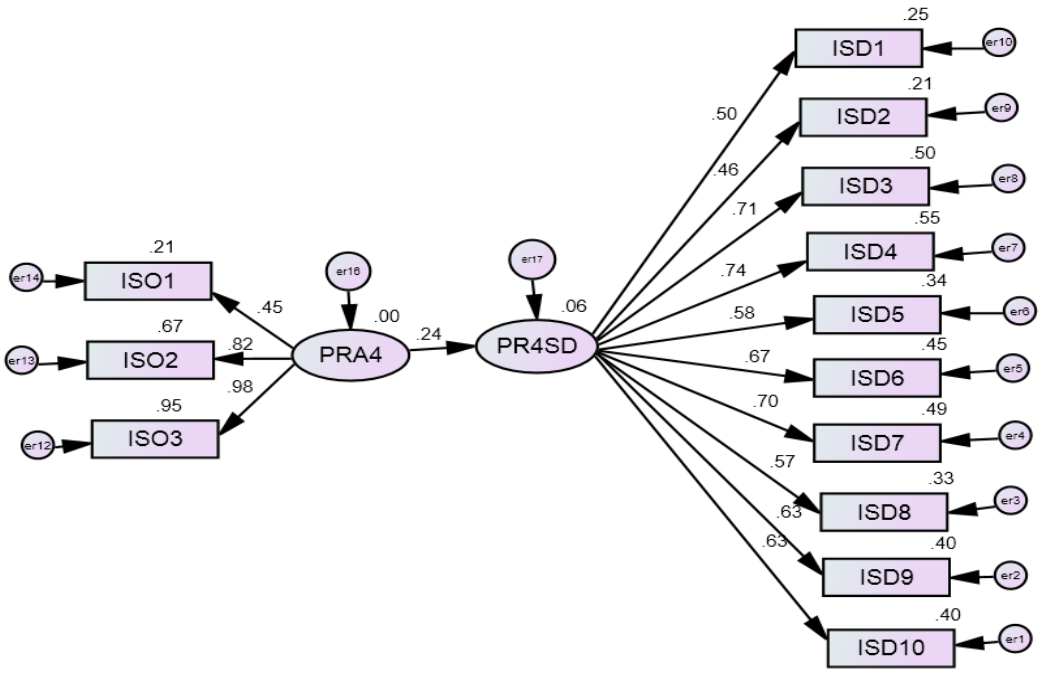


χ^2 (33) =34.754 *p=0.384*, $\chi 2$ /*DF* =1.053, and RMSEA=0.037

The likelihood ratio chi-square of the structural sub model 3 gave ($\chi 2$= 34.754; DF =33; p = 0.384) which was insignificant (p>0.05) and RMSEA =0.037<0.08. The goodness of fit indices between the data and the model gave GFI=0.9594 and AGFI was 0.941 which was greater than 0.90 cut point, indicating acceptable fit between the data and the model. The standardized path coefficient from project management processes, for CMMI representing the regression weight β =0.42. The four predictors together accounted for 18% of the variance on IT service delivery (R^2 =.18). The standardized path coefficient to improved response time to incidents (ISD3) β =.80) was the highest impact of CMMI practices on IT service delivery, holding the other nine factors of IT service delivery constant. This was followed by improved service availability (β =0.79). Other service delivery variables gave varied coefficients service quality (β=0.52), user satisfaction (β=0.56), standardized services (β=0.60), IT resource use (β=0.64), IT alignment (β=0.77), staff productivity (β=0.54), IT

governance (β=0.67) and cost reduction (β=0.74). Overall the finding shows that CMMI practices affect IT service delivery positively. Again, the study established the effect of ISO practices on IT service delivery. Figure 5.4 show the relative effect of the ISO practices on IT service delivery.

Figure 5.4 Structural Sub Model 4 on the effect of ISO practices on IT service delivery



$\chi 2$ (14) =32.981 (p=0.03, χ 2 /DF =2.356, and RMSEA=0.066

Although the likelihood ratio chi-square of the structural sub model 4 ($\chi 2$ =32.981; df =14; p = 0.03) was significant (p<0.05), other goodness of fit measures RMSEA =0.066 <0.08, GFI=0.915 and AGFI =0.936 was greater than 0.90 cut point indicating acceptable fit between the data and the model. As illustrated in Figure 4.5 the standardized path coefficient from ISO 27001/2 information system security and policy practices had the highest impact on IT service delivery when holding the other two practices constant with standardized regression coefficient β =.98). This suggested that ISO 27001/2 information system security and policy practices are more

important to IT service delivery performance than ISO 20000 for information and communication technology management (β ~ =.82) and ISO 9001: 2008 for quality management (β ~ =.45). The overall path coefficient for ISO was β =0.24 and the three predictors together accounted for 6% of the variance in IT service delivery (R^2 =.06).which was insignificant.

The path coefficients from improved service availability (ISD4) and response time (ISD3) had the highest coefficients β=0.74 and β=0.71 respectively, meaning that IT service availability and response time were the greatest benefit achieved as a result of ISO implementation in state corporations. Other service delivery variables gave varied coefficients; service quality (β=0.50), user satisfaction (β=0.46), standardized services (β=0.58), IT resource use (β=0.67), IT alignment (0.70), staff productivity (β=0.57), IT governance (β=0.63) and cost reduction (β=0.63). The study therefore concluded that all the four ITSM practices, ITIL, COBIT, CMMI and ISO and hypothesized variables other than COBIT's monitor and evaluate had significant impact on IT service delivery. Among the four practices, ITIL had the highest effect on IT service delivery R^2=0.40 (40%), followed by COBIT with R^2=0.31 (31%), CMMI R^2=0.18 (18%) and lastly ISO R^2=0.06 (6%). The findings imply that usage of ITSM practices by in Kenyan state corporations can impact IT service delivery positively.

The combined effect of ITSM practices on IT service delivery was tested as it was conceptualised in the literature and the results are presented in Table 5.1.

Table 5.1: Combined effects of ITSM practices on IT service delivery

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.406[a]	.165	.157	.44207	.165	19.386	1	98	.000	2.175

a. Predictors: (Constant), ITSM
b. Dependent Variable: IT Service Delivery

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.788	1	3.788	19.386	.000[a]
	Residual	19.152	98	.195		
	Total	22.940	99			

a. Predictors: (Constant), ITSM
b. Dependent Variable: IT Service Delivery

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.029	.333		6.101	.000
	ITSM	.465	.106	.406	4.403	.000

a. Dependent Variable: IT Service delivery

The results of the analysis in Table 5.1 show that ITSM practices correlate with IT service delivery up to 40.6% (R=.406) which is a relatively moderate or average relationship explained by 16.5% (R^2 =.165) variation on IT service delivery. This proportion that is explained by ITSM practices is statistically significant (F value = 19.386 at p-value = 0.00 which is less than 0.05). These relationships were expressed in the following equation:

ITSD = 2.029 + 0.406 ITSM

Where ITSD = IT service delivery, ITSM=ITSM practices

In the coefficient table, a unit change in ITSM practices yields 0.406 positive changes on IT service delivery. This change is statistically significant, meaning that ITSM practices impacts IT service delivery positively. On the basis of these results H_1 is supported. The study therefore failed to reject the hypothesis. The results concur with the findings of Marrone and Kolbe (2011) detailed survey in Europe and Asia, which concluded that ITSM practices improved IT service delivery. Gacenga and et al, (2010); Tan et al (2010); Iden and Eikebrokk (2014) findings that ITSM practices implementation directly lead to the realization of improvements to IT organizations.

The effective IT functioning has been of great focus and integral aspects for IT organizations the overall business outcome, the results demonstrate that the current ITSM frameworks can be critical to the provision of the operational and strategic effectiveness of IT organizations thus providing benefits to the corporate vision of excellence in IT service delivery to organizations (Tan et al., 2010).

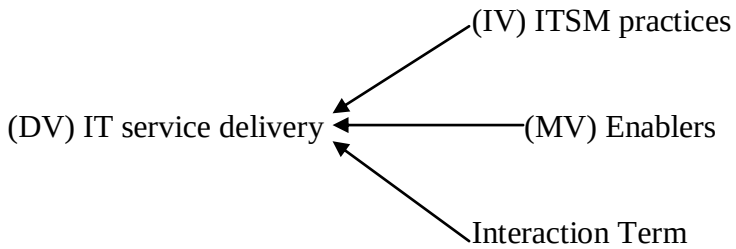
5.3 Moderation effect of enablers on ITSM practices and IT service delivery relationship

The second objective of the study was to establish the moderation effect of enablers on the relationship between ITSM practices and IT service delivery. This study therefore conceptualized that enablers as those factors that would accelerate or decelerate the relationship between ITSM practices and IT service delivery.

A moderator is a variable which affects association between independent and dependent variables. Baron and Kenny (1986) define a moderator as a variable that affects the direction and or strength of the relationship between a predictor (independent) and dependent variable. In SEM analysis moderation is tested by analysis of Chi-square. Moderation is supported if the deference between the

Chi square and the corresponding Degree of freedom is statistically insignificant. According to Kline (2010), testing of the moderation requires a robust chi-square statistics, hence a sample size of 200 is deemed adequate for the moderation analysis. Due to the limitation of the population and sample size regression analysis was used to test this objective. Moderated effects in regression models capture the effect of an independent variable on a dependent variable as a function of a third variable. The dependence of the third variable is known as the interaction effect or term. This effect is a product of the predictor and dependent variable. Moderation is supported when the interaction term remains significant when introduced to the regression is significant. Figure 5.5 demonstrates the testing of moderation illustrated by Baron and Kenny (1986).

Figure 5.5: Influence of Interaction term



Key:

IV= Independent variable MV=Moderator variable DV = Dependent Variable

Source: Adapted from Baron, R.M., & Kenny,D.A. (1986).

H_2: *Enablers moderates the effect of information technology service management practices on IT service delivery of Kenyan State Corporations.*

This hypothesis was tested using stepwise regression analysis. In step one, information technology service management practices and enablers were regressed on service delivery. In step two the interaction term between information technology

service management practices and enablers was introduced. Table 5.2 shows the regression results depicting the effect of enablers on the relationship between information technology service management practices and Service delivery.

Table 5.2: Moderation effect of enablers on ITSM practices and IT service delivery relationship

Model Summary[c]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.634[a]	.402	.390	.37605	.402	32.611	2	97	.000	
2	.647[b]	.418	.400	.37282	.016	2.684	1	96	.105	2.041

a. Predictors: (Constant), Enablers, ITSM

b. Predictors: (Constant), Enablers, ITSM, Interaction Term

c. Dependent Variable: IT service Delivery

ANOVA[c]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	9.223	2	4.612	32.611	.000[a]
	Residual	13.717	97	.141		
	Total	22.940	99			
2	Regression	9.596	3	3.199	23.013	.000[b]
	Residual	13.344	96	.139		
	Total	22.940	99			

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.917	.335		2.738	.007
	ITSM	.243	.097	.213	2.517	.013
	Enablers	.527	.085	.524	6.199	.000
2	(Constant)	-1.502	1.513		-.992	.324
	Interaction Term	-.229	.140	-1.159	-1.638	.105

a. Dependent Variable: IT service delivery

The findings for step two indicate that ITSM practices (B=.243, t=2.517,

P=0.013< .05) and enablers (B= 0.527, t=6.199, P=0.00<.05) independently have a statistically significant influence on IT service delivery accounting for 40.2 Percent (R^2=.402, F=32.611, p value=0.00<.05) of the variation on IT service delivery. In the second step, the effect of the interaction term on controlling for the two independent variables was not statistically significant (B=-.229, t=-1.638, P value =0.105>.05).

Although enablers influenced IT service delivery individually, the influence of the interaction was not statistically significant. The findings thus failed to accept the hypothesis that enabler moderates the influence of ITSM practices on IT service delivery of Kenyan State Corporations.

5.4 Moderation Effect of integration strategies on ITSM practices and IT service delivery

The third objective of the study was to establish the moderating effect of integration strategies on the relationship between ITSM practices and IT service delivery.

In order to achieve this objective, a hypothesis H_3: *Integration strategies have a Significant Influence on the Relationship between ITSM practices and IT service delivery of Kenyan State Corporations* was stated and tested.

The current study assessed the effect of ITSM integration strategies on ITSM and IT service delivery. The covariance of the individual integration strategies was tested using structural equation modelling. The covariance of ITIL -> COBIT was 0.56, ITIL -> CMMI=0.67 and ITIL -> ISO=0.36 meaning that CMMI was the best integrator with ITIL. The study also studied the covariance of COBIT -> CMMI=0.75 and COBIT -> ISO=0.39, CMMI->ISO=0.54 meaning again that CMMI was the best integrator with COBIT but the covariance was higher in COBIT than with ITIL. Thus

it was evident that CMMI was a better integrator.

Due to limitation of sample size, to test for the moderation influence, step wise regression analysis was conducted using the following steps. Step one, tested the influence of ITSM practices and integration strategies on IT service delivery. Then in step two, the interaction term was introduced in the equation and its significance evaluated when controlling for ITSM practices and integration strategies. The interaction term was computed as the product of the standardized scores of ITSM practices and integration strategies. The findings of these tests are presented in Table 5.3

Table 5.3: Moderating effect of integration strategies on ITSM practices and IT service delivery

Model Summary[c]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.476[a]	.227	.211	.42766	.227	14.215	2	97	.000	
2	.525[b]	.275	.253	.41616	.049	6.433	1	96	.013	2.024

a. Predictors: (Constant), ITSM, Integration strategies

b. Predictors: (Constant), ITSM, Integration strategies, Interaction Term

c. Dependent Variable: IT service delivery

ANOVA[c]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.200	2	2.600	14.215	.000[a]
	Residual	17.740	97	.183		
	Total	22.940	99			
2	Regression	6.314	3	2.105	12.152	.000[b]
	Residual	16.626	96	.173		
	Total	22.940	99			

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.661	.394		6.752	.000
	ITSM	.467	.102	.408	4.574	.000
	Integration	-.105	.038	-.248	-2.778	.007
2	(Constant)	9.212	2.611		3.528	.001
	Interaction Term	.311	.122	2.957	2.536	.013

a. Dependent Variable: IT service Delivery

The findings for step one indicate that ITSM practices (B=.467, t=4.574, P<.05) and integration strategies (B=-.105, t=-0.248, P=0.007<.05) independently have a statistically significant influence on IT service delivery accounting for 22.7 Percent (R^2=.227, F=14.215, P value <.05) of the variation on IT service delivery.

In the second step, the effect of the interaction term on controlling for the two independent variables was also statistically significant (B=0.311, t=2.536, P value <.05). The significance of the interaction term indicated that both ITSM practices and integration strategies when combined contribute to IT service delivery. The Durbin Watson Statistic was 2.1 which were greater than 2 implying that there is no autocorrelation in the sample. The findings thus failed to reject the hypothesis that integration strategies moderates the influence of ITSM practices on IT service

delivery. The relatively moderate change in R^2 was an indication that the interaction term had significant effect to explain the relationship. The current study thus concluded that interaction between the ITSM practices and integration strategies had an influence on IT service delivery to support a moderation relationship. The study therefore failed to reject the hypothesis.

The strategic alignment theory emphasise that managers need to identify the myriad process interdependencies that could help determine how the various processes overlap, how they can be linked, split, recombined and sequenced to achieve a successful outcome(Curtis,2005). The findings imply that concurrent adoption and implementation of ITSM practices can be beneficial to the state corporations in improving IT service delivery.

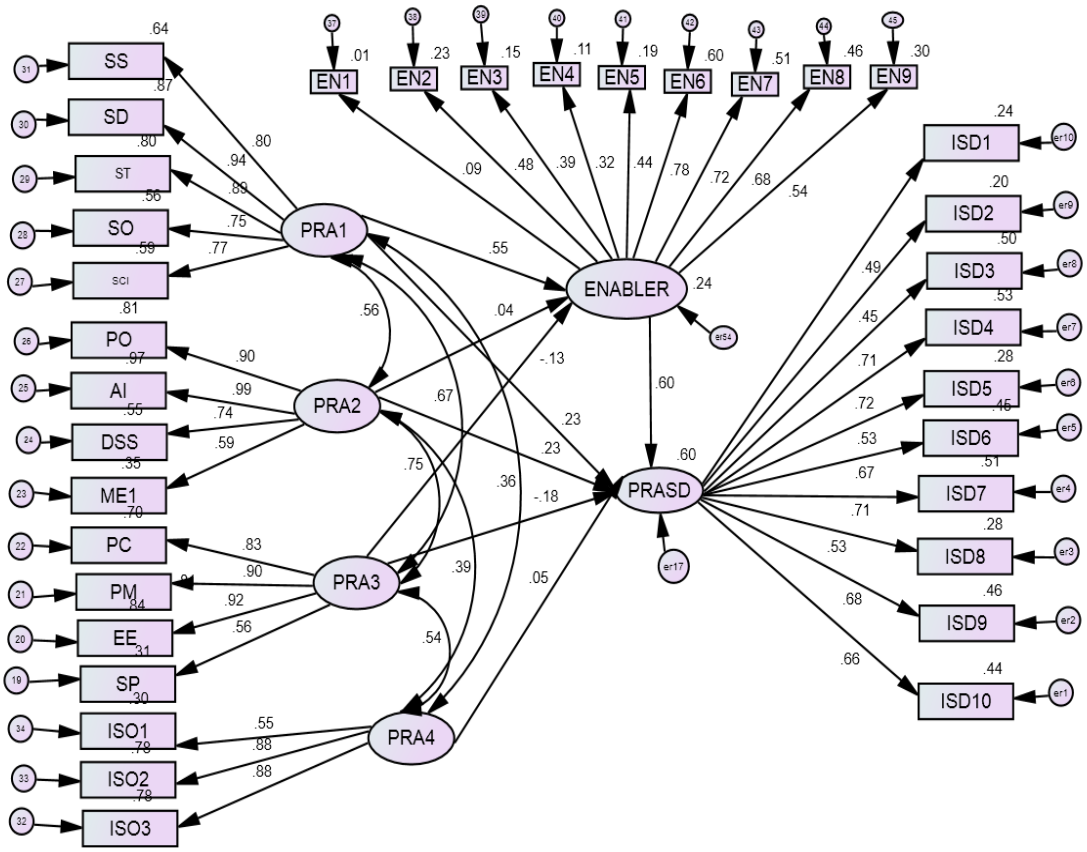
5.5 Combined independent effects of ITSM practices, Integration strategies and enablers on IT service delivery

This study had one broad objective to determine the joint effect of ITSM practices, integration strategies and enablers on IT service delivery of Kenyan state corporations. The following hypothesis was formulated to be tested.

H_4: *The combined effect of ITSM practices, integration strategies and enablers on IT service delivery is higher than the individual effects.*

The study generated the combined model on the influence of ITSM practices on IT service delivery. Figure 5.6 illustrates the fully unveiled model.

Figure 5.6 combined model on the influence of ITSM practices on service delivery.



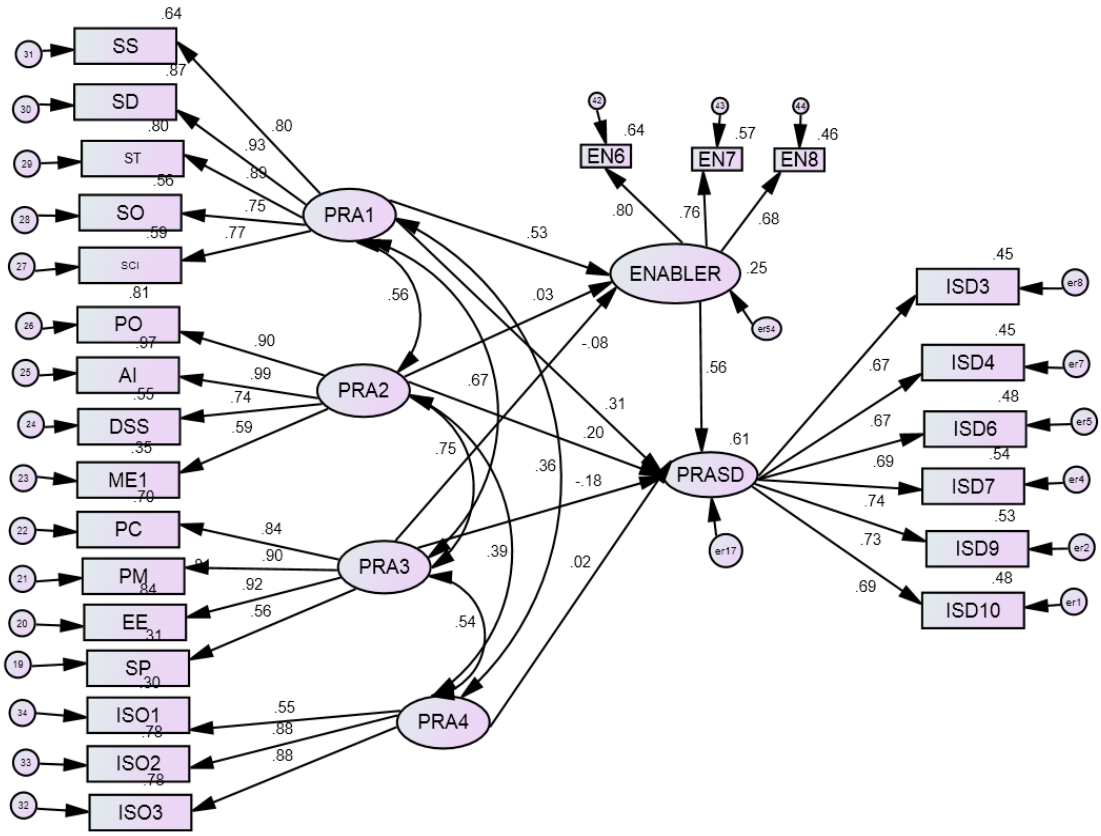
$\chi 2$ (261) =600.604 (p=0.968 χ^2 /DF =2.301 and RMSEA=0.08

The likelihood ratio chi-square (χ^2= 600.604; DF =261; p = 0. 968) were insignificant (p>0.05) and RMSEA=0.08<0.08. The goodness of fit indices GFI=0.967 and AGFI was 0.951 which was greater than 0.90 cut point, indicating acceptable fit between the data and the model. As shown in figure 5.6, the four practices together, with ITSM enablers and integration strategies accounted for 60% of the variance in IT service delivery (R^2 =.60) which was a moderate influence.

The study refined the model by excluding factors that were not very significant with less than 0.4 factor loading as shown in the modification indices. It was found that, the effect of ME1 was not flagged in the modification indices; hence it was retained in

the final and modified model. The final model is shown in Figure 5.7

Figure 5.7 Final model on the effect of ITSM practices on service delivery.



$\chi 2$ (112) =235 (p=0.06 χ 2 /DF =1.942 and RMSEA=0.078

The likelihood ratio chi-square (χ^2= 235; DF =112; p = 0. 06) were insignificant (p<0.05) and RMSEA=0.078<0.08. The goodness of fit indices between the data and the model gave, GFI=0.980 and AGFI was 0.890 which was greater than 0.90 cut point indicating acceptable fit between the data and the model. As shown in figure 5.7, the four practices together with ITSM enablers and integration strategies accounted for 61% of the variance in IT service delivery (R^2 =.61) after refinement which was a moderate influence on IT service delivery. Among the enablers, only consultant support, tools and organization culture were significant. The four ITSM

practices had greatest effect on response time, service availability, IT resource use, staff productivity and cost reduction.

Since the model provided a feasible solution, regression analysis was conducted to provide a joint contribution of each group of variables (Malakmohammadi, 2010). The results of the joint effect of ITSM practices, integration strategies and ITSM enablers are presented in Table 5.4.

Table 5.4: Combined Effect of ITSM practices, integration strategies and enablers on IT service delivery

Model Summary[d]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.406[a]	.165	.157	.44207	.165	19.386	1	98	.000	
2	.634[b]	.402	.390	.37605	.237	38.432	1	97	.000	
3	.675[c]	.455	.438	.36077	.053	9.388	1	96	.003	1.925

a. Predictors: (Constant), ITSM
b. Predictors: (Constant), ITSM, Enablers
c. Predictors: (Constant), ITSM, Enablers, Integration Strategies
d. Dependent Variable: IT service delivery

ANOVA[d]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.788	1	3.788	19.386	.000[a]
	Residual	19.152	98	.195		
	Total	22.940	99			
2	Regression	9.223	2	4.612	32.611	.000[b]
	Residual	13.717	97	.141		
	Total	22.940	99			
3	Regression	10.445	3	3.482	26.750	.000[c]
	Residual	12.495	96	.130		
	Total	22.940	99			

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.029	.333		6.101	.000
	ITSM	.465	.106	.406	4.403	.000
2	(Constant)	.917	.335		2.738	.007
	ITSM	.243	.097	.213	2.517	.013
	Enablers	.527	.085	.524	6.199	.000
3	(Constant)	1.525	.378		4.038	.000
	ITSM	.249	.093	.218	2.687	.008
	Enablers	.518	.082	.515	6.348	.000
	Integration strategies	-.098	.032	-.231	-3.064	.003

a. Dependent Variable: IT service delivery

The results in Table 5.4 indicates that ITSM practices explain 16.5 percent (R^2=0.165), however, when an additional variable, enablers is added, it explains 40.2 percent (R^2=0.402) with enablers contributing 23.7 percent (R^2=0.237) and when integration strategies is added it explains 45.5 percent (R^2=0.455) with integration strategies contributing 5.3 percent R^2=0.053).

Therefore, 45.5 percent variations in IT service delivery is explained by the combined effect (R^2=0.455) and statistically significant (F=26.750, p-values=0.000), implying that the variables when combined influence IT service delivery. The results shows that when ITSM practices are regressed with IT service delivery, ITSM contributed 16.5% effect on IT service delivery, when enablers are added the contribution reached 40.2% with enablers contributing 23.7% and integration strategies contributing 5.3%. Overall the three variables together accounted for 45.5% effect on IT service delivery. The results were sufficient to support the influence of the combined variables on IT

service delivery of the Kenyan state corporations.

The findings suggest that a strong link exist between the usage of ITSM practices and IT service delivery. The study's findings and the literature available provide a relatively robust confirmation for the growing support for ITSM implementation and its effect on IT service delivery in state corporations. Overall this finding supports the hypothesis that the combined effect of ITSM practices, enablers and integration strategies on IT service delivery was higher than individual effects.

5.6 Discussion of the findings

In this section, the summary of major findings of the study, addressing gaps identified in literature and the problem statement, are set out. In what follows, discussions are done along conceptual, empirical and theoretical spheres. The discussion points out agreement and contradiction between the results of the current study and those of other studies as well as postulations of the anchoring theories. The discussion is organized along the four hypotheses of the study.

5.6.1 ITSM practices and IT service delivery in state corporations

The first objective of the study was to establish the influence of ITSM practices on IT service delivery. The justification for carrying out this research stems from the fact that the usage of ITSM practices has been on the rise and the impact that these practices have on the organization has been limited in the academic literature (winniford et al, 2009). At the same time, firms were uncertain if their organizations would obtain any benefits from implementing ITSM practices (Praeg and Spath, 2011).

While the ultimate interest lies on the impact that these practices have on IT service delivery and business performance, the focus of this study delved into the perception of IT executives who had implemented these frameworks. This was based on the basis of ITIG, (2008) reports that over 90% of CEOs and CIOs view IT as a crucial contributor to the success of the business, however over the past three decades academic researchers and business have referred to IT as the "productivity paradox", meaning that in spite of enormous investments in IT, the technology has not proven to provide a significant increase in productivity.

Ciborra, (1997) argue that strategic alignment positively influences IT effectiveness leading to greater performance on IT service delivery. Pollard and Cater-Steel (2009) posit that IT service management can be conceptualized as solution to a problem of aligning the relationships between the business and IT infrastructure domain in order to take advantage of IT opportunities and capabilities. Their results show that aligned firms have greater IT maturity and that the chief information officer's knowledge of IT service delivery is greater in aligned firms. Papp (2001) concurs that alignment is the key to achieving improved profitability from IT. For Papp, alignment considers strategic fit between strategy infrastructure, processes and fundamental integration between business and IT.

Worldwide ITSM practices have been recognised over the past years as the innovative resources to overcome productivity paradox issues. ITSM has also been theorized to have the potential to become relevant strategic assets that have an impact on the integration between the business and the IT organization (Wagner, 2006). The issue of business-IT alignment has often been cited as the key issue by IT executives (Tan et

al, 2010).

The findings from this study have shown that all the five ITIL practices (Service Strategy, Service Design, Service Transition, Service Operation and Continual Service Improvement) had a significant effect on IT service delivery. The findings imply that state corporations implementing ITIL practices will improve IT service delivery by 40%. Extending the findings by Karimi, Somers and Gupta (2001) on the impact of ITIL on customer service, which found that ITIL practices, improved customer service.

The study further revealed that among the COBIT practices, plan and organize, Acquire and Implement and Deliver and Support practices explained the effect of ITSM practices in the predicted direction, while Monitor and evaluate practices did not. The three COBIT practices/predictors together accounted for 31% of the variance in IT service delivery (R^2 =.31) meaning that COBIT practices significantly improve IT service delivery. The finding concurs with (Heart et al., 2010; Lazic et al., 2011) that a positive relationship exists between COBIT and IT-enabled enterprise adaptability. However, the finding suggest that monitor and evaluate practices of COBIT are rarely practiced in state corporations, meaning that state corporations that have adopted and implemented COBIT practices do not assess quality and compliance to the COBIT practices. From a control perspective, the functionality of IT systems has to be verified to make sure that the systems are functioning as intended. In addition, Monitor and evaluate practices addresses management's supervision of the organization's control process and provide assurance of the quality of services provided by an IT organization. Meaning that assessing efficiency of adopted COBIT practices for effective control and continues service improvement may be missing in

State Corporation. Likewise the study established that all the CMMI practices (Process Management, Project management, Software Engineering and Service Support) had significant effect on IT service delivery. The four CMMI practices/predictors together accounted for 18% of the variance in IT service delivery (R^2 =.18). Lastly among the ISO practices only ISO 20000 and ISO 27001/2 had significant effect on IT service delivery. However, the ISO predictors together accounted for 6% on IT service delivery (R^2=0.06). Among the four practices ITIL had the highest effect, the findings corroborates with Cater-Steel et al. (2009) study findings among ITSM practices ITIL is the most widely adopted.

The results of the correlation and regression analysis indicated that the relationship between ITSM practices and IT service delivery was moderate, positive and statistically significant. Results of the study showed that ITSM practices explained 16.5% of IT service delivery. The other variables in the organizations explained the remaining 83.5%. This finding can be explained by the low level of maturity of ITSM in state corporations. These were revealed from the study findings that 83% of Kenyan State Corporations were in level 2 maturity and below. Marone and Kolbe (2011) contend that IT service delivery benefits increases with the level of maturity with ITSM, the same study concludes that as the maturity of the COBIT implementation increases, so does the perceived business-IT alignment.

The findings from the qualitative data confirmed that ITSM practices improved IT service delivery. The same finding explained that adoption of ITSM practices greatly improved IT service delivery aspects such as user satisfaction, quality of IT services, turnaround time of customer request and communication among IT staff and between ICT and the customer (business). The study therefore concluded that ITSM practices

significantly influence IT service delivery. The service delivery benefits varied from one practices to the other. As postulated in the strategic alignment theory, and extant literature (Reich and Benbasat, 2000), ITSM practices ensure successful IT and business alignment, optimal use of IT resources and an appropriate quality of IT was supported by the study findings.

The results were consistent with extant literature that ITSM practices impacts positively on IT service delivery. Cater-Steel and McBride (2007) found that ITIL implementation impacted on service quality, user satisfaction, and on the infrastructure and resource management. Potgieter, Botha and Lew (2005) found out that usage of the ITIL framework would provide benefits in the areas of service quality and user satisfaction and Cervone (2008) that established that ITSM practices improved cost reduction, user satisfaction and the productivity of the IT department. The finding also corroborates studies by Heart et al., (2010) in which a positive relationship between COBIT and IT-enabled enterprise adaptability was reported. Similarly, Lazic et al. (2011) which suggested that, COBIT implementation is positively related to business performance.

This finding bridged the identified gaps in literature, paucity of studies combining all the four practices comprehensively. Further, through SEM analysis the study confirmed and provided empirical results on how IT service delivery benefits varied from one practice to the other in State Corporations in a developing country. Therefore ITSM practices are resources towards excellence on IT service delivery in state corporations.

5.6.2 Enablers and IT service delivery in state corporations

The second objective of the study was to establish the influence of enablers on the relationship between ITSM practices and IT service delivery in Kenyan state corporations. In this study enablers were conceptualized as moderating variables. The enablers comprised of organization size, top management support, government policies and regulations, sufficient internal professional IT staff, tools, knowledge and skill, external consultants, organizational culture and willingness to change.

In testing for the moderating effect of enablers on the influence of ITSM practices on IT service delivery, SEM analysis results indicates that willingness to change had the highest mean score followed by knowledge and skill related to IT Service Management. The enablers with the lowest moderation effect were tools and consultant support. From the foregoing, the current study agree with the (Iden, 2009), Delphi study which found that senior management involvement, competence and training, information and communication to staff and stakeholders, and culture were important factors for successful implementation of ITIL practices.

Empirical studies on enablers had been addressed in ITSM literature in different perspective. Although the CSF approach is widely used by researchers to produce a plethora of factors, the findings of the current study show that enablers have different levels of criticality in influencing ITSM practices and IT service delivery relationship. From the SEM analysis it was evident that among Kenyan state corporations, consultant support, tools and organization culture were significantly associated with ITSM and IT service delivery.

This study has established that individually enablers significantly influence IT service delivery; however when the effect regressed with IT service delivery was not

statistically significant. The outcome of this study agrees with Marrone and Kolbe (2011) study which concluded that ITSM challenges were more at low level of ITSM maturity and hence the expected benefits on IT service delivery were minimal.

This study therefore concludes that, although enablers have been postulated to enhance the effectiveness and success of ITSM implementation the effects are statistically insignificant at low level of ITSM maturity.

5.6.3 Integration strategies and IT service delivery in state corporations

The third objective of the study sought to establish the moderating effect of ITSM integration strategies on ITSM and IT service delivery relationship. Cater-Steel, Tan and Toleman (2006) observed that many organizations that had adopted ITIL had also adopted COBIT, CMMI and or ISO, whereas this observation was supported in extant literature, the current study focused on answering whether these integrations significantly impacted on IT service delivery. Therefore the purpose of the study was to establish if there is a significant difference in the moderating role of ITSM integration on the relationship between ITSM practices and IT service delivery. The results revealed that state corporations had adopted integrated ITSM frameworks to improve IT service delivery. The finding agrees with Tan et al (2010) and Curtis, (2005) that although the academic community has been slow to research the phenomenon of multiple framework adoption, organizations have recognized the opportunity to reduce the complexity of customizing one practice to suit emerging needs by adopting multiple frameworks for specific need to IT management.

The study further determined which IT service management practices were integrated. The findings revealed varied and less agreement on the integration aspects. From the

SEM analysis the study established that CMMI and COBIT had the highest covariance followed by CMMI and ITIL, meaning that state corporations intending to integrate ITSM practices can start with either CMMI and COBIT or CMMI and ITIL for optimal performance on IT service delivery based on their organizational needs. It was evident from the study that CMMI was the best integrator and provided higher effect on IT service delivery than other combinations, demonstrating that different integration strategies provides varied effects on IT service delivery.

The current study established that ITSM integrations influenced the effect of ITSM practices on IT service delivery to a great extent and the effect of integrations strategies on ITSM practices and IT service delivery was statistically significant. The findings concurs with Cater-Steel, et al. (2006) study which established that integrating multiple ITSM practices can be beneficial to organizations in terms of efficiency and waste reduction. Lucas (2005) study which concluded that integrating all these elements converges to sustainability and achievement of business objectives of improved IT service delivery. Therefore state corporations should choose integrations that punctuate equilibrium alignment model that provides the optimal effect on IT service delivery.

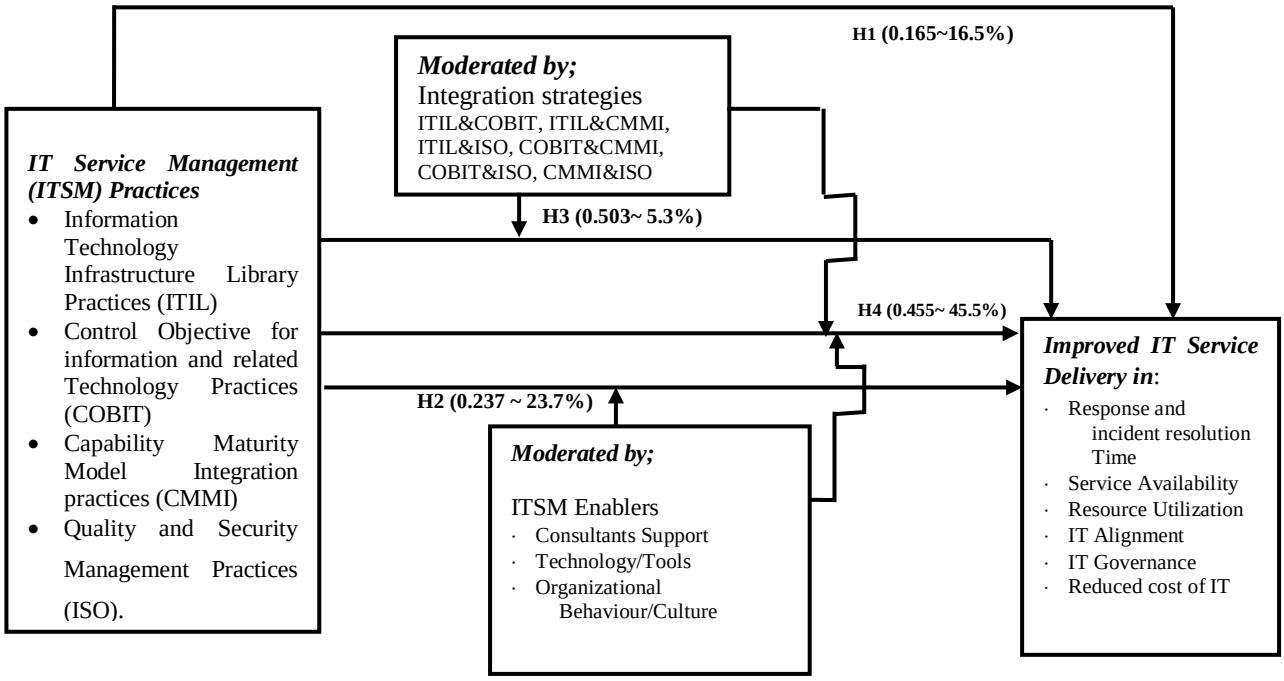
5.6.4 Combined effect of ITSM practices, enablers and integration strategies on IT service delivery in state corporations

This study had one broad objective to determine the combined effect of ITSM practices, enablers and integration strategies on IT service delivery in Kenyan state corporations. The results of the combined effect of ITSM practices, integration strategies and enablers explained 45.5 percent of the variations in IT service delivery.

This finding was higher than the individual effect of ITIL, COBIT, CMMI and ISO on IT service delivery.

The study did not come across empirical studies on combined effect of ITSM practices; integration strategies and IT service delivery. However the finding concurs with Cater-Steel, Tan and Toleman (2008) study that a number of factors contribute to the success of the ITSM projects and Martin (2009) that hybrid of best practices contributes to ITSM successes. The study then generated the overall summarised model on the moderation effect of integration strategies, enablers on the relationship between ITSM practices and IT service delivery. Figure 5.8 depicts the Final model.

Figure 5.8 Final Model



Source: Data Analysis (2015)

The final model shows that there is a significant relationship between ITSM practices and IT service delivery. Integration strategies significantly moderate the relationship while only consultants support, technology/tools and organizational behaviour/culture

enablers moderate the relationship.

Overall ITSM practices significantly improved; response and incident resolution time, service availability, IT resource utilization, IT alignment, IT governance and reduced cost of IT service delivery in Kenyan state corporations. The study clarifies the relation between specific ITSM practices and the benefits attainable through its implementation. The findings suggest that a strong links exist between the usage of ITSM and the realization of operational benefits and improvements on IT service delivery.

5.7 Chapter Summary

This chapter has been devoted to test hypotheses, confirm the descriptive results and discussion of the study findings. In total four hypotheses were tested. The key findings indicate that ITSM practices significantly influence IT service delivery. Further, ITSM enablers have no significant moderating role. This notwithstanding, the ITSM integration strategies strengthens the relationship between ITSM practices and IT service delivery.

A combined influence of ITSM practices, enablers and integration strategies was greater than the influences of ITSM alone on IT service delivery. These findings have been discussed and compared with theory as well as previous studies. The results were found to concur with several as well as differ with other studies as well as theoretical and conceptual propositions.

The key beneficiary of the findings is the strategic alignment theory postulations which have been confirmed by these findings. Further, the proposition by the contingency theory was also supported that contingency of factors influencing IT

service delivery vary across the industry and study context by refuting the effect of some enablers on the relationship between ITSM and IT service delivery. Further, the proposition by the resource based view was confirmed that ITSM practices are resources that fit well in RBV towards capability on IT service delivery. In what follows, chapter six presents the summary conclusions and recommendations.

CHAPTER SIX

SUMMARY, CONCLUSIONS AND IMPLICATIONS

6.1 Introduction

This chapter presents a summary of the research problem while discussing the findings from the quantitative study for each of the hypothesized relationships. It also discusses the implications for scholar and managers, assesses the limitations of the study, and presents future avenues of scholarly research in the field of IT service Management. The structure of the chapter is guided by the four research objectives and hypotheses as an endeavour to explain why the findings are the way they are and to what extent they are consistent with or contrary to past empirical findings and theoretical arguments. These is based on an observation by Venkatesh et al., (2013) that scholarly research should contribute to and extend the current literature by filling in existing gaps for both researchers and managers.

This study was therefore conceptualised in an effort to contribute to and extend the current literature by filling in existing gaps for both researchers and managers. This chapter presents a summary of the research problem. The implications of the research are also presented. The limitations of the study alongside the future avenues of scholarly research in the field of ITSM practices, integration strategies and enablers and including IT service delivery are equally presented.

6.2 Summary of the Findings

This study was set out to establish the effect of ITSM practices on IT service delivery by addressing four primary gaps in the literature. The empirical studies revealed that the current study findings have been contradicting, biased, and unbalanced in analysis of different measures of IT service delivery, as well as the failure to use

weighted scores to measure IT service delivery. The evolving literature on ITSM enablers was narrow and largely focused on the adoptions and the integration strategies that explain concepts but falls short of exhibiting the moderating effect on the relationship between ITSM practices and IT service delivery.

To address these four gaps, this study was conceptualized and schematized and pictorially set out in a conceptual framework with the intent to investigate the relationships between ITSM practices, enablers, integration strategies and their overall impact on IT service delivery-at the firm level unit of analysis, using the various theoretical underpinnings. Primary data was collected, cleaned, sorted, edited and analysed. The analyses were done using descriptive statistics as well as multiple regression and SEM analyses yielding varied results, which have been compared to theoretical propositions, conceptual and empirical studies.

The influence of ITSM practices was evaluated based on the dimensions of ITIL, COBIT, CMMI and ISO practices. These were evaluated against ten IT service delivery variables on improved; service quality, user satisfaction, standardized services; IT resource use, IT alignment, staff productivity, IT governance and cost reduction. The summary of the four hypotheses tested and the results are presented in Table 6.1.

Table 6.1: Summary of Test of Hypothesis

Objective	**Hypothesis**	**Decision**
Objective One: To establish the effect of IT service management practices on IT service delivery.	H1: Information technology service management practices have a significant positive effect on IT service delivery.	**Failed to Reject**

Objective Two: To examine the influence of enablers on the relationship between IT service management practices and IT service delivery.	H2: enablers have significant moderation effect on the relationship between IT service management practices and IT service delivery.	**Rejected**
Objective Three: To examine the influence of integration strategies on the relationship between IT service management practices and IT service delivery.	H3: Integration strategies have significant effect on the relationship between IT service management practices and IT service delivery.	**Failed to Reject**
Objective Four: To determine the combined effect of ITSM practices, enablers, integration strategies on IT service delivery.	H4: The combined effect of ITSM practices, enablers, integration strategies and service delivery is higher effect than the individual effect.	**Failed to Reject**

This research significantly shows that the implementation of ITSM practices directly lead to improved IT service delivery. The study also identified frameworks and practices that significantly predict the realization of IT service delivery benefits, clarifying the relation between ITSM practices and the benefits attainable through its implementation. The findings suggest that a strong link exists between the usage of ITSM practices and the realization of IT service delivery benefits. The moderation effect of enablers was statistically insignificant, while integration strategies significantly moderate the relationship between ITSM practices and IT service delivery. The combined effect of ITSM practices, enablers and integration strategies provide greater effect on IT service delivery than the individual variables. The study's findings and the literature available provide a relatively robust confirmation of the

growing support for ITSM implementation and its effect on IT service delivery.

6.3 Conclusion

This study sought to establish the influence of integration strategies and ITSM enablers on the relationship between ITSM practices and IT service delivery of Kenyan state corporations. To achieve this, specific objectives and matching hypothesis were stated. In this regard the study has drawn several conclusions. Overall, there is a significant relationship between ITSM practices and IT service delivery of state corporations in Kenya. The results show that disaggregated ITSM practices; ITIL, COBIT, CMMI and ISO had a weak but positive relationship with IT service delivery. ITIL had the highest effect on IT service delivery, followed by COBIT, CMMI, and ISO respectively. The aggregated effect of ITSM practices on IT service delivery was also tested and the results presented. Results of the study showed a relatively moderate or average relationship. The findings were sufficient to support influence of ITSM practices on IT service delivery, implying that ITSM practices had statistically significant effects on IT service delivery. The study has shown the practices that have most impact on IT service delivery and the service delivery benefits realised from each practice, thus the study conclude that ITSM practices are resources that state corporations can use to enhance capability on IT service delivery; therefore, state corporations need to adopt and align ITSM practices to IT service delivery for overall business success.

The study further established that ITSM practices interacted with enablers and this interaction had an influence on IT service delivery individually, however the moderation effect was statistically insignificant, thus extending a study by Iden and Eikebrokk, (2014) on enabler and ITSM adoptions. The study has shown that

individually enablers influenced service delivery but when combined only consultants Support, technology/tools and organizational behaviour/culture were significant, the study therefore concludes that state corporations should focus on this enablers and pursue the others as the organization mature on ITSM practices as established by Marrone and Kolbe (2011) that as maturity increases, the benefits also increase thus reducing the challenges identified with enablers.

The study also found that ITSM practices and integration strategies significantly influences IT service delivery. The interaction between the two variables had a statistically significant influence on IT service delivery to support a moderation relationship extending the study by Tan et al (2010) and Curtis, (2005) on adoption of multiple ITSM practices. Integrations improves the impact of ITSM on IT service delivery, hence state corporations should identify and pursue integration strategies that lead to maximum effect on IT service delivery.

Finally, the combined influence of the three variables; ITSM practices, integration strategies and enablers was found to have a greater influence on IT service delivery in Kenyan State corporations than the individual variables. Hence state corporations should not view ITSM implementation in isolations; ITSM practices enablers, integration strategies provide enhanced effect on IT service delivery. The finding that ITSM practices have a statistically significant influence on IT service delivery is critical, hence state corporations need to pay attention to the ITSM practices especially during IT decision making.

6.4 Implications of the Study

There has been existing research in the area of ITSM practices, integrations strategies,

enablers and IT service delivery benefits. However, there has been limited literature on the influence of ITSM practices dimensions on IT service delivery.

There has also been very little literature on the influence of the specific ITSM enablers dimensions on IT service delivery. The findings from this study have certainly brought about areas of impact to the existing body of knowledge, managerial practice, theory and policy in Kenyan state corporations and other organizations in both the public and private sector in Kenya and beyond.

6.4.1 Theoretical Implications

This study will contribute towards theory in many ways. Whereas the concept of ITSM is grounded more on practice than theory, this study was anchored on Strategic Alignment, Resource Based View and Contingency theories. The findings of this study lend the much needed empirical strength to these theories. The conceptualization of ITSM and IT service delivery relationship was anchored on the strategic alignment theory. This study showed empirical combination of ITSM practices, enablers, and integration strategies in IS to provide a fruitful conceptualization of ITSM practices and IT service delivery providing empirical strength to the strategic alignment theory.

Critics of strategic alignment maintain that the implicit dominance of a structured alignment process of strategy and business is questionable in an era where uncertainty and flexibility predominate and the articulation of the strategic intent is difficult (Ciborra, 1997). Papp, (2001) however, argue that by concentrating on the alignment of strategy and infrastructure, state corporations will not only achieve synergy and facilitate the development of competitive capabilities on IT service delivery, but they

will also increase profitability and efficiency. One of the findings of the study was that integration strategies significantly influence the effect of ITSM practices on IT service delivery. It's argued that business-IT alignment is the highly desired state in which state corporations can effectively use IT to achieve its business objectives, as advocated by the strategic alignment theory (Deare, 2006). One of the conjectures of strategic alignment theory is the adaptation and fit which has been supported by integration strategies on the relationship between ITSM practices to the IT service delivery benefits. The study has shown that ITSM integration strategies significantly moderate IT service delivery thus supporting the concept of strategic fit and adaptation of strategic alignment theory.

Contingency theory has been criticized for taking a conservative stance, and providing an endless grouping of variables thus not conclusive and cumbersome to use in real-world settings. The study established the moderation effect of enablers on ITSM and IT service delivery relationship. Saunders and Jones (1992) argue that increasing use of case study methodologies, longitudinal research to investigate the phenomena provides contingent environmental factors that are universal in IS. The current study have shown that among enablers there are enablers that provide optimal effect on the relationship between ITSM practices and IT service delivery, providing a contingency of factors that enhance the effect of ITSM practices on IT service delivery. This finding has lend support to contingency theory by providing enablers that moderate ITSM practices and IT service delivery in state corporation context

The study established ITSM implementation enhance IT service delivery. ITSM emerged as resources which can be configured, renewed, recombined and re-configured to provide a competitive advantage in IT service delivery. Resource-Based

View (RBV) provides a favourable model for analysing the capability of ITSM practices to provide competitive advantage on IT service delivery. The contextualization of these theories in Kenyan state corporations widens the scope of applicability and operationalization of the theories. This study demonstrated application of these theories with respect to IS research. Lastly, the current study has developed an all-inclusive theory in ITSM discipline that can be used by IS researchers in the future.

6.4.2 Implication for Policy

The objective of the creation of Kenyan state corporations is to provide services to its citizens and to bring about social economic development. In order to meet this objective, the government has come up with IT strategies one of which is Vision 2030, National ICT standards and national ICT master plan. These strategies and objectives will be achieved by government through the ministries, government departments and state corporations which cover all the sectors of the economy. Service delivery in Kenyan state corporations therefore is very critical because they enable the government achieve her programs. The study established the moderating integration strategies on the relationship between ITSM practices and IT service delivery.

At a policy level, government will benefit from this study in the development of policies on ITSM practices with a view to improve IT service delivery in state corporations.

The government can utilize this study in the development and review of various national ICT standards on IT management and governance. This would ensure that state corporations have the required ITSM practices that can create a proper fit

between their organizations to the IT service delivery needs of state corporations.

Disaggregated, enablers have been established to have crucial contribution to IT service management practices. Kenyan state corporations will also benefit from the study by putting in place appropriate policies that ensure firms focus on for successful implementation of ITSM practices and realization of IT service delivery benefits. This will strategically enhance success rate of ITSM practices and enhance value on ITSM investments.

Integration strategies have demonstrated that benefit realization from ITSM investments vary with integration strategies. State Corporation can benefit from the study in the development of Guidelines and policies that are strategic to spur benefit realization on improved IT service delivery especially with respect to user satisfaction, quality of service, staff productivity, governance, cost of IT service delivery.

From the foregoing, there is need at policy level therefore, for the evaluation and review of the performance contracting guidelines to include these aspects which are important for IT service delivery. Organizations would in this case be required to include these as targets in their performance contracts, and as well demonstrate how they are to be implemented and monitored. This will make state corporations to start applying empirically tested methodologies of improving IT service delivery.

Mworia (2011) argued that the reasons why state corporations continue to underperform is on account of lack of embracing international best practices in regard to IT governance and IT service delivery a preposition that was supported by SCAC (2013). The government at the national level can benefit from this study in

understanding that ITSM practices, enablers and integration strategies lead to improved IT service delivery. The government should therefore develop a policy framework that will benchmark on these practices as international best practices.

6.4.3 Implications for Managerial Practice

This study will contribute towards managerial practice in state corporations and also in organizations that are in the private sector. It was clear from the findings that ITSM practices influenced IT service delivery.

The current study has provided optimal, practices, enablers ad integration strategies that will enhance IT service delivery in state corporations. This finding can provide direction to the practitioners and managers on the day to day operations. The individuals in organizations tasked with selecting and developing ITSM practices in order to ensure that organizations have the right fit of IT practices will be guided by this study when searching for international best practices towards IT service delivery.

Enablers are important because they chart the IT direction of an organization. This study has proven that enabler's manifestations influence IT service delivery was individually important. Management in state corporations will benefit from this study in that they will use it to formulate internal organizational processes that will guide ITSM enabling organization. The issue of comprehensiveness of the process is critical as management are able to evaluate available alternatives in adapting IT systems.

Integration strategies were also found important across the state corporations that were studied. The study detailed the importance of having integration strategies so as to boost the process of IT service delivery by complementing practices on areas they have weakness in guiding IT management. The study findings confirmed that the

integration strategies were important for IT service delivery because the manner in which management respond to the happenings emerging from IT determines the service delivered by the organization. It was clear from the initial findings that the factors in the integration strategies mattered to state corporations and that there was a clear independent contribution of both ITSM practices and integration strategies to IT service delivery. Management will be able to use this study to understand the importance of aligning their organizations to the ITSM practices to achieve the best fit that enhance IT service delivery. This will enable state corporations compete not only in the region but internationally.

Given the importance of the study variables in IT service delivery, management in organizations will use this study to ensure that ITSM practices are not only put in place, but that also the implementation measures are defined and monitored within the organizations for sustainable IT service delivery. Although they are not part of the performance contract guidelines, management can use this study to put ITSM practices in their internal performance contracts to ensure that they are institutionalised in their day to day operations in all levels of their IT organizations.

This study contributes to research in assessing the impact of different ITSM practices on IT service delivery. Results from the study provide a comprehensive, empirically validated conceptualization of factors pertaining to IT Service delivery benefits due to implementation of ITSM. From the perspective of practitioners, IT managers can direct their ITSM improvement efforts to ITSM practices which lead to IT service delivery benefits they wish to attain. For organizations considering the implementation of such ITSM frameworks, preliminary results show that ITSM practices can produce performance advantages. The research could also alleviate

concerns about the value delivery of the ITSM implementation.

6.4.4 Implications for Methodology

Although, (Poper, 1959) argued that no theory can ever be proven from data; it can only be corroborated, nonetheless, the proposed model has the potential to guide a variety of related research streams. The proposed model provides a reference point to a wide range of empirical studies that could be conducted in order to further test this model to different domains or test different conceptualizations of the same model.

The results from this study provide several implications on methodology. Validity and reliability tests were carried out on the data collection instrument and it was found that the instrument was sufficient to collect data from the respondents. Given that the tests were positive, it is an indication that the data collected was reliable and future research may consider using the same methods for data collection. A drop and pick method was used to get the questionnaire to the respondents and getting them back. This method yielded a response rate of 93% which is a good indication that this method is reliable for data collection.

The operationalization of the study variables got into the heart of IT service delivery. The variables were disintegrated into fine and understandable meanings that were made up of the day to day operations in the organization and that made it easy for the respondents to relate and understand the questions raised in the questionnaire and to provide relevant data that brought forth issues of IT service delivery in Kenyan state corporations. The study utilized regression augmented with SEM to analyse and confirm the relationships between the study variables. These tools are used widely in IS research and helps to explain the relationships clearly. The use of regression and

SEM made it very easy to test and confirm the hypotheses that were developed to achieve the research objectives. At the end of the tests, it was very clear on how they relate in regard to Kenyan state corporations, thus enhancing criterion validity.

6.5 Limitations of the Study

The study aimed at establishing the influence of integration strategies and ITSM enablers on the relationship between ITSM practices and IT service delivery of Kenyan state corporations. While this objective was met, it was not without limitations.

Some Kenyan state corporations were undergoing restructuring due to the recommendations of the taskforce tasked to review state corporations with a view to improve service delivery. This reduced the initial population of study to 100. Those that were merged did not wish to participate because the exercise was on-going. The state corporations not included in the study may have left out vital perspectives and contributions to this study.

Although the sample size of 100 has been supported in literature as adequate for SEM (Sivo et al, 2006), extant literature indicate that sample size of 200 to 400 will provide more robust chi-square and RMSEA statistics (Kline, 2010). The limitation of the total number of state corporations and 100 sample responses limited the study from testing this literature and exploring the other aspects of the study using structured equation modelling. The constraining of sample size limited the applicability of structured equation modelling as initially conceptualised and thus limiting the rigor of the study

ITSM practices were at low level of maturity in most state corporations, the responses

especially qualitative data was limited, although it provided crucial information for the study. This was coupled the wide geographical spread of the Kenyan state corporations was yet another limitation. Although emails were effectively used in a few scenarios to administer the questionnaires. This left out vital information which could have been obtained with more clarification of the concepts and qualitative data captured. The maturity level was also evidenced by weak regressed compared to other mature IS disciplines. Despite all the highlighted limitations the quality, letter and spirit of the study were not compromised.

6.6 Suggestions for Further Research

Arising from the findings in this study, future researchers could benefit from the following suggestions for further study. This study concentrated on establishing the influence of each of the ITSM practices on the IT service delivery of Kenyan state corporations. However, IT service delivery was tested as a composite score as computed. It would be interesting if the individual ITSM practices dimensions were tested against the raw score of each of the areas in the IT service delivery of state corporations. The findings may be different from the ones obtained in this study.

The context of the study was Kenyan state corporations, which were at low level of ITSM maturity. Future research could be undertaken to replicate this study but instead compare performance of both state corporations and private sector with a wider context that include the east African region to obtain more samples. Further, the same study could be replicated but a different context could be used, for example, a researcher could carry out a study for private companies in Kenya using the same variables.

This study used only three variables to test their influence on IT service delivery in state corporations. Given the fact that there are many other factors that may affect IT service delivery, other researchers may seek to unravel the influence of such other factors like corporate governance, strategic planning, outsourcing, IT strategy and so forth on the IT service delivery of state corporations. It would be interesting to find out whether the results would be the same when different variables are used. The study was undertaken in all state corporations except those that were undergoing public sector reforms during the study.

This population of study was very large and it was not possible for the researcher to get into the details of the data collected from the field. Future studies should study fewer state corporations or in fact study state corporations in one sector and replicate the current study to see whether the findings would still be the same or better still, this study can be replicated, but should be enlarged so as to compare state corporations with organizations from other sectors including in the region.

Enablers are key to IT service delivery, this dimension was used as an moderating variable between ITSM practices and IT service delivery. Future research could take enablers as an independent variable and establish its influence on IT service delivery. Given the critical role that ITSM practices play in charting out the IT direction of organizations, it would also be interesting for future research to study the influence of ITSM practices as an independent variable and enablers as a dependent variable. Further future research could also establish the influence of ITSM practices on the individual IT service delivery dimensions.

6.7 Chapter Summary

This chapter is a summary of the study, its conclusion and recommendations. The chapter provided tabulated overview of the objectives, the hypotheses and decisions on the results of tests of hypotheses. Conclusions have been drawn. Overall, the study concluded that ITSM practices have a significant influence on IT service delivery. Moderation of selected manifestations of enablers on ITSM practices and IT service delivery on Kenyan state corporations were highlighted. Moderation of selected manifestations of ITSM integration strategies on ITSM practices and IT service delivery on Kenyan state corporations were also highlighted.

The chapter consequently enumerated on the key implications of the study on theory, managerial practice and policy. Limitations of the study have equally been mentioned.

One such limitation was the wide geographical coverage of Kenyan state corporations. It is along these key implications and limitations that the researcher concluded this chapter by providing recommendations for future study.

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Appendix 1: Cover Letter

CHARLES BORURA
P.O BOX 58676 CODE 00200
NAIROBI.
Email: cmborura@yahoo.com
Mobile: 0722796809
6th June 2015

Dear Sir/Madam,

RE: DATA COLLECTION

Am doctoral student at the University of Nairobi undertaking a Doctoral of Business Administration in Strategic Information Systems. One of my academic outputs before graduating is a thesis and for this I have taken a topic on "**Information Technology Service Management Practices, Enablers, Integration Strategies and Service Delivery Among Kenyan State Corporations**"

You have been selected to form part of the study. This is to kindly request you to assist me in collecting data by responding to the interview guide. The information you provide will be used strictly for academic purpose and will be treated with utmost confidence. A copy of the final report will be available to you upon request. Your assistance will be highly appreciated.

Yours sincerely

Charles Borura

Appendix 2: Questionnaire

This questionnaire is aimed at collecting data on IT service management practices and IT service delivery among state corporations in Kenya. You are requested to participate in the study by ticking {✓} or circling suitable responses and where requested provide short/brief comments on the space provided. The information you provide will be used strictly for academic purpose and will be treated with utmost confidence.

Section A: General Information

1. What is your Job Title

(1) IT Manager	(2.) IT Process Manager	(3.) CEO	(4.) Other(Please Specify)

2. How many years have you worked in this organization?

(1) 0- 3 Years	(2.) 4-6 Years	(3.) 7-9 Years	(4.) 10 and above

3. What is the size of your IT department in terms of the number of employees?

(1) 1- 25	(2.) 26-50	(3.) 51-75	(4.)76-100	(5.) more than 100

4. How long has your organization used ITSM practices?

(1) 0- 3 Years	(2.) 4-6 Years	(3.) 7-9 Years	(4.) 10 and above

Section B: IT Service Management Practices

5. Which IT Service Management (ITSM) practices have you implemented in your organization? (Tick more than ONE as Applicable)

Implemented Practices	Tick(√)
a. Information technology Infrastructure Library (ITIL)	
b. Control Objective for information and related technology (COBIT)	
c. Capability maturity model Integration (CMMI)	
d. International organization standards (ISO)	

e. Government Provided Standard (ICT Authority standards)	
f. Not defined (our processes are ad hoc)	

6. Which of the following statements best describes the level of IT Service Management practices in your organization?

Level (TICK ONLY ONE)	Tick(√)
a. We have not adopted IT Service Management practices(ITIL or COBIT or CMMI or ISO) (Level 0)	
b. We are new to IT Service Management and have just started to implement processes (Level 1) hence we have a relatively low level of IT Service Management process maturity.	
c. Some processes are documented and these are generally understood, but errors are likely (Level 2)	
d. We have a medium level of IT Service Management process maturity. Processes are documented monitored for compliance (Level 3)	
e. We have a reasonably high level of IT Service Management process maturity. Our processes are documented, and measured according to established metrics (Level 4)	
f. We have a very high level of IT Service Management process maturity. Our processes are documented, understood, backed by metrics and continually reviewed for improvement (Level 5)	

7. In a scale of "1 -5" where 1-**Not at all**, 2-**Small Extent**, 3-**Moderate Extent**, 4-**Great Extent** and 5-**Very Great Extent**, please indicate the extent to which you agree with the application of the following ITSM practices to improve IT service delivery in your organization?

Information Technology Service Management Practices	**1**	**2**	**3**	**4**	**5**
I. ITIL Practices, *If Not implemented move to II*					
Service Strategy Practices					
a. Strategy Management; to manage and execute IT strategies	**1**	**2**	**3**	**4**	**5**
b. Service Portfolio Management; to analyse and approve services					
c. Risk Management; to manage IT security risks					
d. Demand Management; to match business activity to IT capacity					

e. IT Financial; to manage an IT department's budgeting, accounting and charging requirements					
Service Design Practices					
f. Service Level Management; to maintain service catalogue, negotiates service level agreements and underpinning contracts.	**1**	**2**	**3**	**4**	**5**
g. Supplier Management; to categorize and manage supplier performance					
h. Availability Management; to define, analyse, plan, measure and improve all aspects of availability of IT services.					
i. Capacity Management; to ensure that the capacity of IT services and the IT infrastructure is able to deliver agreed service levels.					
j. Information Security; to Manage Security, audits and penetration tests.					
k. IT Service Continuity; to manage risks that could seriously impact IT services					
Service Transition Practices					
l. Release and deployment; to implement approved changes to IT services.	**1**	**2**	**3**	**4**	**5**
m. Change management; to control the lifecycle of all changes					
n. Transition Planning and Support to prepare services for transition					
o. Asset and Configuration; to maintain information about configuration items required to deliver an IT service, including their relationships.					
p. Service validation and testing of softwares					
q. Knowledge Management; to maintain knowledge					
Service Operation Practices					
r. Service desk function; as the single point of contact for all IT incidents	**1**	**2**	**3**	**4**	**5**
s. Incident and request fulfilment; to restore normal service operations as quickly as possible.					

t. Problem Management; to analyse root cause, prevent incidents from happening and minimises the impact of incidents that cannot be prevented					
u. Access and Event Management; to monitor all key configuration items					
v. Application management; for application development					
w. IT operations to manage IT resources and job schedules					
Service improvement Practices					
x. Continual Service Improvement; for service measurement, reporting and improvement.					
II. COBIT Practices *If Not implemented move to III*					
Plan and organize Practices					
a. Manage Strategy; to ensure strategy is developed, disseminated and executed	**1**	**2**	**3**	**4**	**5**
b. Manage enterprise architecture; to design, update and manage data and information architecture					
c. Manage innovation; to identify, incubate and implement ICT innovations					
d. Manage portfolio; to ensure IT projects are selected and implemented strategically					
e. Manage budget; and costs to ensure ICT budgets are analysed, managed and reported					
f. Manage human relations; to ensure IT personnel aspects are managed					
g. Manage Service Agreements; to ensure SLAs are developed, negotiated, signed and regularly reviewed					
h. Manage Suppliers; to evaluate, establish, manage performance, renew and/or terminate, categorize suppliers and maintain supplier contacts database					
i. Manage quality; to ensure system tests and quality assurance is managed					
j. Manage risk to ensure IT risk are identified, mitigated and prevented					

Acquire and Implement Practices					
k. Manage Programs and Projects; to ensure projects are controlled and managed	**1**	**2**	**3**	**4**	**5**
l. Manage requirements to ensure excellence in system and user requirements					
m. Manage solutions; identification and build to ensure applications designed meet the user requirements					
n. Manage availability and capacity process; to ensure systems are up and capacity plans for resources and infrastructure.					
o. Manage changes; acceptance and transitioning to ensure standardized procedures for all changes to production environment					
p. Manage Knowledge; to tab knowledge across the department					
q. Manage assets; to ensure identification, tracking, and management of hardware and software assets (CIs), configurations, changes, patches, and new assets					
r. Manage configuration; to ensure change and configuration management database is maintained					
Deliver and Support Practices					
s. Manage operations; to ensure IT governance is maintained	**1**	**2**	**3**	**4**	**5**
t. Manage service request and incidents; to capture, track, assign, and manage incidents along with communication with the end-user.					
u. Manage problems; to ensure root cause analysis, resolution and prevention of incidents.					
v. Manage continuity; to ensure IT continuity for all IT services with recovery **option** such as (do nothing, gradual, intermediate, fast, hot standby).					
w. Manage Security Services; to ensure security incident and threats are managed					
Monitor and evaluate processes					
x. Monitor, evaluate and assess performance					

III. Capability Maturity Model Integration (CMMI) Practices *If Not implemented move to IV*	**1**	**2**	**3**	**4**	**5**
Process Management Practices					
a. Configuration management process; to establish and maintain the integrity of work products.					
b. Decision Analysis and Resolution process; to analyse possible decisions.					
c. Product Integration process; to assemble the product from the product components, ensure that the product is integrated, functions properly, and deliver the product.					
Project Management Practices					
d. Project Monitoring and Control; to provide an understanding of the project's progress so that appropriate corrective actions can be taken when the project's performance deviates significantly from the plan.	**1**	**2**	**3**	**4**	**5**
e. Project Planning process; to establish and maintain plans that define project activities.					
Engineering Practices					
f. Software Quality Assurance process; to provide staff and management with objective insight into processes and associated work products.	**1**	**2**	**3**	**4**	**5**
g. Software application management process; to achieve the project's established quality and process-performance objectives.					
h. User Requirements process; to produce and analyse customer, product and product component requirements					
i. Software Requirements process; to identify inconsistencies between requirements, project plans and work products.					
Support Practices					
j. Software application support and maintenance	**1**	**2**	**3**	**4**	**5**
k. Risk Management; to identify potential problems before they occur					
l. Supplier Agreement process to manage the acquisition of software application products from suppliers.					

m. Software validation; to demonstrate that a product or product component fulfils its intended use when placed in its intended environment.					
n. Software verification; to ensure that selected work products meet their specified requirements					
IV. ISO practices *If Not implemented move to V*	**1**	**2**	**3**	**4**	**5**
a. ISO 2008: 9001 Quality management standard					
b. ISO 20000 quality management standard					
c. ISO 27001/02 information technology security standards					
V. Others:					
Information and Communication Technology Authority (ICTA) frame work for ICT/standards					

8. Comment on how IT Service Management practices have improved IT service delivery in your organization?

……..

……..

……..

……..

9. Please comment on which frameworks and practices have had the highest effect on IT service delivery in your organization.

……..

……..

……..

Section C: Enablers

10. Using the scale of 1-5, where, **1-Not at all, 2-Small Extent, 3-Moderate Extent, 4-Great Extent and 5-Very Great Extent**, indicate the extent to which the following aspects have enhanced the use ITSM practices to improve IT service delivery in your organization?

ITSM Enablers	**1**	**2**	**3**	**4**	**5**
a. Organization/firm size in terms of number of IT service users					

b. Top Management support and commitment in sponsorship/ providing access to necessary project and process resources (time, people, funding)					
c. Government policies and regulations on IT management.					
d. Sufficient internal professional IT staff, with expertise to enhance organizational capability to deploy new polices, processes and tools.					
e. People knowledge, information and skill related to IT Service Management.					
f. Support from capable and experienced external consultants.					
g. Availability of integrated IT Service Management Technology on software/tools to support automation of process and workflow.					
h. Organizational culture/behaviour in ensuring compliance to new practices over the long term (ITSM aligned culture).					
i. Willingness to change					

11. Please comment on how the above aspects in question No.10, has influenced IT Service Management practices in your organization?

……..

……..

……..

12. Other than the above listed aspects in question No.10, which other aspects have influenced IT Service Management practices in your organization?

……..

……..

……..

Section D: Integration Strategies

13. Has your organization integrated any IT Service Management practices? Yes [ ] No [ ] I don't know [ ]
14. Which of the following IT Service Management practices have you integrated? ITIL and COBIT [ ] ITIL and CMMI [ ] ITIL and ISO [ ] COBIT and CMMI [ ]

    COBIT and ISO [ ] ISO and CMMI [ ] ALL the above [ ]

    Other combinations [ ] please list

……

15. Briefly explain how IT Service Management practices have been integrated or combined in your organization?

……..

……..

16. Please comment on how IT Service Management practices integrations has improved IT service delivery in your organization

……..

……..

……..

17. Using the scale of 1-5, indicate the extent to which the integration strategies in Question 14 have influenced the effect of IT Service Management practices to achieve improved IT service delivery?

    [1]-Not at all

    [2]-Small Extent

    [3]-Moderate Extent

    [4] -Great Extent and

    [5] -Very Great Extent

Part D: IT Service Delivery

18. Owing to IT Service Management practices in your organization, to what extent has the following IT service delivery aspects been achieved in your organization where 1= not at all and 5 = Very Great Extent.

IT Service Delivery	**1**	**2**	**3**	**4**	**5**
a. Service Quality					
b. User Satisfaction					
c. Response and Resolution Time					
d. Service Availability/Reduced Downtime of IT systems					
e. Standardized services					
f. IT Resource Utilization					
g. Business/IT Alignment					
h. staff productivity					
i. IT Governance					
j. Reduced cost of IT service delivery					

19. Overall to what extent has IT Service Management practices

reduced the cost of IT service delivery

0-20%	21-40%	41-60%	61-80%	81-100%

20. In reference to Question No.18, please comment on how IT service management practices have improved the listed IT service delivery aspects, starting with the aspect with greatest improvement.

……..

……..

……..

21. Is there any other additional aspect of IT service delivery that has improved as a result of IT service management practices other than the aspects listed in question No.19? Yes [ ] No [ ] List and briefly explain

……..

……..

22. Based on your IT service management practices experience in your organization please provide any additional comments.

……..

……..

THANK YOU FOR YOUR TIME

Appendix 3: List of State Corporations in Kenya

1. Agricultural Development Corporation
2. Agricultural Finance Corporation
3. Agro Chemical and Food Company Ltd.
4. Athi Water Services Board
5. Bomas of Kenya
6. Brand Kenya Board
7. Bukura Agricultural College
8. Capital Markets Authority
9. Catering and Tourism Training Development Levy Trustees
10. Centre for Mathematics
11. Chemelil Sugar Company
12. Chuka University
13. Coast Development Authority
14. Coast Water Services Board
15. Coffee Board of Kenya
16. Coffee Development Fund
17. Coffee Research Foundation
18. Commission for Higher Education
19. Communications Commission of Kenya
20. Consolidated Bank of Kenya
21. Constituency Development Fund
22. Co-operative College of Kenya.
23. Cotton Development Authority
24. Council of legal Education
25. East African Portland Cement Company Ltd
26. Egerton University
27. Energy Regulatory Commission
28. Ewaso Ng'iro North Development Authority
29. Ewaso Ng'iro South Development Authority
30. Export Processing Zones Authority
31. Export Promotion Council.
32. Geothermal Development Company Ltd

APPENDIX 3: CONTINUED…

33. Higher Education Loans Board.
34. Horticultural Crops Development Authority
35. Industrial and Commercial Development Corporation
36. Industrial Development Bank
37. Insurance Regulatory Authority
38. Jomo Kenyatta University of Agriculture and Technology
39. Jomo Kenyatta Foundation
40. Kabianga University College
41. Kenya Accountants and Secretaries National Examinations Board.
42. Kenya Agricultural Research Institute
43. Kenya Airports Authority
44. Kenya Animal Genetic Resources
45. Kenya Broadcasting Corporation
46. Kenya Bureau of Standards
47. Kenya Civil Aviation Authority
48. Kenya Coconut Development Authority
49. Kenya Copyright Board
50. Kenya Dairy Board
51. Kenya Education Staff Institute
52. Kenya Electricity Generating Company Ltd.
53. Kenya Electricity Transmission Company
54. Kenya Ferry Services Ltd.
55. Kenya Film Classification Board
56. Kenya Film Commission
57. Kenya Forest Service.
58. Kenya Forestry Research Institute.
59. Kenya ICT Board
60. Kenya Industrial Estates
61. Kenya Industrial Property Institute
62. Kenya Industrial Research and Development Institute
63. Kenya Institute for Public Policy Research and Analysis.
64. Kenya Institute of Administration

APPENDIX 3: CONTINUED…

65. Kenya Institute of Education
66. Kenya Institute of Special Education
67. Kenya Investment Authority
68. Kenya Literature Bureau
69. Kenya Marine and Fisheries Research institute
70. Kenya Maritime Authority
71. Kenya Meat Commission
72. Kenya Medical Research Institute.
73. Kenya Medical Supplies Agency
74. Kenya Medical Training College
75. Kenya National Assurance Company (2001) Ltd
76. Kenya National Bureau of Statistics
77. Kenya National Examinations
78. Kenya National Highways Authority
79. Kenya National Library Services
80. Kenya National Shipping Line
81. Kenya National Trading Corporation
82. Kenya Ordinance Factories Corporation
83. Kenya Pipeline Company Ltd.
84. Kenya Plant Health Inspectorate Services.
85. Kenya Ports Authority.
86. Kenya Post Office Savings Bank
87. Kenya Power and Lighting Company Limited
88. Kenya Railways Corporations
89. Kenya Re-Insurance Corporation
90. Kenya Revenue Authority
91. Kenya Roads Board
92. Kenya Rural Roads Authority.
93. Kenya Safari Lodges and Hotels
94. Kenya Seed Company
95. Kenya Sugar Board
96. Kenya Sugar Research Foundation

APPENDIX 3: CONTINUED…

97. Kenya Tourist Board
98. Kenya Tourist Development Corporation
99. Kenya Urban Roads Authority.
100. Kenya Utalii College.
101. Kenya Veterinary Vaccines Production Institute
102. Kenya Water Institute
103. Kenya Wildlife Service
104. Kenya Wine Agencies Ltd
105. Kenya Yearbook Editorial
106. Kenyatta International Conference Centre
107. Kenyatta National Hospital
108. Kenyatta University
109. Kerio Valley Development
110. Kimathi University
111. Kisii University
112. Laikipia University College.
113. Lake Basin Development Authority.
114. Lake Victoria North Water Services Board
115. Lake Victoria South Water Services Board.
116. Local Authorities Provident Fund
117. Masai Mara University
118. Maseno University
119. Masinde Muliro University
120. Media Council of Kenya
121. Meru University of science and technology
122. Moi Teaching and Referral Hospital
123. Moi University
124. Multi-Media University College
125. National Aids Control Council
126. National Bio-safety Authority
127. National Campaign Against Drug Abuse Authority
128. National Cereals and Produce Board

APPENDIX 3: CONTINUED…

129. National Commission on Gender and Development
130. National Coordinating Agency for Population and Development
131. National Council for Children Services
132. National Council for Persons with Disabilities
133. National Council for Science and Technology
134. National Crime Research Centre
135. National Environmental Management Authority
136. National Hospital Insurance Fund
137. National Housing Corporation
138. National Irrigation Board
139. National Museums of Kenya
140. National Oil Corporation of Kenya
141. National Social Security Fund
142. National Water Conservation and Pipeline Corporation
143. New Kenya Cooperative Creameries Ltd.
144. NGO Coordination Board
145. Northern Water Services Board
146. Numerical Machining Complex
147. Nyayo Tea Zones Development Corporation
148. Nzoia Sugar Company
149. Oginga Odinga University
150. Pest Control Products Board
151. Postal Corporation of Kenya
152. Privatization Commission of Kenya
153. Public Procurement Oversight Authority
154. Pwani University College.
155. Pyrethrum Board of Kenya
156. Retirement Benefits Authority
157. Rift Valley Water Services Board
158. Rural Electrification Authority
159. Sacco Societies Regulatory Authority
160. School Equipment Production Unit

APPENDIX 3: CONTINUED…

161. South Eastern Kenya University
162. South Nyanza Sugar Company
163. Sports Stadia Management Board
164. Tana and Athi Rivers Development Authority
165. Tana Water Services Board.
166. Tanathi Water Services Board
167. Tea Board of Kenya
168. Tea Research Foundation of Kenya.
169. Teachers Service Commission
170. Technical University of kenya
171. Technical University of Mombasa
172. University of Nairobi
173. University of Nairobi Enterprise Services
174. Water Appeals Board
175. Water Resources Management Authority
176. Water Services Regulatory Board.
177. Water Services Trust Fund
178. Youth Enterprise Development Fund

Source: State Corporations Advisory Committee As At 31st January 2015

Appendix 4: Factor Analysis

Factors	Items	Factor Loading	Cronbach Alpha
Service Strategy processes	a. Strategy Management to manage and execute IT strategies	.863	.745
	b. Service Portfolio Management; to analyse and approve services	.803	
	c. Risk Management to manage IT security risks	.650	
	d. Demand Management; to match business activity to IT capacity	.765	
	e. IT Financial to manage an IT department's budgeting, accounting and charging requirements	.386	
Service Design processes	a. Service Level Management to maintain service catalogue, negotiates service level agreements and underpinning	.697	.858
	b. contracts		
	c. Supplier Management to categorize and manage supplier performance	.901	
	d. Availability Management to define, analyse, plan, measure and improve all aspects of availability of IT services.	.778	
	e. Capacity Management to ensure that the capacity of IT services and the IT infrastructure is able to deliver agreed service levels.	.752	
	f. Information Security Management to Manage Security, audits and penetration tests.	.818	
	g. IT Service Continuity management to manage risks that could seriously impact on IT services	.659	
Service Transition processes	a. Release and deployment management to implement approved changes to IT services.	.811	.867
	b. Change management to control the lifecycle of all changes	.749	
	c. Transition Planning and Support to prepare services for transition	.899	
	d. Asset and Configuration Management to maintain information about configuration items required to deliver an IT service, including their relationships.	.665	
	e. Service validation and testing of softwares	.853	
	f. Knowledge Management to maintain knowledge	.703	
Service Operatio	a. Service desk function as the single point of contact for all IT incidents	.794	.906

n processes	b. Incident and request fulfilment Management to restore normal service operations as quickly as possible.	.812	
	c. Problem Management to analyse root cause, prevent incidents from happening and minimises the impact of incidents that cannot be prevented	.735	
	d. Access and Event Management to monitor all key configuration items	.844	
	e. Application management to ensure application development process is managed	.605	
Plan and organize processes	a. Manage Strategy to ensure strategy is developed, disseminated and executed	.811	.759
	b. Manage enterprise architecture to design, update and manage data and information architecture	.787	
	c. Manage innovation to identify, incubate and implement ICT innovations	.792	
	d. Manage portfolio to ensure IT projects are selected and implemented strategically	.885	
	e. Manage budget and costs to ensure ICT budgets are analysed, managed and reported	.876	
	f. Manage human relations to ensure IT personnel aspects are managed	.744	
	g. Manage Service Agreements to ensure SLAs are developed, negotiated, signed and regularly reviewed	.786	
	h. Manage Suppliers to evaluate, establish, manage performance, renew and/or terminate, categorize suppliers and maintain supplier contacts database	.741	
	i. Manage quality to ensure system tests and quality assurance is managed	.189	
	j. Manage risk to ensure IT risk are identified, mitigated and prevented	.200	
Acquire and Implement processes	a. Manage Programs and Projects to ensure projects are controlled and managed	.692	.902
	b. Manage requirements to ensure excellence in system and user requirements	.722	
	c. Manage solutions, identification and build to ensure applications designed meet the user requirements	.789	
	d. Manage availability and capacity process to ensure systems are up and capacity plans for resources and infrastructure.	.913	
	e. Manage changes acceptance and transitioning to ensure standardized procedures for all changes to production environment	.807	

	f. Manage Knowledge to tab knowledge across the department	.805	
	g. Manage assets to ensure identification, tracking, and management of hardware and software assets (CIs), configurations, changes, patches, and new assets	.662	
	h. Manage configuration to ensure change and configuration management database is maintained	.777	
Deliver and Support processes	a. Manage operations to ensure IT governance is maintained	.869	.864
	b. Manage service request and incidents to capture, track, assign, and manage incidents along with communication with the end-user.	.795	
	c. Manage problems; to ensure root cause analysis, resolution and prevention of incidents.	.851	
	d. Manage continuity to ensure IT continuity for all IT services with recovery option such as (do nothing, gradual, intermediate, fast, hot standby).	.606	
	e. Manage Security Services to ensure security incident and threats are managed	.890	
Process Management Processes	a. Configuration management process to establish and maintain the integrity of work products.	.908	.905
	b. Decision Analysis and Resolution process to analyse possible decisions.	.957	
	c. Product Integration process to assemble the product from the product components, ensure that the product is integrated, functions properly, and deliver the product.	.893	
Project Management Processes	a. Project Monitoring and Control to provide an understanding of the project's progress so that appropriate corrective actions can be taken when the project's performance deviates significantly from the plan.	.932	.848
	b. Project Planning process to establish and maintain plans that define project activities.	.932	
Engineering processes	a. Software Quality Assurance process to provide staff and management with objective insight into processes and associated work products.	.817	.824
	b. Software Quality Assurance process to provide staff and management with objective insight into processes and associated work products.	.860	
	c. Software application management process; to achieve the project's established quality and process-performance objectives.	.857	

	d. User Requirements process to produce and analyse customer, product and product component requirements	.865	
	e. Software Requirements process to identify inconsistencies between requirements, project plans and work products.	.474	
Support processes	a. Software application support and maintenance	.815	.896
	b. Risk Management to identify potential problems before they occur	.929	
	c. Supplier Agreement process to manage the acquisition of software application products from suppliers.	.880	
	d. Software validation to demonstrate that a product or product component fulfils its intended use when placed in its intended environment.	.874	
ISO practices	a. ISO 2008: 9001 Quality management standard	.737	.814
	b. ISO 20000 information technology quality management standard	.904	
	c. ISO27001/02 information technology policy and security standards	.911	
ITSM Enablers	a. Organization size in terms of number of IT service users	.176	.751
	b. Top Management support and commitment in sponsorship/ providing access to necessary project and process resources (time, people, funding)	.668	
	c. Government policies and regulations on IT management.	.443	
	d. Sufficient internal professional IT staff, with expertise to enhance organizational capability to deploy new polices, processes and tools.	.382	
	e. People knowledge, information and skill related to IT Service Management.	.642	
	f. Support from capable and experienced external consultants.	.731	
	g. Availability of integrated IT Service Management Technology on software/tools to support automation of process and workflow.	.683	
	h. Organizational culture/behaviour in ensuring compliance to new practices over the long term (ITSM aligned culture).	.692	
	i. Willingness to change	.678	
IT Service Delivery	a. Service Quality	.580	.860
	b. User Satisfaction	.528	
	c. Response and Resolution Time	.745	

	d. Service Availability/Reduced Downtime of IT systems	.750	
	e. Standardized services	.625	
	f. IT Resource Utilization	.702	
	g. Business/IT Alignment	.728	
	h. staff productivity	.595	
	i. IT Governance	.702	
	j. Reduced cost of IT service delivery	.679	

Appendix 5: University Approval Letter

UNIVERSITY OF NAIROBI
COLLEGE OF HUMANITIES AND SOCIAL SCIENCES
SCHOOL OF BUSINESS
DOCTORAL STUDIES PROGRAMME

Telephone: 4184160/1-5 Ext. 225
Email: dsp@uonbi.ac.ke

P.O. Box 30197
Nairobi, Kenya

29th May , 2015

TO WHOM IT MAY CONCERN

RE: CHARLES BORURA: D80/72724/2012

This is to certify that, **CHARLES BORURA: D80/72724/2012** is a Ph.D candidate in the School of Business, University of Nairobi. The title of his study is:
"Information Technology Service Management Practices, Enablers, Integration Strategies and Service delivery among Kenyan State Corporation".

The purpose of this letter therefore, is to kindly request you to assist and facilitate in carrying out the research/study in your organization. A questionnaire is herewith attached for your kind consideration and necessary action.

Data and information obtained through this exercise will be used for academic purposes only. Hence, the respondents are requested not to indicate their names anywhere on the questionnaire.

We look forward to your cooperation.

ASSOCIATE DEAN
Graduate Business Studies
School of Business (UON)
P.O. Box 30197 – 00100, NAIROBI

PROF. STEPHEN N.M. NZUVE
ASSOCIATE DEAN,
GRADUATE BUSINESS STUDIES
SCHOOL OF BUSINESS

SNMN/nwk

Appendix 6: Research Authorization Letter

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone: +254-20-2213471,
2241349, 310571, 2219420
Fax: +254-20-318245, 318249
Email: secretary@nacosti.go.ke
Website: www.nacosti.go.ke
When replying please quote

9th Floor, Utalii House
Uhuru Highway
P.O. Box 30623-00100
NAIROBI-KENYA

Ref: No.

Date:

14th August, 2015

NACOSTI/P/15/4633/7550

Charles Mosoti Borura
University of Nairobi
P.O. Box 30197-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"Information Technology Service Management practices, enablers, integration strategies and service delivery among Kenyan State Corporations,"*** I am pleased to inform you that you have been authorized to undertake research in **all Counties** for a period ending **31st August, 2016.**

You are advised to report to **the Chief Executive Officers of selected State Corporations, the County Commissioners and the County Directors of Education, all Counties** before embarking on the research project.

On completion of the research, you are expected to submit **two hard copies and one soft copy in pdf** of the research report/thesis to our office.

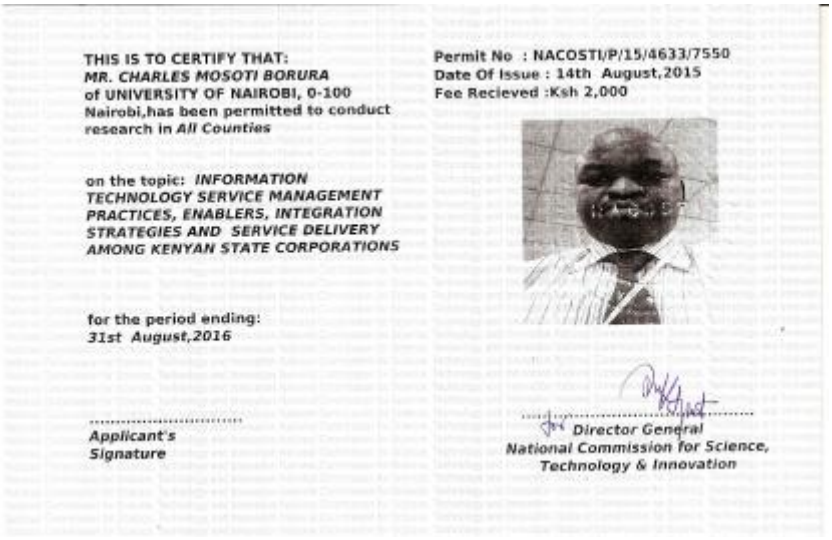
DR. S. K. LANGAT, OGW
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The Chief Executive Officers
Selected State Corporations

The County Commissioners
All Counties.

Appendix 7: Research Permit



THIS IS TO CERTIFY THAT:
MR. CHARLES MOSOTI BORURA
of UNIVERSITY OF NAIROBI, 0-100
Nairobi,has been permitted to conduct
research in *All Counties*

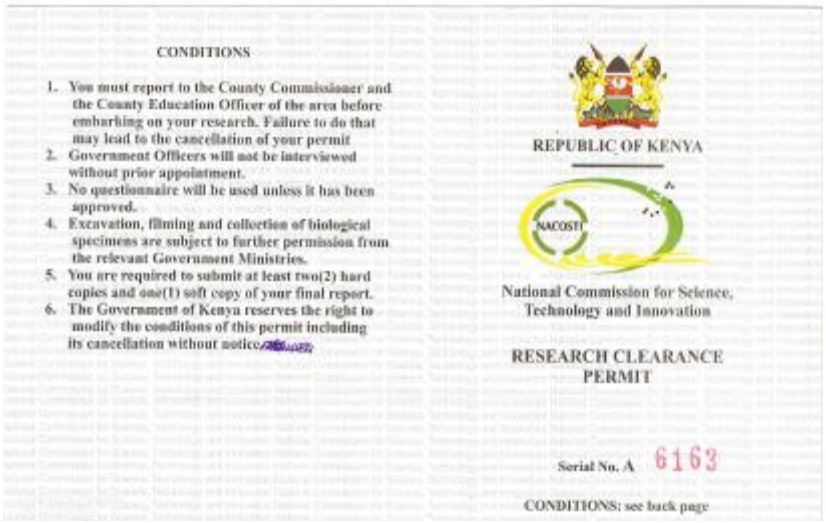
on the topic: *INFORMATION TECHNOLOGY SERVICE MANAGEMENT PRACTICES, ENABLERS, INTEGRATION STRATEGIES AND SERVICE DELIVERY AMONG KENYAN STATE CORPORATIONS*

for the period ending:
31st August,2016

.....
Applicant's
Signature

Permit No : NACOSTI/P/15/4633/7550
Date Of Issue : 14th August,2015
Fee Recieved :Ksh 2,000

.....
Director General
National Commission for Science,
Technology & Innovation



CONDITIONS

1. You must report to the County Commissioner and the County Education Officer of the area before embarking on your research. Failure to do that may lead to the cancellation of your permit
2. Government Officers will not be interviewed without prior appointment.
3. No questionnaire will be used unless it has been approved.
4. Excavation, filming and collection of biological specimens are subject to further permission from the relevant Government Ministries.
5. You are required to submit at least two(2) hard copies and one(1) soft copy of your final report.
6. The Government of Kenya reserves the right to modify the conditions of this permit including its cancellation without notice

REPUBLIC OF KENYA

National Commission for Science,
Technology and Innovation

RESEARCH CLEARANCE
PERMIT

Serial No. A 6163

CONDITIONS: see back page