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An Investigation into Improving Efficiency and Effectiveness in the
Nigerian Public Sector through Knowledge Management

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Abstract

As public sector organisations face increasing pressure to innovate, sustain service delivery and improve performance, Knowledge Management (KM) practice is found to be instrumental and potentially useful for dealing with problem that are unstructured, lack one-off solutions and requires managers to create, share and use knowledge across government Ministries, Departments and Agencies (MDAs) and citizen groups.

In light of the above, this study explores knowledge management as an organisational strategy and focus on how public sector in developing countries, especially in Nigerian can adopt knowledge management practice for performance efficiency and effectiveness improvement.

Due to the nature of the research, interpretivist research paradigm and a case study design was employed with a mixed of quantitative and qualitative data collection methods. Three empirical studies were conducted with the Delta State (case organisational) public service in Nigeria. Questionnaires were distributed to 100 employee of the Delta State public service. In addition, semi-structured interview, focus group discussion were conducted with senior employee of the sector, documentary analysis and diary were employed to explore employee perception on the issue of efficiency and effectiveness, knowledge audit and sources (starting point) of inefficiency and ineffectiveness in the Nigerian public sector.

The resulting data is analysed at descriptive, exploratory and explanatory level using Content Analysis, Hierarchical Task Analysis, Swim-Lane Sequence Diagram as well as Frequency Count, Percentages and Product Correlation Coefficient. Results adequately identify inefficiency and ineffectiveness, huge gaps and obsolete knowledge within task process and inefficiency and ineffectiveness is introduced even before tasks are carried out.

Theoretically, the study significantly contributes to public sector knowledge management as the developed framework (Strat-KM) provides context for the field of KM as well as providing strategy for the implementation of KM as a direct response to addressing inefficiency and ineffectiveness of service delivery in Nigeria and other related organisations.

Key words: knowledge management, knowledge management framework, public sector

Dedication

Give honour to whom honour is owed (Romans 13:7)

To my parents: Late Pa Mejeh Ejeh and Oderun Onofite; my siblings; wife and children.

Thank you all for your love and supports.

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First, I am eternally grateful to God Almighty for His mercies, love and unending blessing of understanding and patience to undertake and successfully complete this study. Glory and honour be yours for ever and ever. Amen.

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1 Chapter One: Research Introduction - Understanding the Research Context

This study aims to provide insight on how Knowledge Management (KM) can contribute to the improvement of efficiency and effectiveness in public sector organisational performance in developing countries in general and the Nigerian public sector in particular. The overall focus is to develop a framework that can guide the implementation of a Knowledge Management practice within the Nigerian public sector and other public sector organisations in developing countries intending to implement knowledge management practice. To achieve the focus of this study, this chapter begins by providing the research background as well as justifies the significance of this study. The important of managing knowledge is also introduce in this chapter.

The concluding sections of the chapter present the research problems as well as the research question, aim and objectives. This is followed by a preview of the research methodology with noteworthy portions highlighted. The penultimate sections present the motivation including the significance and contribution to knowledge for this study. The final sections outline the structure of the thesis and the chapter ends with a summary.

1.1 Background

The inefficiency and ineffectiveness of the way government resources are utilised for national and state service provision in Nigeria has been highlighted (Nkwede 2013, Aroge & Hassan 2011, Suleman 2009). Over the years, many public sector organisations have sought to improve the performance of the sector by introducing radical reforms and restructuring. In response, and aiming to transform the Nigerian public sector into a result-oriented civil service, successive governments and managers have responded with reforms and restructuring of the Nigerian public service (Nwanolue, & Iwuoha 2012, Eddy & Akpan 2008).

The Nigerian public service has been subject to a great number of ambiguous and unsuccessful change as such the sector have to confront significant organisational, administrative, operational, digitise business process and economic problems (Tsirikas, Katsaros, and

Nicolaidis, 2012; Okeke-Uzodike and Subban, 2015). Though, the management of the Nigerian public sector have used other strategic (e.g. restructuring) approach towards addressing the operational (performance) problem in the sector. Results have been slow (Onuorah, and Ebimobowei 2012) and successive government and management of the public sector continue to seek new measures to instill effective workforce in the civil service (Ogunrotifa 2012).

In the same context, past years have witness different organisation such as the New Public Sector Movement trying to revitalise the public service through reforms which the result has also been poor. However, recent years has seen many public service management advocating reassessment, reintegration and digital public service. This is to adopt an holistic need-oriented structures and e-governance civil service. All of these calls for better civil service are informed partly by the potential benefits of knowledge that has been globally accepted as a source for organisational survival and efficient and effective service delivery (Acheampong 2014).

Knowledge is regarded as an organisational asset and the ability to effectively manage it has the potentials to enhance organisation operational processes, development, sustainability and innovation (Chong, Salleh, Ahmad, and Sharifuddin, 2011; Turner and Minonne 2010). Hamid (2012) noted that *“in an economy where the only certainty is uncertainty the one sure source of lasting improvement to service delivery and competitive advantage is knowledge”*. The essence of managing knowledge is to provide the right knowledge to the right people at the right time. This implies that knowledge management is an organisational strategy to make knowledge available to those that needs it in order to improve both individual and organisational performance (Girard and McIntyre 2010; Nonaka and Takeuchi 1995).

In recent years, public sector organisations are challenged to be more proactive in tackling problems and to constantly improve efficiently and effectively task performances (Christine, Lonti, and Joumard, 2007). Simultaneously, Knowledge Management practice offers an organisation (public sector inclusive) the possibilities to recognised immediate and future knowledge need (Berg 2011, Turner & Minonne 2010, Girard & McIntyre 2010) for effective organisational performance. This is one of the main reasons current research believe that

knowledge management can improve efficient and effective of employee performance in the Nigerian public sector.

One of the main reason why current research believed that knowledge management can improve the ways government business processes can be improve through knowledge management is grounded on the fact that there is direct linkage between knowledge management and improvement to organisational efficiency and effectiveness (Phusavat, Anussornnitisarn, Patthanaturak, and Kekale, 2010; Chidambaranathan and B.S., 2015).

The relationship between Knowledge Management and improvement to efficiency and effectiveness has been widely published and embraced by many organisations especially in the developed world during the last decade (Macdonald, 2010; Correa, et al., 2005). Despite the many benefits of knowledge management, there are some scepticism about knowledge management and efficiency and effectiveness improvement. In all of this, knowledge management has become a significant driver for organisational improvement and it has been hailed as a critical concept for development and sustainability (Alhamoudi 2010). This again provides the groundwork to argue in this research that knowledge management can initiate the improvement of service delivery within developing countries public service especially in Nigeria

1.2 Importance of Managing Knowledge

Today's business landscape are shaped by different and integrated factors forcing organisation (private and public) to finding new and better ways of improving their business process. In this regards, public sector organisation especially in developing countries are often called to act in an unpredictable scenario and being able to manage holistically various business process dimensions in response to citizen and stakeholders satisfactions (Schiuma, 2011). Accordingly, public sector organisations need to optimise the use of available resources to ensure effective service delivery. In order to meet these and other challenges, there are needs to be more flexible and pro-active in finding these ways of improving and driving business process efficiently and effectively.

The understanding of how these challenges can be address is related to the relevance knowledge plays as a core resource for organisational efficiency and effectiveness (Hamel, 2009). Though, organisations can continuously develop and sustain performance leveraging on other different resources and factor, however, these different resources are dependent on knowledge-based intensity. In all indications, it can be said therefore that knowledge represent one of the fundamental constituent parts of any organisation and the ability to successfully manage knowledge provides sustainable development and improvement to efficiency and effectiveness of service delivery.

Based on the above context, the question therefore is “what is the role of managing knowledge in an organisation?” Answering this question according to Schiuma (2011) is one of the fundamental debates that have moved the practice of Knowledge Management forward by researchers and practitioners. Though, many contemporary and integrated publications have provided answers to the above question particularly in management literature. However, it is important to recall in this study that the reasons for managing knowledge are grounded on improvement to efficiency and effectiveness especially for public sector organisations in developing countries.

Furthermore, this study argued that managing knowledge by organisations is not for the sake of just preserving knowledge, but the planning, development and deployment of knowledge resources support improvement to business processes as well as enhance service delivery efficiently and effectively (Turner & Minonne, 2010; ; Schiuma, 2011).

Some studies have explored the concept and practice of knowledge management and concluded that managing knowledge can contribute to quality assurance in terms of service delivery (Sedziuviene & Vveinhardt, 2010). Policy makers and administrative manager in many public sector in developing countries ought to explore knowledge management practice which in no doubt will contribute immensely to the quest for better service delivery and e-governance.

Furthermore, with public sector, the expectation is the need to enhance efficiency and effectiveness, increase productivity of staff and policy makers in response to global call for

public sector administration improvement. Therefore, a well define guidelines for knowledge management practice is what Nigeria public sector other related organisations in developing countries need. This is to enable the sector achieve performance improvement taking into perspective available knowledge resources.

1.3 The Research Problem

The Nigerian public sector like many public sector organisations in developing countries lack conscious effort in harnessing the vast amount of knowledge resource within the sector. This problem has led to knowledge drain and or untapped knowledge within the public sector in developing countries and Nigeria in particular.

The Nigerian public sector is constantly faced with many challenges including; corruption (Unegbu & Kida 2011), poor performance (Esu & Inyang 2009, Dogarawa 2011), lack of leadership commitment (Asiodu 2012), knowledge drain (Ekeke, 2011) and cultural impact (Lawanson 2013). This has led to the Nigerian public sector being described as inefficient and ineffective organisation in terms of service delivery.

In the above context, this study investigate how knowledge can be optimized within public sector organisations by proposing a knowledge management practice framework for managing organisational knowledge with emphasis on the Nigerian public sector.

In summary, the research problem looks at: **“how to manage and tap the vast amount of knowledge within the Nigerian public sector with a view to improving performance efficiency and effectiveness”**. Based on the above focus, the main research question is formulated in section 1.5.

1.4 Research Context: The Nigerian Public sector

The focus of this research is to investigate whether knowledge management can improve efficiency and effectiveness in the public sector in Nigeria and to develop a knowledge management framework that can guide the creation, presentation and use of knowledge in the Nigerian public sector.

The Public Sector is an organisation owned and controlled by government (Mihaiu, Operana, & Cristescu 2010; Aristovnik 2009), referring to the public or civil service, that is, a government establishment evolved not only to formulate policies, but to also implement strategies and tools in driving government business processes effectively and efficiently (A. B. Ogunrotifa 2012). Thus, the Nigerian public sector is an organisation owned and controlled by the Nigerian government.

The Nigerian public sector is constantly faced with many challenges including; corruption (Unegbu & Kida 2011), poor performance (Esu & Inyang 2009, Dogarawa 2011), lack of leadership commitment (Asiodu 2012) and cultural impact (Lawanson 2013). These challenges (especially performance and culture) creating an idiosyncratic (particular) context for this research. In Nigeria, the public sector has been enmeshed in various problems with poor performance being a general issue in the civil service of Nigeria. This has led to the public sector been described as an inefficient and ineffective organisation in terms of service delivery (Onuorah & Ebimobowei 2012)

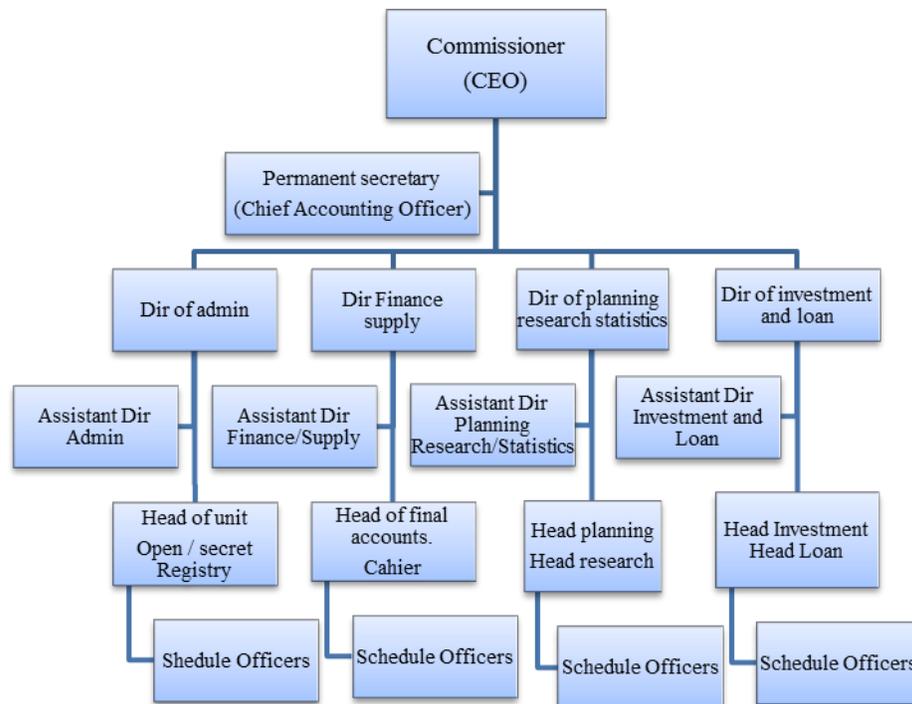
The Nigerian public sector is composed of a Federal Civil Service, thirty-six autonomous state civil services and seven hundred and seventy four unified local government public services as well as agencies including parastatals and corporations. The Nigerian public sector is structured and managed around government ministries, departments, units and extra ministerial departments headed by Minister (Federal level), Commissioners (State level) and Head of Personnel Management (Local Government).

The Head of Service (HoS) is the Chief Adviser to the Government as well as the Chief Liaison Officer between the government and the civil service. The administrative head and chief accounting officer of each ministry are the Permanent Secretaries (PSs). The PSs, Directors and all other core staff of the ministries ensure that policies from the government are implemented accordingly.

The Nigerian public service is classified into administrative class, executive class, professional class, clerical class, and the manager class, responsible for carrying out the day-today functions of the service (Unegbu & Kida 2011, Ekeke, 2011). These classes of officer are

ranked into three main cadres (Grade Levels: GL); Management Level (GL 13-17), Senior Level (GL 07-12) and the Junior Level officers (GL 01-06). The structure, management and reporting format of the public service is depicted in a typical organogram of a ministry (e.g. Ministry of Finance) in Delta State (see fig 1.1).

Figure 1.1: Organogram of the Ministry of Finance (Delta State)



Source: Ministry of Finance, Headquarter, Delta state

The day to day management of the public sector in Nigeria is entrenched in the procedure and rules contained in such documents as public service rules, financial regulations, circulars, scheme of service, and guides to administrative procedures among others (Esu & Inyang 2009, Federal Republic of Nigeria, 2000). These various documents serve as a medium for knowledge management within the service. These documents are of considerable interest to the current research as they provide a clear understanding of how existing knowledge managed is practice.

The Nigerian public sector operates a three tier (Federal, State and Local public service) which is homogenous in nature allowing the adoption of the same line of content and policies across the entire public sector (Ekeke, 2011).

Specifically, for this research, the Delta State public sector was selected from the thirty six states in Nigeria for the collection of data. The choice of a single state for data collection in this research is justifiable bearing in mind that the Nigerian public sector is a tripartite organisation with a homogenous structure and implementation of policies across the three tiers of government. Thus, the findings from the data collected from the Delta State public sector is a valid reflection and representation of data that may be collected from the entire public sector in Nigeria

1.5 Research Question

There is lack of conscious effort to utilise the vast amount of knowledge resource within the public sector in developing countries, Nigeria included. In this context, this research investigates and introduces formal knowledge management practice within the Nigerian public sector. To guide this research, the following research question is postulated:

“Can knowledge management improve the efficiency and effectiveness of the Nigerian public sector?”

1.6 Research aim and objectives

The overall aim of this thesis is to empirically and critically investigate whether Knowledge Management can improve performance of officers in Nigeria public service. To achieve this aim, the more specific objectives are:

1. To critically investigate the concept and theories of knowledge, knowledge management and knowledge management frameworks for public sector organisations.
2. To conduct an in-depth empirical study to access the efficiency and effectiveness of the Nigerian public sector

3. To conduct an in-depth knowledge audit within task processes in the public sector of Nigeria in order to determine whether the right knowledge are being used for task performance.
4. To examine the sources (starting point) of inefficiency and ineffectiveness from and individuals and organisational perspective in the Nigerian civil service.
5. To synthesis findings from empirical studies in order to develop a knowledge management framework for the Nigerian Public Sector and related organisation intending to practice KM.

1.7 Methodology

This research adopts an exploratory route and applies a Mixed Methods approach for its data collection from an interpretive viewpoint. The focus is on gaining indebt understanding and explores the social phenomena in the context of knowledge management as a driver for improving efficiency and effectiveness in the Nigerian public sector and related organisations in developing countries. Accordingly, a case study method is employed to broaden the scope of the empirical works in this study.

The adoption of case study in this research is to enable the collection of distinctive but interrelated data in response to knowledge management as it impact on efficiency and effectiveness improvement within public sector organisation. The case organisation for this study is the Delta State public service in Nigerian. Furthermore, the adoption of the exploratory route for the research is based on the ability to investigate extensively and clarify unclear problem where there is limited previous research (Saunders *et al.*, 2009).

To explore the research question and objectives, three empirical studies were conducted with the Delta State public service in Nigeria, using mixed-methods (multiple data collection instruments; Questionnaire, Semi-structured Interview, Focus Group, Direct Observation, Hierarchical Task Analysis and Documentary Analysis) approach. The adoption of mixed-methods was based on its flexibility and extensive opportunity to explore phenomena. In this research, flexibility and extensive exploration of phenomena was done in relation to the public service staff perception on efficiency and effectiveness, knowledge gaps in task processes and

source of inefficiency and ineffectiveness in the Delta State public sector. The reason for the adoption of mixed-methods in this research is to add credibility and validity to the research findings. In addition, the adoption of mixed-methods is to reduce bias if a single method of data collection and analysis was used. The three fieldworks focused on:

1. Fieldwork 1 investigated the perceptions of civil servants in relation to efficiency and effectiveness in the Nigerian public service and the existing knowledge management structure within the sector. Data was collected from senior officers from the Delta State public service using questionnaires, semi-structured interviews, focus groups and documentary analysis. Analysis of data identified that there is inefficiency and ineffectiveness in using government resources, existence of informal knowledge management and insufficient Information Technology infrastructures in the main stream government business process.
2. Fieldwork 2 explores task processes with a view to identify embedded knowledge within tasks. The objective is to fill any missing and obsolete knowledge in the sector's task processes. Semi-structured interviews, observations and task walk-through were used for data collection. Data collected was analysed using Content Analysis (CA), Hierarchical Task Analysis (HTA) and Swimming Lane Sequence (SLS) diagramming techniques. This approaches involved generating themes (codes) from the interview sections, focus group discussion and reviewing organisational documents to draw conclusions from data collected.
3. Fieldwork 3 further explored the source of inefficiency and ineffectiveness in the Nigerian Public Sector. Metrics to assess efficiency and effectiveness were developed and applied to project documents. Contract execution documents were analysed with a view to identifying knowledge-based organisational source of inefficiency and ineffectiveness. At the individual level diaries were used to log activities of personnel workplace distraction; which were considered as a source of inefficiency and ineffectiveness.

According to Venkatesh et al. (2013), there exist number of techniques for analysing data collected through mixed-methods approach in a research. Given the rigour of analysing data from multiple research instruments, this research draws from various techniques during the data analysis phase. Data collected in this study can be said to be both qualitative and quantitative. For qualitative data, Hierarchical Task Analysis (HTA), Swimming Lane Sequence (SLS) and Content Analysis (CA) were applied while Chi Square, Pearson Correlation Analysis and Frequency Counts were used for quantitative data. Chapter three of this thesis provides a comprehensive overview of the research methodology as well as justification for the methods employed for data collection and analysis for this study.

1.8 Motivation of Study

A number of interests, personal, academic and national in character come together in motivating this study. The quest to gain advanced knowledge, a growing interest in knowledge management theory and practice and the realisation of the Nigerian government in trying to improve efficiency and effectiveness of its public sector through knowledge management practice are the main motivation this study.

The management of the Nigerian public sector through its Head of Service (Ama Pepple, Head of Public Service Nigeria 2007-2009) realised many benefits of knowledge management for public sector organisation advocate for the implementation of knowledge management within the sector. Pepple had a vision for a better Nigerian public service hinged on knowledge and knowledge management but this was not achieved as she retired in 2009. Her vision set the stage for human capacity building, and subsequent government openly advocated for the implementation of knowledge management practices in the scheme of service. However, the process of implementing effective knowledge management is imperative within the Nigerian public service.

Another motivation for this study is grounded on Vision 2020 which was established in 2010 (Eneh 2011, Chinedu *et al.* 2010). One of the objectives of Vision 2020 is to transform Nigeria into one of the top 20 economic powerhouse countries by the year 2020 (20:2020) with respect to freedom and access to information and knowledge. By setting the objective of becoming one of the top 20 nations by the year 2020, it is imperative that Nigeria focuses on sustainable

development and achieves efficient, effective quality services through a contemporary knowledge-based civil service driven by knowledge management practices (Nigeria National Planning Commission, 2010). The Honourable Minister and Chairman of the Nigerian National Planning Commission, entrenched in the Nigerian Vision 2020 (NV2020) draft that;

“... by 2020, Nigeria will have a large, strong, diversified, sustainable and competitive economy that effectively harnesses the knowledge (expertise) and energies of its people and responsibly exploits its natural endowments to guarantee a high standard of living and quality of life to its citizens”.

One of the strategies to achieve the objective of the Vision 2020 was to develop a knowledge-based civil service (Eneh 2011) with the culture of acquiring, sharing and use of knowledge towards improvement of its services. Another motivation for this study is the challenges and calls for effective implementation of knowledge management theories and concepts within the public sector in developing countries (e.g. Nigeria). In summary, the motivation for this study is grounded on the following:

- A growing interest and the desire to advocate for knowledge management initiative as a strategy for the improvement for efficient and effective service delivery within the public sector of developing countries (especially the Nigeria public sector).
- A civic obligation of the public service staff to contribute to the Nigerian public service in becoming one of the top 20 countries globally by year 2020

1.9 Novelty, Significance and Contribution of Study

This study is significant for the following reasons:

First, poor performance is a major issue in the Nigerian public service. Therefore, investigation into improvement to efficiency and effectiveness within the Nigeria public service is of particular interest to policy makers, legislators as well as the citizens.

Secondly, because of the potentials and glamour for due process, accountability standards and practices, this study provides avenue for improving organisational performance among civil

servants and stakeholders within the Nigerian public service. This can be achieved by promoting acceptable procedure with regards to knowledge audit and re-evaluation of existing government business processes.

Thirdly, there is dearth of literature on improvement to efficiency and effectiveness of public sector organisation in developing countries, particularly in Nigeria. In this context, current study makes a theoretical contribution to the existing literature, particularly with regards to knowledge management as a practice for improving efficiency and effectiveness in developing countries in general and Nigeria in particular.

Fourthly, this thesis made a methodologically contribution by providing an innovative and integrated blend of instruments and techniques which enable the investigation of the perception of civil servants on efficiency and effectiveness, knowledge audits and sources of inefficiency and ineffectiveness in a public sector organisation.

Finally, the main contribution of this study is the conceptualisation and development of an Operational Framework (Strat-KM) that can guide the implementation of a knowledge management practice in public sector organisations. This in particular (Operational Framework perspective) is to fill the gaps in knowledge identified in tasks processes within the Nigerian public sector (see chapter 7).

1.10 Thesis Structure

This thesis is structured into nine distinctive but interrelated chapters unfolding major ideas in a logical sequence. The present chapter briefly explained the need to address the issue of improvement to efficiency and effectiveness in the Nigerian public sector through knowledge management. The research background, aim, objectives and significance as well as the methodology that underpin the study were presented in this chapter. An introduction to the content of each thesis chapter is presented while the diagram below presents a pictorial view of the process undertaken in carrying out the research.

Chapter 2: Literature Review

This study is associated with the issue and fundamentals of knowledge management as a strategy for the improvement of organisational efficiency and effectiveness. As a result, this chapter critically reviews a wide range of extant literature in the knowledge and knowledge management domain. The aim of this chapter is to understand and present discussion round the concept and theories of knowledge management as well as its linkage to improvement in public sector efficiency and effectiveness.

More importantly, this chapter reviews knowledge management concepts and practices in the context of developing countries in general and the Nigerian public sector in particular. The chapter further explores the concept and theories of knowledge management frameworks in order to provide theoretical foundation for the development of the proposed strategic knowledge management framework.

Chapter 3: Research design and methodology

This chapter provides the overall research design and methodology adopted for this study. The chapter also discussed research paradigms leading to the understanding of the specific paradigms adopted in this thesis. Consideration, selection and profiles of participants for this study are presented in this chapter. Methods of data collection and data analysis are presented while introducing data collection instruments such as Task Walkthrough, Hierarchical Task Analysis at the same time providing discussion around the development of a numerical metrics as well as Swimming Lane Sequence Diagram for data analysis.

Chapter 4: Efficiency and effectiveness in the Nigerian public sector: Understanding the research problem

This chapter presents discussion on the issue of efficiency and effectiveness in the Nigerian public sector. The aim is to explore the perception of civil service staff on efficiency and effectiveness, knowledge management practice as well as the impact of organisational culture on service delivery within the Nigerian public sector context. Furthermore, this chapter concludes with the exploration of Information and Communication Technology integration

within Nigerian public sector business processes using the Delta State public service as a case study.

Chapter 5: Analysing knowledge user task

This chapter is a direct response to the perception of civil service staff on efficiency and effectiveness in chapter four. The chapter presents; discussion around the auditing of knowledge within task processes. The aim is to understand task processes and identify embedded knowledge within the tasks. Four tasks (ministerial tendering, purchase requisition, payment process and state budgeting) were purposefully selected for investigation and are briefly highlighted in this chapter. The selection of these tasks reflects core everyday activities performed by ministries and extra ministerial department in the public service of Nigeria.

Chapter 6: Towards identifying sources of efficiency and effectiveness in the Nigerian public sector

The chapter investigates the source of inefficiency and ineffectiveness from the organisational and individual perspectives. The main focus of this chapter is to trace the start point at which inefficiency and ineffectiveness set into public service task processes. To investigate this, selected projects executed in the Delta State public service between 2005 and 2013 were collected and analysed using documentary analysis while diary filling was used to trace the source of individual inefficiency and ineffectiveness. The application of the developed metrics was also presented in this chapter.

Chapter 7: Framework (Strat-KM) development and validation

This chapter discusses the framework development for this research. Also discussed in this chapter are the frameworks that underpin the Strat-KM. The chapter introduced the suitability of a framework in relation to knowledge creation, sharing and use specific to the Nigerian public sector and related organisations within developing countries. The validation of the framework is also presented in this chapter while highlighting the potential impact of knowledge management on efficiency and effectiveness in the way public goods are delivered.

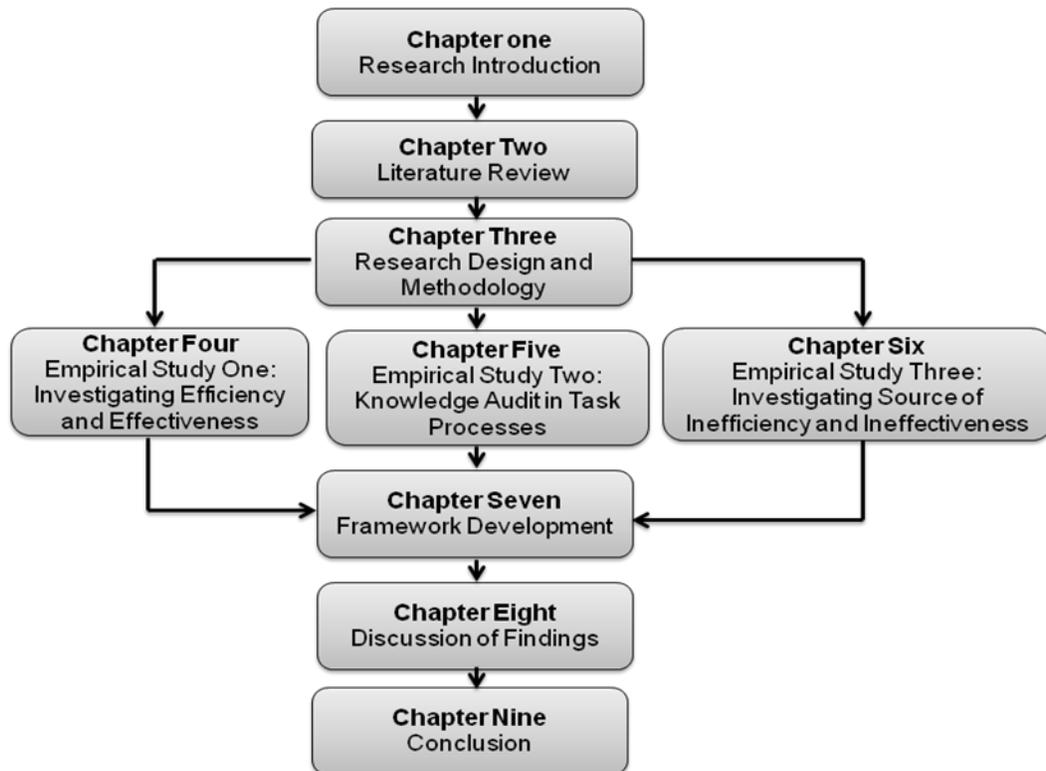
Chapter 8: Discussion of Findings

This chapter presents the analysis of the findings for this research. The discussion of the findings is in line with knowledge gained from the knowledge management literature. The findings from the three empirical studies as well as the understanding gained from knowledge management concepts and theories were synthesized and compared with the knowledge management framework concept and theories to develop the knowledge management framework (Strat-KM) presented in this thesis.

Chapter 9: Conclusion

This final chapter presents the conclusion of this thesis drawing on the findings for this research. The chapter briefly summarise the research contribution and limitations. The chapter ends with a brief recommendation that may contribute to the implementation of Strategic Knowledge Management practice within the Nigerian public sector.

Figure 1.2: Thesis Structure



1.11 Personal Journey

The researcher discovered education in the early 2000s after 10 years working experience with the Nigerian National Petroleum Corporation (NNPC), the main oil and gas upstream sector in Nigeria. He joined the Delta State public service in 2001 as an Assistant Data Processing Officer.

Back in 2004, the researcher was moved from data processing officer to Database/SAP Basis Administration. As part of his official assignment, he was made Training Coordinator and SAP introduction trainer for end-users where he has trained over a 1,000 civil servants and political appointees.

While in the public service, the researcher's drive for education became intensified as working alongside university graduate provided the necessary motivation and freedom to continue his educational desire. In 2006, the researcher obtained HND (B.Sc equivalent) degree with distinction in Computer Science, a feat not before him achieve from the Federal Polytechnic, Auchi, Edo State.

In 2008, the researcher gained admission to further his academic career at the Northumbria University, Newcastle, United Kingdom where he obtained a Masters degree (MSc) in Computer Science. During this period, meeting other students from different background further has positive impact in the researcher's life with respect to education.

In 2012, as the desire to push for academic continue, the researcher applied and gained admission to conduct a research in public sector Knowledge Management at Doctoral (PhD) level, University of Sunderland, United Kingdom. During the research period, the researcher has the opportunity to work with some highly academic and non-academic professionals. Working with these highly professional people is one of the best periods in the researcher's entire life.

From data collection perspective, the researcher's long years of experience working with different civil servants within the Delta State civil service, friendly personal relationship developed during the researcher's time as a Training Coordinator and those he has trained

played key role. Again, the researcher's academic determination and achievement which has become a source of motivation and reference point for other civil servants within the state public service as with the relationships developed during his official life as a civil servant provided the platform for the high response rate from participants during the data collection phase of this study.

1.12 Summary

The research context is to investigate whether the efficiency and effectiveness of the Nigerian public sector can be improved through knowledge management practice. Specifically, this chapter has discussed the research background and put forward a research question with a view to achieving the research objectives. Furthermore, the three empirical studies carried out in this research using a mixed-method research approach for data collection and analysis were introduced.

This chapter has contextualized the research, briefly discussing the Nigerian public sector as well as its compositions providing an organisational Organogram of the Delta State Ministry of Finance. Furthermore, the different documents include; memos, civil service rules and regulation that contained policies and knowledge for carrying out management of the Nigerian public sector were briefly discussed.

In the chapter that follows, a literature review of surrounding knowledge and knowledge management and its link to the improvement of efficiency and effectiveness is presented, addressing the research question of the thesis: *“Can knowledge management improve efficiency and effectiveness in the Nigerian public sector?”*

2 Chapter Two: Literature Review - Impact of Knowledge Management on Improvement to Efficiency and Effectiveness

In the last two decades, the importance of knowledge has been highlighted by both academics and practitioners as a source of competitive advantage and productivity as well as efficiency and effectiveness (Lin et al. 2012). However, the mere act of processing knowledge does not guarantee success instead knowledge has to be managed targeting organisational objectives (López-Nicolás & Meroño-Cerdán 2011). This is a fundamental reason why Knowledge Management practice has been viewed as critical for effective execution of organisational business processes (Holsapple & Wu 2011). The assertion in this thesis therefore, is that knowledge management, if appropriately and effectively implemented can have a strategic positive impact for enhancing organisational productivity, sustainability, efficiency and effectiveness.

Accordingly, this chapter reviews and evaluates contemporary literature on knowledge and knowledge management in relation to efficiency and effectiveness improvement. The chapter begins by introducing the concept of efficiency and effectiveness. This is because the onus of this research is on improvement to efficiency and effectiveness of the Nigerian public sector with emphasis on knowledge management. The section that follows introduces Information Management (IM) and Knowledge Management (KM) including the differences between the two concepts as a way of providing a clearer interpretation surrounding the understanding of and KM

The sections that follow provide discussion around knowledge and knowledge management. This includes the definition of data; information and knowledge to broaden our understanding of what constitutes knowledge as a core organisation resource in relation to this study.

This is followed with the concept of knowledge management as a practice. The discussion in this section includes knowledge management and its challenges from a public sector perspective. A range of knowledge management frameworks contemporary literature is

reviewed and their application in the public sector context explored. The chapter ends with a summary.

2.1 The Concept of Efficiency and Effectiveness

In recent years, the debate of the role of public sector has shifted towards understanding and measurement of efficiency and effectiveness. According to (Bartuseviciene & Sakalyte (2013), efficiency and effectiveness are central to the measurement of organisational performance. Despite this obvious relevance of measuring organisational performance, it appears that most organisational managers and individuals believed that efficiency and effectiveness are the same. However, each of these terms has their own distinct meaning.

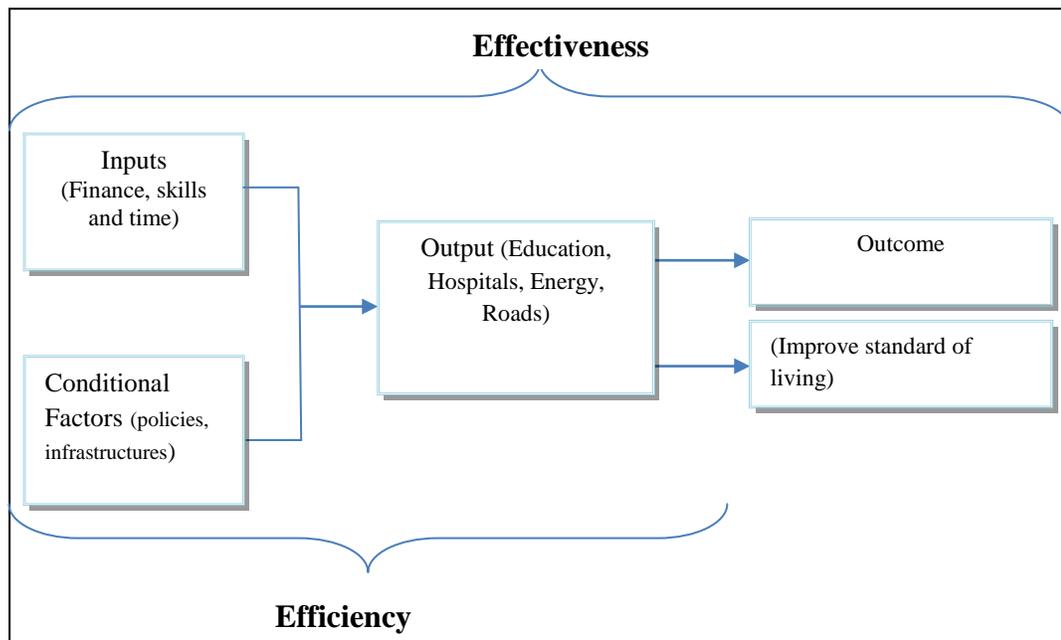
Aristovnik (2009) conducted a study “Efficiency and Effectiveness in European Union (EU) Member State and Croatia” and observed that the views of public sector organisations have shifted towards the assessment of efficiency and effectiveness. Aristovnik concluded in the study that public sector especially in the EU can be more efficient and effective if government adopt better measures in managing available resources as regards performance.

On the contrary, Curristine, Lonti and Joumard (2007) argued in their study of European Union Economy that there is no blue print to organisational efficiency and effectiveness. However, in the study “Improving Public Sector Efficiency and Effectiveness: Challenges and opportunity Curristine, Lonti and Joumard concede that there are three main institutional driver (decentralisation of political power, appropriate human resources management and increase in the scale of operations on education and health) that can help improve organisation efficiency and effectiveness.

A review of literature on organisational performance appraisal reveals that there are various opinions on how organisations are assessed. Mousa (2006) emphasized two main indicators when evaluating performance: The *efficiency* and *effectiveness*. A view supported by Palenberg (2011) when he noted that in the context of measurement and improvement to service delivery, the two commonly used measures are efficiency and effectiveness.

Most organisational managers believed that the two terms are synonymous. However, as Bartuševičienė & Šakalytė (2013) noted that each of these terms has their own distinct meaning. Bartuševičienė & Šakalytė (2013) emphasised that efficiency is “doing things right” while effectiveness is “doing the right thing. The differences between the two terms are further explained in the context of input, output and outcome as indicated in Fig 2.1.

Fig 2.1: Efficiency and Effectiveness in relation to output



Source: Aristovnik, A. (2009)

The understanding from fig 2.1 reveals that efficiency provides slightly different information compared to effectiveness. The fundamental difference between the two terms lies in the fact that effectiveness is much broader dealing with service quality and creation of value added, output interaction within social and economic environment. On the other hand, efficiency measures the relationship between input and output or how organisation can maximise the use of available resource to achieve maximum output. To this end, next sub-sections present the understanding between the two concepts.

2.1.1 Efficiency

Generally, efficiency relates to the extent to which an organisation achieve its goals using the least amount of resources (Mihaiu, Operana, and Cristescu, 2010). In support of this view, Bartuševičienė & Šakalytė (2013) posits that efficiency relate to the relationship between inputs and outputs. Pinprayong and Siengthai (2012) opined that there are two types of efficiency: Business and Organisational efficiency. They emphasised that business efficiency reveals the input and output ratio, while organisational efficiency reflects the improvement of internal processes such as structure, culture and community. In effect, organisational efficiency indicates improving organisational entities in relation to management, productivity and quality.

For this study, efficiency is considered to be how successfully organisational inputs are transformed into outputs. In this context, efficiency is the optimization of government resource (finance, personnel skills and time) to provide qualitative service (output) such as roads, hospital, education and security. As an example, if ministry A spends N10 per borehole while B spend N15 per borehole, ministry A is said to be more efficient than ministry B. This is because, ministry A spend less resource in completing borehole project. This concept can be aggregated for an entire organisation where less money, time and technology is spent to achieve people's oriented projects that qualitatively enhance the life of the people.

2.1.2 Effectiveness

Effectiveness measures the degree to which an organisation achieves its set goals or the way output interact with economic and social environment (Zheng, Yang & Mclean 2010). It determine the organisation objectives or simply the degree to which organisation realises its own goals (Hookana 2011;Bartuševičienė & Šakalytė 2013). Kennedy-Philips (2011) noted that organisational effectiveness enable the assessment of progress towards objective attainment and goal achievement. In a related development, Aubyn (2009) believed that effectiveness helps to assess the progress towards organisational mission fulfillment,

For this study, effectiveness relates to the ability of how organisation achieve final objective based on resources deploy. That is, effectiveness measures the extent to which an organisation meet up with the goals it sets out to achieve. The explanation is that, if in 2012 the Nigerian

public sector sets out to provide 100 boreholes to 100 communities and by December, it provided 80 boreholes its effectiveness is rated as 80%.

In general, efficiency and effectiveness are exclusive, at the same time, both concept influence each other (OCED, 2010). In this context, individuals and managers are to ensure measures are put in place to achieve both efficiency and effectiveness within an organisation. Evaluating and measuring public sector efficiency and effectiveness is sometimes difficult, this is because the public sector provides social services (benefits) which in most cases do not have direct or immediate benefits.

2.2 Information Management and Knowledge Management Understanding

The distinction between Information Management (IM) and Knowledge Management (KM) is far from being well-articulated in the KM literature. This is as a result of the confusion that surrounds the understanding of knowledge and information. In actual sense, there is no consensus as to the claim that knowledge management is a new field with its own research base, since much of the terminology and techniques used have been borrowed from Information Management (Costa, Soares & Sousa, 2016).

Recently, the lack of clear distinction between information and knowledge has been recognized as a major concern in knowledge management literature (Morales & Moral 2016). Indeed a thin line between IM and KM at both the conceptual and practical levels exist. One way to differentiate between IM and KM is to identify the process involves in the two concepts. According to Onyancha (2011), Information Management focuses on the "plans and activities that need to be performed to control an organisational records".

For Kebede (2010), Information Management is the management of the information resources of an organization as well as management of the information technology. Choo (1996) presented information processes as a cycle, which entails five basic steps: identification of information needs, information acquisition, information organization and storage, information distribution and information use. Each of these steps requires planning, coordination and the control of a various activities supported by information technology.

According to Bouthillier and Shearer (2005), IM initiatives are measures put in place to control systematically information in recorded form. Although, IM emphasises is usually on technology control processes, however, its human element is considered in techniques such as information audit and mapping. Indeed, IM practitioners tend to implement and maintain information systems and they strongly emphasise on organisational information resources and technology.

On the other hand, Knowledge Management is the capability of organisations to manage their knowledge resource (Arch & Emadzade, 2012). KM is described as the deliberate design of processes, tools, structures with the intent to increase, renew, share, and improve the use of knowledge resource represented in any of the three elements (Structural, Human and Social) of intellectual capital (Shannak, 2009). The challenge for managing knowledge lies in the ability to assess and extract a person's individual knowledge and make use of which is dependent on the environment and ways to encourage people to take part in the sharing of knowledge they carry.

Like Information Management, the focus of Knowledge Management is grounded in such processes as creation, sharing and use which may not necessarily be technology base. KM is mainly human capability or knowledge to achieve organisational objectives (Niri et al. 2010). It is a process of producing knowledge with the aim of transforming organisation into learning organisation. According to Karadsheh (2009), KM can be described as a techniques to enhance and bridge the process of implementing environment to encourage sharing, distribution, creating and comprehending knowledge of an organisation.

Generally, Knowledge Management is a process based with two major side; Information Management and People Management. Information Management is manageable; however, managing people is most challenging especially when it concerns the management of tacit knowledge. Knowledge Management according to Chidambaranathan and Swarooprani (2015) is more than mere storing and managing of information, however, a process that requires the capability to create and share knowledge across an entire organisation.

Finally, to differentiate KM and IM, one must examine the distinction drawn between the related concepts: Data, Information and Knowledge. Attempts to define these various concepts are numerous and produce slightly different results depending on the discipline they are viewed from. Thus, next section presents discussion on the distinction between the three concepts under the emerging knowledge synergy. This way, our understanding of the differences between information and knowledge management will be broadened.

2.3 Knowledge Synergy: Data, Information and Knowledge Understanding

To properly understand why organisations manage their knowledge assets, it is imperative to understand the relation between three interrelated concepts; data, information and data. This understanding is necessary in order to help understand the issues or confusions surrounding the true meaning of knowledge management.

Karadsheh (2009) provide a distinction among the three terms. He viewed Data as a set of facts, Information is represented as a categorised, reviewed and scrutinized data while knowledge is the result of merging information with perspective and expression that resulted in insinuating and approaches on which decision can be made.

The definition of data, information and knowledge by various researchers are similar. Galliers and Leidner (2009) describe data as context-free and claimed that it can be interpreted in many different contexts for different purposes. Information, they said is the processing of data and is dependent on a particular context. They further stressed that for information to be meaningful, it has to include information systems as well as human being. Vlada and Nica (2010) conclude by stating that knowledge can be identified as information in context. They however, said that information does not become knowledge automatically.

Additionally, Karadsheh (2009) states that as data develop into information more value is created which in turn convert information into knowledge by appending insight and enhance understanding through actions or decision making.

As will, Kirsch et al. (2015) indicates that data is raw facts gathered from business transaction and activities. Again, they view information as a structured data while knowledge is considered to be an interpretation to information. In this view, knowledge is when information is placed in context, internalized and evaluated based on mental view of the world or activities within a particular context.

Based on the above, data is simply an unprocessed facts and raw numbers gathered from business activities with no concern or value. Information is a processed data with value that determine purpose. And knowledge is an interpretation attached to information to improve the understanding of purpose which can be used for problem solving and action driver.

The understanding gained from the discussion of data, information and knowledge above indicates that there is a relationship between the three concepts. The relationships presented in this thesis are to enable, compare and for better analysis to deal with the understanding of knowledge management. Therefore the three terms are define accordingly below:

- Data is described as the unprocessed collection of details with no real purpose, value and meaning.
- Information is a manipulated structured data with little value which can be classified, structured and organized for personal or organisational use.
- Knowledge is refered to as an individual's stock of information, skills, experience, and memories which can be transmitted to others through some form of medium in order to enhance individual performances.

Typically, the discussion of knowledge is linked with the understanding of data and information. In Knowledge Management literature, knowledge is classified into Tacit and Explicit knowledge. Both tacit and explicit knowledge are recognized as important sources of competitive advantage and value creation for organisation (Molnar et al. 2011).

Explicit knowledge is regarded as objective separated from both individual and social value and can be codified in a tangible form (Alhamoudi 2010). On the other hand, tacit knowledge

is the skills and ability people possess which is very difficult to express or transmit. The main characteristics of these two types of knowledge is that “explicit knowledge” can be described in a formal language , documented, it has structured fixed content, and can be externalised (Trusson et al. 2014). Tacit knowledge on the other hand is personal and difficult if not possible to disembodify from the carrier. It resides in the head or mind of human (Salleh 2010). It is deeply rooted in experience, actions, ideas and values and evolve in a particular context (Alavi & Leidner 2011). Thus, tacit knowledge is difficult to share and formalise, express or communicate to others except through learning. Yet, tacit knowledge is the most reference type of knowledge when discussing knowledge management practice as a result of its value to organisations. Having understand the concept, information management and knowledge management as well as data, information and knowledge, next section now discuss knowledge management in relation to the objectives of this study.

2.4 Knowledge Management

In the last two decade, the field of Knowledge Management has emerged as an important research area in the academics and organisational practice (Ann et al. 2008). Vast numbers of definition for knowledge management exists with more or less common characteristic (Zaim 2006). It is pointless reviewing all of the definition associated with knowledge management in this study; however, it is worthy to note some consideration for KM in order to establish a working definition for this thesis.

According to Chidambaranathan & Swarooprani (2015), KM is the process that enable organisations find, select, organize, disseminate and transfer important information and expertise necessary for organisational activities such as problem solving, strategic planning and decision making. While Malhotra (2000) describe knowledge management as an organizational processes that seek synergetic combination of data and information processing capacity of information technologies, and the creative and innovative capacity of human beings. Knowledge management requires the re-consideration of organisation strategy that caters for critical issues of organisational adaptation, development and survival even in the face of the present environmental change.

On the contrary, Solleiro et al. (2009) emphasises the importance of intellectual capital and describe knowledge management as management of the intellectual capital controlled by the company. Sedziuviene & Vveinhardt (2010) focuses on the value of intangible assets and define knowledge management as the art of creating value from an organisation's intangible assets. Knowledge management from the tacit knowledge perspective is unlocking, leveraging and making individual knowledge available within the organisation.

Yang (2010) and Kim et al. (2014) brings another perspective to the field and describe Knowledge Management as a conscious strategy of getting the right knowledge to the right people at the right time and helping people share and put information into action in ways that strive to improve organizational performance. Mphahlele (2010) defines knowledge management as the range of practices and techniques adopted by organisations to create, store, share knowledge across the firm and the application of knowledge to achieve organisational objective.

Keeping all of these definitions and many others in mind, it is now possible to compose a more practical working definition of knowledge management for this study. Thus, this study consider knowledge management as *“the systematic management of all activities and processes for identifying, creating, codifying and storing, sharing, and utilisation of knowledge for improving organizational efficiency and effectiveness as well as sustainable development”*.

As the breadth of the definition for this study illustrate, knowledge management is a set of entities involving various activities encompasses theories, processes and technologies that supports the development and exploitation of knowledge resource. The ability to effectively manage knowledge that exists in explicit and tacit forms enhances organisational capability to efficiently and effectively innovate initiatives for service delivery improvement. The innovative initiatives enable organisation to learn how to create new knowledge that create values for organisations by improving efficiency and effectiveness and competitiveness (Haslinda & Sarinah 2009).

From the understanding of the definition above, it can be argued that in today's knowledge economy, organisational performance, development and sustainability are derived from what the organisation knows and how to enable the human capital use what they know than relying

on manual labour in achieving organisational objective. The ability to rapidly create and effectively manage knowledge is critical to organisational survival and development (Mciver et al. 2013). This shift has altered the way most people perform task and put a premiums on organisational ability to understand knowledge within task perform.

Furthermore, the relevance of Knowledge Management in increasing organisational efficiency and effectiveness across industrial sector has been well documented in literature (Jain & Jeppesn, 2013). Findings from extant literature on the imperative value of knowledge management to organisations have supported the relevance of the concept (Oluikpe 2012). Despite the realisation of the importance of knowledge management, our understanding and how to organise, manage and integrate activities for managing knowledge that is critical to work activities is limited especially in the public sector organisation in developing countries (Kebede 2010; Dzunic & Subotic 2014).

The assertion is that knowledge management can yield important strategic outcome such as improving productivity (Chen & Huang 2012), increase personal agillity (Mciver et al. 2013), enhancing innovation (Pitt and MacVaugh 2008) and organisation operational efficiency and effectiveness (Cao et al. 2010). Despite this realisation, knowledge management has many critics and its implementation is limited across developing countries public sector. This again, provides current research the groundwork to explore and contribute to both theory and pratice the discussion of knowledge management implementation in developing countries public sector in general and the Nigerian pulic sector in particular.

2.5 Knowledge Management in Public sector

Within Knowledge Management (KM) domain, the public sector is an important research context. According to Massaro et al. (2015), knowledge management has the potentials to influence and improve the public sector service delivery processes. Indeed, knowledge management is a powerful enabler for increasing efficiency and effectiveness in all areas of public sector processes. Though, knowledge management practice has always been integrated in government tasks, inseparable from strategy, planning, and implementation (McAdam & Reid 2000). However, there are few studies focusing on public sector knowledge management than in the private sector (Oluikpe, 2012; Riege & Lindsay, 2006). This is because, the culture

within the public sector makes the development of knowledge management practice more challenges (Amayah 2013).

Knowledge is central to policy making and public sector service delivery. Thus, Knowledge Management has been found to be critical to policy development (Arora 2011), human services (Huang 2014) and e-governance (Islam & Avdic, 2010). As the expectation of public service increases with the ever-increasing demand for effective service delivery, knowledge management is potentially usefully for dealing with the many unstructured business processes. Managers of the public sector are expected to be innovative in adopting principles and concept that enable the creation, storing and sharing of knowledge to support civil servants across ministries, agencies, departments and units.

Pee and Kankanhalli (2015) posits that knowledge management can enhance public service delivery, improve decision making effectively and build the public service work-force. While Acheampong (2014) noted that with appropriate knowledge management practice in the public administration service delivery can be improve.

Public sector task and services are knowledge intensive. Datta and Ahmed (2015) agreed that the planning and implementation of appropriate knowledge management can enhance effectively the performance of public sector organisation. Based on the claim that public sector organisations will be more effective in service provision, innovation and be more proactive in dealing with the ever increasing service and task processes, this study proposes that knowledge management can improve the efficiency and effectiveness of the Nigerian public sector.

Knowledge management is gaining a foothold at different levels of public service organisations globally, yet, there is lack of empirical studies as to the impact on improvement to efficiency and effectiveness especially in developing countries including Nigeria (Acheampong 2014; Mahdi, Almsafir, and Yao 2011; Okunoye 2002). However, two major strands of public service administration stress the importance of effective knowledge management in public sector organisations.

First, there is substantive human capital in most public sector organisations, yet, there are crises due to brain drain, retirement and floating untapped knowledge especially in developing countries (Birasnav et al. 2011), all of which call for effective knowledge management designs. For example, in the study of the Nigerian public sector performance management, Rasul and Rogger (2013); Esu & Inyang and (2009) argued that there is personnel and organisational inefficiency and ineffectiveness as a result of lack of knowledge processes, procedures and policies for handling government business processes. Hu (2010) suggested that regular knowledge management can help provide new employee with the required training and established employees with the required knowledge for effective performance.

Technology is an effective mechanism for effective collaboration among public service staff. As a second strand, There is a need for the integration of Information Technology to develop stronger processes for knowledge management in a more effective public servants collaboration. To appreciate this, Pee and Kankanhalli (2015) suggested that that there is more and more transactional public sector knowledge network being used to facilitate knowledge management across departments and units in an organisation. This network accelerate the creation and distribution of knowledge across entire organisation and agencies in a way that places more emphasis on knowledge management capability.

As a final and general remark on public sector knowledge management, Sensuse *et al.* (2014) conducted a study on the identification of knowledge management process in Indonesia and conclude that most developed countries are implementing knowledge management in enhancing organisational efficient and effective p. For example Sensues et al (2014), emphasis that United Kindom has developed a framework with knowledge creation and sharing through learning processes, communities of practice and mentoring to promote knowledge management practice. In the Irish civil service, knowledge management has already been implemented both in mechanism and technologies by capturing knowledge activities through process associated documentation of pilot study projects and business process information the using same as a guide for training and knowledge management plans. Though, this success story cannot be said of developing countries as the potential for knowledge management practices are yet to be tapped.

Therefore, the proposition of this study is to contribute and guide both theory and practice as well as to develop framework for the public sector in developing countries to guide the development of an effective knowledge management practice that can guarantee the provision of the right knowledge to right people at the right time across units, departments and ministries.

2.6 Culture and Information Technology Effects on Knowledge Management Practice

In the knowledge management literature, various factors and concepts are have been cited as influencing elements and enabler for the development and creation of knowledge (Bharadwaj et al. 2015). These influencing factors includes; leadership commitment, organisational structure, culture and information technology (Mageswari et al. 2015; Lehner & Haas 2010). However, this study discusses two major factors that can influence knowledge management in an organisation like the public sector in Nigeria. The two factor discussed are Culture and Information Technology.

2.6.1 Organisational Culture

According to Hofstede (2003), organisations do not operate in social vacuum but are influenced by the social context. This is the reason Bamgboje-ayodele & Ellis (2015) describe culture as an organisational capital and key element to organisational change and renewal as well as a glue that bonds members of organisation together.

Organisational culture is very central to the successful implementation of knowledge management initiatives. It has been considered both as a facilitator as well as barrier for knowledge management projects (Bharadwaj et al. 2015) . Since organisational culture is key to knowledge management, it is imperative that organisation know how to influence and develop culture and environment that motivate the creation and sharing of knowledge.

Cardoso, Meireles and Peralta (2012) emphasis that the interaction between individual is essential for building innovative culture and the basis for creating new ideas and can, therefore be view as having the potential for creating knowledge. Furthermore, Bharadwaj et al. (2015)

argued that organisational individual interaction should be encouraged formally and informally. This type of collaboration enable organisation to shape the way knowledge can be manage internally. As part of the organisational culture, the organisation is encourage to imbibe the culture of free information sharing, having knowledgeable worker mentor less knowledgeable person and provide work friendly relationships among employees.

2.6.2 Information Technology

Information Technology boom and the advent of highly sophisticated Information and Communication Technology has been one of the main driver and enabler for knowledge management in recent years. Various researches have been conducted on the impact of ICT on the successful adoption of knowledge management (Mageswari et al. 2015; Chen et al. 2011).

According to Gold (2001), Information Technology comprises a crucial element of the structural dimension for mobilising social capital for managing knowledge. It helps to overcome the challenges or barriers of time and space that would normally limit knowledge management activities (Lin et al. 2012; Yu et al. 2010). Information Technology support indirectly enables knowledge management initiatives by providing faster, cheaper and reliable communication among organisation stakeholders and influences business performance (Samoilenko & Nahar, 2013). In the creation, storing, sharing and retrieval of knowledge, information technology serves as a reliable tool for both unstructured and structured data as well as collaboration needed for managing knowledge efficiently.

In organisations, according to Bharadwaj et al. (2015), the entirety of technological infrastructure for managing knowledge is tangible and acts as enabler for facilitating knowledge management initiatives. IT as tangible assets, Meso and Smith (2000) posits that technology infrastructure comprises the hardware, software and protocols that allow the creation, storing and sharing of knowledge within organisations. Phusavat et al. (2010) believes that IT play four main roles in knowledge management initiatives: a) obtaining knowledge, b) storing, categorizing and indexing knowledge, c) seeking and identifying required contents and d) flexible expressing contents based on individual or organisational needs. The analysis of these four main roles suggests that Culture and IT are influential elements for the successful management of knowledge within organisations.

2.7 Strategic Knowledge Management

In the last decade, the potential of knowledge has been highlighted in knowledge management literature (López-Nicolás and Meroño-Cerdán, 2011). Nowadays, knowledge is considered as a fundamental and strategic resource for organisation sustainability (Janet and Chua 2013). However, the mere act of processing knowledge does not guarantee organisational success (Momeni 2011); rather, effective generation and the application of knowledge results in organisational success (Chawla and Joshi 2010; Biygautane and Al-yahya 2011).

In today's global economy, knowledge is at the heart of most business processes, and managing knowledge has become important to organisational success (Green, Liu, and Qi, 2009). In public sector organisations for instance, knowledge has become central to policy making and the delivery of public service (Pee and Kankanhalli, 2015). To this end, Knowledge Management (KM) has been found to be instrumental to policy formulation (Riege and Lindsay, 2006), crises and disaster management (Yates and Paquette, 2011) and e-Government (Pee and Kankanhalli, 2015).

In public sector organisations, knowledge management is specifically fundamental to policy development, service provision and individual performance improvement (Kebede, 2010; Girard and McIntyre, 2010). According to Supyuenyong and Swierczek (2011); Mageswari, Sivasubramanian and Dath (2015), knowledge management is a strategy as well as a process. Knowledge management as either strategy or process has been well documented in the literature. Knowledge management as a strategy relates to the infrastructures organisations employ in creating, storing, sharing and the use of knowledge for formulating policies and making decisions as well as linking knowledge management to business processes (López-Nicolás and Meroño-Cerdán, 2011).

In Oluikpe (2012), knowledge management strategy is described as the overall approach taken by an organisation in identifying knowledge resource and aligning them to business processes, thus reducing knowledge drain (gaps) and improving organisational business processes. A view similar to Kim *et al.* (2014). Kim and Co. describe knowledge management as 'the set of strategic approach guiding knowledge creation and sharing in an organisation which provides

opportunity and constructs for innovative, sustainable development and improvement to service delivery.

Knowledge management strategy believers advocate the adoption of convenient and explicit methods to manage knowledge with a clear, flexible and conscious means of instituting strategies for knowledge creation, sharing and use in order to impact positively on organisational business processes. To define an effective knowledge management strategy, organisations must adopt a global, convenient vision and selection of appropriate knowledge management tools with a common knowledge management orientation across units and departments. This is because knowledge management is essential to all activities within the organisations and the capability of individuals to grow and improve on their work performances.

Bosua and Venkitachalam (2013) noted that in achieving better knowledge management strategies; organisation must review theories and principles that work well and try to take positive elements of such concepts and theories. López-Nicolás and Meroño-Cerdán (2011) indicated that one of the essential elements of effective knowledge management strategy is to find a balance between the exploration and exploitation of knowledge creation, storage, sharing and uses and the various elements in business processes. However, Turner and Minonne (2010) contend that the mere act of exploration and exploitation of knowledge does not guarantee success, but effective alignment of knowledge management strategies to the various elements of business processes that counts.

The knowledge management strategy presented above provides an understanding on which to explore and evaluate current knowledge management structure in the Nigerian public sector. Strategically, the evaluation of current knowledge management strategy in Nigeria is to provide a baseline measure for planning, aligning and the development of a Strategic Knowledge Management (Strat-KM) framework proposed in this research.

2.8 Knowledge Management Process

Over the years, a number of processes for knowledge management practice has emerged with many containing variations of familiar management process (Esterhuizen et al. 2012; Pinho et

al. 2012). These processes are both general and specific in scope. The generic processes describe the various elements of knowledge management on the other hand, the specific processes of knowledge management deals with such process as conversion and transfer (Nonaka et al. 1994) of knowledge.

These processes can also be descriptive in nature, identifying key knowledge management perspective in that they prescribe methodologies for conduct of knowledge management (Allameh, Zare and reza Davoodi, 2011) . They can also be compared on both context and content dimensions. The context dimension refers to the focus or primary intent of the processes, and the latter to knowledge resources and those activities and factors that facilitate its management (Canzano & Grimaldi 2012).

Knowledge Management is largely regarded as a process involving various activities for dealing with knowledge resource (Alavi & Leidner 2011). KM activities range from knowledge generation and codification to storage as far as transfer of knowledge (Alavi & Leidner 2011; Riege & Lindsay 2006). In all of this, lack of consensus exists with respect to the terms used to describe the major processes in the knowledge management. Table 2.1 summaries the major processes found in knowledge management literature. However, a closer look at the table and processes therein reveals that the difference are not really that great. The terms used differ, but there are some overlaps in the different types of processes involved in a knowledge management process cycle.

Table 2.1: Summarised view of knowledge management process

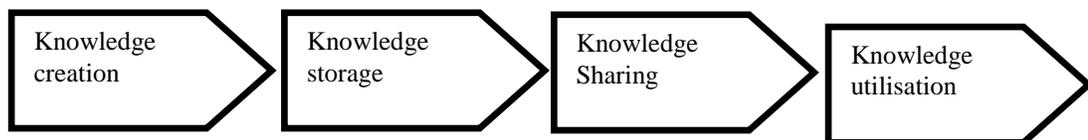
KM processes	Indira, Suganthi and Mood (2012)	Tubigi and Alshawi (2012)	Bagorogoza <i>et al.</i> (2011)	Mpofu (2011)	Anand and Singh (2011)	Akram <i>et al.</i> (2011)	Momeni (2011)
Knowledge creation/capture	✓	✓	✓	✓	✓	✓	✓
Organisation	✓	✓	✓	✓	✓		✓

Conversion				✓	✓		
Store/retrieve	✓		✓			✓	✓
Update	✓						
Share	✓	✓	✓	✓	✓	✓	✓
Apply					✓		
Utilisation	✓	✓	✓	✓	✓	✓	✓
Disposal							✓
Retain	✓				✓		
Total	7	4	5	5	7	4	6

Table 2.1 has presented various positions of researchers with respect to knowledge management processes. The main purpose of the table is to guide appropriate selection of KM processes for this study.

As an example, Indira, Suganthi and Mood (2012) examined and introduce seven processes of knowledge creation, organisation, storage, update, utilisation and retain. While Bagorogoza et al. (2011) combined five different knowledge management processes including knowledge creation, organisation, storage/retrieval, sharing and utilise (use). As indicated in figure 2.1, it can be said that knowledge management processes do not follow a single process but, a combination of multiple processes.

Figure 2.1: Knowledge management process (concept)



From a practical perspective, four processes of knowledge management have been identified to be common to most (if not all) knowledge management researchers and practitioners

knowledge management framework development. This is because; the four components are the most referenced knowledge management processes components in the contemporary knowledge management discipline. Other components may be relevant to different people in different circumstances depending on the situation and environment.

In this research, the four identified common knowledge management processes are ideal and relevant. This is because; the proposed knowledge management framework is grounded on these four main components. To broaden our understanding of knowledge management process for this research, the following sub-sections are presented.

2.8.1 Knowledge creation

Knowledge creation is complex, multidimensional and dynamic for most organisations (if not all) that engaged in the management of knowledge (Allameh, Zare and Davoodi 2011). Irrespective of the complexity in acquiring knowledge, Nonaka and Takeushi (1995) believed that successful organisations are the ones that are consistently engaged in creating and circulating knowledge within the frame of applying it to organisational business processes.

In the knowledge management literature, knowledge creations are classified into individual and organisational processes. The creation processes is often described as “*a continuous process of learning by acquiring knowledge in overcoming both the individual and organisational boundaries and constrain imposed by existing information parameters*” (Kamasak and Bulutlar, 2010).

To create new knowledge, actors within an organisation must interact to share what they know. Before organisational knowledge can be created, organisations must understand and know where knowledge within the organisation resides. The creation of organisational knowledge requires that the individuals involved must collaborate and the processes be clearly defined (Bharadwaj, Chauhan, and Raman, 2015). Accordingly, collaboration for knowledge creation is usually a two way thing between individuals, units and departments as in the case of the Nigerian public sector like various organisations that implement knowledge management practice.

Further, knowledge can be created within or outside an organisation (Akram 2011). In this context, Nonaka and Takeushi (1995) presented a framework of knowledge creation consisting of four elements usually referred to SECI (Socialisation, Externalisation, Combination and Internalisation) model. This framework has been widely used by researchers and professionals alike in the field of knowledge management. Suffice to say that SECI is relevant to the current research's framework context

The SECI model for knowledge creation encompasses both internal and external process of generating knowledge. However, the Nigerian public sector like many other public sector organisations in Africa mostly generates knowledge internally. The Nigerian public sector in generating its knowledge adopts process like induction, in-house training, mentoring, meeting, and workshops. This process has been proven to be effective in some cases (Kucza 2001). But the notion "knowledge is power" sometimes affect the way knowledge is exchange within the sector (Ekeke, 2011).

Another mechanism normally adopted by the Nigerian public sector for knowledge creation is "grafting". It is a process of employing individuals with expertise from outside the organisation to perform certain tasks (Acheampong, 2014). Grafting provide an organisation with the opportunity to acquire knowledge that may be lacking or difficult to grow within the organisation internally.

Many organisations that have thrived are those that are engaged in continuous knowledge creation and transfer activities and initiatives. In support of the foregone, Phusavat et al., (2010) noted that an organisation with continual knowledge management initiatives innovates which in turn enable sustainable development. To meet continuous knowledge creation initiatives, Acheampong and Kandadi (2008) listed various strategies that may enhance the creation of knowledge within an organisation to include but not limited to the following:

- Enabling environment and culture to encourage individual interaction with experts.
- Embedded knowledge creation practices through report writing after every business process completion.

- Establish feedback process for employees to rate knowledge during and after every training and workshop sections.
- Provision of open access to knowledge resources (e.g. Community of Practice, online open knowledge access). This can directly enhance knowledge usage and help update and create new knowledge.

2.8.2 Knowledge storage

The knowledge storage process is oriented towards making knowledge available and accessible by everyone. For an organisation to store knowledge there must be knowledge conversion (create) process that has the ability organise, structure, integrate and coordinate knowledge defined through framework that takes into cognisance the organisation and structuring process (Bharadwaj, Chauhan, and Raman, 2015). This process should be in direct response to the organisational operational processes which will allow users to access knowledge in a desirable format.

Samoilenko and Nahar (2013) noted for knowledge to be effectively stored, there is need for a common representation standard and consistency to allow the accessibility of knowledge. Without the common representation of knowledge in the organisation repository accessing the required knowledge becomes difficult. The view of Samoilenko and Nahar is consistent with Jasimuddin (2007) on the issue of the knowledge of an organisation stored in an organisational repository.

Knowledge is considered the most vital resource of an; the ability to preserve knowledge therefore has important consequences. In this context, Jasimuddin (2005) state that stored knowledge can effectively safeguard an organisational from downward turnover. Therefore, it is important that any organisation intending to embark on a knowledge management project should plan to store knowledge in a user-friendly and easily accessible form for all users across the organisation.

Generally, in organisation like those in the Nigerian public sector with knowledge mostly documented, repository for storing knowledge needs to be prioritised. Storing knowledge in

computer based storage devices and few artefacts aids knowledge retrieval faster. Computer based knowledge storage is very critical when organisations with huge knowledge based employee intend to adopt knowledge management practice. One important technology knowledge storage base recommended in this research is databases and electronic bulletin board in order to guarantee safety, preservation and knowledge accessibility by all knowledge civil servants in Nigeria.

2.8.3 Knowledge sharing

From an organisational perspective, knowledge created and preserve must be distributed or shared between members of the organisation. It is a process through which members or groups (units or departments) are affected by the expertise of another group (Islam, Hasan, and Rahman, 2015).

Among knowledge management processes, knowledge sharing is the main cornerstone and basic tenet of knowledge management practice (Salleh 2010b). It is a concept attributed to the way knowledge is transfered which is thought to be an antecedent of previous expertise gained during organisational learning (Van Grinsven and Visser, 2013).

Successful knowledge sharing is dependent on individual characteristics such as experience, motivation and belief grounded on organisational culture of trust (Ansari et al. 2012). From organisational and individual characteristics, Islam, Hasan, and Rahman (2015) noted that knowledge sharing is a difficult task because, the willingness of individual to share constitute one of the major barriers to knowledge sharing. A view supported by Amayah (2013) that knowledge sharing in the public sector is much more complex. This complexity arises as a result of public service staff believing that knowledge is power and the route to promotion opportunities.

In a related development, Wilkesmann and Wilkkesmann (2011) state that knowledge sharing is comprised of social interaction, processes, personal understanding as well as sense-making all play a critical role in knowledge sharing difficulties. Sandhu, Jain, and Ahmad (2011) noted that the sharing of knowledge may not be successful because learning as part of knowledge creation is an active process of constructing knowledge in the mind of a receiver

from a tacit knowledge perspective which is dependent on other factors such as organisational culture and personal know how. Massaro Dumay and Garlatti (2015) argued that irrespective of the complexity in sharing knowledge between organisational members in the public sector, effective knowledge management promotes effective service delivery.

In an organisation with knowledge management practice, Amayah (2013) noted that knowledge can be shared through face-to-face interaction, telephone or email or informally in a highly structured organisations like the public sector. At the same way (Wang and Noe, 2010) noted that knowledge sharing can be informal. Informal knowledge sharing entails exchange of knowledge without specific intension. The exchange of knowledge can be in an official manner thereby helping colleagues get tasks completed in an efficient manner.

2.8.4 Knowledge use

In line with available knowledge, identification, creation and sharing, knowledge use can be implemented based on organisational objectives. Indra, Cahyaningsih, and Catur (2015) in their study of knowledge management process of the Indonesia government human capital management project noted that knowledge application or use is the aspect of knowledge management practice that focuses on the activities of deploying active and relevant knowledge to individuals in order to improve organisational value. Thus, in this regards, knowledge use can be considered as the process of using knowledge as a guidance and recommendation to effect organisational decision and action.

Allameh, Zare and Davoodi (2011) noted that the mere act of creating and distributing knowledge within organisation does not yield value unless required knowledge is generated and linked to the organisational business processes. Thus, the value of knowledge use is much appreciated when business processes are improved effectively and efficiently.

2.9 Knowledge Management in the Nigerian Public Sector

Most public sector in the developed economy have developed some sort of operational knowledge management framework (Sensuse et al. 2014). Again, the government sector of some developed countries e.g. UK, France, Finland, USA, and Canada have deloped and integrated knowledge management systems into their main business stream (Acheampong

2014). Furthermore, many countries in Europe have been involved in some form of knowledge management systems based on the CEN 2004 recommended framework structures (Pawlowski and Bick, 2012). In the UK, public sector agencies are knowledge management driven according to the British Standard institution.

In developing countries, like the Nigerian public sector, not until knowledge management practice is 100% tool for sustainable development, investment into knowledge management concept is not always considered (Okunoye 2002). However, the awareness to manage knowledge among public sector organisations in Africa by the United Nation and other related organisations is yielding results but at a slow pace.

The Nigerian public sector realisation to become a knowledge work-force was suggested in 2009 when the then Head of Service (HoS) in a lecture titled ‘The Nigerian Public Service: the way Forward’ during the Nigerian service day says:

“the thrust is on building knowledge and expert based organizations through the creation of an enabling environment for the acquisition, sharing and management of knowledge, involving networking and collaboration, with colleagues...it involves more flexibility in organizational systems, through a shift from hierarchical to multiple accountability (professional and 360 degrees), as well as a more adaptive system that encourages knowledge generation, knowledge leadership, professionalism, innovation, initiative taking, and greater communications across all levels of the Service...moreover, it requires the application of IT-enabled knowledge management practices”

Ama Peppel, Head of Service of Nigeria (2007 – 2009)

The HoS vision for knowledge management practice within the Nigerian public sector as a strategy for the improvement of efficiency and effectiveness of the sector was further reaffirmed in a report by government agencies especially the Vision 2020 pilot survey on public service performance. Although, the Nigerian public sector have implemented different strategies including reforms (Omitola 2012) and restructuring (Ekpe, Daniel, and Ekpe, 2013)

in order to address the issue of efficiency and effectiveness, this has not yielded the desired result. Therefore, the call for the implementation of knowledge management practice by the HoS is consistent with researchers (Arora, 2011; Girard and McIntyre 2010; Chawla and Joshi 2010) and the research objective.

The major challenges faced by the Nigerian public sector in implementing a knowledge management process, can be said to be lack of guiding principles and concepts (framework) on how to develop and implement knowledge management. Though, little research has been conducted in some aspect of the Nigerian economy; telecommunication (Suraj and Ajiferuke 2013); Bayelsa State public service (Ekeke 2011); banking sector (Oluikpe 2012) and agriculture (Nwafor, Manson and Salau, 2009). The core government business processes from public service perspective lack a framework the Nigerian public sector can rely upon. Thus, this research aims to provide the theoretical and practical foundation for the development and implementation of knowledge management in the Nigerian and related public sector in developing countries especially in Africa.

2.9.1 Challenges and Opportunities

The benefits of knowledge management have been extensively discussed in literature. Many organisations in the developed economy have already implemented knowledge management. However, the story in the developing economy is different. Most of the challenges facing developing countries including Nigeria implementing knowledge management stem from lack of management commitment and technology integration as well as organisational culture and structure.

The commitment of managers and staff alike in the public sector in Nigeria have been analysed and found to be a major issue in implementing certain policies and tools that may be advantageous to the organisation. In Nigeria, much documentation exist detailing initiative including policies and processes aimed at improving the performance of individuals and the organisation in general. Yet, management of the sector shows little commitment to such initiative unless it is guaranteed successful. Management commitment is critical if knowledge management is to be successful in any organisation. This is because, management executes

strategy for organisational development and determines the vision and policies that drive and encourage policies and projects.

Technology and culture are some of the driving force for knowledge management projects. Technology as a driver for knowledge creation and sharing is an important factor (Samoilenko and Nahar, 2013). The integration of IT in the public sector especially in Africa is limited. However, times are changing as more and more IT infrastructures are being integrated to key business processes in the scheme of service. Few studies have ventured into studying cultural impact as a challenging factor to the success of knowledge management. Studies (Bamgboje-ayodele and Ellis, 2015; Ekeke, 2011) shows that the culture in the Nigerian public sector impede knowledge flow . This is an area where management of the Nigerian public sector needs to intensify efforts in encouraging and motivating public service staff to create and share acquired knowledge.

Thankfully, the different awareness campaign and conferences have stimulated the desire to embrace new technology as well as theory and concepts that will improve the performance of the public sector. The lecture of the then HOS (Ama Pepple 2007-2009) on the adoption of knowledge management in the main stream of the Nigerian public sector is seen by many as providing the platform for the implementation of knowledge management practice within the Nigerian public sector business processes.

2.10 Knowledge Management Theories and Frameworks

Managing organisational knowledge is never ending and involves many activities, tools and actors. In this context, having the capability and strategies to capture, share and use knowledge is a critical aspect of organisational efficiency and successful performance. Drawn from Ternes (2012) study which state that as ‘organisation process and knowledge needs evolve’ so must the strategies and framework for knowledge creation, share and use evolve.

Knowledge management has been described as a multi-faceted subject with arrays of theories and frameworks underpinning its development and practice. The multi-faceted nature of knowledge management has increases the study and management of knowledge. The multi-faceted has posed certain complexity and challenges to the development of knowledge

management especially in the public sector organisations. Thus, different authors have developed and applied different theories and frameworks based on their environmental and business process demands.

Available theories and frameworks have provided insight into organisational factors that have influenced organisational capability to create, distribute and use knowledge in effecting product and service delivery. For these theories and frameworks to succeed in aiding organisational knowledge management, different success factors have also been identified to include; organisation culture, people, motivation, leadership commitment, clear business process definition and technology (Lehner and Haas, 2010). The consideration for these theories and frameworks as well as specific organisational success factors all promoted the drive for knowledge management maturity. Next, some of the theories and frameworks that have helped shaped the maturity of knowledge management practice are presented.

Mainly, the discussions of knowledge management theories are sometimes viewed according to the way knowledge process is categorised. Though, four knowledge management pillars (processes) were identified and adopted in this research, however, the discussion on knowledge management theory is based on organisational strategies on how individual member of the organisation can identify, create and share knowledge between them.

2.10.1 Knowledge Creation Theories

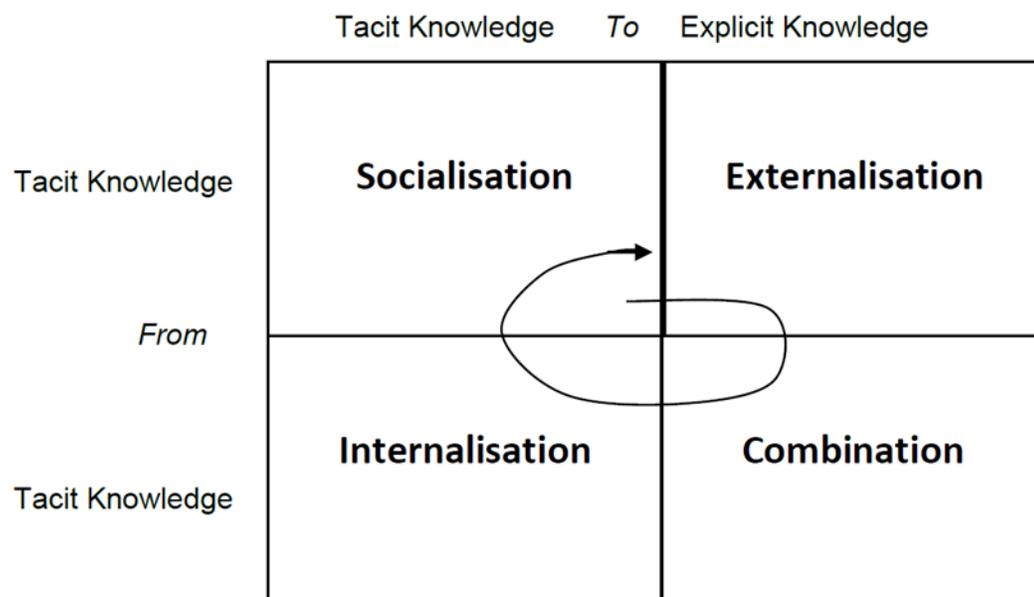
The potential of knowledge management have been widely published, relatively little is been known about how a knowledge creation process can be achieved and managed (Nonaka *et al.* 1994). Drawn from Polanyi (1966) and further amplified by Nonaka and Takeuchi (1995) two dimension of knowledge creation process can be illustrated: tacit and explicit knowledge conversion process. According to some authors, the distinctions between the tacit and explicit of knowledge creation are complementary and not mutually exclusive. The distinction between explicit and tacit knowledge reflects the epistemological view point relating to the knowledge creation process. Following consideration of the dimensions of knowledge the creation process, attention are given to individuals and their commitment to the process of knowledge creation (Nonaka & Toyama 2003). The individuals commitment covers the aspect

of intention to, role of autonomy, and discontinuities based on the organisational environment and demands (Nonaka et al. 1994).

Perhaps the most widely interpreted and applied knowledge creation theory is the knowledge conversion process by Nonaka and Takeuchi (1995). The assumption is that knowledge conversion process is actualised through the conversion of tacit knowledge to explicit knowledge and vice visa. This conversion process of tacit to explicit knowledge provides the formulation of the knowledge creation processes as follows; 1) from tacit to tacit knowledge, 2) from explicit knowledge to explicit knowledge, 3) from tacit to explicit knowledge and 4) from explicit to tacit knowledge.

The process of knowledge conversion theory in this research is anchored on the SECI knowledge creation framework by Nonaka and Takeuchi (1995). SECI stand for Socialisation, Externalisation, Combination and Internalisation (see fig 2.2).

Figure 2.2: Modes of knowledge creation theory



Adopted from: Nonaka and Takeuchi (1995)

The SECI mode of knowledge conversion enables interaction between organisational individuals in a socially inclined process. As indicated in fig 2.2, the knowledge creation

processes through the SECI framework occur in a spiral form which begins with the generation of knowledge involving a social process of combining knowledge within the mind or individual into explicit (documented) knowledge.

The start of the SECI framework indicates that tacit knowledge can be transferred to tacit knowledge in another individual through *Socialisation*. Further, the framework process suggests that tacit knowledge can be converted into explicit knowledge through the *Externalisation* process. Believers of the framework also indicate that explicit knowledge can be converted into tacit knowledge by translating knowledge theory into practice in a process of *Internalisation* and finally, explicit knowledge according to the framework can be transferred to others explicitly through the combining of by existing theories in a *Combination process* (Haslinda and Sarinah, 2009).

Though the Nonaka and Takeuchi knowledge creation theory is the most widely referenced framework for knowledge creation and transfer, some school of thought believed that the SECI theory is not as straightforward as it seem (Hazlett, Mcadam, and Beggs, 2008). Akin to knowledge creation and sharing theories, various instrument and process has been adopted to influence the way knowledge is created and shared within organisation. These processes include; telephone conversation, email messaging, face-face (storytelling) Communities of Practice (CoP) and recently social media platforms and applications. All of these have improved to a certain degree the way organisations have successfully created and shared knowledge within an organisation.

In this study, the SECI knowledge theory was adopted as part of study of knowledge creation process. The understanding is that the SECI theory is a flexible and inexpensive process of creating knowledge which civil servants within the public sector of Nigeria can rely. It provides opportunity for civil servants to share knowledge (especially tacit) in a socially inexpensive process. Though, there is in existence of knowledge creation and sharing processes (through memos and circulars) in Nigeria. This process according to Ekeke (2011) is effective to a certain degree; however, this process of knowledge creation is sometimes hindered due to high the highly rigid organisational structure and communication process.

With the SECI theory, civil servants can engage freely in the act of knowledge creation in socially determined environments without rigid organisational rules.

2.10.2 Knowledge Management Frameworks

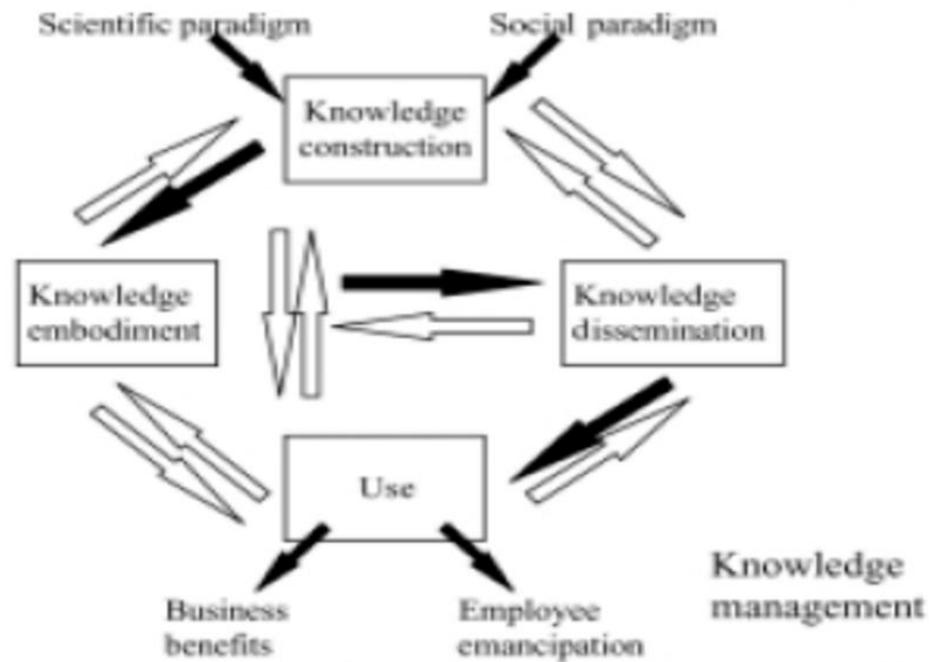
Many knowledge management frameworks exist Wu and Pang (2008), covering a wide spectrum. The main frameworks that contributed to this research are briefly outlined here, with the review of the frameworks helpful to establish the assumptions and approach that underpin the proposed Knowledge Management framework.

2.10.2.1 Demerest Knowledge Management Framework

The Demerest knowledge management framework is a socially constructed framework with the assumption that knowledge and knowledge management are socially linked with social and learning processes within an organisation (McAdam and McCreedy, 1999). The working of the framework assumes that knowledge creation is not just an explicit process embodied within the organisational structure but through a social process of interaction (Haslinda and Sarinah, 2009) similar to Nonaka and Takeuchi (1995).

In the Demerest framework (fig 2.3) the emphasis of knowledge creation is grounded on four phases of knowledge management starting with knowledge construction, dissemination, use and embodiment similar to the framework proposed in this research.

Figure 2.3: Demerest knowledge management framework



Source: (McAdam & McCreedy 1999)

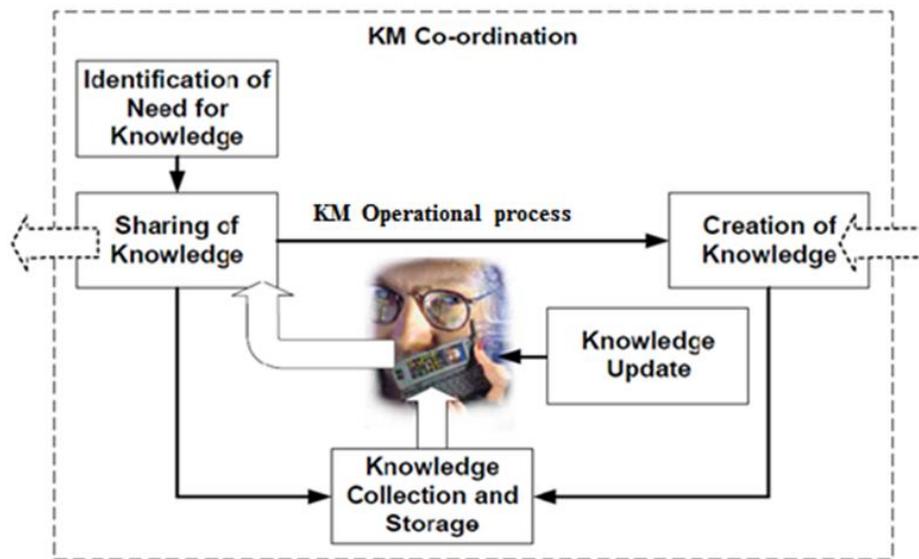
As situated in the Demerest framework in fig 2.3, the knowledge identified is constructed which can then be embodied within an organisation through the process of both explicit and social interaction by individuals. According to the framework, once knowledge within the organisational process have been identified, the process of knowledge dissemination is adopted to provide knowledge between individuals across the organisation. At this stage Demerest argued that knowledge has an economic value to the organisation once the embodied knowledge is applied to business processes.

Like many other researchers or frameworks, embodied knowledge within an organisation has economic values which must be managed effectively to create organisational value. The management of knowledge should not be strictly based on the organisations strict structures rather the knowledge management process in an organisation should be hinged on social construct of interaction that promotes more freedom sharing knowledge within an organisation like the Nigerian public sector.

2.10.2.2 Kucza Knowledge Management Process Framework

The Kucza knowledge management framework is developed based on prior experience of software development for VTT Electronics and Technical Research Centre of Finland software development improvement. The framework is to guide the development and implementation of knowledge management projects in general. The framework has two distinctive but related components; Co-ordination and the Operational process of managing organisational knowledge. The focus of the framework is to enable the understanding of knowledge management, perform analysis and plan knowledge management process in a structured manner built on the main pillars of the knowledge management process 1) Knowledge creation, 2) knowledge storage and 3) knowledge sharing (see fig 2.4)

Figure 2.4: Kucza Knowledge Management Process Framework



In the Kucza (2001) framework, the emphasis and understanding is that the activity in a knowledge management project is to be structured and performed both at management level and across other stakeholder in the organisation (Kucza, 2001). The Co-ordination process of the framework is concerned with the organisation of activities of analysis, planning, defining and effecting process to support the continuous improvement of knowledge management in the organisation. These activities are performed at the higher level of an organisation.

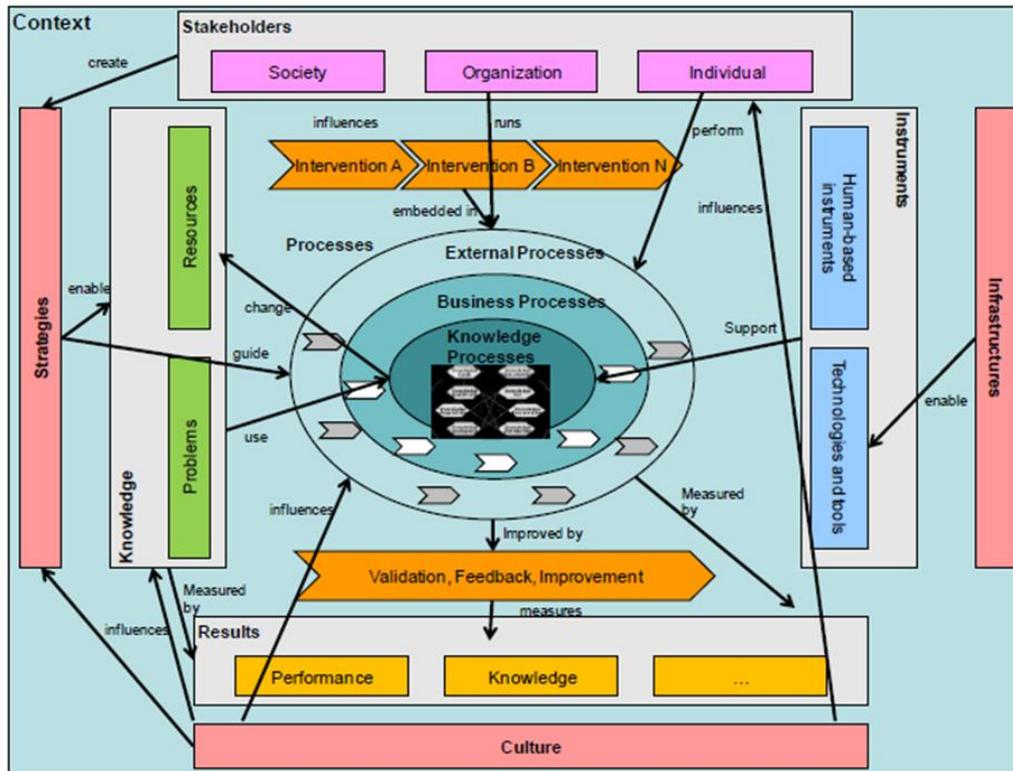
On the other hand, the operational process aspect of the Kucza (2001) framework emphasises the four important aspects of the knowledge management process of creation, storage, and sharing. However, Kucza (2001) framework did not expatiate details in the way knowledge could be used and which current research has adopted to complete the proposed framework. The operational process of the Kucza framework is drawn from knowledge management process (Supyuenyong and Swierczek, 2011) which involve the process of identifying need for knowledge, creation of identified knowledge and subsequently storing and transmission of new knowledge.

The proposed research framework share similar emphasis in many respect to Kucza (2001) framework by the articulation of two processes of co-ordination and the operation process through knowledge creation, storage and sharing. In the two processes, activities are clearly defined reflecting the way knowledge can created to how knowledge is applied to organisational processes (see 7.4).

2.10.2.3 Pawlowski and Bick Global Knowledge Framework

The main focus of the Pawloski and Bick (2012) knowledge management framework is to identify and present a knowledge management process standard in a global context. The framework is designed to provide principles and structure for researchers, practitioners and to serve as a reference guide for the implementation and deployment of knowledge management across an organisation from a global perspective. The construction of the Pawlowski and Bick's (2012) framework is anchored on a combination of other frameworks (e.g. CEN 2004). The CEN framework is designed as a common standard and definition process for all activities within knowledge management projects. The core of the Pawlowski and Bick (2012) framework is grounded on three level processes as indicated in fig 2.5.

Figure 2.5: Pawloski and Bick Global Knowledge Management Framework



Similar to the structure in fig 2.5, the component of the framework are drawn from three processes namely: business process, knowledge process and stakeholder processes. The Business process denote the core process within an organisation task process based on need identified as similar to that of (Kuczaj, 2001). The emphasis of this section of the framework is that all business processes have embedded knowledge which requires the identification, capturing and distribution similar to the focus of the current research fieldwork two.

The knowledge process component of the Pawloski and Bick (2012) framework is grounded and categorised based on creation and sharing within an organisation. The categorisation describes the core of knowledge management system that emphasises the cultivation of knowledge for solving organisational problems and ultimately enhancing organisational performance. However, the assumption of knowledge needs cover both human and technological aspects of knowledge management process. This again is similar to the

knowledge creation process in most knowledge management projects in which Kucza emphasis in his Operational process.

Similar to the Kucza framework in the Co-ordination process aspect, the stakeholder context provide the planning and organisation of the activities required for knowledge management project. The stakeholder context describes the participation of organisational managers relating to decision to implement knowledge management, planning and organising of individual involvement and provision of environment to enable other activities in the knowledge management process success. Overall, the stakeholder context has a strong impact in the way a knowledge management process as it facilitate dedicated awareness building, training and provision of a conducive environment for knowledge management success.

Knowledge management framework extant literature reviewed (especially Pawlowski and Bick 2012; Kucza 2001) provides a strong basis for the understanding of knowledge management components, the interaction between these components as well as the foundation on which the proposed knowledge management framework in this research is grounded. One of the most important knowledge companies gained from the review of the various knowledge management frameworks highlighted above is that, social interaction is an important element to a successful knowledge management process. Consequently, social interaction will form a core element to the knowledge management process proposed for the Nigerian public sector.

2.10.2.4 Summary of Findings from Literature Reviewed

The research in this thesis aims to create a Strategic Knowledge Management Framework to serve as a reference point and guide for the implementation of knowledge management practice in the Nigerian public sector. The goal of the framework is to identify and guide the processes of providing the right knowledge to the right people at the right within the boundaries of the Nigerian public sector. Further, this chapter has reviewed extant literature from contemporary studies from the knowledge management domain perspective. As way of broaden our understanding from the various literature, the following highlight knowledge has been gained.

- There is a consensus that knowledge is a core organisational resource with the potential for organisational success. However, the ability to effectively manage knowledge enhances organisational efficiency and effectiveness. In the government sector, knowledge and knowledge management is seen as an enabler to policy formulation and an improvement to organisational workforce performance.
- From a framework perspective, a knowledge management initiative is influenced by knowledge management process. In this context, a single knowledge management initiative is not depending on a single process but a combination of various processes and activities grounded on organisational business process.
- The knowledge management process and especially knowledge creation, sharing and use are better influenced by social interaction between members of an organisation rather than by rigid organisational structural practice by most public sectors.

The study focus is to investigate whether knowledge management can improve the efficiency and effectiveness of the Nigerian public sector. To this end, knowledge gained from literature reviewed highlighted in this chapter provides a strong and fundamental basis to argue that knowledge management has the potential to improve service delivery in the Nigerian public sector. To demonstrate this, chapters four, five and six have been critically crafted as a direct response to the research aim and objectives.

2.11 Summary

This chapter has discussed knowledge and knowledge management from the perspective of public sector organisational settings. A critical discussion of knowledge in the public sector specifically for the Nigerian public sector as well as challenges and opportunities for the implementation of knowledge management practice was presented. Based on contemporary literature, knowledge management theories, concepts and processes were also explored and discussed. Finally, the chapter ends with a discussion on the various knowledge management frameworks that shaped the construction of the proposed framework in this research.

As a way of summarizing issues discussed in this chapter, table 2.2 highlights some key literature that was reviewed which ultimately enable the identified gaps and formulation of the question in the current study.

Table 2.2: Summary of literature reviewed for this study

Author	Country	Nature of Study	Methodology	Key findings
Chong et al. (2011)	Malaysia	Empirical	Survey (Questionnaire)	Positive effect of KM towards organisational performance. Strong support for KM framework
Alhamoudi (2010)	Saudi Arabia	Empirical	Mixed methods approach	Strong support for the development of KM framework in public sector organisation. KM improves organisational efficiency and effectiveness
Schiuma (2012)	Italy	Review of literature	Structured literature review	KM have positive impact on organisational business process efficiency and effectiveness
Acheampong (2014)	UK and Ghana	Empirical	Qualitative (Interview)	Strong support for KM framework to support KM implementation in developing countries public sector. KM initiatives have the capability to improve public sector performances
Massaro et al. (2015)	Italy	Review of literature	Structure literature review	KM impact positively on organisational efficiency and effectiveness
Lee et al. (2016)	Taiwan	Empirical	Survey (Questionnaire)	Culture and ICT has positive impact on the successful implementation of KM projects in organisations
Ekeke (2011)	Wales and Nigeria	Empirical	Mixed methods	KM has the capability to improve public sector organisation
Girard & McIntyre	Canada	Empirical		Technology, Culture, leadership, measurement

(2010)				and process provides holistic approaches to KM initiatives in public service
Amayah (2013)	USA	Empirical	Survey (Questionnaire)	Organisational culture significant impact on knowledge sharing within public sector organisation
Zaim (2006)	Turkey	Empirical	Survey (Questionnaire)	There is positive relationship between KM and organisational performance. Knowledge sharing and distribution has more impact on KM than knowledge creation and development
Yang (2010)	Chinese	Empirical	Survey (Questionnaire)	There is positive relationship between KM and performance improvement and employee competencies

3 Chapter Three: Research Design and Methodology

The previous chapters have presented discussion on the theoretical background on which this research is grounded as well as literature around knowledge management and its positive impact on organisational development, sustainability, efficiency and effectiveness. The aim of this chapter is discuss the research design and methods from the perspective of the research context introduced in chapter one and guided by literature reviewed in chapter two.

Section 1: This first section covers the research paradigms. The discussion is on the three main types of research (exploratory, descriptive and explanatory) and the specific choice for this research. An extension of the discussion of this section is grounded on the research paradigm and the rationale for the preferred interpretive paradigm adopted in this research

Section 2: This section discusses the research design and approach. It describes the research design and the approaches for data collection. The various instruments such as Hierarchical Task Analysis and Task Walkthrough along with other traditional methods of data collection were also introduced and discussed in this section. Further, procedure for collecting relevant data for this research was also discussed in this section.

Section 3: This section concentrates on the techniques for data analysis. This includes the development of Metrics, Swimming Lane Sequence Diagram and other techniques for data analysis in this research are also discussed in this section.

Section 4 covers the research validity and reliability of data collected and analysed. And the chapter ends with a short summary.

3.1 *Research Purpose and Paradigm*

The concept of knowledge management has been considered as one of the practices with the potential to improve organisation efficiency and effectiveness (Chidambaranathan and Swarooprani, 2015). Within this concept, this research investigates whether knowledge management as a strategy and a process can improve efficient and effective service delivery in the Nigerian public sector. Against this backdrop, the research proposes the development of a

framework that can guide the development and implementation of knowledge management practice within the Nigerian public sector.

This research adopts an exploratory route and applies a Mixed Methods approach for its data collection from a positivist and interpretivist viewpoint. Since this research concerns the collection of distinct but interrelated data in response to knowledge management within public sector organisations where limited information exists, it is logical that an exploratory route of investigation is adopted. This view is consistent with the views of Saunders *et al.*, (2009) on the adoption of an exploratory route of data collection and analysis in a research of this nature. The adoption of the exploratory route of data collection in this research provided an extensive interaction with participants, this in turn enables clarification of unclear problem during data collection as a result of the limited information from the research area specifically the Nigerian public sector and knowledge management practice.

Further, a research paradigm is the “*progress of scientific practice based on philosophies and assumptions about the world and the nature of knowledge*” (Collis and Hussey 2003). It is the interrelated assumptions between the social context and empirical data which provides a philosophical and conceptual framework that underpins a given study. Creswell (2014) noted that research can adopt more than one paradigm in a research project depending on the research objectives and question the research is to address.

This in mind, the main philosophical assumption adopted in accessing the world (context) and the nature of knowledge in this research is the positivist paradigm. However, there is a footprint of the interpretivist paradigm in the current research. The rationale for the adoption of these two paradigms in this research is briefly presented in sections 3.1.1 and 3.1.2.

3.1.1 The Positivist Paradigm

The positivist paradigm relates to the application of the methods of natural sciences to the study of social reality. The positivist paradigm arose based on the philosophy of rigid rules of measurement, absolute principles, logic in predicting the outcome of a research (Creswell 2014).

The claim of positivism is based on the existence of objective reality (that is reality exist through the determination of what can be seen, touched and fill). In this context, a valid research is mostly established by the degree of proof associated with the result of the phenomenon under study.

The first empirical study carried out in this research makes use of a questionnaire and analyses data through quantitative (rigid scientific principles) methods. In study three, data collected was analysed through a scientific method using statistical rules. The rigid principles adopted by positivism provide the claim that this research lends itself toward scientific knowledge; principles and logic in a research as evidenced in studies 1 and 3. Nevertheless, such rigidity of principles does not allow for the complete investigation of the aspect of social reality and human experiences (knowledge management and perceptions of staffs on efficiency and effectiveness) desired for this research. As a result, interpretive (qualitative methodology) philosophy was incorporated into the research process and design.

3.1.2 The Interpretivist Paradigm

The interpretivist paradigm or school of thought believed that a worldview or reality is subjective to the individual and influenced by social constructs Bailey (2007). The interpretivist as a research paradigm presents a culturally derived and historically situated interpretation of views of social reality.

The interpretivist paradigm focuses fully on the complexity of human intuition as the situation demands and is not predefined on dependent and independent variables. It lays its philosophical foundation on a qualitative methodology in which there are many truths and multiple realities in given research contexts. Thus, methodologies such as exploratory analysis through the various fieldworks were encouraged in this research.

From an interpretivist view point, the main concern is on understanding how people feel and think of reality about questions being asked rather than making judgment as to whether the views of, feelings, opinions and answers are valid (Cole 2006). Based on Cole and the views of other researchers on the interpretivist school of thoughts, data collected and analysed in this

research makes use of a qualitative approach without the rigidity of rules and logic pertinent in the positivist school of thought.

To further elucidate the research paradigm, table 3.1 summarises the characteristics of the two main paradigms for this research.

Table 3.1: Characteristics view of positivist and interpretivist paradigm

Main characteristic	Positivist view	Interpretivist view
Purpose	To predict and explain the perception of public servants in respect to public sector efficiency and effectiveness in Nigeria	To gather data from knowledge experts and other samples and recognised the value and depth of the content provided by the experts
Belief	<ul style="list-style-type: none"> ▪ One truth exist through the use of absolute principles, experiments and logic ▪ Objective view 	<ul style="list-style-type: none"> ▪ Many truths and realities exist within a social construct. ▪ Different people have varied perceptions about needs and experiences
Research methods	Mostly quantitative, using questionnaires and metrics.	Mostly qualitative, collected through interviews, focus group, observation, task walkthrough and documentary analysis.
Data preparation and analysis	Statistical Analysis (percentages, frequency and correlation coefficient) and Knowledge User Metrics	Document Analysis Hierarchical Task Analysis, Swimming Lane Sequence Diagram and Content Analysis

Due to the nature of this study, a single paradigm could not satisfy the objective required. Therefore, this research adopts the positivist paradigm (quantitative) as its main philosophical standpoint as well as the interpretivist paradigm (qualitative). The combination of the two philosophies is complementary in nature. The combination of both paradigms provides the balance of analysing data scientifically in one hand and at the same time enables the flexibility of analysing, understanding and elucidating data collected in relation to the potentials of knowledge management practice and the perception of the efficiency and effectiveness within the Nigerian public sector staff.

3.2 Research Approach: Mixed Methods Justification and Rationale

In this research, a Mixed-Methods approach was adopted for data collection and analysis combining quantitative and qualitative approaches, methods and techniques. By combining quantitative and qualitative techniques in a specific research project, the main focus is usually to address the research questions and objective. The adoption of the mixed methods in this research is consistent with related studies by (Macdonald, 2010; Hamid, 2012; Yeh, Yeh, and Chen, 2012).

The rationale for the adoption of mixed a methods approach in this research is complementary and triangulated of data collected to inform a valid standpoint. As Creswell and Clark (2011) noted, triangulation is the most common reason for using the mixed methods in a research. This is because it brings together the strength and overlapping weakness of both qualitative and quantitative research designs (Hamid 2012; Morgan 2014). The purpose of triangulation of data in this research is to obtain extensive but complementary data that addresses whether knowledge management can improve performance efficiency and effectiveness in organisations such as the Nigerian public sector.

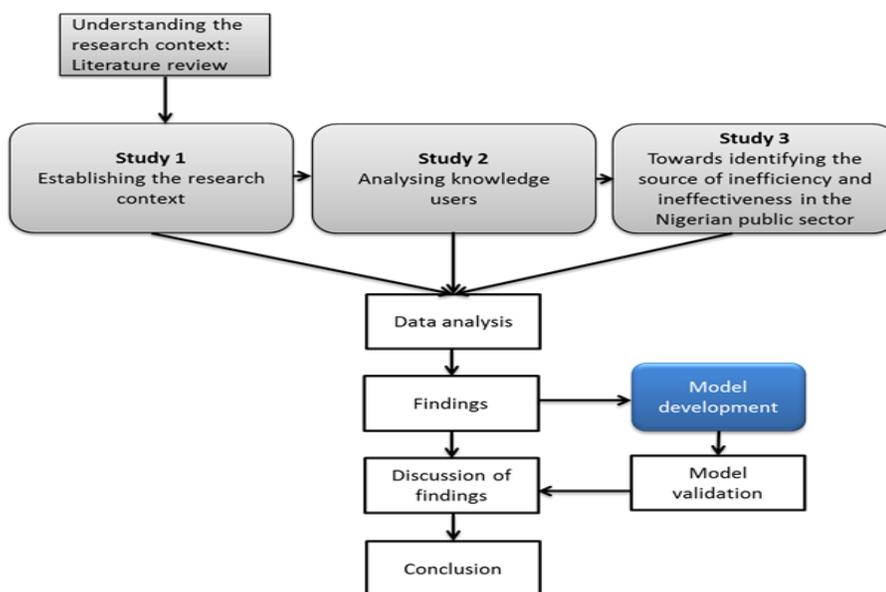
The primary tenet for triangulation is that, it provides the possibility of using several strategies (instruments and processes) for investigating a given phenomenon (Macdonald 2010). However, the strategy employed in this research is the sequential exploratory strategy. This strategy allows the collection of data and analysis in two stages starting with qualitative data

in the first stage followed by quantitative analysis (see data analysis fieldwork 1 and 3). For this research, findings from the three fieldworks were triangulated during the interpretation and presentation of result (qualitative data validating that of quantitative data) which enables possibility of addressing the research question and objective appropriately.

3.3 Research Design: Overview

Fig 3.1 elucidates a schematic representation of the research design and flow of the research process. This included mixed methods of data collection and analysis (fieldwork 1-3), followed by the development and validation of an operational process framework for the implementation of knowledge management towards improving efficiency and effectiveness of performance in the Nigerian public sector. The discussion of the research design followed strictly the schematic diagram in fig 3.1

Figure 3.1: Schematic diagram of the research design



This research adopted both explorative and interpretive design, based on sources for data collection (literature, organisational documents and public service staff), the objective of the research and the location of the case study (Delta State Public Sector, Nigerian). Data were analysed and interpreted inductively thereby gaining insight into the phenomenon (research

focus) against the backdrop of developing the proposed framework (Strat-KM). As inductive meanings were the main focus, the research considered the participant's concepts of their own understanding of business process in the Nigerian public service. The findings and framework development in this research are discussed in the context of the objective in demonstrating how current research contributes and expands the knowledge base of improvement to efficiency and effectiveness.

3.4 *Fieldwork 1: Establishing the research context – Data Collection Methods*

Efficiency and effectiveness has been at the forefront of discussion in most Nigerian public sector literature (Omitola 2012) and many researchers agree that there is high inefficiency and ineffectiveness in the Nigerian sectors (Ekpe, Daniel and Ekpe, 2013; Nwanolue and Iwuoha, 2012; Suleman, 2009). Whilst much literature focuses on bad leadership (Anyim, Chidi, and Badejo, 2012; Suleman, 2009) and corruption (Otusanya 2011), here an alternative approach is taken, specifically focused on knowledge management and its potential improvement to efficiency and effectiveness. To explore the context further, this first initial fieldwork investigated:

- The perception of Nigerian public servants of the efficiency and effectiveness of the Nigerian public sector
- The existence of Knowledge management in the Nigerian public sector

The main rationale for this study is to understand from a personnel perspective whether the Nigerian public sector is efficient and effective at providing required services within the frame of personnel performance. Secondly, to provide the foundation for exploring how knowledge within the sector is created, stored, accessed and utilised by officers of the sector.

To investigate these issues, study (fieldwork) 1 included four main approaches for its data collection:

Table 3.2: Summary of instruments issues investigated in fieldwork-1

Instrument / Approach	Overview
<p>Questionnaire</p> <p>Survey: Knowledge Management in the Nigerian Public sector</p>	<p>Quantitative survey instrument distributed to one hundred GL 8-16 with 33 questions covering demographics, efficiency and effectiveness, Knowledge sharing, Organisational culture and Information Technology</p>
<p>Semi-Structured Interview</p> <p>Investigating Efficiency and Effectiveness within the Nigerian Public sector</p>	<p>Semi-structured interview with ten GL 15-16 with themes including, participant demography. efficiency and effectiveness, knowledge management, organisational culture and Technology infrastructure</p>
<p>Focus Group</p> <p>Investigating Efficiency and Effectiveness within the Nigerian Public sector</p>	<p>10 member focus group with staff drawn from group: Change Management Team. Themes addressed included: Efficiency and effectiveness, knowledge management, and technology infrastructure</p>
<p>Nigerian Public Sector Documents</p>	<p>Documents included Delta State public sector structure, communication hierarchy, documents and files regarding knowledge management (memos, circulars, civil service rules etc.)</p>

3.4.1 Fieldwork 1: Survey Questionnaire

In trying to conceptualise the perception of staff on the problem of efficiency and effectiveness in the Nigerian public sector, using Delta State public service as a case study, data were collected using fully structured self-administered questionnaire. The questionnaire titled “A survey on the investigation into improvement to efficiency and effectiveness in the Nigerian public sector through Knowledge Management” was used to collate empirical evidence upon which views can be formed concerning the themes; efficiency and

effectiveness, knowledge management, cultural impact on knowledge sharing and technological infrastructure within the Delta State public service.

According to McDaniel and Gates (2002) questionnaire is a rich sources of data collection with a set of documented questions designed to generate necessary evidence to accomplish a research objectives. The questionnaire as a data collection method has the advantages of been relatively cheap and can be used to generate large amount of data from wider participants (Gill and Johnson 2010).

The questions in the questionnaire were formulated based on the objective and research question put forward in section 1.3. This is to enable the research address knowledge management within public sector with respect to efficiency and effectiveness improvement. The questions in the questionnaire were arranged logically to allow its flow from general to specifics. Questions asked followed a rational progression, starting from simple to complex question. The questions in the questionnaire were closed questions with alternative answers also provided. Free space was also provided (in an open ended design) to encourage participants who may want to add additional comments (see section 4.2.1 for the implementation of the questionnaire).

Scaling is a vital information when designing a questionnaire. This is because it provide an effective processes of capturing and reflecting on the opinions' of the research participants as well as reducing the burden on respondents on how to answer the given questions which provides optimum validity of the questionnaire (Adam 2014).

As a start on the questionnaire scaling, participants were ask to tick appropriate boxes (normal scaling) for the participants' demography. The second part of the questionnaire contains four sections, standard five Likert scale (1 "strongly disagree" to 5 "strongly agree) and four Likert scale (4 "very frequently" and 1 "never) are used to reflect and ascertain the opinions of the participants on the themes contained in the questionnaire. As mentioned earlier, additional spaces were also provided for the participants to provide further comments if need be.

A pilot testing of the questionnaire was done with eight PhD students of the University of Sunderland which was sufficient to enable the identification of any problems that may arise during the administration of the main questionnaire. This was consistent with the views of Teijlingen, and Hundley (2001) on the need to pilot questionnaires before they are actually administered. Though, the selected PhD student for the pre-test of the questionnaire may not be of the same level of knowledge with actual participants, however, they provide the lens from which the questionnaire was professionally designed. See the questionnaire design in appendix i).

For Fieldwork 1, a hard copy of the questionnaires was distributed face-to-face to each of the participants that were randomly selected from Officers in Grade Level 08 to Grade Level 16 within the Delta State public service. The distribution of the questionnaire was done over a period of two and half weeks. During this period, a follow up telephone calls were made to the participants. This processes as well as the memo from the HIS enabled over 90% questionnaire return rate. Further detail on the questionnaire is provided in section 4.2.1

3.4.2 Fieldwork 1: Interviews

Gill *et al.* (2008) noted that there are three fundamental types of research interviews (structured, semi-structured and unstructured interview). Structured interviews used predetermined questions for its data collection without the opportunity for follow up questions. Structured interview is relatively quick and easy to administer with limited participants and does not required in-depth probing into context of the subject.

Conversely, the unstructured interview is a data collection instrument that does not follow any predetermined ideas or theories. Unstructured interviewing is time-consuming (can last for several hours) which are sometime difficult to manage because of the non-predetermined nature of the questioning process.

On the other hand, the semi-structured interview is a data collection tool that consists of key or predetermined questions to explore a research area as well as providing opportunities to probe in an in-depth manner the research context based on the responses from participants.

As with the questionnaire, the semi-structured interview was adopted in this study to assess the perception of personnel on efficiency and effectiveness, the impact of culture on existing knowledge management and technology usage in the organisation. The questions for the semi-interview were formulated based on the research objective and literature reviewed. The questions followed a rational progression starting from simple generic (demography) to complex specific questions. This provided the opportunities to probe, sort clarifications and elaborate on issues relating to the subject under discussion. Themes considered with the interview in the fieldwork 1 study are; efficiency and effectiveness, management of organisation knowledge and technology infrastructure integration in government business process. These themes are considered in accessing personnel perception of the Delta State public service on the efficiency and effectiveness in the sector.

3.4.3 Fieldwork 1: Focus Groups

Fieldwork 1 also included focus groups to gather data from participants at an official level through a collective conversation (Kamberelis & Dimitriadis 2013). A focus group is a type of interview used in generating useful responses from a group of individuals who may not have participated during one to one interviews (Ritchie, 2015). The focus group interview is less structured compared to other forms of interview. This is as a result of the difficulties in managing and bringing structure into a group of individual from different backgrounds. The aim of adopting the focus group as a tool for data collection in this research is to explicitly engage group of individuals to generate rich data that provides insight into the research context. Bryan (1992) suggests that the major strength of the focus group is the freedom of sharing views that arise from the social context between the participants and the researcher. The social interaction within the group provides the opportunity to observe how opinions, views or ideas emanate from conversation within a group in a natural setting.

Prior to the group discussion, a seminar was presented to the Change Management Team (CTM) members in Delta State, Nigeria highlighting the research context and the themes to be discussed during the group discussion. This is to provide understanding of the research context as well as the possibility of selecting appropriate participants for the group discussion. The selection of the group members of the FG10 was left with the management of the CMT

management and a purposeful selection process was adopted. This is because, management of the CMT knowledge understands who to select for such a discussion based on the knowledge of the context to be discussed.

As with the questionnaire and interview, the group discussion covers four main areas which are: perception of efficiency and effectiveness from a group perspective, knowledge management in the service, impact of culture on knowledge management in the service and information infrastructure usage for business processes in the sector. Data collected during the discussion session was recorded with a tape recorder for transcription and future reference.

3.4.4 Fieldwork 1: Documentary Analysis

A document analysis is any material that provides information about the research phenomenon that exists independently of the research actions. According to Bowen (2009), documentary analysis is a method of collecting data in a systematic procedure for the purpose of evaluating a given phenomenon. Document that may be used to evaluate a research interest may take the form of printed or electronic materials. The analytical processes of these research areas entails finding, selecting, sense making and synthesising documents to obtain required information consistent with the views Hartley (2004) on documentary analysis as a data collection instrument.

Researchers (Bowen, 2009, and Ekeke, 2011) have used documentary analysis to decipher information and themes in relations to their research objectives. However, current research critically examined documents tracing and obtaining knowledge areas and gaps in tasks performed by public service staff with a view to identifying source of inefficiency and ineffectiveness within the Nigerian public sector.

The Nigerian public sector is a document centric organisation with a huge collection of documents. Most knowledge and policies needed for daily management of the sector are in documented form. Thus, an aspect of data collection for this research was to review some of the organisational documents. Table 3.3 summarised documents collected and reviewed as part of the data collection in this research highlight the list of documents collected and reviewed.

Table 3.3: Summary of documents reviewed

S/N	Type	Quantity	Number of Pages
1	Memo	5	Between 2-8
2	Circular	5	Between 2-12
3	Financial regulation	1	68
4	Civil Service Rules and Regulations	1	168
5	Drafts and Gazette	2	146 and 118 respectively

As indicated in table 3.3, total of 14 documents with between 2 to 168 pages were reviewed. Documents collected were scanned through, noting policy implementation, knowledge management processes and business processes including organisational structures and communication processes within the organisational setting. The collection and analysis of these documents provided understanding on how government business processes and knowledge management is discussed within the frame of the Nigeria public sector.

3.5 Fieldwork 2: Analysing Knowledge User Tasks – Data Collection Methods

The results from Fieldwork 1 identified that there was a perception of inefficient, ineffective delivery of government goods (see section 4.4) in Nigeria. With the assumption that there is poor knowledge and knowledge management in the sector, Fieldwork 2 provided an opportunity to critically assess task performance in selected ministries and staff in relation to knowledge within tasks.

Fieldwork 2 aimed to explore embedded knowledge areas within tasks performed by staff of the Delta State public sector. Following (Tsirikas, Katsaros, & Nicolaidis, 2012; Sedziuviene & Vveinhardt, 2010; Green, Liu and Qi, 2009), knowledge is considered to be at the heart of

much of today's business, sustainable development, innovation, and efficient and effective service delivery. Therefore, exploring key knowledge in tasks performed by personnel in the Nigerian public sector provided a unique opportunity towards understanding where specific knowledge within tasks can be identified. To investigate the issues in Fieldwork 2, two approaches were used for data collection as presented in the next section.

3.5.1 Fieldwork 2: Semi-structured interviews

In Fieldwork 1 semi-structured interviews focused on public sector employees across a range of grades and roles. In Fieldwork 2, the focus was on senior members of staff. Since the fieldwork involves understanding processes and knowledge within task through narrative information from participants, the semi-structured interview is considered appropriate. The aim of the interview sessions is to enable an in depth exploration of selected tasks (business processes) as well as embedded knowledge within the tasks.

10 participants including Directors and Assistant Directors from ten ministries from Delta State public service were purposefully selected to participate in the interview process. Years of experience and the ability to narrate processes within the tasks selected were the prime choice for the selection of the participants. The interview sessions lasted for 1 hour to 1.5 hours depending on the clarity of issue needed in some cases.

3.5.2 Fieldwork 2: Task Walkthroughs

A Task Walkthrough (also referred to as an activity walkthrough) is a method of data collection that focuses on capturing data and understanding activities in a task through an observation method (Driscoll 2011). It is a method used in specifying and discussing the sequence of activities required to complete a task (Grabenbauer, Fruhling, and Windle, 2014). It a data collection method that provides research participants with the opportunity to walkthrough and discuss given task activities based on certain questions. The general aim of the task walkthrough is its systematic approach to identifying possible lapses in a task processes.

This research adopts task walkthrough as a method of data collection with a view to understanding task processes and knowledge within the tasks. The task walkthrough was

conducted around the following task scenarios in the Delta State public service: 1) Ministerial tendering process, 2) Ministerial purchase request, 3) Payment process and State budget preparation process. The selections of these tasks are representative of some tasks performed daily by officers of the Nigerian public sector.

The execution of the task walkthrough is based on the activity theory proposed by Mahatody, Sagar, and Kolski (2010). The activity walkthrough theory focuses on a systematic method of collecting data and the description of events based on an intentional and purposeful observation of activities and behaviours or artifacts.

In the task walkthrough, the evaluation of the tasks was conducted in phases including:

1. Preparation: The tasks to be evaluated were purposefully determined based on the objective of the study.
2. Conceptualization and verification of activities within the tasks: Conceptualisation of activities within the selected task through literature to first understand how the activities are performed. In the verification aspect, tasks were checked if they are performed across multiple or all ministries and the extent to which each of these tasks corresponds to purposeful action based on ministry objectives.
3. Participant selection: The participants for the evaluation of the selected task were the same set of participants in the interview section.
4. Task evaluation and method: Two main questions were asked around the various function of the participant's ministry as well as specific activities perform by the participants in relation to the selected task above. Follow up questions were asked in clarifying areas of the task not understood. An observation method is the instrument for data collection. All activities during the task walkthrough sessions were recorded on audio tape as well as note taking.

Following the phases highlighted above, data was transcribed and evaluation report prepared as well as the result presented in chapter 5 of this thesis.

3.6 Fieldwork 3: Towards identifying Sources of Inefficiency and Ineffectiveness in the Nigerian Public Sector

In recent years, there has been extensive research on the efficiency and effectiveness of public sector organisation (Mihaiu, Operana, and Cristescu, 2010; Hookana, 2011; Asiodu, 2012). However, there is little or no existence of study on the sources (starting point) of inefficiency and ineffectiveness especially in public sector organisation in the developing countries (e.g. the Nigerian public sector).

Findings from fieldwork 1 identified that there is high inefficiency and ineffectiveness in the Nigerian public sector. While fieldwork 2 identified wrong knowledge, missing and obsolete knowledge within task processes in the Nigerian public sector. The implications of fieldwork 2 also extend the claim that there is high inefficiency and ineffectiveness in the way government resources are used in providing quality services to the people of Nigeria.

The findings from fieldwork 1 and 2 inform the decision for fieldwork 3 with a view to investigate the sources of inefficiency and ineffectiveness as a direct consequence of applying wrong and obsolete knowledge to task processes.

Documentary analysis and diaries were the main approach for data collection in the fieldwork 3. These instruments were used to access both individual and organisational sources of inefficiency and ineffectiveness respectively. These two methods of data collection are highlighted below:

3.6.1 Fieldwork 3: Documentary Analysis

Document analysis has proven to be a rich source of data in a research. It is qualitative research that is a highly effective and efficient method for evaluating the context of a topic (Jasimuddin 2007). The use of documents as an evaluation in part of a study takes various forms including; draft, minutes of meetings, manuals, background papers, books, journals among others (Bowen 2009).

For this study, the main purpose for the inclusion of documents analysis as part of its data collection tool is to explore from an organisational perspective through contract execution

noting specifically the start point of inefficiency and ineffectiveness in government business process. Like other analytical qualitative approach, the used documentary analysis enables the researchers to interpretate, extract meaning, gaining understanding and develop knowledge within the frame of project management in the Delta State public service.

During the study, 10 core ministries in Delta State, from which 36 documents of project executed from 2005 to 2013 were purposefully selected for examination. On average, the pages on a given project document ranges between 28 (small projects) to over 100 pages (big project). Document included in each project executed are; memo, ministerial or state tender board report (bidding process, minute of meetings and approval memo), letter of award, contract acceptance letter, project monitoring reports, certificate of job completion, payment warrants and receipt (payment)

The analytical process begins with scanning collected documents and finding, selecting, sense making terminologies used and synthesing data contained in the various project documents which is consistent with Bowen (2009) document analytical process. Data from documents were categorised into themes in relation to the objectives defined in the Knowledge Use Task Metrics.

3.6.2 Fieldwork 3: Diary

One of the objectives of the research is to investigate the sources of inefficiency and ineffectiveness from an individual perspective. In Crosbie (2006) "*Using Activity Diaries: Some Methodological Lessons*", a diary was said to be a rich source of data collection when conducting a research. This is because, a diary can provide a detailed but personal account about phenomenon (ten Brummelhuis, Bakker, & Euwema, 2010).

In this context, this research adopted the diary as an instrument to explore individual sources of inefficiency and ineffectiveness by investigating individual interference within the Delta State public service. Individual interference is considered as instances where an individual is hindered or obstructed from optimum performance during an official hours (Brummelhuis, Bakker, & Euwema, 2010).

Prior to the main distribution of the diary, one officer was purposefully selected from the ministries coded f M1, M2, M3 and M4 as a pilot study. This is to ensure that participants understand the context of the survey with the possibility of filling the diary accordingly. No changes were made to the format of the diary after pre-testing.

A total of 12 participants participated in the actual data collection exercise. The participants were purposeful selected (two each) from six ministries coded as M1, M2, M3, M4, M5, M6 (Works, Economic Planning, Finance and Women Affaire, Tourism and Health) within the Delta State, Nigeria. The officers selected are Senior Staff from Grade Level 8-14. Availability and willingness to participate was the prime choice of these officers.

Before the actual data entry, a brief explanation and a practice data entry session was demonstrated for each of the participants. A diary was distributed to each of the participants for a week (5 working days: Monday to Friday) to fill all activities (both official and unofficial) during official hours (8:00am – 16:00pm) each day.

To ensure filling of the diary accordingly, follow up mobiles calls were made to each participant on Tuesday and Thursday of the week the dairies was with them. At the end of the week, the diary was retrieved and a photocopy of all entries was made (see appendix vii for a sample copy of data in the diary) and the diary handed back to participants for keep as a thank you gesture

3.7 Framework development (Strat-KM)

The findings from the 3 fieldworks as well as concepts from literature informed the development of the knowledge management framework proposed in this research. The framework (Strat-KM) is to guide the implementation of knowledge management practice that make available the right knowledge to the right people at the right time in order to improve government staff performance in relation to resources used. This framework (Strat-KM) is developed in a more inclusive structure with a greater and detailed process for knowledge creation, sharing and use within the frame of government establishments (specifically the Nigerian public sector).

The framework was developed incrementally through a series of stages, underpinned and informed by prior analysis of knowledge management frameworks literature and expanded by 3 empirical studies. The concept of the proposed framework was influence majorly by (Kucza (2001), Pawlowski and Bick (2012) and Ekeke (2011) literature. Extensions were made where necessary to the frameworks of Kucza (2001), Pawlowski and Bicks (2012).

Strat-KM is composed of two main concepts; the Co-ordination Process and the Operation Process. The Co-ordination process represents the management influence on knowledge management project processes while the Operation process involves the processes of knowledge creation, storage, sharing and use. The development of Strat-KM is further detailed in chapter 7

3.8 Data Analysis

Data analysis entails the process or framework for sorting, arranging, interpreting and presenting of data. It involves working with, organising, and breaking data into smaller manageable chunks (Owen 2014). The purpose of analysing data in this research is to; describe and summarise data into information that enable the forecasting of outcome in order to explain the phenomenon under investigation. The phenomenon under investigation herein is whether knowledge management can improve the efficiency and effectiveness of the Nigerian public sector.

To explore the research context, multiple sources of data collection are adopted. This has also informed the use of different techniques for data analysis. The multiple data sources used for data collection were classified under quantitative and qualitative techniques using questionnaire, interviews, HTA, documentary analysis amongst others tools. Against this backdrop, data analysis for this research is grouped under quantitative and qualitative data analysis based on the 3 studies carried out.

3.8.1 Quantitative data analysis (Questionnaire)

Data collected by questionnaire was first sorted and arranged in a grid table. This is to make responses easier to interpret and for further analysis. Data collected was then entered into Statistical Package for Social Sciences (SPSS v 22.0) for analysis.

A statistical process was undertaken for the analysis of data from the questionnaire. Descriptive statistics and Correlation Coefficient techniques were used to analyse data collected with questionnaire. The descriptive analysis entails the analysis of data using frequencies, percentages and chi square. The analysis of data with descriptive statistic in this research covers the participant's demographic information as well as individual perception of the variables (themes) within the questionnaire.

Another aspect of the descriptive statistics employed was the Correlation Coefficient. This statistical test was used to identify the potentials relationships or cause and effect of association (Robson et al 2008) between two variables. Furthermore, the Correlation Coefficient test was also used to determine the strength and statistical significance between variables. As an example, the relationship (impact) between projects delayed start date and delayed end date was tested using the accepted 0.05% conventional significance level for most research.

3.8.2 Qualitative Data analysis (various data sources – Interview, Focus Group, Documentary Analysis, Task Walkthrough (Observation), and Diary)

The main data analysis techniques employed in this research for all qualitative data is Content Analysis (CA). Data collected with qualitative methods were analysed based on data reduction, display and conclusion processes (Frankfort-Navhmias and Nachmias, 2008). The choice of Content Analysis is usually to identify common themes and patterns in qualitative data. It is a dynamic form of data analysis that is concerned with the summarisation of informational contents of data (Elo et al., 2014).

Content Analysis are techniques based on an objective and systematic description of manifest content of information communicated (Seuring & Gold 2012). In Content Analysis, the content of the data collected are analysed to reveal the developing patterns matching between the various cases or phenomenon under investigation. Furthermore, Elo et al. (2014) noted that Content Analysis is any analysis technique that enables the making of inference through objective and systematic identification of explicit characteristics of data collected.

The adoption of the content analysis in this research followed the Seuring and Gold (2012) data analysis process. The concept of Seuring & Gold (2012) allows for the extraction of required information to assess the various research variables. In this context, information on the variables drawn from perceptions of staff on efficiency and effectiveness, embedded knowledge within tasks performed and the start point of inefficiency and ineffectiveness in the Nigerian public sector were generated. This process enabled keeping the analysis scheme for this research open for modification and amendment in order to come up with the real meaning of the data from individual staff perspective.

3.8.3 Hierarchical Task Analysis (HTA)

Hierarchical Task Analysis (HTA) is the “*best known task analysis technique*” designed primarily for breaking tasks down to analyse into a hierarchy of goals and operations (Stanton and Young, 1999). It is a structured approach that begins with main task defined through intended goals and the main task broken down into smaller component tasks with associated processes (Al-Hakim, Maiping, and Sevdalis, 2014). Goals are the unobservable task goal and the operations are the observable processes associated with operation within the task goal.

The HTA is particularly useful as a general task analysis method because of its flexible, extensive and systematic approach for identifying weakness and behaviours that usually occur during task analysis (Phipps, Meakin and Beatty, 2011). Ormerod and Shepherd (2004) argued that when performing the design of the HTA, there is need to capture both the human factors (knowledge and workload) and the operational process of the task performed which Annett (2004) believed should follow a top-down approach.

The concept of the Skills-Rule-Knowledge (SRK) framework by Rasmussen (1983) was adopted for the design and implementation of the HTA in this study. The SRK framework is grounded on human performance of a given task classified into one or more of three levels: skill, rule and knowledge-based drawn upon during task performance. The SRK strength is based on the ability to break down main tasks into various levels of task processes and goals (Phipps, Meakin and Beatty, 2011). The goals and processes of each subtask are aimed at providing understanding to the main task goal and process.

The SRK framework was originally designed for nuclear process control; however, the focus exhibited here has been adapted to fit into such task as Ministerial Tendering, Purchase Requisition and Payment Processes within the objective frame of this research. As a general guideline, the reasons listed below are detailed for the adoption of the HTA based on the SRK framework for this study:

- To breaks down the main task of the tasks highlighted above into smaller components in order to reveal the major processes in relation to the embedded knowledge within the tasks
- To present task and associated processes in a graphical form for ease of understanding. This again is to respond to greater understanding of task goals and processes in order to identify appropriate knowledge within tasks.

The HTA approach used in this study was compiled using data and information from task walkthrough, observation and interviews with 10 Directors and assistant Directors within the Delta State public service, Nigeria. The participants were purposefully selected for this study based on their years of experience, availability and readiness to respond to the question asked. All participants were interviewed based on a *talk-aloud protocol* with follow up questions to clarify any tasks or processes that was unclear. This method of interview provided an in-depth understanding and richness of data required for the objectives of the study.

Data collected was recorded on tape recorder and later transcribed to show the processes within tasks selected noting terminology used, personnel as well as units and departments involvement in each tasks processes. A draft (documentation) of the information from the task analysis was produced for each of the tasks. The documentation was presented to the participants for review. This is to ensure that the transcribed information is correct as intended by the participants. The information from the documentation was further refined as presented in fig 5.1 (page 131).

As an example, a complete task analysis of the information from the ministerial tendering processes is presented in fig 5.3 with Swimming Lane Sequence Diagram (SLSD) further showing clarity of purpose.

3.8.4 Swimming Lane Sequence Diagram (SLSD)

Swim Lane Sequence Diagram (SLSD) (sometimes referred to as a cross-functional diagram) is one of the process flow diagrams for frameworking business process efficiently and effectively (Jeyaraj and Sauter, 2014). It was originally proposed by Rummler and Branche (1999) for planning business reengineering and wide software development. However, the SLSD has been widely used for many other aspect of business process analysis. The Swim Lane Sequence Diagram is a sequence of diagram usually used in depicting the interaction within a process which offers visual identification of sequence within a process. (Millham and Yang, 2004).

This research adopted the Swim Lane Sequence Diagram along with the HTA processes in fig 5.3 as an evaluation tool to understand task processes (e.g. ministerial tendering processes) in the Delta State public service, Nigeria. The overall aim is to provide an opportunity to effectively and efficiently identify and map knowledge within task processes to the various actors in the task activities. Furthermore, the SLSD provides the opportunity to analyse and understand how activities and responsibilities are shared between various actors. The actors herein are considered as the people, unit, departments and ministries (Jeyaraj and Sauter, 2014) within public service in Delta State.

The construction of the SLSD in this research follows a careful analysis of data collected and initial frameworking of task processes through a Hierarchical Task Analysis (HTA) in fig 5.3. As indicated in Task Walkthrough, Observation and Interview methods of data collection (section 3.4.3.2); data was first transcribed from tape recorder into series of sentences. These sentences were later structured logically to reflect themes frameworked in the HTA.

The SLSD was constructed based on the information and logic that was frameworked within the HTA structure. As an example, the construction of the SLSD follows the logic inherited from the HTA ministerial tendering process already frameworked in fig 5.3. Standard

Business Process Frameworking Notations (BPMN) was used for the construction of the SLSD (see fig 5.4).

As with the HTA construction, the construction of the SLSD follows horizontal and vertical columns which depict various actors, tasks to be frameworked and the activities within the task consistent with Rumbaugh, Jacobson and Booch (1999) and (Jeyaraj and Sauter, 2014). As an example, in fig 5.4 the horizontal columns indicate the main task (**need analysis** 1.0, **bidding process** 2.0, **bid evaluation** 3.0 and **decision** 4.0 to be decomposed which was inherited from the design of the HTA (see fig 5.3). On the other hand, lifeline notation (broken lines) separating activities vertically were used in depicting actors (units and departments) as well as sub-task within the main tasks (see page 135).

To further explore the logic within the tasks activities in the SLSD, arrow line notation (lines with arrow head) are used to show the flow of information and activity between each main and sub-task activity. To illustrate this, for example, before activity 2.1(publication or invitation for bidders) can be carried out, Schedule Officer must complete activity 1.2 (Checking funds availability) by making sure there is available funds for such a given project.

In its specific context, the adoption of the SLSD in this research provided two main objectives. First, the SLSD as with the HTA provides the opportunity to effectively decompose and understand key business process within the Nigerian public sector business frame.

Secondly, the SLSD also provided the platform through which “embedded knowledge” within task processes were identified graphically as indicated in the orange boxes in fig 5.4. The interpretation of the orange boxes in the SLSD is the identification of missing or obsolete knowledge within the ministerial tendering process in the Delta State sector was identified.

3.8.5 Knowledge Identification Metrics

To further explore the content and prepare data for analysis in fieldwork 3, Knowledge Identification Metrics were developed. The application of metrics has proven to be an effective technique for measuring project’s quality and productivity (Moller and Paulish 1993). The groundwork for the origin and application of metrics as started with a software

measurement which sprang up in the 1970s. The initial concept of the software metrics was for software fault identification and development. This was later extended to covers four primary components of software development including; code complexity measures, project estimation, software quality control and software process development (Moller and Paulish 1993). This initial focus has evolved over the years to cover other aspect of project management (Perrenoud and Sullivan, 2013).

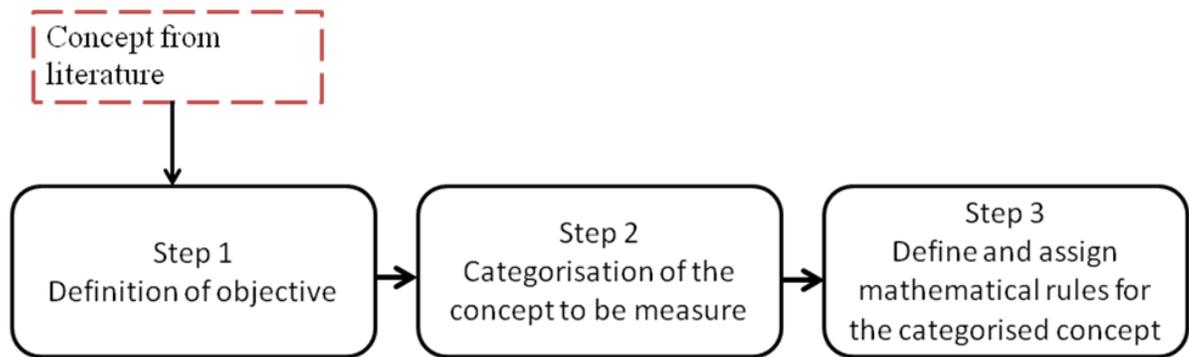
This research initially conceives the concept of metrics for the measurement of knowledge within tasks performed by the staff of the Delta State public service. However, the application of metrics described in this thesis was used for the measurement of the sources of inefficiency and effectiveness targeting the under listed components of construction project and individual interference (distraction) within the public service in Delta State, Nigeria (see chapter 6).

- Project schedule dates (project start and end date)
- Project cost
- Employee proficiency
- Personnel interference/distraction

The development of the metrics follows an extensive review of literature in order to identify key components to be measure in the context of the focus highlighted above. The review of literature permitted the identification of the steps and sub-steps required for the evaluation process within the metrics.

The development of the metrics described in this thesis is consistent with the first step metrics process definition by Jackuet and Abran (1997). The adoption of the metrics development process by Jackuet and Abran (1997) (step 1) is as a result of its extensive description of metrics developmental process consistent with the Moller and Paulish (1993) metrics definition. Fig 3.2 illustrates the developmental process of metrics specific for this research.

Figure 3.2: Summary of the metric development: Knowledge Identification Metrics



Modified from Jackuet and Abran (1997)

Step 1: Definition of objectives

This step entails the understanding and presentation of the objective to measure. This also includes the attribute of the entity (objective) to measure. In this context, the main entity to measure is the source of inefficiency and ineffectiveness in relation to construction projects and employee proficiency as well as employee interference.

Step 2: Categorisation of the concept to be measured

To provide a base for measurement of the metrics during development, both objectives and attributes conceived in this research are clearly defined. The definition of the various concepts of the metrics as an example in this research was based on knowledge required within project date scheduling and project cost.

During the definition of these concepts that culminated in metrics for this research, some rules on attributes such as; delay start date, delay end date, initial project cost and final projects cost were clearly narrated and defined logically. The logical definition of the concept was based on the decomposition of task execution processes within the project from the public service perspective. For example, the determination of various schedule dates to the final cost of the project. This logical decomposition includes the various actors and sub-concepts within the project description by concept and attributes.

To formulate the design of the measurable entities within the metrics, a mathematical relational set logic within the concept was defined as presented in the final step.

Step 3: Define and assign mathematical rules for the categorised concept

At this step, mathematical expression based numerical assignment rules were formulated based on the theoretical description of the concepts and sub-concepts defined in step 2. Two distinctive approaches were followed during the development of the mathematical expression formulation. The first approach was to describe the measurement entities to be included in the framework in the metric. The second aspect was the arrangement of the categorisation of the concepts in an order to allow the framework and assignment of mathematical annotation for the attributes.

The logical concept and the successive formulation of the steps and sub-steps for the design of the measurement of the attributes in the metrics is as defined in sections 6.2.1 to 6.2.5 and based on the concept in fig 3.2 above. All of the concepts described in this section are consistent with the metric development process by Jacquet and Abran (1997). The application of the metrics is provided in section 6.4.

3.9 Reliability and Validity

Reliability and validity are two major related concepts which are drawn upon in social science studies in ensuring that research findings are accurate, usable and relevant to the researchers research processes (Gray, 2009). Adam (2014) postulated that data tests can be reliable without being valid; however, test cannot be valid without being reliable. Based on this context, this research ensures that data collected are reliable at the same time valid through the following process.

Reliability is vital in research as it ensures that appropriate instruments are employed during data collection with consistent results in mind. The concept of reliability is built on the degree of consistency in evaluating data from various instruments used within a research project. The concept of reliability requires that the same methods and processes for that collection and

analysis in a given research can be repeatable while generating the same result in a different environment (Drucker-Godard *et al.* 2001).

The main aim of research reliability and validity is to minimize errors and bias. Most of the bias and errors often associated with research are: participant bias, observer bias, participant error and observer error (Adam 2014). These biasness and errors are associated with attitude and time for answering questions during data collection.

To address the issues of reliability for quantitative data in the research, feedback from the pilot stage enables the researcher to determine that 20 minutes is enough to answer questions in the questionnaire. Further, a two weeks period was given to the participants to return the questionnaires. Therefore, it was assumed that these times for participants to answer questions in the questionnaire will reduce bias as a result of tiredness and misrepresentation. While bias as a result of the researcher's official relationship with the participants, the participants were treated as anonymous (no mentioning of names).

From the qualitative data, interview and discussion sessions with participants were scheduled around convenient times with the participants. Moreover, the questions and answer section in these techniques were done in such a way to build rapport with participants, at the time allowing participants enough time and feel free to give answers as to their understanding of the questions asked.

Validity relates to the correctness and or credibility of the explanation and interpretation of responses to questions answered either in qualitative or quantitative data. Generally, there are two main types of validity; internal and external validity. Internal validity relates to the drawing legitimate and accurate sample size, while external validity is concerned with the generalisation of findings that reflects the views of the entire population from which the research sample is drawn.

For this research, the issue of validity was address through standardised and consistent contents of the questionnaire and interview to all participants. The modification from the pilot survey ensures that the final content of the questionnaire is consistent and accurate. Overall,

the standardised formant of the questionnaire ensures that content bias is minimized. From the qualitative validity perspective, all interview sessions followed similar protocols in ensuring that questions were asked accordingly in each session. Further, feedback was given to the participants to confirm if their responses were as intended.

Finally, since the method of data collection and analysis in this research is the mixed method approach, this means different data collection instruments were used. To ensure reliability and validity, data collected was triangulated based on data types and theories consistent with Acheampong (2014); Ekeke (2011).

3.10 Research Participants

In all three fieldwork interventions as detailed in table 3.4, personnel from the Delta State public service of between grade levels (GL) 8-17 form the participants for this research. The participants are arranged as follows; senior officers (GL 08 to 14), Assistant Directors, Directors and Senior Management Staff (GL 15 to 17), including the Permanent Secretary (GL 17) across 15 ministries in Delta State.

Table 3.4: Summarised view of the research participants

S/N	Study	Instruments	No. of participants	Total no. of participants
1	Fieldwork-1	<ul style="list-style-type: none"> ▪ Questionnaire ▪ Interview ▪ Focus Group 	<ul style="list-style-type: none"> ▪ 100 ▪ 10 ▪ 10 	120
2	Fieldwork-2	Interview and task walkthrough	10	10
3	Fieldwork-3	Diary	12	12
Total no. of participants				142

The total number of participants that participated in this research was 142 staff from the Delta State public service. All participants are serving officers with between five to thirty years of working experience. Participants are selected from various ministries in Delta State, however, their work contexts are similar across the public sector in Nigeria.

A significant set of participants that engaged in this research are drawn from a homogenous group, providing the benefits of selecting informed participants about knowledge and policy implementation in the public service. The members of this group, the Change Management Team are public sector employees in Delta State whose responsibilities are to communicate and advise government on organisational changes; including policies and management strategies that may affect the performance of the public service).

As mentioned in section 3.3, the research adopted the combination of qualitative and quantitative techniques for its data collection and analysis. Delta State public service is the focal case organisation chosen for this study. Delta State public service has 23 ministries and other inter-ministerial departments with a very large number of employees; therefore, it is unrealistic to engage all public service staff across the state ministries. As a consequence, the research adopted a probability sampling strategy known as simple random method to select the participant for the quantitative method, while in the qualitative method; purposive sampling was used in selecting all participants. These selection techniques supported more variability across the workforce, thus accessing and achieving greater data validity.

In using the simple random method technique Robson et al. (2008) note that, the technique helps in selecting an appropriate sample in an unbiased form from a large population size. Another case for the choice of the simple random technique in most research is that it gives equal opportunity to all elements within a population to participate in the research.

For the qualitative method, a purposive technique was used. The rationale for using purposive sampling in selecting participants was based on the perceived characteristic thought relevant to providing informative data for this research. In chosen the participants through the purposive sampling, years of experience, academic qualifications and status (grade lever/rank) were the main considerations.

3.11 Summary

This chapter has presented the research methodology for this research. It detailed the rationale for the choice of the combination of positivist and interpretivist paradigms which played a major role in the decision to adopt the mixed approach of data collection and analysis. The chosen methodology is justified according to the research objectives and processes guided by the entire research process. In this context, the chosen methods of data collection through questionnaire, focus group, interviews, documentary analysis, tasks walkthroughs and diary keeping is appropriate and justified. This methods chapter has provided richness and extensive treatment of data in relation to an holistic approach to the development of a knowledge management framework proposed in this research. The HTA, SLSD and Knowledge Identification Metrics as well as the highlighted statistical and content analysis techniques adopted in this research also provide richness of data analysis leading to the specific findings towards achieving the objective of the research. The following chapters (4-6) discuss the application and results from the three fieldwork interventions of this research.

4 Chapter Four: Efficiency and Effectiveness in the Nigeria Public Sector: Understanding the Research Problem

As detailed in the previous chapter, the first stage of the research aimed to further investigate the research context, by exploring perceptions of effectiveness and efficiency in the Nigerian public sector through an empirical study conducted in Delta State, Nigeria. This chapter presents an empirical mixed methods study focusing on public sector employees' perceptions of inefficiency and ineffectiveness in the Nigerian public sector. Demographic data and participants' views and perceptions of efficiency and effectiveness, Knowledge Management, Organisational Culture and Information and Communication Technology were explored with questionnaires, semi-structured interviews, focus groups and document analysis. Data was analysed through descriptive statistics for quantitative data and Content Analysis for qualitative data.

To achieve the objective of this study, this chapter has been structure into five sections:

Section 1 presents the focus of this study providing insight on how public service staffs in Nigeria view the efficiency and effectiveness of the sector.

Section 2 presents discussions around participants for this study. The selection of participants is largely on a sample population from the Delta State public service.

In section 3 methods employed for data collection are presented. The discussion of this section includes instruments as well as the procedures adopted for the collection of data.

Section 4 details data analysis approach. Various techniques employed during data analysis were also discussed.

Section 5 presents the result of this fieldwork. Finally, section 6 present summary of the chapter.

4.1 Purpose and Focus of the Fieldwork

The focus of this fieldwork is to present and map its findings to the research question and objective of ‘whether knowledge management can improve the efficiency and effectiveness of the public sector in Nigeria’. In specific, the focus of this fieldwork is drawn from:

- **Efficiency and Effectiveness:** Since the overall research aim is to explore a way of improving the efficiency and effectiveness of the Nigerian public sector, it is therefore necessary as a start point, to explore and understand the level of efficiency and effectiveness from the perspective of staff while also considered findings from literature.
- **Existence Knowledge Management Process:** As a second purpose, this fieldwork focuses on understanding the knowledge management process currently in practice in Nigeria. Knowledge Management is key concept for improvements to efficiency and effectiveness in this research, thus, exploring the current state of knowledge management is imperative for the overall objective of the research.
- **Information Technology:** In many organisations (private and public), Information Technology (IT) is one of the main drivers for sustainable development and improvement to business process effectiveness. As an objective in this fieldwork, exploring IT provision to provided for understanding on how knowledge is created, shared and used by staff as well as how the IT infrastructure is integrated into business processes.
- **Culture** is another area this fieldwork draw its focus. For effective knowledge management in any organisation, there must be an organisational culture that encourages the creation and sharing of knowledge across units and departments. For this context, this fieldwork explores the impact of organisational culture on the way knowledge is created and distributed across the public sector in Nigeria.

4.2 Research Method

Data for assessing the objective of this study was collected using a mixed method approach (survey, interview, focus group discussion and documentary analysis). Following the recommendation of Pee and Kankanhalli (2015) for data collection in public sector

organisations, the target participants, instruments development, procedure for data collection and method of data analysis is presented in this section.

4.2.1 Research participants

The study is applied to understanding the perception on efficiency and effectiveness of public service staff in Nigeria. This study was carried out in Delta State, Nigeria. Therefore, only staffs of the Delta State public service, Nigeria were included as participant for this study. 100 officers from the state civil service were randomly selected for the quantitative data using questionnaire. Furthermore, interview was conducted with 10 senior staff (Directors and Assistant Directors) drawn from the Delta state public service who were not part of the questionnaire section. Also, in the Focus Group session, 10 participants from CMT were carefully selected for the group discussion. The interviewees selected were coded S1 to S10 for the semi-structured interview while FG1 to FG10 code was used for the Focus Group members. The interviewees were purposefully selected. For purpose of clarity, the participants and methods of selection are discussed under each instruments used.

4.2.2 Data collection instruments

The instruments developed for fieldwork-1 are detailed in table 4.1 and further outlined in the following sections.

Table 4.1: Summary of instruments used for data collection

Instrument	Description of items covered	Number of participants and level
Questionnaire: Understanding improvement to organisational efficiency and effectiveness	33 questions covering five sections 1. Demographics 2. Efficiency and effectiveness 3. Knowledge Management 4. Culture	<ul style="list-style-type: none"> ▪ 83 questionnaire received and fit for use ▪ Participants were drawn from Grade Level (GL) 8-16

	5. Information Technology	
Semi-Structured Interview: Exploration of organisational efficiency and effectiveness	<p>Questions for the interview covers five items including;</p> <ol style="list-style-type: none"> 1. Participant demography. 2. Efficiency and effectiveness 3. knowledge management 4. Culture 5. Technology infrastructure 	<ul style="list-style-type: none"> ▪ 10 participants ▪ Participants drawn from Director and Assistant Director ▪ Grade level 12 to 16
Focus Group : Exploring knowledge management, IT and efficiency and effectiveness	<p>Questions for this section covers four items including;</p> <ol style="list-style-type: none"> 1. Participant demography 2. Efficiency and effectiveness 3. Knowledge Management 4. Technology infrastructure 	<ul style="list-style-type: none"> ▪ 10 members for this group ▪ Participants were drawn from a group called Change management Team (CMT). ▪ Grade Level 08 to 14
Nigerian Public Sector Documents	<p>Documents collected and review includes public sector structure, communication hierarchy, documents and files regarding knowledge management.</p>	<p>9 Different documents were analyse including; memos, circulars, civil service rules, financial regulations, drafts, gazettes, newspaper publications, scheme of service and nominal role</p>

4.2.2.1 Questionnaire design

A questionnaire entitled “Survey: Knowledge Management in the Nigerian Public sector” was developed to collect data relating to the respondent’s perceptions of efficiency and

effectiveness, knowledge management, organisational culture and technology usage within Delta State public sector. The questionnaire (see table 4.2 and Appendix i) was developed through the literature review and consideration from the research context (see section 4.1), aiming to collect quantitative data relating to public sector staff views and perceptions.

Questions were drawn from similar work by Hamid (2012) and Girard and McIntyre (2010) in the Malaysian and Canadian public sector respectively. The objective of both studies was to improve the performance of the Energy and Tourism sector of Canada and Malaysia, similar to the objective of the improving the Nigerian public sector. Though, questions were adopted from this literature, however, questions in the current questionnaire were developed according to the objective of this research.

In the current research, questions relating to participants demography including education, years of experience and knowledge management similar to Hamid (2012) and Girard and McIntyre (2010) were included in the questionnaire design for this research. However, questions targeted towards age and sex of participants in Hamid was excluded from this study. This is because age and sex does not make much meaning towards understanding the efficiency and effectiveness and knowledge management in the context of this study.

Similar to Ekeke's (2011) questionnaire designed and administered specifically for Nigerian public sector employees, this research focused on knowledge sharing and knowledge culture as well as the technology infrastructure questions. Similar to Ekeke's questionnaire, the questionnaire includes the participant's demography, cultural impact on knowledge sharing and possibility of acquiring knowledge within the public sector. Ekeke did not include questions on knowledge hoarding and technology usage in his research.

Though, question relating to knowledge hoarding is not included in Ekeke's research, however, it is relevant to the current study. This is because; this section on knowledge hoarding provides the opportunity to access whether public service staffs are willing to share knowledge freely between colleagues. This is a critical factor to consider if knowledge management practice is to succeed in any organisation.

Furthermore, questions relating to IT integration were also incorporated in the current research questionnaire to explore IT sufficiency and connectivity in the scheme of service in the public sector. Exploring the integration of IT infrastructure in organisational knowledge management processes is fundamentally important as IT is one of the cornerstones for the success of knowledge management practice.

Given the positive relationship that exists between the number of scale points and reliability and the frequent and well-known use of Likert scales in general the questions in the questionnaire were scaled on five-point Likert scales with values from 1 “strongly disagree” to 5 “strongly agree;” and four point Likert scales with 4 “very frequently” and 1 “never”. Categories, ticking of boxes and open questions for comments were other form of responses adopted as a response format for the questionnaire. See table 4.2 for summary of items in the questionnaire.

Table 4.2: Summary of Questionnaires on Knowledge Management in the Nigerian Public Sector

Theme	Focus & Rating	Description/Rationale
Demography 3 questions	How many years have you worked in the Delta State public sector? 5 point likert scale	Respondents were asked to tick their years of experience with the public sector. This is to enable the researcher rate a respondent with his level of experience with the organisation as there is a relationship between organisational knowledge and years of experience (McDonald 2010).
	What is your educational qualification?	Like years of experience, educational background also provides a baseline measure of knowledge and effectiveness in the context of organisational performance. Nigerian public sector Grade Level 8-16 (staffs with university degree and longer years in service) are officers that engage in knowledge activity and management of the public service in Nigeria.

Efficiency and effectiveness	Do you usually meet efficient and effective service delivery in the public sector? 5 point likert scale	Respondents were asked if public sector effectiveness and efficiency did meet their objective of quality service delivery to the people because
	Are citizens happy with the services your ministry provides? 5 point likert scale	Respondents were asked to rate how satisfied citizens were with public sector services because
	Do you measure efficiency and effectiveness? 5 point likert scale	Respondents provided information on the measurement of efficiency and effectiveness in the sector and how the measures were carried out.
4 questions		
Knowledge Management	Opportunity to get knowledge 4 point likert scale	Respondents were asked to identify how often they accessed a range of typical knowledge documents
	When you need required knowledge do you know where and how to get it? 5 point likert scale	The purpose of this option is to understand if officers know where available knowledge is kept and the process of getting the required knowledge.
	Is there knowledge hoarding in the public service? 5 point likert scale	Respondents were asked whether they are willing to share their knowledge with other officers in the ministry or department and if this is reciprocal.
14 questions		
Organisational Culture	Does the organisation culture and structure impede the free flow of knowledge and communication in your	This aimed to assess respondent perceptions of organisational culture (secrecy, organisational structure, knowledge hoarding) and its impact on knowledge sharing and organisational processes

5 questions	ministry? 5 point likert scale	towards efficiency and effectiveness.
Technology Usability questions 5 questions	Is there sufficient Information Technology Infrastructure in the public sector? 5 point likert scale	This section is taken to understand the level of IT integration into business processes in the public sector

4.2.2.1.1 Questionnaire Administration

100 questionnaires were distributed to Senior Officers (GL 8-16) from the Delta state public service. The questionnaire was distributed one-to-one (face-to-face) to the participants during official period (8am to 4pm) for about two weeks. This is to ensure that the participants are identified and to further ensure that maximum numbers of responses are returned. The participants for this survey were recruited based on a simple random selection process from fifteen ministries out of the 23 ministries in Delta State.

83 (83%) questionnaire were completed, returned and analysed using percentages and frequency. The high number of returned questionnaire is based on the nature of the public sector to treat the survey exercise as an official assignment as a result of the memo circulated by the Head of Information Systems, Ministry of Science and Technology.

4.2.2.2 Semi-structured interview

As with the questionnaire, questions in the interview session were arranged in relation to the themes in the questionnaire with Senior Management staff from Delta State public service. The interview covers issues relating to (a) participants demography (b) efficiency and effectiveness (c) knowledge management processes; (d) the impact of the organisational culture in the way knowledge is managed (e) usability of information technology. Again, the questions for the interview are similar to Kajogbola (2004); Eddy and Akpan (2008); Ekeke (2011) and (Hamid 2012) approach. See details of the interview question in appendix ii

Table 4.2 provides a summary of questions during the interview section.

Table 4.3: Summary of Semi-Structures Interview Section

Themes	Focus / Question	Description
Demography	Participant to describe their background and their job role in the public service	To collect general information about respondents role in the organisation, years of experience and educational qualification.
Efficiency and Effectiveness	Participants were asked to describe the concepts of efficiency and effectiveness in relation to government services.	Ask participants what efficiency means to them, instruments and process of measuring efficiency and effectiveness in the public sector.
	In terms of service delivery to the people, how is performance measured in the public sector?	If efficiency and effectiveness ever been measured, what processes were followed in measuring this concept and who is responsible for the measurement
	How can government improve on the way current services are being delivered?	To know the current challenges in the course of meeting the objective of delivering efficient and effective service delivery
Knowledge Management	How is required knowledge for task and project deliverables created and shared in the public sector?	Participants were asked to describe how knowledge is generated, stored, and share between officers, units and departments in the organisation. What constitutes knowledge, and how accessible is it by individuals.
Organisational Culture	Every organisation has its culture which is the organisational way of operations of staff in that organisation. From your experience in the Delta State public sector, what do think is/are the impact of culture in your organisation?	This section provide participants the opportunity to elaborate on several cultural issues in the public sector including; secrecy, communication difficulties, the structure of the organisation, organisational bureaucracy and knowledge hoarding.

	Describe the greatest barriers to issue of culture in the service?	
Technological infrastructures	Describe technology infrastructure in the civil service? Do officers have access to the IT infrastructures?	The implication of this section is to ask participants to describe the level of information technology in their ministry, including internet connectivity and if all staff have computer and IT accessories to perform their daily task.

The interview questions started from general to specific with “collaborative narrative approach” similar to Nwankwo, Akunuri, & Madichie (2010). This approach provided an in-depth probing into the themes surrounding the research objective within the real world context of the Nigeria public sector.

4.2.2.2.1 Interview Administration

To ensure participation of officers, a letter was sent to the Head of Information Systems (H.I.S), Delta State stating the purpose of the research and. A corresponding memo from the H.I.S was sent to All Ministries soliciting the corporation of officers for the interview and subsequent access to data by the researcher. This enabled the purposeful selection (Zaim 2006b) from Assistant Directors and Directors across 10 ministries to discuss the themes in table 4.2. All 10 officers selected for interview were available and interviewed. In choosing the interviewees from the appropriate pool, willingness and availability to participate were the prime considerations.

The interview session with the participants lasted for about an hour. All data collected through the semi-structured interviews was recorded, transcribed and analysed. A narrative data analysis was adopted to analyse data collected based on the themes highlighted in table 4.3.

4.2.2.3 Focus Group

Rich, qualitative information can be yielded through group discussions (Kamberelis and Dimitriadis, 2013). The use of focus group for data collection in this research is to complement other data collection instruments in this fieldwork as well as to broaden our

understanding of themes identified. Table 4.4 outlines the structure and main themes discussed during the focus group.

Table 4.4: Summary of the focus group discussion

Theme	Rationale
Views on participants background	
Can everyone tell me your name, job background and ministry?	This section ask participants to introduce themselves in turn, to discuss their job role and the ministry they represent with a view to understanding the competencies in the subject to be discussed based on individual grade level, and educational qualification.
Efficiency and effectiveness	
What does efficiency means to you? What does u understand by term effectiveness? Has efficiency and effectiveness been measured in your ministry? If “yes”, what are the process and instruments involved?	This is for participants to provide their understanding of the concept of efficiency and effectiveness from the perspective of civil servant. This is also to know the processes how efficiency and effectiveness have been measured in the ministries.
Knowledge management	
How is the knowledge in the public sector generated and share between member of staff, units and departments?	This section is to form the discussion on existing knowledge management structures and how new knowledge is generated. What procedure are involved in the generation and sharing of knowledge in the sector?
How do you or member of staff access	Participants share their opinion on the various

<p>available knowledge for their daily task?</p>	<p>tools and access to the knowledge in the public sector. Any constraint to the way knowledge is shared was also discussed. This provided the understanding to the cultural aspect of knowledge management ranging from secrecy and hoarding of knowledge.</p>
<p>Information Technology</p>	
<p>Can any of you describe information technology infrastructure in your ministry? How do you access the information in the state database (E-Delta Data Centre)? Does everyone have access to this database?</p>	<p>This is to allow participants to discuss the use of information technology, access to the ICT infrastructures in the various ministries and how the main Data centre at the state secretariat is connected to the various ministries.</p>
<p>Are there enough computer and its accessories for every officer in you ministry?</p>	<p>This section provides the understanding into coverage of computer systems in the various ministries. Whether there are enough computer systems for every officer in each ministry? It also helps to look into the issues of whether the problem of the public sector is related to ICT integration for information management or the use of knowledge manage in its codified form.</p>

To ensure a clear understanding of the research objective, a seminar was presented to the members of Change Management Team in Delta State. The seminar presentation was in response to an invitation from members of the Change Management Team (CMT). The overall aim of the seminar is to sensitise members of the Change Management Team to the research

context. The seminar created the necessary awareness and willingness to participate in the group discussion.

4.2.2.3.1 Focus Group Administration

In recruiting members of the focus group, a letter from the Head of Information Systems (H.I.S), Directorate of Science and Technology was sent to the Chairman of the CMT. The focus group consisted of 10 CMT members who were purposefully selected by management of the Change Management Team, due to their greater knowledge of potential participants.

CMT members are staff drawn from all ministries including an extra-ministerial department in the state public service whom are responsible for communicating and advising government on any issue relating to organisational changes (policies) and other related matters.

To ensure the group is properly managed, a circular form of seating arrangement was adopted (Kamberelis & Dimitriadis 2013). Beside the 10 group members, the secretary to the Change Management Team was contacted as a note-taker during the group discussion while the researcher server as the moderator. During the group discussion, a simple question and answer format of focus group discussion was adopted to elicit the views of participants on the objective of the discussion.

The group discussion lasted for about 1.45 hours. The focus group was conducted as detailed above with the session recorded, transcribed and analysed.

4.2.2.4 Documentary Analysis

The Nigerian public sector is a document-centric organisation where most of its policies and organisational procedures are entrenched in a codified form (Eddy and Akpan, 2008; Ayanda and Sani, 2010; Ekeke 2011). Documentary Analysis is a qualitative research mechanism for interpreting, giving meaning to and complementing other forms of data collection in a research project (Hartley, 2004).

The aim of analysing organisational documents in this study is to access the level of efficiency and effectiveness, to understand how existing knowledge is managed as well as the structure

of the public service. The findings from analysing organisational documents are to compare and validate findings from instruments used in this fieldwork and well as reviewed literature.

Table 4.5: Type and number of documents collected

Type of documents	Quantity
Memo	8
Circulars	8
Civil service rule	1
Financial regulation	1
Scheme of service	1
Nominal role	1
Draft	1
Gazette	1
Newspaper publication	Several

To ensure the right documents are collected, the Director of Planning, Research and Statistics, Office of the Head of Service, Cabinet Office, Delta State was contacted in order to gain access to required documents as highlighted in table 4.5. A total of 22 documents including several newspaper publications were collected and reviewed.

The documents collected were scanned through and broken down into smaller constituent and meaning were inferred based on theme identified. This approach is consistent with Ekeke (2011) Documentary Analysis of the Bayelsa public service in Nigeria.

4.3 Results

Fieldwork-I investigate public sector employee's perceptions of efficiency and effectiveness in Nigerian using qualitative and quantitative approach of data collection and analysis. Results are provided for use of questionnaire, semi-structured interviews, focus group and documentary analysis are discusses in sub-sections. Data collected and analysed were then triangulated for presentation in this chapter.

4.3.1 Questionnaire Results and Interpretation

4.3.1.1 Participant Demographics

Table 4.6 provides a summary of participant demographics. Most participants (80%) had between 6 - 15 years of experience working for the Nigerian Public Sector. About 7% (n = 6) of respondents have over 15 years of working experience, with this group being major stakeholders in decision making processes in the Nigerian public sector.

In terms of education, over 80% of respondents have a high educational level, with a graduate certificate or degree. These demographics highlight that public sector employees between Grade Level 8-16 typically have a high level of education and over 5years of experience. This reflects the requirement identified by (Macdonald 2010) on the level of knowledge and expertise needed to perform core tasks to an acceptable level in an organisation like the civil service using education as measure of scale.

Table 4.6: Summary of participants' demography

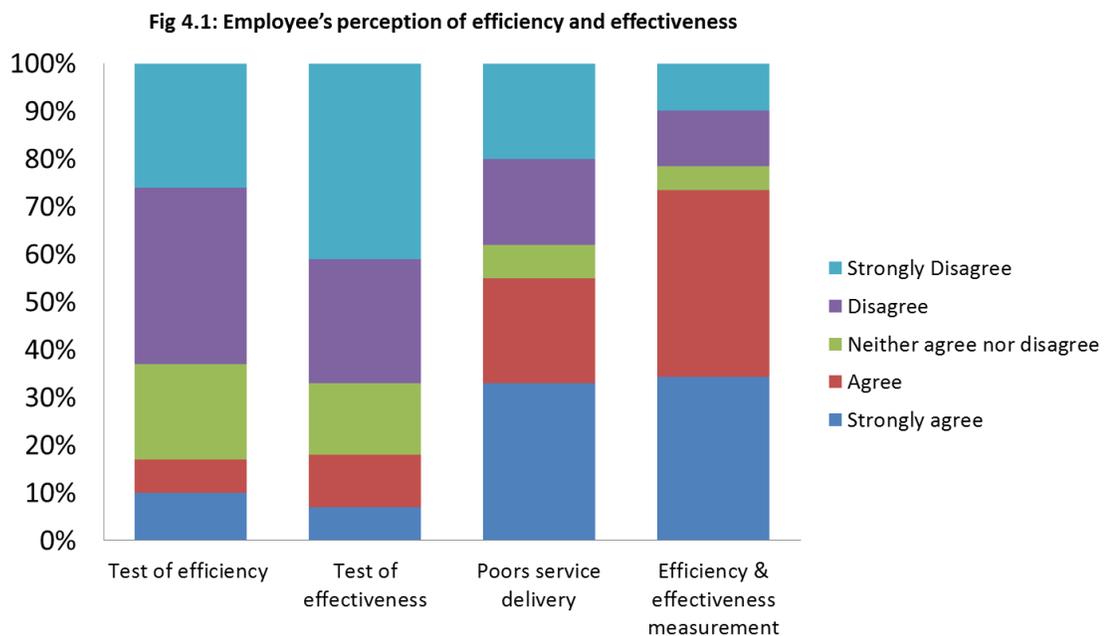
Educational Level >	Polytechnic	BSc	Msc	PhD	%
Years of Experience					
< 5	2	6	3	0	13%
6-15	9	33	20	4	80%
> 15	0	3	2	1	7%

Similar to Macdonald (2010), the findings from data analysed indicates that people with similar years of experience and similar educational level share similar views about efficiency and effectiveness of the Nigerian public sector. However, the issue of analysing differences between high grade and lower grade was dealt with as the results from the questionnaire are being representative of grades 8-14 whilst the views of the senior grades are considered through interviews.

4.3.1.2 Perceptions of Efficiency and Effectiveness

Efficiency and effectiveness of the public sector is a major issue for most government organisations globally (Curristine, Lonti, and Joumard, 2007), with the government responsible for using available resources to provide quality services to the people (Mihaiu, Operana and Cristescu, 2010). In this questionnaire, public sector employees were asked to rate their perceptions of efficiency and effectiveness using 5 point Likert scale around four questions Q6 (eff. = efficiency), Q7 (eff. = effectiveness), Q8 (PSD = poor service delivery) and Q9 (eff. and eff. msmt. = efficiency and effectiveness measurement), see figure fig 4.1.

Figure 4.1: Employee's perception of efficiency and effectiveness



Over 60% of the respondents strongly disagree or disagree that the Nigerian public sector is efficient and effective at delivering quality government service to the people, with only 17% agreeing or strongly agreeing that the Nigerian public sector is efficient and effective at delivering government goods to the people.

On the concept of efficiency and effectiveness measurement, over 75% of respondents identified that efficiency and effectiveness is measured while about 20% of the respondents disagreed that they have carried out measurement of efficiency and effectiveness in the Nigerian public sector as indicated in table 4.7.

Table 4.7: Summarised impact of efficiency and effectiveness analysis

Themes	Outcomes	Impact
Efficiency Effectiveness	There is inefficiency and ineffectiveness in the Nigerian public sector	Very strong supporting inefficiency and ineffectiveness.
Poor service delivery	There is poor service delivery indicating inefficiency and ineffectiveness	Strong response in support of poor service delivery
Efficiency and effectiveness measurement	Existence of efficiency and effectiveness measurement	Very strong response indicating efficiency and effectiveness is measure in the public service

The results from the empirical study using the questionnaire identified that the Nigerian public sector is not efficient and ineffective in the way government resources are used to provide service to the people. Further analysis indicated that the public sector personnel all believed that the public sector is inefficient and ineffective.

4.3.1.3 Knowledge management

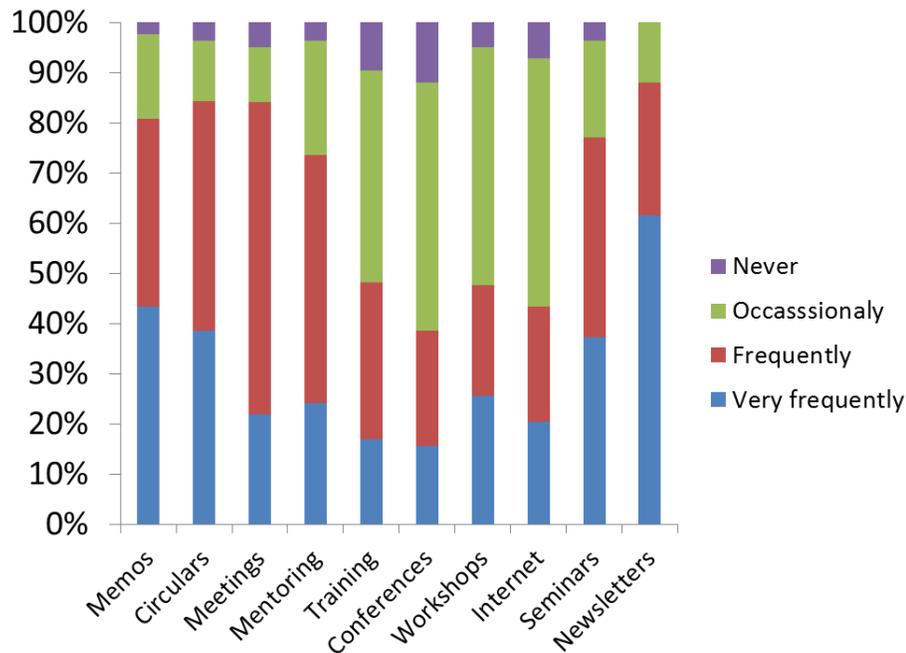
The assessment of knowledge management was grounded on the opportunity to get and use knowledge in the questionnaire. Overall, twenty three various knowledge sources were listed (e.g. documents, seminars, telephone, meetings) and categorised into ten mechanism for accessing knowledge (see table 4.8).

Table 4.8: Summary of opportunity to get knowledge

Theme	Sources of knowledge	Outcome	Impact
Opportunity to get knowledge	<ul style="list-style-type: none"> ▪ Memos ▪ Circulars ▪ Meetings ▪ Mentoring ▪ Training ▪ Conferences ▪ Workshops ▪ Internet ▪ Seminars ▪ Newsletters 	Personnel know where and how to get required knowledge indicating essence of knowledge management in practice	Very strong positive response supporting knowledge management practice in existence

Similar to information in table 4.8, result relating to opportunity to get knowledge and test knowledge management existence is presented in fig 4.2.

Figure 4.2: Existence of knowledge management



The results reveals that the opportunity to access knowledge is high with over 95% of respondents indicating that they occasionally or frequently get knowledge required for daily performance of task in the Nigerian public sector, have less than 3% of participants indicated a lack of opportunity. Notably, the employees with lack of access to knowledge are either newly employed to the service or have recently been transferred to a new department.

The study confirms the results of Ekeke (2011) that knowledge management exists in the Nigerian public sector. Respondents were aware of a range of knowledge sources, knowing where and how to get knowledge for the performance of their task.

4.3.1.4 Organisational Culture

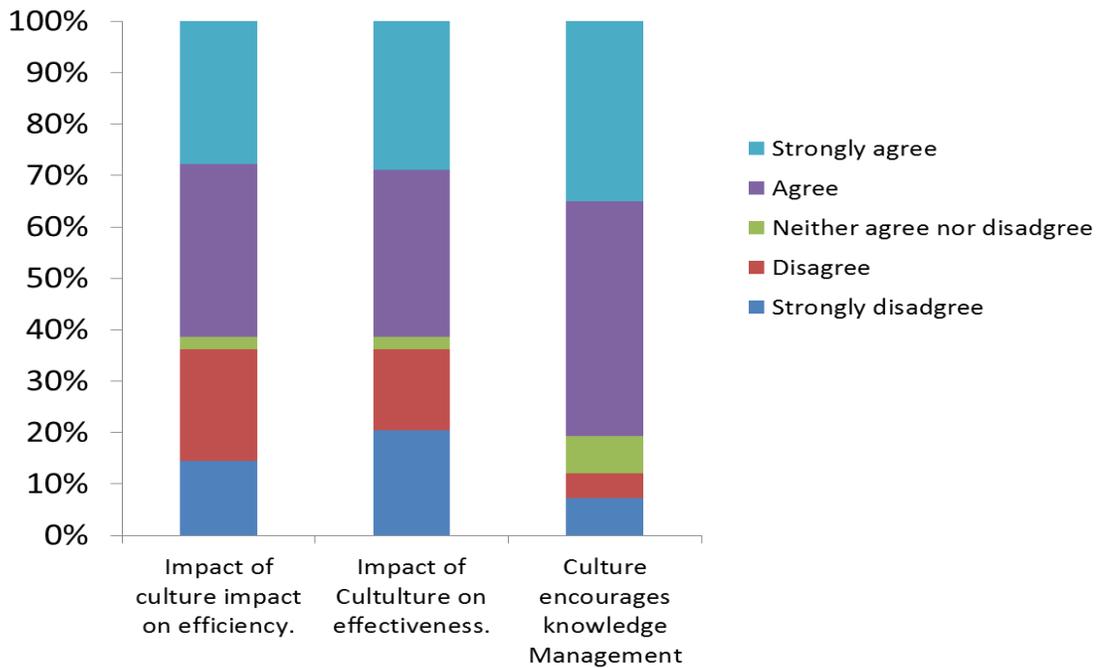
Over 50% of participants agreed or strongly agreed that the organisational culture impedes the drive for efficiency and effectiveness, with 37% of participants disagreeing or strongly disagreeing that the public sector structure impedes the way efficiency and effectiveness s achieved.

Table 4.9: Summarised outcome of the impact of culture to efficiency and effectiveness

Themes	Outcomes	Impact
Organisation culture	There is element of the organisational culture impeding organisational efficiency and effectiveness	Moderate culture impediment on efficiency and effectiveness process
Impact of culture to knowledge management	The organisational culture does not impede on knowledge sharing between colleagues	Very strong response supporting culture encourage knowledge creation and sharing within the organisation

In the context of impact of organisational culture on efficiency and effectiveness as well as knowledge creation and sharing (knowledge management) fig 4.3 is presented the result of data analysed.

Figure 4.3: Cultural impediment to efficiency, effectiveness and knowledge management



When organisational culture was viewed from the perspective of knowledge creation and sharing, over 80% of participants indicated (strongly agree or agree) that organisational culture encourages the creation and sharing of knowledge. 11.9% believed that the organisational culture does not encourage sharing of knowledge and that they could improve the way efficiency and effectiveness has been driven in the Nigerian public sector.

Reviewed literatures indicated that organisational culture and structure is very necessary for any organisational knowledge sharing. Result from the research survey indicated that the structure and culture in the Nigerian public sector does not impede the free flow of knowledge in the sector. The existing structure and culture which is top-down and down up may sometimes impede the way knowledge is assessed in the sector.

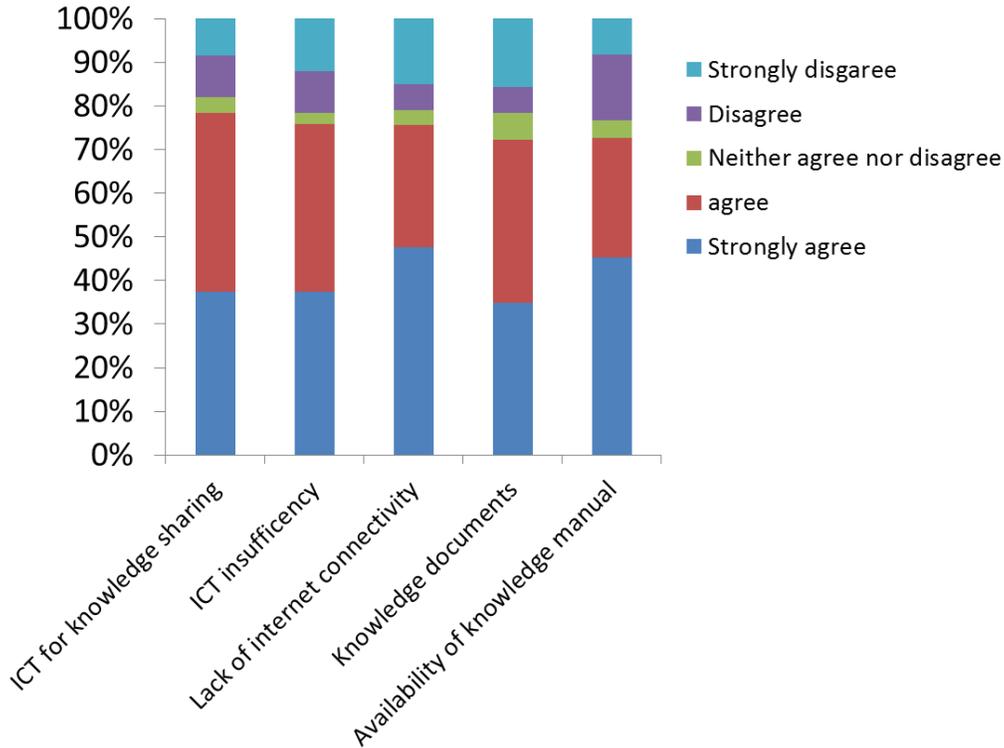
The interpretation is that there may not necessarily be a delay to knowledge assessment in the organisation due to culture, however, due to the top-down and down up structure there may be delays to assessment of knowledge which may eventually impact required knowledge as to when it is needed by personnel for task performances.

4.3.1.5 Information and Communication Technology

Most modern organisations like the Nigerian public sector are fundamentally driven by information and communication technology. This is because, Information Technology is considered as an effective factor, helper, enabler and driver for knowledge management, economic development, efficiency and effectiveness (Gurten, 2012).

In this survey, participants were asked to tick their preference on information technology sufficiency and connectivity within the organisation using 5 point Likert scale. Fig 4.4 represents views from participants on the issue of ICT integration of government business processes in Nigeria.

Figure 4.4: ICT integration to business processes and knowledge management



These results highlight that ICT infrastructure (computer and IT accessories, internet connectivity) is poor with over 76% of participants indicating that there is insufficient ICT in the state civil service to help improve effective and efficient service delivery.

ICT infrastructure is a major driver for any organisational business process. Most public service personnel that participated in the survey believed that there is insufficient ICT to support both business process and knowledge sharing in the organisation. Though, the Nigerian public sector is a document centric organisation, thus, the insufficient of IT infrastructure to support knowledge sharing and business process also impact on the efficiency and effectiveness of the Nigeria public sector.

4.3.1.6 Questionnaire: Key Findings

1. Over 60% of participants agreed that the Nigerian public sector is inefficient and ineffective in the way services are delivered to the people

2. Public sector personnel understand the concept of efficiency and effectiveness and have engaged in its measurement, with over 95% of respondents engaging in measurement.
3. There is element of knowledge management practice in place have most personnel know where and how to get knowledge for task performances.
4. The organisational structure impedes effective knowledge creation and sharing.
5. The organisational culture does not impede effective knowledge creation and sharing.
6. ICT Infrastructure is poor and impedes effectiveness and efficiency of service delivery.

4.3.2 Interview Results and Interpretation

The results and interpretation presented in this section is grounded from the information in section 4.3.2. The semi-Structured interview was used to engage senior public sector employees in discussions issues relating to efficiency and effectiveness, knowledge management and technology infrastructure. Table 4.10 provides summarised responses from the interviews.

Table 4.10: Summary of Semi-Structured Interview with participants

Questions	Summary of Responses	Implication
Responses to Efficiency and Effectiveness		
How do civil servants perceived efficiency and effectiveness?	<p><i>Interviewee: S2, S3,S6,S7,S9,and S10</i></p> <p><i>“Successful delivery of government services to the people and those who constitute the membership of Delta State civil service”.</i></p> <p><i>interviewee S1, S5, S6,S8</i></p>	<p>The responses indicate that civil servants understand the concept of efficiency and effectiveness as it concern delivery of government goods to the people.</p> <p>Inefficient and ineffective government business processes</p>

	<p><i>“Efficiency in Delta State simply refers to rendering government services on time, and effectiveness means that the service so rendered must be appropriate”.</i></p>	
<p>How efficiency and effective the Delta State public service deliver government goods to the people?</p>	<p><i>Interviewee, S3, S4, S5, S7, S8, S9 and S10</i></p> <p><i>“In Delta State efficiency and effectiveness in respect to the rendering of services to the people (individual or entities) within the context of service delivery, is very poor”. Interviewee 4</i></p> <p>However, two of the officers have the following comment on efficiency and effectiveness in Delta state public service.</p> <p>Interviewee: S1 and S2</p> <p><i>“To a large extent given the practice of public administration vis a vis availability of scare resources I can say confidently that we have been meeting our objectives effectively and efficiently”.</i></p>	<p>Poor usage of government resources to providing goods and services. This views also indicate that the public service is inefficient and ineffective</p>
<p>What are the tools and process for measuring efficiency and effectiveness in the public sector?</p>	<p>Interviewee: S1 to S10</p> <p><i>“The individual measurement uses the Appraisal Personal Evaluation Report (APER) form. The form is used in appraising individual (staff) of every ministry over a year period. It is not</i></p>	<p>There is a wide range of assessment tools available to measure the performance of both individual and the public sector in general. However, some believed that the implementation of the</p>

	<p><i>an effective means to appraise the performance of staff because it does not give room for critical assessment of a staff due to some varying influences”.</i></p> <p><i>“On the other hand, organisational performances are measured through feedbacks from the public and budget implementation (project monitoring reports)”.</i></p> <p><i>Interviewee: S1</i></p> <p><i>Again, the servicom office in my office periodically asses the output of Departments. At the state level, there is also the dashboard meetings organised by His Excellency the Governor to asses MDAs on key performance indicators (KPI).</i></p>	<p>individual assessment does not produce critical assessment result.</p>
<p>Knowledge Management responses</p>		
<p>From your time with the public sector, how have you been able to acquire and share needed knowledge to do your job effectively?</p>	<p>Interviewee: S8, S5, S10</p> <p><i>“.....the first three (3) months of your employment is usually for orientation and workshops”.</i></p> <p><i>Interviewee: S3, S4, S6, S7 and S9</i></p> <p><i>“Documents such as memos, circulars, public service rules and regulations, financial regulations etc where used to share knowledge”.</i></p> <p><i>Interviewee S7</i></p> <p><i>“Department holds regular (monthly)</i></p>	<p>This response indicates that there is an existing knowledge management structure in the public sector. However, some participants argued that the process of getting files that contains knowledge is difficult and take longer process to collect which delays efficient use of knowledge to completing a given task as at when needed.</p>

	<p><i>meetings where issues relating to ministry are discussed. In such meetings knowledge are share between staff”.</i></p> <p><i>Interviewee: S9</i></p> <p><i>“Files relating to the function of the department are kept in files in the registry; staff can call for any files and also acquire knowledge from there</i>”</p>	
Organisational Structure and Culture Responses		
<p>What is/are the impact of communication/reporting in the way knowledge is been shared in your organisation?</p>	<p><i>Interviewee: S4 and S10</i></p> <p><i>“.... the structure of the Nigerian public sector is top-down and down-top process. In the same vein, communication/reporting are also carried out in top-down and down-top format. This structure has both negative and positive impacts”.</i></p> <p><i>Interviewee: S8</i></p> <p><i>“Permit me to say here that both the organisational structure and culture has more negative impacts in way the Nigerian public sector are managed in recent times due to lack of accountability and transparency from the Government”.</i></p>	<p>The embedded meaning of most of the responses suggests that the organisational structure and culture impede negatively on task performance which evidently impact negatively on efficiency and effectiveness of service delivery in the Nigerian public sector.</p>

Information Technology Responses		
What do you think about information technology infrastructure in the public sector?	<i>Interview S4 and S10</i> “... there is lack of ICT usage in the state; however, the government of Delta State is ensuring a better ICT connectivity in the state with the implementation of “Project E-Delta” running SAP application for funds management.....”	The general belief is that there is insufficient ICT in support of government business processes. This also impact negatively on effective ways of providing quality services to the people

4.3.2.1 Summary of Semi-Structured Interview Responses

As with the results from the research questionnaire and interpretation from the information in table 4.10 the following result is formulated.

1. The Nigerian public sector is inefficient and ineffective in the way government goods and services are distributed.
2. Poor implementation of efficiency and effectiveness measurement
3. Existence of knowledge management. However, there is the difficulties of accessing available knowledge by officers within the sector.
4. Organisational structure and culture impede the free flow of knowledge
5. The study identified a lack of ICT infrastructure to business processes

4.3.3 Focus Group Results and Interpretations

This section presents the discussion with the focus group members in the Delta State public service. As with the questionnaire and interview sections, focus group discussion presented in this study covers issues relating to efficiency and effectiveness, knowledge management and ICT integration into government business processes in Nigeria. Following the discussion presented in section 4.3.3.1 and information in table 4.11 the results from the focus group discussion is formulated.

Table 4.11: Summary of results from Focus Group Discussion

Questions	Summary of Responses	Implication
Responses relating to efficiency and effectiveness		
Can everyone describe what efficiency and effectiveness mean?	<p>FG1, FG5 and FG6</p> <p>The concepts of efficiency and effectiveness are often commonly used together in the Civil Service to indicate the competencies, tactfulness, prudence and skills desired and deployed for an offices performance of duties in its timely manner”.</p>	<p>The responses from the CMT members indicated that efficiency and effectiveness has to do with providing government services to the people in an acceptable way.</p>
From your understanding of efficiency and effectiveness concept, can you say the sector deliver government goods and services efficient and effectively?	<p>FG1, FG2, FG3, FG4 FG6, FG7, FG8, FG9 AND FG20</p> <p>.....public service does not deliver government goods and services efficiently and effectively.</p>	<p>Government resources are not efficiently and effectively utilised. Overall data analysis indicates that the public sector is inefficient and ineffective in the way governments services are delivered</p>
Knowledge Management Responses		

<p>How is the knowledge in the public sector created and shared?</p>	<p>First and foremost, the participant describes what knowledge is, various forms of knowledge and how knowledge is accessed.</p> <p><i>“Knowledge includes, experience, skills, technical know-how and records created in the normal course of government business”.</i></p> <p>Process of knowledge creation and sharing.</p> <p><i>“Knowledge is shared via circular letters, having access to what have been previously done and kept in records. Sometimes we approach others to share their experiences of similar tasks in the past to help handle tasks before us”.</i></p>	<p>There is a form of knowledge management existence in the Nigerian public sector. The process of creating and sharing various form of knowledge is understood. But there is usually a bureaucratic bottle neck in access to the various form of knowledge.</p>
<p>Information Technology Responses</p>		
<p>In terms of information technology for business processes in the public sector.</p> <p>Do civil servants have access to computers and ICT related device and services in the state??</p>	<p>FG2, F4, FG5, FG8 AND FG10:</p> <p><i>“....In my opinion, computer usage in the state is a major issue that need to be address”.</i></p> <p><i>FG 6, FG1and FG8</i></p> <p><i>“..... we have very few computers in my ministry and internet connectivity is very</i></p>	<p>The embedded meaning of these responses from participants suggests that there are insufficient computers and IT accessories in all ministries of the state which need urgent attention.</p>

	<i>slow unless late in the evening”.</i>	
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4.3.3.1 Summary of Focus Group Discussion Responses

The discussion with group focused member reveals the following results:

- The Nigerian public sector is inefficient and ineffective at delivering government goods to the people.
- There is knowledge management practice in the Nigerian public sector. However, there are delays to accessing available knowledge due to the bureaucracy in the public service.
- There is poor ICT infrastructure to support business processes in the public sector of Nigeria.

4.3.4 Results from Document Analysis

As indicated in section 4.3.4, result of analysis of 22 documents collected in Delta State public service reveals:

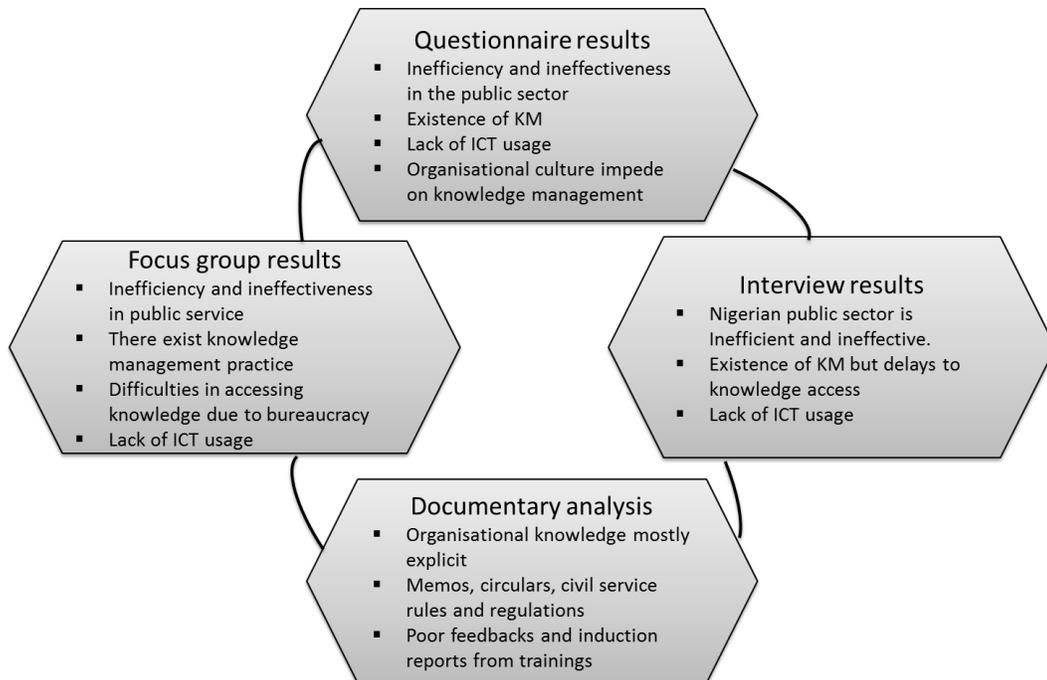
- The Nigerian public sector is a document centric organisation as such most of its knowledge is explicitly and entrenched in documents
- Working knowledge and processes are contained in documents such as memos, circulars, consultant reports and civil service rules and regulations.
- Ineffective means of training and mentorship drawn from feedbacks and induction reports

To determine the real impact of analysing documents in relation to the objective of this study, further analysis is required. See chapter six for detail discussion of analysing documents in this thesis.

4.4 Findings and Recommendations from Fieldwork-1

The analysis and results presented did not discover any new trends, confirming what other researchers (Esu and Inyang 2009; Ayanda, 2010; Ekeke 2011; Asiodu 2012) have identified in the Nigerian public sector.

Figure 4.5: Summarised study results



From the questionnaire study, it was clear that public sector employees perceive that there is inefficiency and ineffectiveness in the system; however, they do not perceive that such performance issues are a result of poor knowledge access and management.

The result from the semi-structured interview indicated that there is knowledge management practice in the state public service in the Nigerian public sector. However, senior staff believed that the bureaucratic bottle neck in the public sector impacts on officers' access to the various form of available knowledge.

In the focus group, all participants (from the Change Management Team) understood the terminology “efficiency and effectiveness”. However, personnel acknowledged that there is inefficiency and ineffectiveness in the service. In terms of ICT, participants agreed that there is insufficient ICT infrastructure for driving government business process in the state public service.

4.5 Summary

This chapter presented the analyses and results this empirical study using 1) Questionnaire; 2) Semi-Structure Interview 3) Focus Group and 4) Document Analysis for data collection in the Delta State public sector.

The study focused at the perception of personnel on organisational efficiency and effectiveness, opportunity to get knowledge, impediment of culture and structure on the way knowledge can be efficiently and effectively share and information technology infrastructures. The result of the study indicated that the Nigerian public sector is inefficient and ineffective in the way government services is delivered, that there is an existence of knowledge management but poor access to knowledge due to bureaucracy in the sector. Further analysis reveals that the organisational structure impedes the free flow of knowledge sharing; however, organisational culture does not necessarily impact on knowledge between organisational staff. The study also reveals that there is a lack of ICT and poor ICT usage in the Nigerian public sector.

Finally, the result that have been presented in this chapter provides the research opportunity to further explore whether the right knowledge are been drawn by civil service staff during task processes. To further achieve the objective of this thesis, the next chapter is dedicated to auditing knowledge within task processes in the Nigerian public sector using Delta State as a case study.

5 Chapter Five: Fieldwork 2: Analysing Knowledge User Tasks

This chapter focuses on the use of Task Analysis to identify key knowledge in the various task performed by civil servants in the Nigerian public sector. It is believed that key knowledge is required if organisation is to succeed in its business processes. This is because; key knowledge effectively influences individual performance in an organisation (Muhammed, Doll and Deng, 2011). Therefore, exploring key knowledge in the various task performed by officers of the civil service provides a unique opportunity towards understanding where specific knowledge is located within tasks.

The objective of this chapter is to present the results of fieldwork identifying embedded knowledge areas within tasks performed by staff of the Delta State public sector. Data was collected using Task Walkthrough (TW), Observation and Interview and analysed using Hierarchical Task Analysis (HTA) and Swimming Lane Sequence Diagramming (see chapter 3 for details of these instruments and techniques). Results identify that there were knowledge gaps in most task processes, most knowledge in use are obsolete and there were unnecessary and bureaucratic procedures that causes delays to many business processes within the public service.

To achieve the objectives of this empirical study, this chapter is sectioned into the following:

Section 1: This section outlines the research focus drawing on the two key issues of task processes and embedded knowledge within tasks.

Section 2: This section presents participants as well as their selection and various instruments used for the data collection. The procedure for data collection is presented noting description and practical task performance by participants.

Section 3: In this section, data preparation and analysis is presented. This includes the application of Hierarchical Task Analysis (HTA) and Swimming Lane Sequence Diagram to uncover knowledge within the task processes.

Section 4: The results of this study are presented in this section. And the chapter ends with a summary in section 5.

5.1 Focus and Purpose of fieldwork 2: Analysing Knowledge User Tasks

This fieldwork was developed in response to the perception of public service staff on the issues of efficiency and effectiveness in the Nigerian public sector. The perception (detail in chapter 4) of the public service staff indicates that the Nigerian public sector is inefficient and ineffective at delivering government services to the people.

Fieldwork-2 aimed to explore operational Process (task) in the Nigerian government sector. Process in this context can be taken to be series of tasked perform in an organisation with an expected end result. To this end, fieldwork-2 has two main focuses:

- To understand embedded task processes: the underpinning concept of understanding task processes will normally provide insight into validating knowledge in a given task processes.
- Identification of embedded knowledge within task processes: The focus on identifying embedded knowledge area within task processes in the public service of Nigeria is to provide an opportunity to generate or update knowledge in relation to task processes.

The results is to provide baseline measurement and increased our understanding on how public service staff in the Nigerian public sector access and use available knowledge in relation to government business processes and or services to be provided.

5.2 Participants

Based on a previous memo sent to all ministries by the Head of Information Systems, Directorate of science and technology, Delta State, soliciting the cooperation of all personnel to participate in the various empirical studies for this research, a reminder call was made to the nine participants. This was to ensure that participants were still willing and ready to participate in the selected study.

The participants were purposefully selected from nine ministries coded: M1, M2, M3, M4, M5, M6, M7, M8 and M9 from the Delta State public service. The participants are Directors

who have served in the public service for over twenty years and hold a university degree. The consideration of these personnel was based on their years of experience, knowledge of job functions (selected task in section 5.3), and ability to respond to questions that may be put forward during the session.

5.3 Procedure for Data Collection

In line with collecting relevant data towards understanding task processes and identifying knowledge in performed tasks, the session with each participant was divided into two sections. Each session lasted between one to two hours. The engagement on task description with the participants took place during office hours (8am – 4pm).

To ensure that data relevant to this study is collected, four tasks across nine ministries in the state public service of Delta State were purposefully selected as indicated in table 5.1

Table 5.1: Summary of tasks selected for this study

Task	Description/rationale
Ministerial tendering	<p>The Nigerian public sector is a service oriented organisation. Again, most projects that are executed go through contractual process and the ministerial tendering committee must vet such contract.</p> <p>The tendering committee task includes the contract bidding process, evaluation of contractor qualification, and approval of contractor for each ministry. These activities require some knowledge which officers are to access internally.</p> <p>To ensure the relevant data is collected, the Director of Planning, Research, and Statistics from the ministries Housing, Environment, Works, Science and Technology and Works were interviewed.</p> <p>The end result of this task is to award a contract that can provide a service on behalf of the Nigerian government to the people.</p>
Purchase requisition	<p>A purchase requisition is usually in response to organisational need. All ministries like any other organisations usually have specific need relating to their business processes. Sometimes procedural processes follow to satisfy ministry needs, however, the procedures also have embedded knowledge. Therefore, to be effective</p>

	<p>in procuring needs knowledge as well as a procedures involved need to be up to date and relevant.</p> <p>During the data collection for this task, the Administrative Directors of the ministries of Health, Education and Water Resources were interviewed.</p> <p>The expected result of this task is the procurement of tangible product to units, departments and or ministries.</p>
Payment process	<p>All contracts either by direct execution (internal staff) or contract with other organisation must be paid for. Payment to any forms of business requires essential procedures and knowledge. Effective payment systems with required knowledge provides a healthy environment to ensure trust between the government and contractor maintained.</p> <p>Data for this task was collected from the Director of Finance and Payment, (Accountant General Office: Ministry of Finance)</p> <p>The end result of this task is for government to pay for goods and services offered to her by contractors</p>
Budgeting	<p>The purpose of this task is to understand, analyse and present grounding in ministry and state budgeting in the Delta State public service. It is designed to help understand the concepts, procedures and knowledge. The understanding of this task is to enable the opportunity to analyse the budgeting process in the ministries to see whether the process is efficient is based on the overall knowledge application.</p> <p>Chief Executive Officer (Economic Intelligent Unit: ministry of Economic Planning) was interviewed for this task.</p> <p>The result of this task is to plan and present an acceptable budget to cover for government expenditure in a year.</p>

Each session with the participants begins with a brief on the objective of the study as well as the issue of confidentiality of information. Data from the sessions were collected using Task

Walkthroughs, Semi-structured Interview and Observations of participants engaging in tasks. Data collected was recorded with an audio tape recorder, transcribed and analysed.

As an example, the ministerial tendering task was chosen to be included in this thesis. This is because it is central to most key government business processes. It provides accountability as well as checks and balance from the perspective of service rendered to the government and services rendered on behalf of government.

Section 1: Semi-structured Interview

Participants engaged in the first session involving a semi-structured interview. They were asked to briefly describe their background and the tasks usually performed, including the responsibility of their department and ministry represented. Table 5.2 highlight questions engaged in during the interview session:

Table 5.2: Summarised engagement with participants in session 1 of interview

Themes	Questions	Rationale
1. Background	Sir, can you describe your background including your education and official rank?	To understand the level of knowledge of the participants with regards to effectively describing task processes in section 2
2. Function of the ministry, department and unit	Can you describe the general function of the ministry including your department and unit?	To have a general understanding of the function and responsibilities of ministries, departments and units.
3. Participant functions	Sir, can you briefly talk about the general functions you perform for this ministry?	This question is to provide understanding of the various function perform by participants in a particular ministry

Section 2: Task Walkthrough

In this section, each participant was asked to describe a particular task as highlighted in question number 3 of table 5.2. The participants then performed the task, explaining their activities with data collected using task walkthroughs and observations of participants engaging in tasks. See table 5.3 for summarised section with the participants.

Table 5.3: Summary of engagement with participants in session 2

Themes	Questions	Rationale
1. Participant's list of tasks and or functions	Sir, are the task highlighted in question specific to you in this ministry or general to all Directors in other ministries?	This aspect of the interview is to understand the various functions that is either specific or general to all Directors in similar department in other ministries.
2. Task process (e.g. Ministerial Tendering)	Can you describe the ministerial tendering process in your ministry?	This is to provide the opportunity to access embedded processes within a given task (ministerial tendering)
3. Task duration	In your opinion, how long does it take to complete the ministerial tendering process at the ministry level?	To enable the estimation of the time taken in days to complete a given task
4. Task actors	In a task like the ministerial tendering processes, how many personnel or offices (units and departments) are involved in such task?	This section is to estimate the number of people that participate in a given task

As indicated in chapter one the Nigerian public sector is a tripartite organisation with a similar system of administration and management, so also within a state public service, all ministries perform similar functions based on similarly defined policies by the state (Ekeke 2011; Esu

and Inyang, 2009). This implies that, each ministry is structured in a similar pattern allowing functional process to be carried out across ministries in the same format. Thus, the tasks highlighted in table 5.1 are carried out in a similar fashion across the nine ministries selected for the study. In terms of knowledge for managing any given task, the indication from the sessions with the participants shows that the same knowledge is accessed and applied across tasks.

5.4 Analysis Approach

This fieldwork investigates embedded knowledge within task processes in the Delta State public service. Data from task walkthroughs and observation were analysed using a Hierarchical Task Analysis (HTA) and Swim Lane Sequence diagrams (SLS) sections 3.6.3 and 3.6.4 of methodology chapter. The adoption of the HTA and SLS techniques for the analysis of data collected in this study is to enable the identification and understanding of knowledge embedded within task processes.

All data collected through interview and observations with participants were first transcribed. The transcribed data were deconstructed to reflect the processes in task described by participants using symbols, notations, tables and results were presented in a bulleted descriptive form.

Standard notation symbols were used to represent the interpretation, communication process and the various units and individuals that are involved in a given task see fig 5.1. Furthermore, the processes in the task were represented with numbers in order to which operations in the task were carried out. Thus, processes 1.0, 2.0, 3.0 describe the main process in a task while 1.1, 1.2 or 1.3 represent sub-process in task 1.0. This labeling format made visible the hierarchy with which task processes occur.

5.4.1 Using HTA to Understand Task Structure of Tendering Processes

As indicated in section 5.3, the ministerial tendering process is selected to be included in this thesis. Accordingly, to illustrate the approach used for analysis, from data collected, the following themes emerged from the discussion with the Director of Planning, Research and Statistics (DPRS), Ministry of Environment on Ministerial Tendering process.

1. **Need analysis:** This include the identification of a project to be executed or service to be rendered by a ministry
 - Define and analyse need with its benefits
 - Funds availability: Check funds availability
 - Memo for the required need
 - Get approval for need execution
2. **Bidding preparation:** Prepare tendering information including; need specification, terms and condition for project execution and advertise bidding
 - Request for bidding
 - Receive bidding
 - Bidding evaluation
 - Pre-qualification selection
3. **Bidding Decision:** Decision is made based on the report from the bidding committee and the best fit contractor is approve to execute the project
 - Approve a contractor
 - Notify all contractors of the bidding outcome
 - Notify winner of outcome
 - Close task

5.4.1.1 Need Analysis

This research uses HTA to further analyse the elements in the ministerial tendering task. Although the main elements of ministerial tendering are highlighted above, several relevant sub-elements were identified which guided the development and our understanding of the task

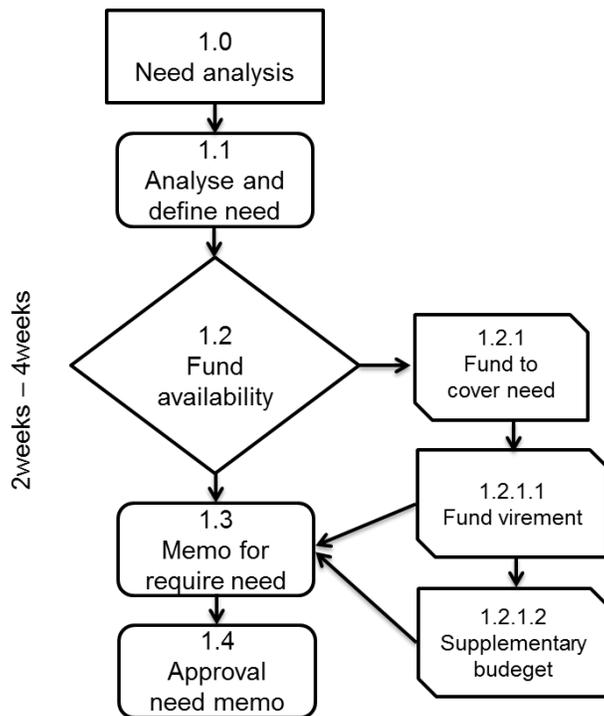
processes. As a general perspective, need must be identified before the tendering process task can be carried out. The inherent elements of need analysis in the tendering process task are highlighted in table 5.4 and a further decomposition of sub-element is presented in fig 5.4.

Table 5.4: Summarised need analysis elements

Task Number	Task Descriptor	Explanation
1.0	Need Analysis	This represented identification of a need to be satisfied or project to be executed
1.1	Define and analyse need with its benefits	Identify and define the benefits of need. Define need specification based on previous experience or current requirement
1.2	Funds availability	Check whether fund is available for the need in the current year budget
1.3	Memo for the required need	Raise a memo detailing the need, benefits, specification, cost implication and availability of fund
1.4	Get approval for need execution	Get approval from the Honourable Commissioner of the originating ministry. If need not approve begin the process from “need identification column” or where necessary else need cannot be met in the current year. Close process

To illustrate the task structure of need analysis in table 5.4, an HTA diagram is presented in fig 5.1.

Figure 5.1: Decomposing Need Analysis using HTA



The fig in 5.1 illustrates our understanding of the processes within need analysis task of the ministerial tendering process. As depicted in 5.1, task 1.2 is further decomposed to show critical sub-elements for funds availability. The sub-element 1.2.1.1 and 1.2.1.2 may not necessarily be the case if there are earmarked funds for a given project in a current year.

To further our understanding of the duration for the task, all participants submit that government period in completing the need analysis task is 2 – 4 weeks. However, this is not usually the case as the duration for this task extends up to 24 weeks as a result of the challenges faced by officers in accessing and creating funds for a given project. The challenges can be traced to the bureaucratic nature of the civil service and process duality.

5.4.1.2 Bidding preparation

The procedure for tendering and awarding of contract in Nigeria public service is governed by the Treasury Circular letter with Reference No. A5 and B5/2001 dated 30th October 2001 and that of Process Certificate of Contract and Finance Circular letter Ref. No. F.15775 dated 27th June, 2001 for ministries, Agencies and Parastatals of the Federal Republic of Nigeria. These

two circulars define the processes and actualisation of contract award processes. In terms of knowledge for the bidding process, the two documents holds knowledge required knowledge which is usually referenced by all staff. Though, most of the knowledge in these circulars still relevant, however, as expected, knowledge evolves with organisational need, people and environment.

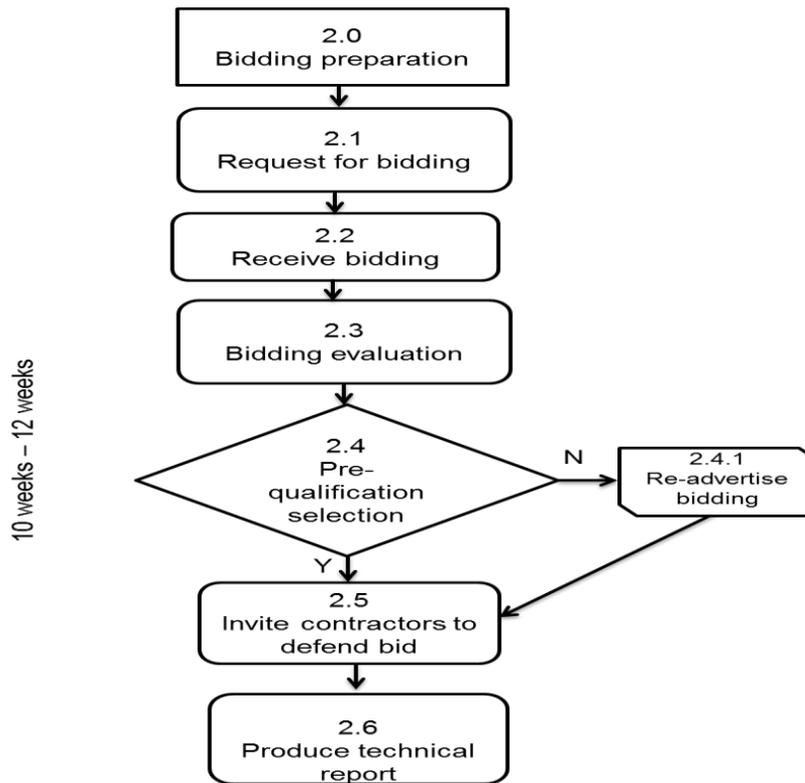
In analysing bidding preparation, themes in table 5.5 emerged from the discussion with the participants:

Table 5.5: Summary of bidding preparation and documentation

Task Number	Task Descriptor	Explanation
2.0	Bidding preparation	This task highlights the activities and documents detailing the terms of project reference for an identified project to be executed.
2.1	Request for bidding (Advertise project)	Request for bidding from the public providing details for the project and end date for bidding.
2.2	Receive bidding	Receive bidding documents from contractors
2.3	Bidding evaluation	Check all contractors documents to ensure conformity to standard
2.4	Pre-qualification of contractors	A pre-qualification letter is sent to three selected contractors. Announcement is also made for the bidding closure. If 3 contractors cannot be selected then re-advertisement for bidding is placed.
2.5	Invite contractors to defend bid	This section entails that the three selected contractors are sent bidding certificates to bid for the contract and subsequently interview for the project being bid for.
2.6	Technical evaluation and report	Technical report on the three selected bidders after interview and subsequent recommendation for approval

To further our understanding in table 5.4 on the activities on bidding preparation and documentation, the HTA in fig 5.2 highlight processes and sub-elements as well the period of time it takes to complete the aforementioned task.

Figure 5.2: Bidding preparation and documentation using HTA



The data in fig 5.2 has been sorted in hierarchical form to illustrate embedded processes within bidding sub-element of tendering task. Each of the boxes within the structure is a sub-element with embedded task processes. The sub-task processes in 2.1, 2.2 and 2.5 are procedural processes and do not required any form of additional knowledge.

A critical analysis of the sub-task in box label 2.3, 2.4 and 2.6 required committee members having the capability (knowledge) to review the contractor’s similar previous project to ascertain both completion and quality of such project noting technical issues in such project.

To complete the analysis of the tendering process task, the following section discusses the decision making process of the tendering process drawing on the technical report from the bidding evaluation committee.

5.4.1.3 Bidding Decision

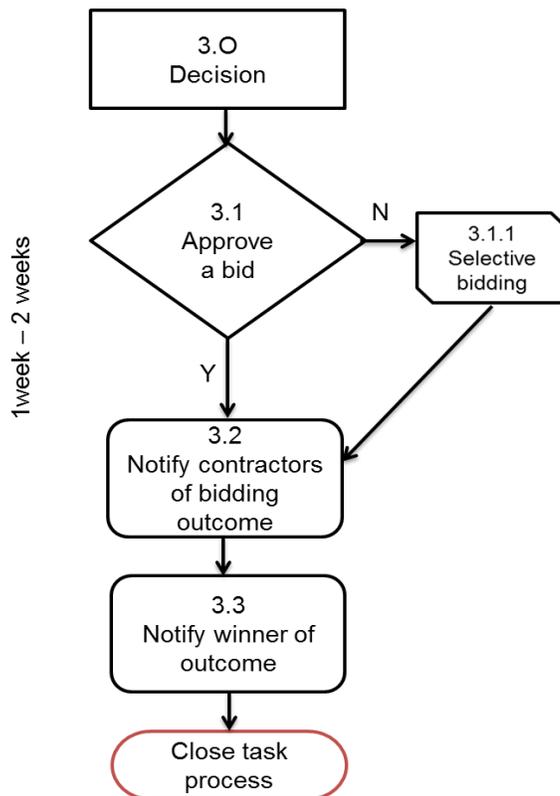
Approving the recommendations of the bidding process committee is usually given by the Permanent Secretary (PS) who is the Chief Accounting Officer of a ministry. The structure of the table 5.6 and fig 5.3 provide an understanding to view how decision relating to the approval of a contract to specific contractor.

Table 5.6: Summarised approval process to a bidder

Task Number	Task Descriptor	Explanation
3.0	Bid approval process (Decision)	Authority to approve the recommendation technical committee to execute a contract.
3.1	Bidding evaluation	Check all contractors documents to ensure conformity to standard
3.2	Notify contractors of bidding outcome	This involves notifying of the three contractors of the final bidding process (the outcome)
3.3	Notify Bid winner	This requires notifying the final winner of the bidding process of the final outcome and award of contract.
3.4	Close task process	This signify the end of the task in a ministerial tendering processes

A critical analysis of the decision making process in the tendering task highlighted in table 5.6 reveals that most of the processes do not require knowledge call but do require organisational procedures. To further understand the process in the decision making process, the HTA schematic in fig 5.3 present further explanations of the processes during decision making during ministerial tendering processes.

Figure 5.3: HTA of decision making in a typical ministerial tendering process.



Under the context of embedded processes, the activities in boxes 3.2 and 3.3 are mainly organisational procedures. The activities are based on sending a formal letter of the outcome to the various contractors which the organisation already has the format to rely on.

Under the context of knowledge, the activity on box 3.1 requires some element of knowledge from the approving authority before approval can be given. Though, most of the knowledge within this activity may have been provided in the need analysis section and technical reports from the evaluation committee. However, this activity requires that the approving authority should have knowledge to check the details provided.

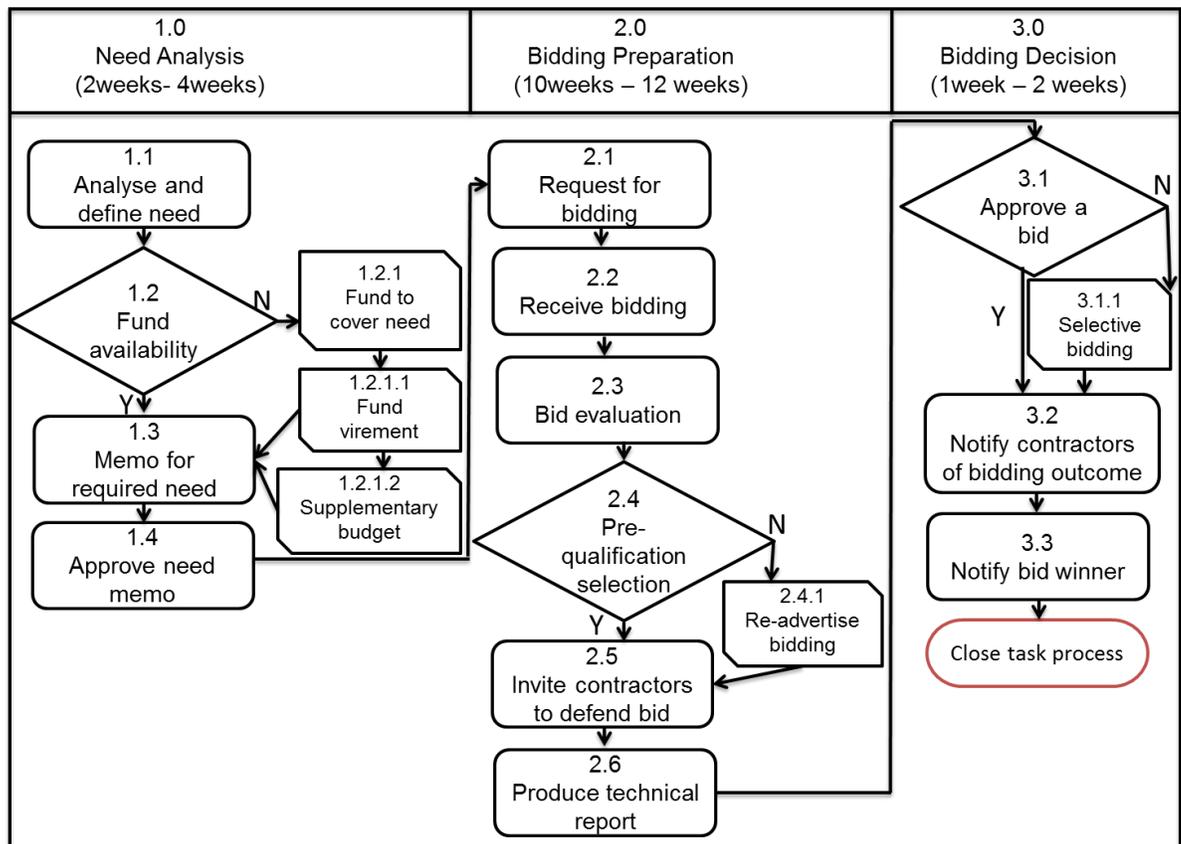
As indicated in fig 5.3, box 3.1 is further decomposed to provide clarification on the decision to approve recommendation or not. For example, if the PS is not satisfied with some aspect of the contractual recommendation from the evaluation committee, he may decline the approval of the contract. In this case, a selective process of contract award is adopted. In the selective process only the committee headed by the PS is required. A critical analysis of the selective

process award of contract reveals that the members of the selective process committee do not necessarily require higher knowledge to review and approve a contractor. The approval is usually based on previous relationships between the contractor and the ministry through similar project executed by the contractor.

5.4.1.4 Summarised understanding of Task Structure of Tendering Processes using HTA

One of the aims of the empirical study 2 is to understand the embedded processes in some selected tasks within the public sector in Nigeria. Data was collected through Task Walkthrough and Interview methods. To understand the task processes data collected was transcribed and analysis using HTA as summarised in Fig 5.4.

Figure 5.4: Ministerial Tendering process using HTA



The structure in fig 5.4 has broadened our discussion and understanding of task processes of government ministerial tendering task. In the HTA task structured, the flow of processes is

top-down reflecting that the hierarchy activities were performed. Within the main task (e.g. need analysis, bidding preparation and decision) processes there were sub-elements that were constructed to show all activities in the main task. For example, the decomposition of task 1.2 into 1.2.1, 1.2.1.1 and 1.2.1.2 further provides an opportunity to understand the embedded knowledge within task 1.2. With task decomposition of this nature, it becomes visible to trace knowledge areas in the ministerial tendering task.

As mentioned in section 5.3, four tasks were chosen for investigation in relation to understanding task processes and embedded knowledge in the government sector business processes. It is noteworthy to highlight here that the four chosen tasks were structured, decomposed and analysed in a similar approach using HTA in fig 5.4. Having completed and understood task processes in the ministerial tendering task using HTA, the next section provides an opportunity to analyse and trace embedded knowledge in a ministerial tendering task using SLSD.

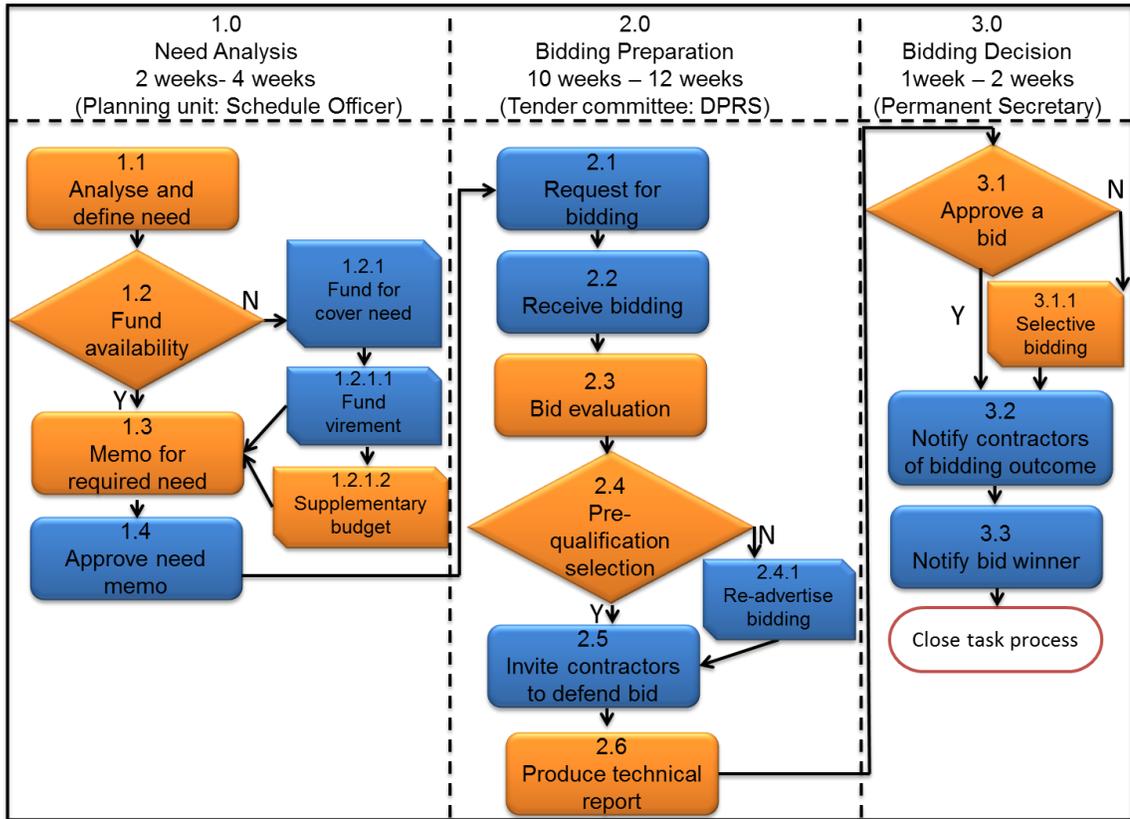
5.4.2 Using Swimming Lane Sequence Diagram (SLSD) to Identify Knowledge in Tendering Processes

This section focuses on identifying embedded knowledge areas in the ministerial tendering process task. As a start, the fig in 5.4 was further reviewed focusing on potential knowledge areas using the Swimming Lane Sequence Diagram technique (SLSD).

To achieve the objective of identifying the knowledge area, tasks and sub-tasks are broken down and represented by boxes as indicated in fig 5.4 reflecting the way processes were carried out. Based on the interview question, each participant performed task specifications using the boxes in the HTA structure as a guide. This provides the opportunity to make visible knowledge areas in task been perform by participants using SLSD.

In line with the analysis structure in fig 5.4, the analysis of task using SLSD begins with categorising the main task (e.g. Need Analysis) and its associate sub-elements into units separated by dotted lines as swimming lanes. The swimming lanes help to streamline and organise task by purpose and sequence of how each task as actioned (see fig 5.5).

Figure 5.5: Identification of knowledge area through SLSD



Key

Orange colour: Knowledge area
Blue colour: Procedure area

The next stage in the analysis is to identify which personnel are responsible for which activity. For this research, unit and department were used to represent individuals. This is because there is more than one individual performing several similar activities across each task. Therefore, adopting unit and department reflect the action of individuals. However, the approving authority (Permanent Secretary) performs function across all units and department in a ministry. The office of the Permanent Secretary in the Nigerian public sector perspective is not classified as a department but as the Chief Accounting Officer for all units and department in a ministry.

Having categorised all activities within the task analysed, colours are then used to separate knowledge areas and procedural areas. As indicated in fig 5.5, the orange colour identifies an area with knowledge areas while blue colour boxes represent areas with procedural actions. From the understanding gained using SLSD for task analysis in fig 5.5, table 5.7 presents further information about the types of knowledge applied during task processes.

Table 5.7: Knowledge area within Tendering Task Process

Knowledge area number	Knowledge area descriptor	Type of knowledge found
1.1	Analyse and define need	<ul style="list-style-type: none"> ▪ Analytical ▪ Costing
1.2 1.2.1.2	Fund availability Supplementary budget	<ul style="list-style-type: none"> ▪ Financial management
1.3	Memo for need required	<ul style="list-style-type: none"> ▪ Secretarial
2.3	Bid evaluation	<ul style="list-style-type: none"> ▪ Technical
2.4	Pre-qualification selection	<ul style="list-style-type: none"> ▪ Analytical ▪ Technical ▪ Costing
2.6	Produce technical report	<ul style="list-style-type: none"> ▪ Technical ▪ Secretarial
3.1	Approve a contractor bid	<ul style="list-style-type: none"> ▪ Management ▪ Financial management ▪ Technical ▪ Costing
3.1.1	Selective bidding	<ul style="list-style-type: none"> ▪ Management ▪ Financial management ▪ Technical ▪ Costing

Similar to fig 5.5, table 5.6 presents information on knowledge areas and types of knowledge found in ministerial tendering task within the Nigerian public sector. Since one of the objectives of this study is to identify embedded knowledge areas in task processes, the result for the study 2 can then be formulated based on the *'types of knowledge found'* column.

5.5 Results from Walkthrough and Observation of task with participant

In this study, four tasks were selected for investigation. Data was collected through task description based on Task Walkthrough and Observation techniques. Results were measured around embedded task processes and knowledge within the task processes.

Similar to data in fig 5.5 and table 5.7, all four tasks (ministerial tendering, purchase requisition, payment process and budget process) analysed were found to have similar results centred around:

- Knowledge gaps in task performed
- Obsolete of knowledge in task performed
- Existence of Guess Knowledge
- Common processes performed across various officers in a ministry

5.5.1 Discussion of results

5.5.1.1 Knowledge gaps in task performed

As earlier mention in chapter one that the Nigerian public sector is a document centric organisation where most of its knowledge is entrenched in documents (see public service rules reversed edition 1st July, 2001 and 1st September, 2009). However, it was observed during study 2 that public service staff mostly times depends on implicit knowledge for task performance. The application of implicit knowledge in some task processes is mostly based on guess knowledge depending on the task and circumstances.

Against this backdrop, data analysed through HTA and SLSD reveals gaps in knowledge in all four tasks explored. The gap in knowledge is as a result of staff depending on guess

knowledge in performing task processes. One possible explanation to this is either the required knowledge is missing or incomplete. A review of the structure in fig 5.5 (orange boxes) and the information in table 5.7 (knowledge area descriptor and types of knowledge found columns) identified areas with knowledge gaps:

The implication of guess knowledge in task processes by the Schedule Officer is provision of inaccurate information to a project execution from the beginning. This is as a result of the Schedule Officer who originated the memo for the execution of a specific project lacks or do not have access to required knowledge to provide explicit information for approval by the Tendering Board Committee. This lack of required knowledge is evident in the empirical study spread across officers that are stakeholders in the execution of projects in the state.

5.5.1.2 Obsolescence of knowledge in task performed

The demand for public goods in recent years has put management of public sector organisations under-pressure. This is because the needs of the people are evolving along with economy and way of life. Thus, to meet the needs of the people, public sector organisations like the Nigerian public sector knowledge driven processes must also evolve. To achieve this, required knowledge to meet the objectives of the sector must be generated and distributed to all stakeholders in the public sector.

One of the results of the study 2 was the identification of obsolete knowledge within task processes. This can be traced to staff applying old knowledge to task processes. Though, organisation knowledge across ministries in Nigeria is updated through circulars and memos. However, it was observed in this study that available codified reference knowledge document (civil service rules) were last updated in 2001. Therefore, any knowledge drawn from this document and other related knowledge documents is bound to produce inefficient and ineffective outcomes. This is because the knowledge need for business processes is evolving and organisations need to devise means of updating available knowledge sources regularly.

5.5.1.3 Guess Knowledge

The terms; guess, presume and assume are synonymously used in management, education and law literature (Cooper, 1951). Assume is supposedly taking something to be true which may

not be true. Presume refers to something individual thinks to be true which again might not be true. And guess is defined as assuming to be true when you cannot actually ascertain whether it is correct or not. For this study, guess in relation to knowledge will be use rather than assume and presume in elucidating part of the empirical findings from Analysing Knowledge User Task (knowledge audit).

What is Guess Knowledge? Guess Knowledge is a tacit knowledge in nature. Guess Knowledge (GK) is a term crafted to describe intuitive individual knowledge not gazette or documented as part of organisational working knowledge. As a working definition specifically for this study, *“Guess Knowledge is defined as the “skills or expertise that exists within individual mind presumed to be accurate or correctly applied for a given task”*.

The premise for managing knowledge is to make available organisational knowledge that is relevant and completely accurate for solving problems or improving organisational working processes (Schiuma 2012). In this context, guess knowledge is individualistic, tacit in nature and as such difficult to codify or transmit. It is a presumed knowledge that is not validated and particular to a given task but drawn upon by individual when organisational knowledge is not available.

To date, however, the study of knowledge such as guess knowledge as describe above context remains largely unexplored. In line with Cerne et al. (2013) study of what goes around comes around: knowledge hiding, perceived motivational climate and creativity, the use of guess knowledge occurred as a result of knowledge hiding that prevents individuals from using accurate organisational knowledge.

Knowledge hoarding or hiding exist in many organisation according to (Hansen, 2011). This assertion is further echoed by Cerne et al. (2013) when they conclude in their study that knowledge hiding is present in many organisation and have negative impact in organisational motivation, creativity and capability to perform. In the same context, guess knowledge occurs in many organisations as a result of knowledge hoarding or hiding by organisational members. The implication of using guess knowledge therefore, is that, as individuals apply knowledge (guess) that has not been verify or ascertained to be accurate to organisational business

process and the implication may not be beneficial to the overall organisational objectives because wrong (guess) knowledge are sometimes drawn for task processes.

In part, this study empirical audit knowledge within the Delta State public service task processes and observed that there are knowledge gaps within task performed by staff of the staff. Findings suggest in part that the reason why there are knowledge gaps is that officers have difficulties in accessing existing knowledge as at when needed as such; officers have to rely on other means to get knowledge required for their task. In this context, officers sometimes rely on guess knowledge in order to achieve their task objectives.

As a final remark, guess knowledge is the knowledge presumes to be correct without the possibility of its certainty. Furthermore, it was observed fieldwork 2 of this study that guess knowledge exist within the public service of Nigeria like many other organisations. The rationale for the use of guess knowledge is grounded on the fact officers of the public sector in Nigeria not having access to required knowledge as at when needed. Finally, it was evident in fieldwork 2, the study by Cerne et al. (2013) and Cooper (1951) that using guess knowledge in organisational business processes or task are more of negative impact than positive because it is individualistic and unvalidated knowledge drawn upon when performing their task.

5.5.1.4 Common processes performed across various officers in a ministry.

The discussion and observation of tasks performed by staff of the Delta State public service during the empirical study in fieldwork2 presented in this chapter indicated that there are commonalities in most tasks performed by officers of the state public service in Nigeria.

The implication of the commonalities in job functions in the state public service is that there will be delays to task completion. The delays could impact on the way government services are delivered. Therefore, there is need to review current task processes within the state public service. The review and update of task processes would also have correspondence impact in knowledge required across a range of task within units rather than multiple staff performing the same task using the same knowledge.

5.6 Implication of study

The nature of this study been the first to access knowledge areas in task processes in the Nigerian public sector and has three main implications.

- Knowledge review and update: The main implication of this study is fundamentally to provide ways of addressing knowledge gaps and obsolescence within task processes in the Nigerian public sector. Furthermore, the identification of knowledge areas in the task selected for this study will provide the foundation from which knowledge gaps and obsolescence can be addressed through knowledge creation or updating of the existing knowledge pool.
- Process review and update: The study has deciphered task processes in some government business processes in Nigeria. The understanding gained from the various task analysis and results can provide the foundation to re-evaluate and update task processes with a view to improving task process efficiency and effectiveness.
- Reduce delays in task process: It was observed that there is duplication of process across multiple staffs that cause delays to task completion. With the findings of this study, duplication of process can be reduced and replaced with required knowledge since staff access similar knowledge in carrying out task processes.

5.7 Summary

The main focus of the current research is to investigate whether improvement to efficiency and effectiveness in the Nigerian public sector can be achieved through knowledge management practices. Based on this objective, fieldwork-2 has investigated four task processes with a view to identifying embedded knowledge within the tasks.

This chapter presents the result of the use of Task Walkthrough and Observatory method of data collection and analysed through Hierarchical Task Analysis and Swim Lane Sequence Diagram. This result has provided the opportunity to identify various knowledge artefacts within tasks performed by civil servants in Delta State public service. The identify

knowledge at this stage is important because it provides the foundation towards the Strat-KM framework design.

The result is clearly an indication which suggests task processes are inefficient and ineffective in the Nigerian public sector. The result provides an opportunity to update or regenerate required knowledge, review and improve task processes if the Nigerian public sector is to be more effective and efficient in the way government goods are delivered.

6 Chapter 6: Fieldwork 3: Towards identifying Sources of Inefficiency and Ineffectiveness in the Nigerian Public Sector

The chapter explores sources of inefficiency and ineffectiveness in the Nigerian public sector from organisational and individual perspectives. The sources of inefficiency and ineffectiveness are considered to be the start point (origin or beginning) at which inefficiency and ineffectiveness set in an organisational business processes (Ekpe et al. 2013). In this exploration, these sources can be seen to be related to the knowledge gaps in most of the tasks and services provided by government agencies in Nigeria. Results presented in this chapter are drawn from data collected through contract execution documents and diary filling by personnel of the Delta State public service.

To further our understanding of this study, this chapter is discussed under the following sections:

Section 1 presents the focus of the study from both organisational and individual perspective through analysis of organisation's document as well using a diary for accessing individual distraction.

Section 2 presents the assessment of organisational sources of inefficiency and ineffectiveness. The method for data collection involves the use of a Documentary Analysis approach, this was adopted to review projects documents from 2005 to 2013 in the Delta State public service.

Section 3 details the process of exploring potential sources of inefficiency and ineffectiveness from an individual perspective focusing on personnel interference (distraction) during official hours. Diary method of data collection was adopted for the exploration of individual sources of inefficiency and ineffective.

Section 4 discusses mode of data analysis. The main analysis techniques adopted in this study is the Content Analysis (CA) techniques. To advance the CA method of data analysis for this

study, numerical metrics are development and applied for data management specific to this study.

Section 4 details results from the study using tables and percentages. And the chapter ends with a summary in section 5.

6.1 Focus and Purpose of fieldwork 3: Analysing Knowledge User Tasks

This empirical study is developed in response to findings from fieldwork-1 and 2. Fieldwork-1 has identified inefficiency and ineffectiveness of service delivery in the Nigerian public sector while Fieldwork-2 identified knowledge gaps obsolescence in task processed by personnel of the Delta State public service.

To address the issues of inefficiency and ineffectiveness as well as knowledge gaps in task processes in the Nigerian public sector, Fieldwork-3 is aimed at investigating sources of perceived inefficiency and ineffectiveness specific to the Nigerian public sector. To achieve this objective, fieldwork focuses on:

- Source of inefficiency and ineffectiveness from an organisational perspective: This entails exploring project management from the perspective of project executed in the Delta state from 2005 to 2013. In this regard, organisational project execution documents were analysed with the aim of identifying the start point of inefficiency and ineffectiveness in a typical project management scenario. The findings serve as a baseline measure of efficiency and effectiveness from a public sector organisation perspective.
- Identification of the source of inefficiency and ineffectiveness from an individual perspective: This focus involves exploring individual inefficiency and ineffectiveness based on various distractions to organisational staff. To explore this focus the use of diary for gathering individual data will be adopted. Findings from this section are to provide opportunity for measuring individual level efficiency and effectiveness in an organisation.

Findings from this study are to provide an overall baseline to measure sources of inefficiency and ineffectiveness in the Nigerian public sector. Furthermore, identifying the sources of inefficiency and ineffectiveness in organisational business processes is expected to provide the opportunities to demonstrate how business processes within an organisation can be re-evaluated as well as the opportunity to create and share appropriate knowledge in relation to improving the way goods and services are delivered.

6.2 Study participants

This study focuses on two key issues; sources of inefficiency and ineffectiveness from organisation and individual perspective. The organisational aspect focuses on analysing organisation documents while the individual aspect draws its data from the use of a diary by organisational personnel.

Against this backdrop, the participants in this study were purposefully drawn from the pool of Senior Staff (Grade Level 09 – 12) from four ministries in the delta State public service. The ministries selected are; Ministries of Works, Environment, Women Affairs and Tourism. The rationale for the selection of the four ministries was based on ministries from high impact services (Works and Environment) and low impact service (ministries Women Affairs and Tourism). A total of twelve personnel participated in the final phase of this study.

6.3 Method of Data collection

The Nigerian public sector is a document-centric organisation with a huge collection of documents (Ekeke, 2011). Thus, assessing organisational business processes through Documentary Analysis provides the capability of identifying potential area of the start point inefficiency and ineffectiveness in an organisation. Specific to this research, documents relating to project execution are collected and analysed.

This study focuses two main issues relating to project execution and individual distraction all of which is to access sources of inefficiency and ineffectiveness. Therefore, the modes of data collection are twofold. To access source of inefficiency and ineffectiveness from an organisational perspective, the Documentary Analysis technique was used. On the other hand, in assessing individual distractions, a Diary method of data collection was used.

6.3.1 Procedure for Data Collection using Documentary Analysis

To explore and achieve the objective of this study, various organisational documents relating to project execution were collected. To provide access to organisational documents, follow up calls were made to the Director of Planning, Research and Statistics (DPRS) of the various ministries selected. The selection of the DPRS is based on the fact that all documents relating to contract execution in the Delta State public service are usually kept in the DPRS office. The reminder calls to the DPRS was based on the initial memo from the Head of Information Systems, Directorate of science and technology, Delta State soliciting for participation of all staff during this study period.

To ensure appropriate data to justify the objective of this study, completed project documentation was purposefully selected for analysis. The documents collected and analysed are highlighted in table 6.1.

Table 6.1: Summary of document analysed

Documents collected	Description
Memo	<ul style="list-style-type: none"> ▪ The memo as a document provides detail about the project to be executed. It is the foundation on which other activities within the project is defined projects ▪ The memo details the nature of the project, the expected cost of the project and expenditure head (Vote of Charge). <p>The average page length of a memo is usually 3 to 6 pages for big projects (project value from 100 Million (£25,000.00) and above) and 1 to 2 pages long for small projects of less than a million (£4,000.00).</p>
Ministerial Tendering Approval (MTA)	<ul style="list-style-type: none"> ▪ It details the bidding process as well as approval for a project before it can be executed. Information on the MTA includes: ▪ Call for bidding from the public

	<ul style="list-style-type: none"> ▪ Technical report detailing selection of contractor to be awarded the project ▪ Cost for the project and <p>The average length of this document is between 6 to 12 pages long.</p>
Contract Award Letter (CAL)	<ul style="list-style-type: none"> ▪ Provide detailed information about the project ▪ Originating ministry ▪ Approved contractor ▪ Proposed project start date, end date, project cost and the supervising officer, department and ministry. <p>This document is usually 1 to 2 pages long</p>
Audit Certificate (AC)	<ul style="list-style-type: none"> ▪ Detail work done by contractor and amount to contractor at each stage of the project. Payment to contractor are drawn from the information on the AC ▪ AC is originated by the auditor General State. Detailing all payments due to a contractor. For the purpose of accountability this document is usually sent to Economic Intelligent Unit (E.I.U) for verification and onward payment process by the accountant General (State). <p>The audit certificate is usually 6 pages minimum</p>
Payment Advice (PA) and Payment Warrant (PW)	<ul style="list-style-type: none"> ▪ This document is originated from the office of the Honourable Commission, Ministry of Finance Headquarters advising Accountant General to pay contractor values indicated in the advice and warrant ▪ This document provides details of project cost and amount approve for payment at every stage of the project ▪ The PA is usually sent by the project awarding ministry advising the Accountant General to issue payment (cheque) to contractor indicated. <p>Based on the varieties of information on this document, the length of pages for PA and PW 12 is 12 (standard)</p>

To ensure wide spread collection of documents in justifying this study, total of twenty six completed projects across thirteen ministries was randomly selected at two project files per ministry. On the average, a project file contained between twenty three to thirty three pages. Thus, the total number of document pages collected and review is between two hundred and ninety nine and four hundred and twenty nine pages.

6.3.2 Data preparation

Documents collected at this stage were first scanned through with a view to identifying main themes relevant for this study using Content Analysis technique. To ensure data is properly managed reflecting the objective of the research; numerical values were attached to each of the identified themes using the research developed metrics. The next section present the developed metrics adopted specific for this study.

6.4 Development of Metrics for Data Analysis

The objective of this chapter is to provide a clear and tangible assessment of the sources of inefficiency and ineffectiveness in the Nigerian public sector. To achieve this objective, metrics were developed based on criteria such as; project delays, cost of a project, employee proficiency, employee interference (distractions) and contractor's satisfaction drawn from documents of typical project execution process and filling of a diary to assess individual distractions in the Nigerian public sector.

The initial consideration of metrics in this study was to access and measure the impact of knowledge management implementation in the Nigerian public sector. However, the research design did not include the implementation knowledge management practice as its deliverables; the already developed metrics were used as a means for assigning values to identified themes from documents collected. The adoption of the metrics in this context provided ease with which data was analysed. For details discussion of metrics development for this research see section 3.8.5.

To broaden our understanding of the metrics development, sub-sections 6.5.1.1 to 6.5.1.5 highlight the formulation of the metrics using mathematical formulas. The metrics

development is based on project delays, project cost, and employee's efficiency as well as interference (distraction) and contractor's satisfaction.

6.4.1 Project delays

Project delays in this research is considered to be the number of days a project is temporarily stopped which may causes later project completion date.

Table 6.2: Determining project delays

Metrics	Variables	Measurement Formula	Data Location	Unit of Measure	Purpose
Project Delays					
Delay to project start date (ΔSD)	SD_{ASP} = Approved start date SD_{ASD} = Actual Start date	$\Delta SD = SD_{ASD} - SD_{ASP}$	Document analysis <ul style="list-style-type: none"> Project approved Memo (SD_{AP}) Project inspection report (SD_{AS}) 	Days	To know the number of delayed days in a project
Delay to project end date (ΔED)	ED_{AED} = Approved End Date ED_{ACED} = Actual End Date	$\Delta ED = ED_{AED} - ED_{ACED}$	Documents Analyse <ul style="list-style-type: none"> Project approved memo (ED_{ED}) Project inspection report (ED_{ED}) 	Days	To know the number of excess days delays to the end date of a project
Deviance in project duration (ΔPD)	PD_{AC} = Approved Completion Date PD_{ACD} = Actual Completion Days	$\Delta PD = PD_{AC} - PD_{ACD}$	Document analysis <ul style="list-style-type: none"> Project approved memo (PD_{AC}) Certificate of 	Days	To know the total period in days for the project

			completion		
			<ul style="list-style-type: none"> Project monitoring report (PD_{ACD}) 		
Number of Stoppage within task in a project (ST)	ST_i = Individual noted stoppage	ST = Count number of stoppages	Document analysis Contract's logbook (ST _i)	Integer	To know the number of stoppage time within task in a project.
Overall Stoppage time within task in a project within a month (OST)	OST_i = Overall stoppage within individual task	$\sum_{i=1}^n OST_i$ $OST =$	Document analysis Project Monitoring Report by Supervising Ministry (OST _i)	Days	To know the individual length of stoppage within a task
Overall stoppage time in a project (OST _{SP})	OST_P = Individual stoppage length for a project	$\sum_{j=1}^m \left(\sum_{i=1}^n OST_i \right) j$ $OST_{SP} =$	Document analysis Project monitoring report (OST _P)	Days	To know the total amount of days lost during the life of a project

Table 6.1 provides a detailed description of metrics related to project delays. However, in the Nigerian Public Sector, information such as: number of stoppages within a task, overall stoppage time within task in a project within a month and overall stoppage time in a project

could not be obtained. This is because the project supervising ministry in Delta State public service does not record such information.

6.4.2 Project cost

Project cost includes approved initial sum of a project and any other cost incurred during the life of the project. Any other costs are cost such as: community settlement, ministerial inspection cost, and other administration charges incurred during the life of the project which were not part of the initial approved project cost. Table 6.3 details the information and computation method for project cost in our metric.

Table 6.3: Determining total cost of a project

Project cost					
Metrics	Variables	Measurement Formula	Data Location	Unit of Measure	Purpose
Approved project cost (\mathbb{N}_{AP})	\mathbb{N}_{IAP} = Initial approved project cost	$\mathbb{N}_{AP} = \mathbb{N}_{AP}$	Document Analysis (Ministerial Tender Board report and Approved project memo) (\mathbb{N}_{AP})	Nigerian currency (Naira ₦)	To know the initial approved cost of a project
Contingency cost of a project (\mathbb{N}_{CC})	\mathbb{N}_i = Individual Unplanned Cost	$\mathbb{N}_{CC} = \sum_{i=1}^n \mathbb{N}_i$	Document analysis Approved memos for cost incurred outside initial approved project cost (\mathbb{N}_i)	Nigerian currency (Naira ₦)	To know the sum of the total amount of fund incurred outside the amount approved for the project
Overall project cost (\mathbb{N}_{OPC})	\mathbb{N}_{AP} = Approved project cost \mathbb{N}_{CC} = Contingency cost of a	$\mathbb{N}_{OPC} = \mathbb{N}_{IAP} + \mathbb{N}_{CC}$	Document analysis Ministerial and State Tender Board approved memos. (\mathbb{N}_{AP} and \mathbb{N}_{CC})	Nigerian currency (Naira ₦)	To know the actual cost of a project

	project				
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6.4.3 Employee proficiency

Measuring employee proficiency is a complex issue for most organisations' management. In the Nigerian public sector, employee proficiency is considered to be the ability of personnel to carry out task assigned with the right knowledge among.

In the development of the metrics, the measurement of employee proficiency was based and calculated on the percentage of successful task an employee can completes within a certain period (weekly). Table 6.4 present a detail formulation of employee proficiency.

Table 6.4: Description of employee proficiency measurement

Employee proficiency					
Metrics	Variables	Measurement Formula	Data Location	Unit of Measure	Purpose
Employee proficiency within a task per day (EP)	EP _s = Number of task completed successfully within a day	EP = Count number of successful task per day For logbook Rating Scale =1to10 Successful task is ≥ 7	Logbook Ask employee to fill logbook daily (EP)	Integer	To know the capability of personnel in terms of the ration of task performance over a period of time.

<p>Overall employee proficiency per day</p> <p>(%OEP)</p>	<p>OEP_s = Overall task completed successful by employee within a day</p> <p>EP_T = Total number of task performed by employee within a day</p>	<p>$\%OEP = \frac{EP_s}{EP_T} \times 100$</p> <p>Where:</p> <p>Successful task =</p>	<p>Logbook</p> <p>Ask employee to fill logbook</p> <p>(OEP_s and EP_T)</p>	<p>Percentage</p>	<p>To know the ability of employee in completing task successfully</p>
<p>Organisational proficiency (Based on Ministry projects)</p> <p>(%OP)</p>	<p>P_s = Successful Projects</p> <p>NP_T = Number of project executed</p>	<p>$\%OP = \frac{SP_s}{NP_T} \times 100$</p>	<p>Document analysis Organisational level</p> <p>Department of Statistic, Ministry of Economic Planning and Auditor General State</p> <p>Individual level</p> <p>(Annual Progress Evaluation Report: APER)</p> <p>(P_s and NP_T)</p>	<p>Percentage</p>	<p>To know the percentage ratio of successful or failed project executed over a period of time</p>

It is worthy to mention here that employee proficiency in this study from the Nigerian public sector context could not be measure. This is because the organisation (the Nigerian public sector) does not usually keep record of any individual unsuccessful task for future references.

6.4.4 Employee interference (Distraction)

In an organisational environment, there are two categories of interference or distractions. First is the internal distraction (from colleagues, personal emotion, physical discomfort.) and the other is the external distractions (friends, family, social media, chatting). This aspect of the metrics provides the understanding to evaluate the impact of both the internal and external interferences as detailed in table 6.5.

Table 6.5: Measures of employee interference

Interference					
Metrics	Variables	Measurement Formula	Data Location	Unit of Measure	Purpose
Unwanted rate of Interference per week (UI)	$I_U =$ Unwanted Interference	UI = Count the number of Unwanted interruptions from total number of interference	Logbook Record number of interference per day for a week by an officer in a ministry	 Integer	To know the number of unwanted interference to an officer's performance within a week

6.4.5 Contractor satisfaction

The information presented in table 6.6 provides the computation for contractors satisfaction based on payment terms and the number of days contractor has to wait before payment is receive for services rendered.

In this research, satisfaction is achieved when the percentage of payment receive is between 70 to 100% and the number of wait days for payment is between 1to 30 days.

Table 6.6: Contractor satisfaction

Satisfaction					
Metrics	Variables	Measurement Formula	Data Location	Unit of Measure	Purpose
Contractor satisfaction (%CS)	RP = Number of request for payment NP = Number of Payments made	$\frac{NP}{RP} \times 100$ %CS = Where: 100% = Satisfactory OR One payment request = one payment made	Document analysis <ul style="list-style-type: none"> ▪ Invoice from contractors ▪ Request for release of fund ▪ Payment Warrant Pay advice (RP and NP)	percentage	To know the percentage of payment made to contractor from the number of request for payment made.
Payment delay days (PDD)	DRP = Date of request for payment DPR = Date of payment receive	PDD = DPRPD - DPAP	Document analysis Request for payment form and payment warrant	Integer	To know the number of wait days before payment is made

6.5 Data Analysis Approach

Data relating to project execution in Delta State, Nigeria was collected and analysed. Initial analysis identified that three of the documents collected had missing information including; no certificate of completion, while two of the projects are without payment details. As such, only twenty one documents were further analysed as detailed in this chapter.

All documents collected were first scanned through to generate values for the various variables (delay start date, delay end date, contract duration, days delay before payment and contractor satisfaction) using the metrics form in table 6.7 as an example for one project analysis.

Table 6.7: Summary of coding sheet with data values from documents analysed

Project	Description	Metrics	Variables	Unit of Measure	Project additional cost	Measurement data	Variance in Data
Construction	Rehabilitation and re-enforcement of electricity network at Umukwata and Ebedei-Unor, Ukwani	Delay to project start date (ΔSD)	SD_{ASD} = Approved start date SD_{ASD} = Actual Start date	Days		ΔSD SD_{AP} = 30-12-2011- SD_{AS} = 18-02-2012 $\Delta SD = SD_{ASD} - SD_{ASD}$	ΔSD 51 days delayed in start date
		APD = Approve project duration	SD_{ASD} = Approved start date ED_{ED} = Approved End Date	Days		APD Count: SD_{AP} 30-12-2011 to ED_{ED} = 30-03-2012	92 approved days for the project
		Delay to project end date (ΔED)	ED_{ED} = Approved End Date ED_{AED} = Actual End Date	Days		ΔED ED_{ED} = 30-03-2012 ED_{AED} = 22-08-2012 $\Delta ED = ED_{ED} - ED_{AED}$	146 days delayed to project end date
		Project duration (PD)	SD_{ASD} = Approved start date ED_{AED} = Actual End Date DPD = Delay payment date	Days		TPD Count: SD_{AP} = 30-12-2011 to ED_{AED} = 22-08-2012 $DPD = 123$	269 total number of days for the project
		$APPD_{AED}$ = Actual Project Process Duration	SD_{ASD} = Actual Start Date ED_{AED} = Actual End Date	Days		$APPD_{AED}$ SD_{ASD} = 18-02-2012 to ED_{AED} = 22-08-2012	187 days (actual start date to actual end date)

		Deviance in project duration (Δ DPD)	ED_{ED} = Approved End Date ED_{AED} = Actual End Date	Days		Δ DPD $APPD_{AED} = 187 - APD = 92$	95 days difference from project start date to actual finish date
		TPD = Total days delays in a project	Δ SD = Delay to Project Start Date $APPD_{AED}$ = Actual Project Process Duration $APPD_{APD}$ = Approved End Date	Days		$APPD_{AED} - APD_{ED} + \Delta$ SD $APPD_{AED}=187 - APD_{ED}=92 + \Delta$ SD =51	TPD = 146 total number of delay
		NOPC= Overall project cost	N_{IAP} = Initial approved project cost N_{AC} = Additional cost	Naira ₦	₦5,000,000.00k	NOPC= ₦32,999,8250.00K $N_{IAP} = ₦27,999,825.00k + N_{AC} = ₦500,000,000.00K$	Variance in project cost ₦5,000,000.00K
		DPD= Delay payment date	PD = Project duration APD = Actual payment day	days		DPD= Count: PD - APD	123 day delay before payment were made
		Contractor satisfaction (%CS)	RP = Number of payment request = 4 NP = Payments Receive = 3	%		(%CS) (3/4) x100 = 75%	75% customer satisfaction

To broaden our understanding and explain the study findings, Pearson Correlation Analysis technique was adopted for further data analysis. This is to show the relationship between the variables considered in this study and to enable the study trace the start point of inefficiency and ineffectiveness.

6.5.1 Delay start date and project delay end date

Based on the information obtained from table 6.8, a Pearson Correlation coefficient was computed to assess the degree of relationship between project delay start date and project end date ($r = .0599$, $n = 21$, $p = .011$). This result shows a positive correlation between delay start date and delayed end date. This identifies that if a project has delayed start date it also likely to have delayed end date.

6.5.2 Delay state date and project duration

The relationship between delayed start date and project duration is based on the data obtained shows a weak correlation between delayed start date and project duration, $r = .427$, $n = 21$, $p = .087$. This implies that delay in the start date of a project may likely to increase the project duration of the project.

6.5.3 Delay start date and payment delays

The information obtained between delay start date of a project and payment delay shows weak positive and insignificance relationship, $r = .310$, $n = 21$, $p = .226$. This indicates that the delay in project start date may not necessarily have positive increase effect on the days contractors have to wait before payment.

6.5.4 Delay start date and project cost

Further analysis shows a positive relationship between delay in project start date and increase in total project cost $r = .510$, $n = 21$, $p = .037$. The implication of the association is that increase delayed to project start date will lead to extra cost being incurred and an increase in the overall project cost.

6.5.5 Delay start date and contractor satisfaction

The analysis in this section shows that there is no correlation between delay in the start date of a project and the contractor's satisfaction $r = -.319$, $n = .21$, $p = .212$. The result indicates that the longer the delay in the project start date, contractors are less satisfied with the days that have to wait before they receive payment.

6.5.6 Delayed end date and project duration

The analysis of data further indicate a direct positive correlation between delayed in a project approved end date and total project duration, $r = .729$, $n = 21$, $p = .001$. This result means that as the approved project end date increases, the total project days to completion increases significantly with the value $p < 0.05$.

6.5.7 Delayed end date and project cost

The result from the analysis shows that there is a positive correlation between the variable; project end date and project cost, $r = .928$, $n = 21$, $p = .000$. This result shows a strong positive relationship between these variables. The interpretation to this is that, a delayed in the project initial end date will definitely increase the overall cost of the project. The understanding of the result is that there is a statistical significant of $p < 0.05$ between project end date and project cost.

6.5.8 Delayed end date and contractor satisfaction

The result from the analysis in this section shows that there is relationship between project end date and contractor satisfaction, $r = -0.23$, $n = 21$, $p = .931$. The implication of this result is that the delay in project end date might not have any effect on contract satisfaction based on the payment terms.

In summary, Overall analysis show that there were positive relationship between project delay start date and project end date, project duration and project cost. This predict that increase in project delay start date will cause delayed in project end date, project duration and project cost.

6.6 Main Findings from Fieldwork-3 Documentary Analysis

Similar to the example in table 6.7, all project documents collected and analysed were found to have:

- Delayed start dates
- Delayed end dates
- Larger project duration
- Higher project cost
- Delayed payment dates
- Contractors were not satisfied with payment delays

There clearly there are issues which support inefficiency and ineffectiveness in the Nigerian public sector. Therefore, the sources of inefficiency and ineffectiveness can then be traced based on these findings and the interpretation of the findings.

6.7 Discussion of Findings from Documentary Analysis

This chapter investigates sources of inefficiency and ineffectiveness in the Nigerian public sector using documentary analysis. The main findings from documents analysed are:

- Positive correlation between project start date and project end date, with all of the analysed projects having both a delayed start and end date
- There is positive relationship between delay start date, longer project duration and project cost, with all the project documents analysed indicating delayed start date, longer project duration and a likely increase in the project cost.
- There was no relationship between project duration and contractor satisfaction
- It was observed that there was no correlation between longer project duration and payment delays

6.7.1 Delay start date

Delayed start is a major issue that needs to be addressed in the context of knowledge needed during contract approval. This is because; delayed start date in all projects is the beginning or source of inefficiency and ineffectiveness in project delivery in the Nigerian public sector.

The start dates of any projects are always decided by a Schedule Officer based on guess knowledge. , within the following processes:

- 1) Schedule Officer sends memo to the Chief Accounting Officer (identifying that a project needs to be executed, based on an identified need)
- 2) Chief Accounting Officer (Honourable Commissioner or The Permanent Secretary) approves the memo
- 3) Memo goes back to Schedule Officer
- 4) Memo goes to State or Ministerial Tender Committee
- 5) Tender Committee accept bid and approve project if necessary

- 6) Approval return to Schedule Officer for award letter
- 7) Schedule Officer raises the award letter
- 8) Schedule Officer sets the start date based on
 - a. When they receive the approval memo from Chief Accounting Officer
 - b. Knowledge of how long between approval and proposed start date of similar projects

Of the documents analysed, all twenty one project documents had a 100% delayed start date. This suggests that most, if not all, projects approved by the Nigerian Public Sector have an inaccurate start date. This means that projects typically start late. There were no examples of the project starting early. As seen in the results in table 5.7, this also has an impact on end date with all of the analysed projects also ending late.

This is because the Schedule Officer has inappropriate knowledge and or a lack of access to appropriate knowledge, meaning that the start date is effectively an ill-informed guess. By the start date always being incorrect, inefficiency is built into the process before the project begins, suggesting that the Schedule Officer, or at least the process they have to follow, is a source of inefficiency.

It was also discovered from the empirical studies that most government business processes are wrong. Thus, it can be suggested that there is a knowledge deficit in this task (project execution). The identified knowledge deficit indicates that required knowledge is either missing or obsolete as evident in the empirical study 2. Once a Schedule Officer lack or do not have access to required knowledge for a task, then, the source or beginning of inefficiency and ineffectiveness set in to every processes all through the project execution.

6.7.2 Project delay end date

The delay in project start date means that projects always end late, with all of the projects analysed having a late end date. However, in addition to projects with late start dates always have late end dates, there is a positive correlation between project end date, project duration and project cost. Thus, projects that start late (e.g. all of them) are highly likely to take longer to reach the end date, has longer duration and the project most likely costs more.

The end dates of any projects are usually decided by a Schedule Officer also based on mostly guess knowledge and information from similar previously completed projects within the following processes:

- 1) Schedule Officer sends memo to the Honourable Commissioner or The Permanent secretary (identifying that a project needs to be executed, based on an identified need)
- 2) Chief Accounting Officer (Honourable Commissioner or The Permanent Secretary) approves the memo
- 3) Memo goes back to Schedule Officer
- 4) Memo goes to State or Ministerial Tender Committee
- 5) Tender Committee accept bid and approve project if necessary
- 6) Approval return to Schedule Officer for award letter
- 7) Schedule Officer raises the award letter
- 8) Schedule Officer sets the end date based on
 - a. When he or she receive approve memo from State or Tender Board Committee and Chief Accounting Officer
 - b. Knowledge of how long between approval and proposed end date is based on previous executed projects

The knowledge used to determine project duration is based on other similar projects (most of which were inaccurate). Basing duration on inaccurate data and knowledge builds in inefficiency from before the project starts.

6.7.3 Delay payment date

Delayed payment refers to time lag between request for release of funds and actual payment received. It was discovered that all project documents analysed indicates that there were 100% delay in payment date.

The delay in payment date is mostly dependent on cash disbursement from the Federation Account (Federal Government), State Government and the discretion to pay by the Honourable Commissioner for Finance (HCF), Honourable Commission for Economic Planning (H. CEP) and The Accountant General (AG) State whom make up the Cash Budget Committee. The payment process is defined in the following processes.

- 1) Contractor request for payment
- 2) Honourable Commission approve request for payment from contractor
- 3) Request sent to Schedule Officer to process
- 4) Request send to Honourable Commissioner or Permanent Secretary for Economic Planning for approval
- 5) Request for payment send to Budget Officer
- 6) Payment request is listed in the payment systems (SAP application)
- 7) Discretion to pay by Honourable Commissioner for Finance
- 8) Payment warrant is printed 4 copies
- 9) Payment warrant send to Accountant General as payment advice

Project payment date based on the discretion of the Cash Budget Committee headed by the Honourable Commissioner for Finance is identified as the source of inefficiency and ineffectiveness in the payment process.

However, it was observed that there was no relationship between delayed start date, project duration and payment delays. This is as a result of the fact that all party to contract executions expected delays in funds disbursement from the Federation Account and State Executive decision to pay.

6.7.4 Contract satisfaction

The study identified that there was no relationship between project duration and contractor satisfaction in terms of payment method. Contractor satisfaction is considered the period over which the contractor gets paid for every request for payment made within 30 days periods as defined in Delta State “Financial Regulation 2001”.

The implication of the result indicates that contractors are satisfied irrespective of payment terms including; time lag (delay) between payment request and actual day payment is received. Under the current payment process, contract duration has no correlation with contractor satisfaction in terms of payment delays. It is not surprising that contractor accept whatever date they are paid because they (contractors) has devised some strategies in quoting higher project cost (almost 3x most projects cost) with the expectation that contract duration and payment dates are always delayed.

The result that has been presented provides the current research with the measurement of the sources of inefficiency and ineffectiveness from an organisational perspective using Documentary Analysis. To complete data collection and analysis for this study, next section presents the measurement of individual interference (distraction) in the Delta state public sector using Diary.

6.8 Assessing Individual Source of inefficiency and ineffectiveness using Diary

This section presents the use of a diary for the collection of data relating to individual sources of inefficiency and ineffectiveness in the Nigerian public sector. In this study, interference is considered to be the main driver for the sources of individual inefficiency and ineffectiveness. Thus the main focus of this section is on interference (employee distraction) to effective and efficient job performance of personnel. To appreciate the contribution of this chapter to the entire thesis, next section briefly looks at the term interference.

According to Crosbie (2006) in her study “*Using Activity Diaries: Some Methodological Lessons*”, diary filling is a good source for collecting data in a research. Drawn on the experiences of Crosbie, (2006) and Jacelon and Imperio, (2005), this section provide detailed result of the use of diaries in investigating internal and external interference on individual tasks performances in the Nigerian public sector.

6.8.1 Interference (employee distraction)

In the study “Is family-to-work interference related to co-worker’s work outcomes?” Brummelhuis, Bakker, & Euwema, (2010) indicated that the possibility of interference occurred when an individual performance outcome is impeded by the activities of either family, friends or co-workers. Drawn from Brummelhuis and Co.’s point of view, current research considered interference as instances where an individual is hindered or obstructed from optimum performance during official hours. This implies that, as individual effective performance is impeded through distractions, ineffectiveness can occur.

Individual efficiency and effectiveness in the context of performances measurement is of interest to the current research. This is because, exploring the impact of interference to

individual performance in the Nigerian public sector provide an opportunity to understand the sources of inefficiency and ineffectiveness from the individual perspective. The understanding from this exploration may not be addressed by the proposed measure (Strat-KM), however, it will highlight to the management of the Nigerian public sector the opportunities to re-access the policies towards various forms of interference identified through this research.

6.8.2 Aim of accessing Individual source of Inefficiency and Ineffectiveness

The aim of this section using a diary for data collection is hinged on the fact that interference is a source of inefficiency and ineffectiveness from the individual performance perspective. To validate this claim, diary filling was used to explore the impact of internal and external interference as the source of individual inefficiency and ineffectiveness in the Nigerian public sector.

6.8.3 Participants

Data for the measure of interference was collected from civil servants (staff) of the Delta State public service. A total of twelve participants from Grade Level 08 to 14 (GL 08-14) were purposefully selected. The participants were selected three each from four ministries (coded M1, M2, M3 and M4). The choice of these ministries was based on functions. The choice of M1 and M2 was based on a ministry that provides tangible products (e.g. construction of roads, houses) and ministries that produce non-tangible service (e.g. women empowerment, religious services and traditional affairs).

6.8.4 Procedure

The twelve participants were given a diary and a pen each for a week (Monday to Friday). In the diary data collection process, an unstructured format of data collection using the diary was used.

The unstructured diary format of data collection is a technique where participants are asked to record their daily official activities as they occurred or as frequently as possible in a form of log entries in a blank pages of the diary (Jacelon & Imperio 2009).

The entries on the diary by participants were done in their own hand-writing. The participants were made to fill the diary in their office during the stipulated official hours of between 8.00am to 4.00pm GMT each of the day.

During the week long activities recording, a follow-up telephone and face-to-face call was made to each of the twelve participants. This is to remind the participants of the need to fill the diary accordingly as the activities or interference occur and to keep the enthusiasm to fill the diary refresh in the mind of the participants.

The diaries were collected from the participants on the Friday of the week. The participants were reassured that no part or all entries on the diary will be used outside the research context. The participants were thanked personally by the researchers for their time and commitment to filling their activities during the period. Photocopy of information in the diary was made and the original diary was returned to the participants as a thank you gift.

6.8.5 Data preparation and analysis

Data collected were analysed using Thematic Analyses (TA) techniques. The analysis of data was based on themes identified in relation to the objective of the study. Various level of interference was identified during and collection of the distribution of the dairies. However, the analysis of the data from the diary was group in twofold; 1) official (internal) and 2) unofficial (external) interference. Table 6.8 below present identified themes and identified interference while table 6.9 provides the template for the data analysis (detail of the analysis template in appendix iii).

Table 6.8: Summarised themes from diary

Theme	Type of interference considered	Description	Implication
Resumption	<ul style="list-style-type: none"> ▪ Resumption period ▪ Closing period 	To know when an officer resume his official duty on a daily basis. This will provide measurement of the number of hours an officer spent in the office.	This to measure the effect of officers that resumed later than 8.00am the official resumption hour at the same time closes before the 4pm (official closing hour).
Official interference	<ul style="list-style-type: none"> ▪ Official schedule ▪ Colleague and bosses intrusion ▪ official conversation 	This provides the understanding of knowing the interference that impact positively or negatively.	The main implication is to collect the internal interference that may cause negative value to the organisation.
Unofficial interference	<ul style="list-style-type: none"> ▪ Unofficial meetings ▪ mobile calls ▪ Patronising mobile hawkers ▪ Family and friends intrusion ▪ School runs ▪ Unofficial conversation with bosses and colleague ▪ Internet surfing (playing computer games, online movies), television watching ▪ Outside office personal 	This is to provide the understanding various interference to officer from both internal and external sources.	This is to measure negative distraction to officer in the course of performing daily official duties.

	<p>engagement</p> <ul style="list-style-type: none"> ▪ Religious activities (prayer session) 		
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During the analysis, all twelve diaries were first scanned through to provide descriptive values for the identified interference. Table 6.9 present a summarised extract from one of the participant’s diary.

Table 6.9: Summary of coding template with data from a logbook

Type of Interference	Monday	Tuesday	Wednesday	Thursday	Friday
Resume duty	8:20am		9.00am	8.35am	8:48am
Prayer session	8:20 – 8:30am		8:20am – 8:30am	Treating official files on SAP for client request for payment 8.35 – 11.20am	8.20am – 8.30am
Official schedule	<ul style="list-style-type: none"> • In-house training for new staff. • Supervised the installation of computer and its accessory in my office 1.10pm – 1.25pm 		Treating official files on SAP for client request for payment 8:30am – 3:45pm	Treat a file from other ministry 12.45pm – 1.20pm Treat Clerk of the House file for payment 2.25pm – 3.15pm	
Unofficial					

meetings		Personal Engagement: Church retreat all day			
Phone calls			Attend to family phone calls and text message 1.25pm - 1.48pm	Attend to phone calls from church members 2.25pm -2.30pm	Planning colleague wedding for the weekend 11.25am - 12.01pm
Misplaced schedule					
Mobile hawkers				Bought food from mobile hawker for break fast	
Colleagues and Bosses intrusion					
Family intrusion					
Friends intrusion					
Watching movies or TV programs					
Engaging in personal activities					
Unofficial conversations with colleagues	Easter discussion with colleague 9:15am – 10:10am			Unofficial discussion with my boss 8.45am – 10.00am	Discussion with colleague and staff from other ministries 3.20pm to 3.45pm

Official conversations with colleagues/Boss				Discussed with boss over budget head 1.35pm – 2.20pm	Official discussion with colleague 9.15am – 9.35am
Internet surfing				Internet surfing 2.30pm – 3.01pm	

6.8.6 Main Result from Diary

Similar to information in table 6.10 based on the various interference identified, the following were revealed from the twelve diaries analysed:

- Lateness to office and closes before official closing period
- High rate of unofficial (external) interference (distractions) from families and friends
- Few interference from bosses and colleagues
- Personal interference (personal engagement) were found to be common in most of the entries.

The understanding of the above findings supports the view that there is an issue with efficiency and effectiveness using internal and external interference as a measure for individual task performance. Next part of the analysis present the findings in relation to the themes identified in table 6.9

6.8.7 Discussion of Findings

6.8.7.1 Lateness to office and closure before closing hour

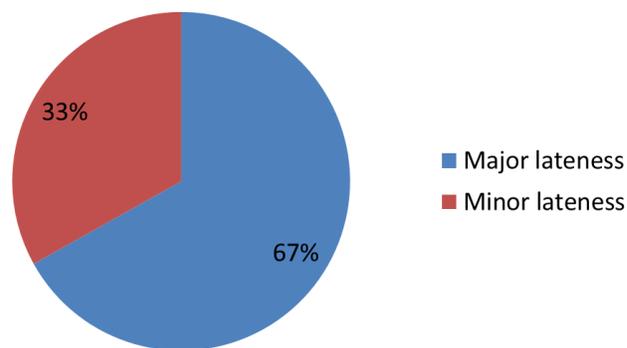
The resumption hour in the Nigerian public sector is 8.00am and the closing period is 4.00pm. The analyses of all twelve (100%) officers selected for the study were late to the office and closed before 4.00pm.

To measure the degree of lateness the following categorised using minutes and hours was used:

- Minor lateness (between 8.00am to 8.30am)
- Major lateness (beyond 8.30am)

The result of the measurement based on the above categorise is presented in fig 6.1

Figure 6.1: Degree of lateness



The result implies that all officers are usually late to the office. Of the twelve participants that were engaged in the study, four participants (representing 33%) were found to be late for about 30 minutes (minor lateness) while eight of the officers had a major lateness representing 67%. This result indicates that the sources of efficiency and effectiveness are impacted if time is considered as input resource for the measure of individual sources of inefficiency and ineffectiveness.

6.8.7.2 Official interference

The official interference is the distraction from either colleagues or bosses that impact positively (official discussion) or negatively (unofficial discussion) on an individual daily performance.

Data analysed from the twelve dairies reveal that official interference occurred during office hours. However, data collected and analysed indicates that interference from colleagues and

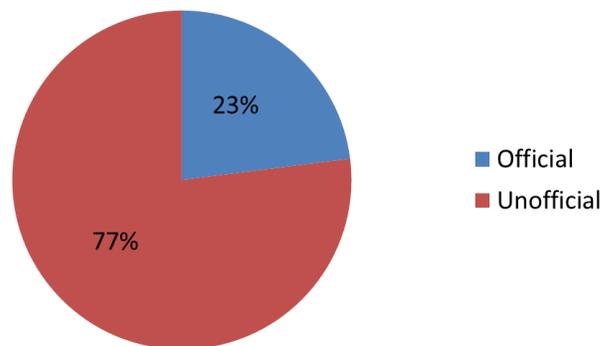
bosses accounted for limited (23%) interference period (see fig 6.2) during eight hours official daily work period.

6.8.7.3 Unofficial Interference

Unofficial interference occur when individual is distracted from carrying out official assignment by external factors. Result from the data analysed indicate a high level (77%) of external interference (family, friends and hawkers) and personal engagement in all twelve diary analysed.

On average, about 3.45 hours daily are spent attending to friends and family by an officer. In some cases, all official hours are spent on personal engagement as indicated on day two (Tuesday) column in table 6.10. This implies a high level of inefficiency and ineffectiveness from the individual perspective of this officer. This can also be considered a source of inefficiency and ineffectiveness on the part of this officer. Fig 6.2 summarised degree of both official and unofficial interference to staff's official performance.

Figure 6.2: Degree of interference



The result indicates that unofficial interference has the highest distraction to officer's performance during official hours. One interpretation of this result is that most of the personnel from the Nigerian public service spent a lot of time attending to unofficial duties which have the possibilities of impacting negatively on the performance officer in an organisation.

The results presented through the use of a diary as an instrument to personnel interference indicates that personnel spent most of their official times attending to non-official activities. This is a crucial element to the study for individual efficiency and effectiveness in an organisation. The exploration of personnel interference using the diary has also shown that the sources of individual inefficiency and ineffectiveness begin with officers arriving late to the office. The implication is that the organisation loses man hours due to this type of attitude from staff of the sector.

6.9 Summary

This chapter has presented the results from fieldwork-3 involving 1) document analysis; and 2) diary completion. The focus of this chapter is on identifying sources of inefficiency and ineffectiveness from both individual and organisational perspective in the Nigerian public sector.

The document analysis provided results that identified; all twenty one project documents examined have 100% delayed start date, extended end date, longer project duration and likely higher cost as a result of guess knowledge being used by officers for project management. On the other hand, result from diary filling indicate that staffs of the state public service spends most of their official hours on non-official activities, thereby impacting negatively on the official demands of officers.

It can therefore be concluded that sources of inefficiency and ineffectiveness in the Nigerian public sector can be traced to the use of guess and inadequate knowledge as well as well as officers engaging mostly on non-official activities during official hours. The result of this study can provide the management of the Nigerian public sector an opportunity to review existing working knowledge pool and readdress personnel attitudes towards official engagement

Finally, result of fieldwork-1 and 2 as well as the findings from fieldwork-3 presented in this chapter enable the formulation of the concept in the proposed framework for the creation and distribution of the right knowledge to the right people at the time for the improvement of

service delivery in the Nigerian public sector as well as related organisation in developing countries. Development of the proposed framework is detailed in the next chapter.

7 Chapter 7 : Framework (Strat-KM) Development and Validation

In this chapter, a knowledge management framework is proposed and formulated for the Nigerian public sector and related organisation in developing countries. The framework, Strat-KM, is grounded on two components; Co-ordination and Operation processes. However, the main focus of the proposed framework in this research is on the Operational process component.

The Strat-KM is to enable the implementation of knowledge management practices aimed at providing the right knowledge to the right people at the right time. And the overall objective is to enhance improvement to efficiency and effectiveness using the operational processes framework to create and apply knowledge for government sector activities especially in Nigeria and other public sector organisations in developing countries intending to adopt knowledge management.

As an abstract, the description of the Strat-KM classification is presented within knowledge creation, storage, sharing and uses classification (Akram *et al.* 2011; Momeni *et al.* 2011). The benefit of the framework is to provide a technical and effective guiding frame for knowledge management practices within the public sector of Nigeria.

In presenting the theoretical and practical explanation to the proposed framework, this chapter is structured in the following format:

Section 1 present a discussion around the construction of the framework (Strat-KM) starting with its goal, purpose and intention. Strat-KM is built based on existing frameworks and briefly outlined in the contextualising of Strat-KM section.

Section 2 deals with the Strat-KM high level presentation including its two major phases of Co-ordinating and Operational processes.

Section 3 provides a detailed discussion on the various components embedded in the Co-ordination processes of the Strat-KM. The discussion is centred on management decision, planning, approval and execution of the knowledge management processes.

In section 4, the operational process of the Strat-KM is detailed. This involves the various processes and activities within collecting, storing, sharing and use of knowledge including instruments required for the knowledge creation to knowledge use phases.

Section 5 presents the validation of the Strat-KM. And the chapter ends with section 6 providing a summary as well as highlighting challenges and benefits of the framework.

7.1 *Strat-KM – goals, purpose and intentions*

The aim of the proposed framework is to guide the development and implementation of a knowledge management practice for the Nigerian public sector and related government organisations.

The overall goal is to make available, required knowledge to the right people at the right time for the purpose of enhancing performances of government staff in Nigeria. This framework is expected to be more inclusive structure with a greater and more detailed process for knowledge creation, sharing and use within the frame of government establishments.

7.2 *Constructing Strat-KM*

Strat-KM was developed incrementally through a series of stages, as detailed in figure 7.3, underpinned and informed by research and empirical study in Fieldworks 1-3. These stages were informed by prior analysis of knowledge management frameworks and the outcomes of the analysis are briefly outlined as below:

- **Sense-making:** This stage was aimed at investigating whether a knowledge management framework or framework is the main solution to problem of inefficiency and ineffectiveness in the Nigerian public sector. In this context, the aim is to determine whether the perceived framework (Strat-KM) can be mapped to organisational business processes based on the three knowledge categories (Moteleb *et al.* 2009): identify

knowledge in view of gaps in processes, store and share the required knowledge and make use the required knowledge to effect business processes.

- **Business process understanding:** This stage aimed at investigating the Nigerian public sector business processes (Fieldwork 1 and 2) in order to understand and specify process tasks, various relationships within tasks based on responsibility between officers, units, departments and ministries.
- **Requirement identification:** The aim of this stage is to facilitate the identification of knowledge sources, the possibility of storing, sharing and use processes through the exploration of knowledge required to fill gaps in task processes. This stage was investigated through thorough analysis of user profile-task specific component processes (Fieldwork 2 and section 1.1 of fig 7.7).
- **Design:** This stage was aimed at incorporating the understanding from the three stages above into determining and developing the actual artefact (Strat-KM) based on knowledge source and flow, process flow and knowledge gaps within business processes in the public sector of Nigeria.

The analysis of the stages highlighted above is to overcome weakness and provide an understanding of not readily available knowledge management frameworks for an organisation like the Nigerian public sector. The most significant strength from the understanding of the highlighted stages lies in the progressive and incremental development of the Operational Processes of the Strat-KM framework.

The next sub-sections briefly describe the main stages leading to the development of the proposed knowledge management framework for the Nigerian public sector.

7.2.1 Stage 1: Literature-based framework development

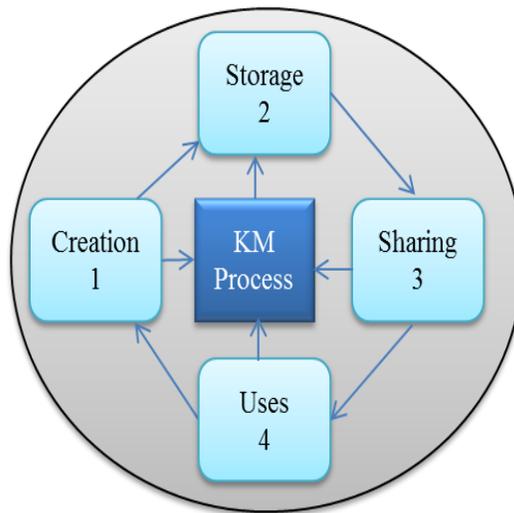
As identified in section 2.6 there are some commonalities in most knowledge management frameworks including strategies, processes and people. Fig 7.1 summarise the commonalities identified for the knowledge management framework process.

Figure 7.1: Identified KM framework process commonalities



The **strategy** defines how a knowledge management goal is to be achieved. This involves determination of needs and how the needs are to be achieved. The **process** represents knowledge creation, sharing and application in order to meet organisational set objectives. **People** represent the stakeholders and individuals involved in the knowledge management process.

Figure 7.2: Identified KM Frameworks process commonalities



The knowledge management process is a natural activity in organisational daily life. In its strictest sense, the knowledge management processes that are commonly present in most knowledge management frameworks are: creation, storage, sharing and application (uses) as indicated in fig 7.2 (Indira and Mood 2012 and Akram *et al.* 2011).

Knowledge **creation** is concerned with the process of identifying and capturing intended knowledge. **Storage** involves the way the required knowledge is structured to fit into organisational processes. **Sharing** provides the opportunities to exchange knowledge and information. And **uses** represent the application of knowledge towards solving organisational problems (Janet, Wee and Chua 2013).

7.2.2 Stage 2: Synthesising frameworks

With Strat-KM focusing on providing knowledge to the right people at the right time through knowledge creation, sharing and uses, the initial framework design was based on a synthesis of both these commonalities and a synthesised combination of frameworks (Kucza 2001, Ekeke 2011 and Pawlowski & Bick 2012). The implication of the three studies that guided the development of the Strat-KM is given below:

As a first guide, the framework architecture by Kucza (2001) was considered. The Kucza framework is structured in two different process levels (Co-ordination and Operational processes) which connect the activities of decision makers and knowledge management processes. The later parts of the two levels are generic for most organisational knowledge management activities. The architecture of this framework helps identify inter-connectivity as well as the potential process flow in the current framework. The framework is based on clear categorisation of purpose for knowledge management practices. Thus, the Kucza (2001) framework is applicable (adopted) for the current framework structure in a practical perspective.

As a second guiding framework, Pawlowski and Bick (2012) were selected. The Pawlowski and Bicks framework was based on the CEN (2004) framework specification created for European community which provided a standardised frame for knowledge management practice. The framework shows clearly, how process orientation and core business processes can be describe in relation to required knowledge processes. Based on the CEN recommended standardization, the Pawlowski and Bicks framework is a good candidate for use by many knowledge management framework designers.

Ekeke (2011) delivered a research ideology on knowledge transfer that was as a motivation for selecting his framework. His research was conducted in the same organisational environment as the current research case organisation. His framework ideology was clear on the way culture impacts on knowledge transfer (sharing) in the public sector of Nigeria. Ekeke's framework provided the groundwork upon which the knowledge sharing process of the current research is built.

The above illustrated frameworks as well as concepts from many other frameworks may not necessary satisfies the needs for knowledge management implementation for organisations like the Nigerian public sector. Therefore, organisations intending to embark upon knowledge manage projects must analyse and modify to suite their own organisational needs. Thus, the review of the highlighted frameworks and three empirical studies (fieldwork two and three) carried out in this research provided necessary tools, ideas and practical approaches for the development of the Strat-KM in this study. See fig 7.3 for description of the proposed Strat-KM high level framework.

7.2.3 Stage 3: Contextualising Strat-KM

Using a literature-informed framework as a basis, extensions were made to support the focus of the knowledge management framework developed for the Nigerian Public Sector. In the operational process phase, extensions were made in areas including; knowledge creation, storage, sharing, uses. The knowledge filtering process was based on the SECI theory of knowledge was introduced. For full detail of these extensions see section fig 7.6

Extensions were also made to both process and knowledge flow in the Operation process of the Strat-KM (see fig 7.3). The process flow extension made at this stage includes; sources of knowledge within external and internal sources linking to the knowledge creation process. The external and internal knowledge sources were introduced as identification that a knowledge carrier must be identified before any process of knowledge creation can begin. Another extension made included knowledge flow within knowledge storage and update process. This flow of knowledge introduced was to accommodate the movement of knowledge that either need to be archive or for further refinement for later use.

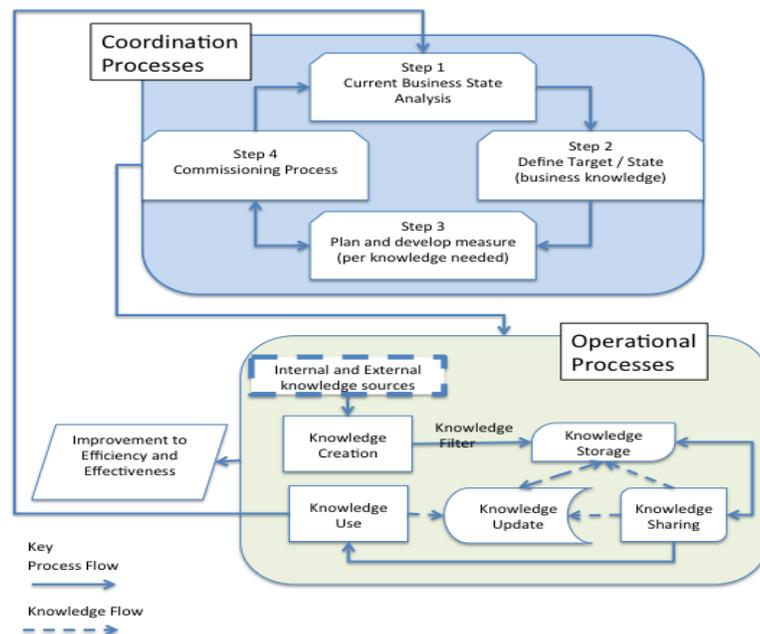
7.3 Strat-KM: Conceptual design

One of the aims of this research is to develop a knowledge management framework (Strat-KM) that can guide the development and implementation of knowledge management practice that was lacking in the Nigeria public sector.

Strat-KM provides a framework with knowledge management processes classified into management activities (planning, decision making, organising, developing and commission processes) and knowledge management specific processes (knowledge creation, storage, sharing and use), see figure 7.3. Strat-KM has two main structural elements:

- **KM-Co-ordination:** represents high level involvement of management in planning and decision making towards implementing knowledge management practices. In the Start-KM framework, the co-ordination processes are underlying the operational processes of the Strat-KM as indicated in the process flow from step 4 in the co-ordination process to the entry point of the operational process box.
- **KM operation process:** the operational process represents the processes of knowledge creation, storage, sharing and uses.

Figure 7.3: Initial KM Process Framework - High level overview



As noted earlier, the main focal point of the framework is on the operation process; however, a brief discussion of the Co-ordination process is presented in the next section.

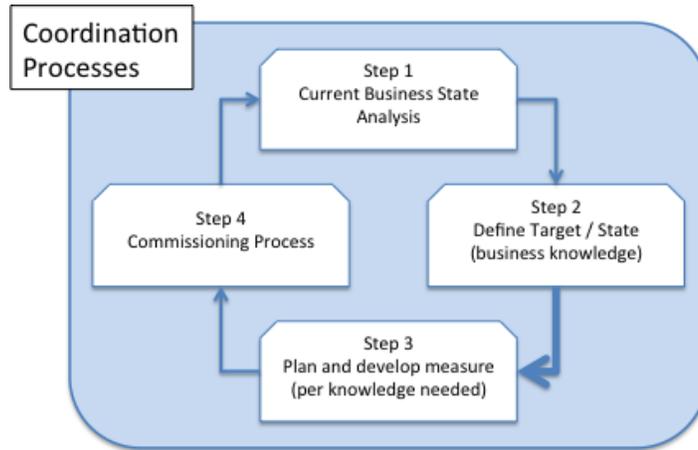
7.4 *Strat-KM: Co-ordination Process*

This section presents discussion around the co-ordination process of the Strat-KM. As with Kucza (2001), the co-ordination process is the main building block for the Strat-KM as every activity to implement knowledge management is initiated by management at this stage. As a concept, as indicated in fig 7.3, within the co-ordination processes all other business processes including the operational processes of knowledge management are planned, approved and implemented as directives. However, in the case of the Nigerian public sector, the necessity to formally manage the process has not have been formally planned, initiate and approved.

In the Strat-KM, Co-ordination process involves knowledge-related management decision making. In Fieldwork-2 (Chapter 5), Delta State public service business processes were observed with a view to understanding some activities. The fieldwork-2 highlighted that there are already existing structures for planning, executing and monitoring project execution which the current study explored. Thus, in the Strat-KM Co-ordination element the 4-phases in fig 7.4 were considered appropriate during Strat-KM construction.

Co-ordination segment is a process that allows management to plan and execute the activities within the operational process of the Strat-KM. The Co-ordination process begins with an analysis of the current business state, followed by the definition of the target state, then planning and development of measures and finally the commissioning processes. This approach is detailed in figure 7.4 and further outlined in subsequent subsections:

Figure 7.4: Strat-KM Coordination - High level Overview



7.4.1 Co-ordination Step 1: Current Business and Knowledge State Analysis (CBSA)

CBSA provides the basis for understanding the current state of business knowledge and how this can be analysed and improved upon. CBSA is undertaken as part of business processes already occurring within the Nigerian Public Sector (e.g. ministerial tendering process). Currently, the Nigerian government business process has a defined and effective analysis process which Strat-KM can build upon and extend. This extension is achieved through a consideration of:

- The type of knowledge that is, and should be, available for the identified business processes (e.g. project execution task)
- How existing knowledge is to be managed
- What cultural and organisational structures affect effective knowledge creation, sharing and uses?

Table 7.1 outlines the activities undertaken during CBSA, identifying knowledge gaps and scoping approaches to rectify these.

Table 7.1: Summary of CBSA activities

Objective	<ul style="list-style-type: none"> • Determine current knowledge and business state. • Identify knowledge need according to business need.
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Actions	<ul style="list-style-type: none"> • Analysis current business to identify which process need which knowledge • Analyse existing organisational knowledge artefact including documents such as; memos, circulars, task and consultants project description documents, • Analyse and identify primary source of knowledge and knowledge storage • Analyses of which factors might likely affect knowledge management processes in the state business process
Outcome	<ul style="list-style-type: none"> • Gaps identification in business process and knowledge • Scopes were defined to map into knowledge creation (identification) (see Operational process of the Strat-KM)

Gap identification is addressed through exploring whether Knowledge Pools (project files, staffs) already have the relevant knowledge. Knowledge Pools include knowledge in documents (e.g. memos, circulars), individuals and groups carrying knowledge. Once the required knowledge is identified, management scope the operational process for capturing that knowledge, achieved in the KM-Operation phase of Strat-KM (see fig 7.6).

7.4.2 Co-ordination Step 2: Define target state (Business and Knowledge)

After the CBSA state has been completed and understood, the next stage focuses on the processes of achieving the desired, goal state for both business process and knowledge required. The goal is defined in terms of providing knowledge to end users through the knowledge creation, storage, sharing and uses which are aligned to business process objectives as indicated in table 7.2. The Nigerian public sector supports a process of defining the target state for any new projects. This approach requires only minimal changes to enable and consider the way knowledge is generated and stored.

Table 7.2: Definition of Target State

Objectives/goal	Define process on how to achieve process and knowledge goal.
Activities	<ul style="list-style-type: none"> ▪ Define processes in a business (task)

	<ul style="list-style-type: none"> ▪ Define possible processes on how to get required knowledge for a given task ▪ Analyse cultural barrier to knowledge creation and address it ▪ Institute sharing knowledge culture
Outcome	Aligning required knowledge to business process goals

7.4.3 Co-ordination Step 3: Plan and develop measures

This section of the Co-ordination process involves the methodology of how business process goals are defined and achieved. In its strictest sense, it is the determination of management of the Nigerian public sector to plan and capture different knowledge within the scope of business (task) process. The planning and measures should be defined in the context of human and other necessary infrastructure (e.g. storage infrastructure) based on roles, rights and responsibilities to support the enhancement of the business processes (Kucza 2001).

The planning and development measures (e.g. project planning, execution and commissioning process) are control processes. Hence for the Strat-KM framework purposes, the planning and development measures are considered to involve people and technology (Akram *et al.* 2011 and Kucza 2001).

The consideration for people (civil service staff) and technology (IT infrastructures) plan presented in tables 7.3 and 7.4 outlines the main activities in knowledge identification for business processes. This also includes a consideration of the roles and responsibilities of people who are stakeholders (those that take ownership) of the required knowledge.

The main focus for technology planning involves an audit of technology including storage facilities (databases and or file storage) and the way stored knowledge will be accessed. In the context of this research, the storage facility or infrastructure is mainly in electronic database while accessed mechanisms are considered to be smart phones, computers and other electronic devices.

The operational element of Strat-KM includes measures to manage the different knowledge activities. These measures provide assessment criteria in relation to how well and accurately tasks are performed and feedback reports are given on the use of knowledge in completing required task (business process). These measures help in guiding Coordination processes to ensure effective capture, development and maintenance of knowledge to effect government business process.

Table 7.3: People's plan activities

Plan order	Plans	Action/key tasks	Deliverables
1	Evaluation and clarification of business strategic objective	<ul style="list-style-type: none"> ▪ Stakeholders deliberation strategies ▪ Acceptance of strategies for knowledge acquisition 	<ul style="list-style-type: none"> ▪ Identification of knowledge for business processes
2	Identification of knowledge pool for business objectives	<ul style="list-style-type: none"> ▪ Analyse key business process that required knowledge 	<ul style="list-style-type: none"> ▪ Identification of necessary knowledge to drive key business processes success
3	Analyse existing knowledge pool	<ul style="list-style-type: none"> ▪ Analyses of existing knowledge creation and sharing methods ▪ Review existing knowledge baseline based on performances 	<ul style="list-style-type: none"> ▪ Identification of baseline knowledge pool ▪ Required methods and techniques for acquiring new knowledge (see section 1.0 of fig 7.6)
4	Identify gaps between existing and required knowledge	<ul style="list-style-type: none"> ▪ Explore and identify knowledge require for current business processes 	<ul style="list-style-type: none"> ▪ Obsolete and missing knowledge were identified. ▪ Knowledge gaps in tasks were identified
5	To identify and design process for filling	<ul style="list-style-type: none"> ▪ Identify knowledge carrier 	<ul style="list-style-type: none"> ▪ Better environment and culture for generating and

	knowledge gaps	<ul style="list-style-type: none"> ▪ Institute environment and culture for creating and sharing knowledge ▪ Adopt processes and training to support knowledge generation 	<p>sharing knowledge</p> <ul style="list-style-type: none"> ▪ Closing of knowledge gap
6	Develop measures to monitor and maintain acquired knowledge	<ul style="list-style-type: none"> ▪ Monitor and maintain business process and knowledge validity 	<ul style="list-style-type: none"> ▪ Measure for accessing knowledge generation, sharing and storage

Table 7.4: Technology's plan activities

Plan order	Plan	Action/key tasks	Deliverables
1	Evaluation and identification of systems for supporting knowledge creation and storage	<ul style="list-style-type: none"> ▪ Evaluate current knowledge collection, storing systems and sharing process 	Validation of systems (technology) that support knowledge management
2	Design necessary system that support knowledge filtering, codification and storage system	<ul style="list-style-type: none"> ▪ Identify and update technological infrastructures to support knowledge creation, storage and sharing 	Better knowledge collection and storage technological infrastructure
3	Identify and evaluate current knowledge creation, storage, sharing and technologies	<ul style="list-style-type: none"> ▪ Evaluate and analyse current knowledge creation, storage, sharing and uses technologies 	Identification of knowledge creation, storage, sharing and uses required technological infrastructures
4	Monitor and maintain knowledge creation, storage, sharing and uses	<ul style="list-style-type: none"> ▪ Identification of technologies and processes that support monitoring 	Establishment of a criteria for maintaining technological infrastructures that support

	technological system	and maintaining of knowledge	knowledge management
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7.4.4 Commissioning process

No extensions were made to the commissioning process in the Strat-KM. This is because; there is already well established process of commissioning new projects in the Nigerian public sector. The commissioning process followed after a project (e.g. road construction) has been appropriately evaluated, approved and executed. However, in a project like knowledge management, the processes highlighted in table 7.5 suffice.

Table 7.5: Summary of the activities in the commission stage

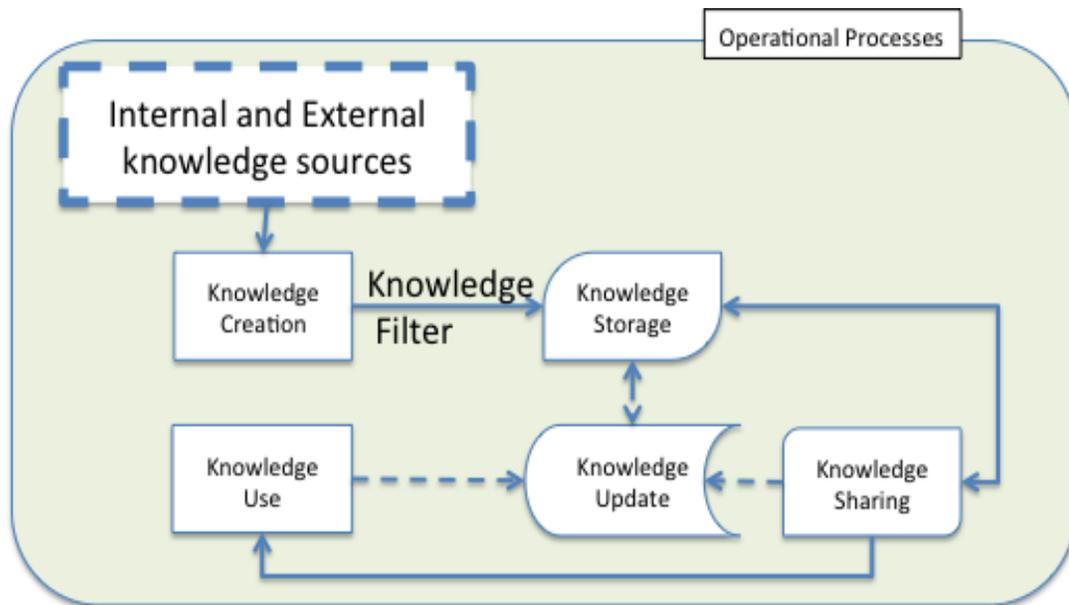
Objective	Commission formal process of creating and presenting knowledge (knowledge management system) to public service staff.
Actions	Communicate process of how to identified, collection and store knowledge. How to access knowledge in media should be made known to all staff and how to share and use knowledge defined (see sections 3.0 and 4.0 of fig 7.6)
Outcome	Individual staffs have the opportunity to understand how knowledge in the organisation has been created and the processes of sharing and uses of the knowledge to effect business processes.

7.5 *Strat-KM: Operational Processes*

The Coordination processes described above were based on existing business process which usually involves management decisions and involvement. However, in this research, the Strat-KM Operational process was developed as new. The operational process of the Strat-KM framework is to develop and implemented after a decision to embark on knowledge management practice has been taken at the co-ordination process level.

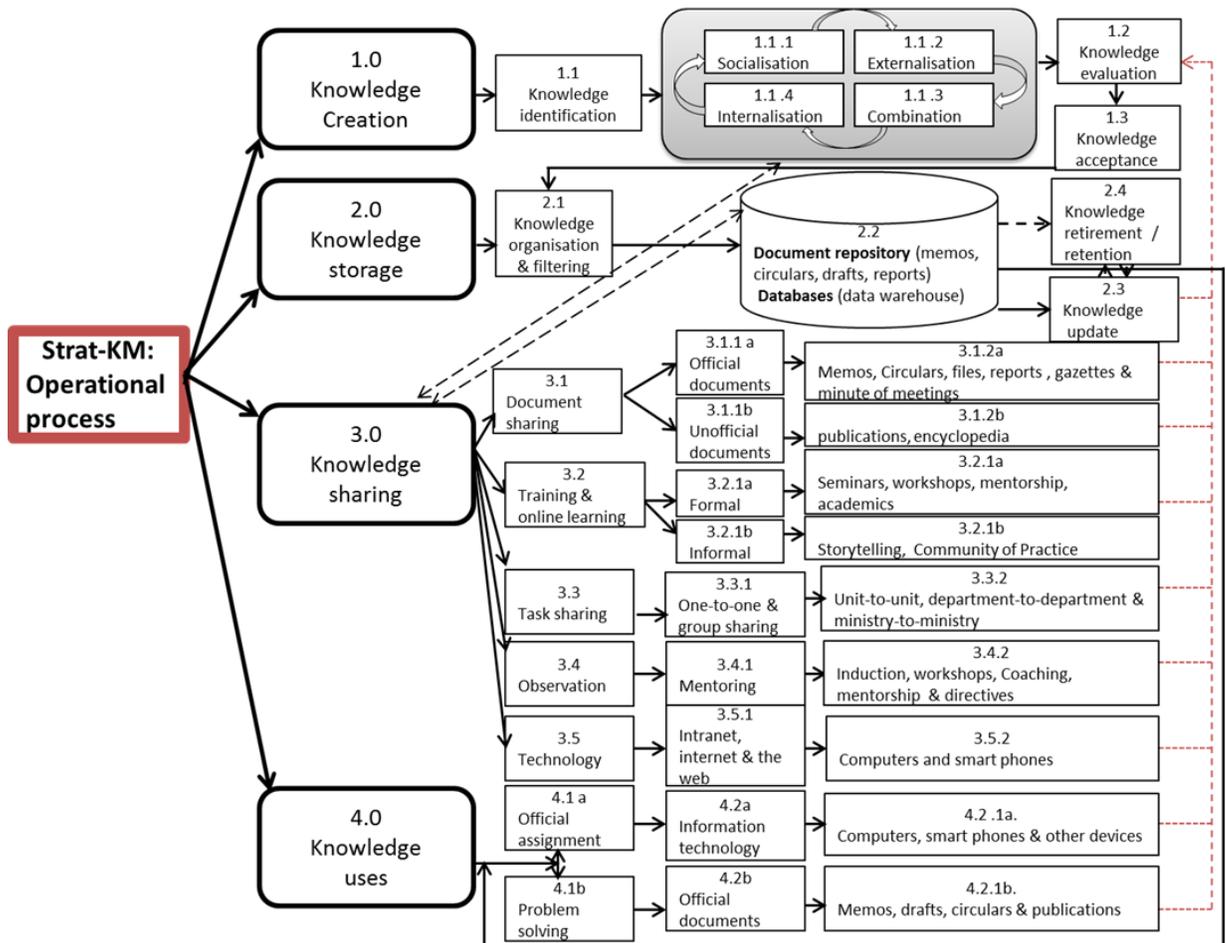
The aim of the Operational Process is to get the right knowledge to the right people at the right time. To achieve this, as detailed in figure 7.6, the Operational Process incorporates four components targeting knowledge creation, storage, sharing and uses for the purpose of using government resources for efficient and effective service delivery.

Figure 7.5: Strat-KM Operation Process - High Level Overview



The Operational Process provides a structured method for the development of a knowledge management process through knowledge, creation, storage, sharing and uses for the Nigerian public sector. The extended view of the Strat-KM: Operational process is given in fig 7.6

Figure 7.6: Strat-KM Operation Process - Detail Overview



As indicated in fig 7.6, the Operational process of the Strat-KM is composed of four main and sub-components of the knowledge management process. The tick arrows are the knowledge process flow connecting main components to sub-components. On the other hand, the orange and dark broken arrows represent knowledge flow between one components and another. Each of the four main components called the four pillars of knowledge management are described in the following sections starting with the knowledge creation processes.

7.5.1 Strat-KM Operation: Task 1: Knowledge Creation

Knowledge Creation in Start-KM (see figure 7.6) aims to identify, acquire and obtain knowledge from internal and external sources that can provide required knowledge (as identified in the Coordination process) to support effective and efficient business processes.

Knowledge Creation in Strat-KM is informed and triggered by the identification of missing knowledge, with Knowledge creation following an appropriate need analysis of business process identifying tasks that require knowledge (see 1.0 of fig 7.6).

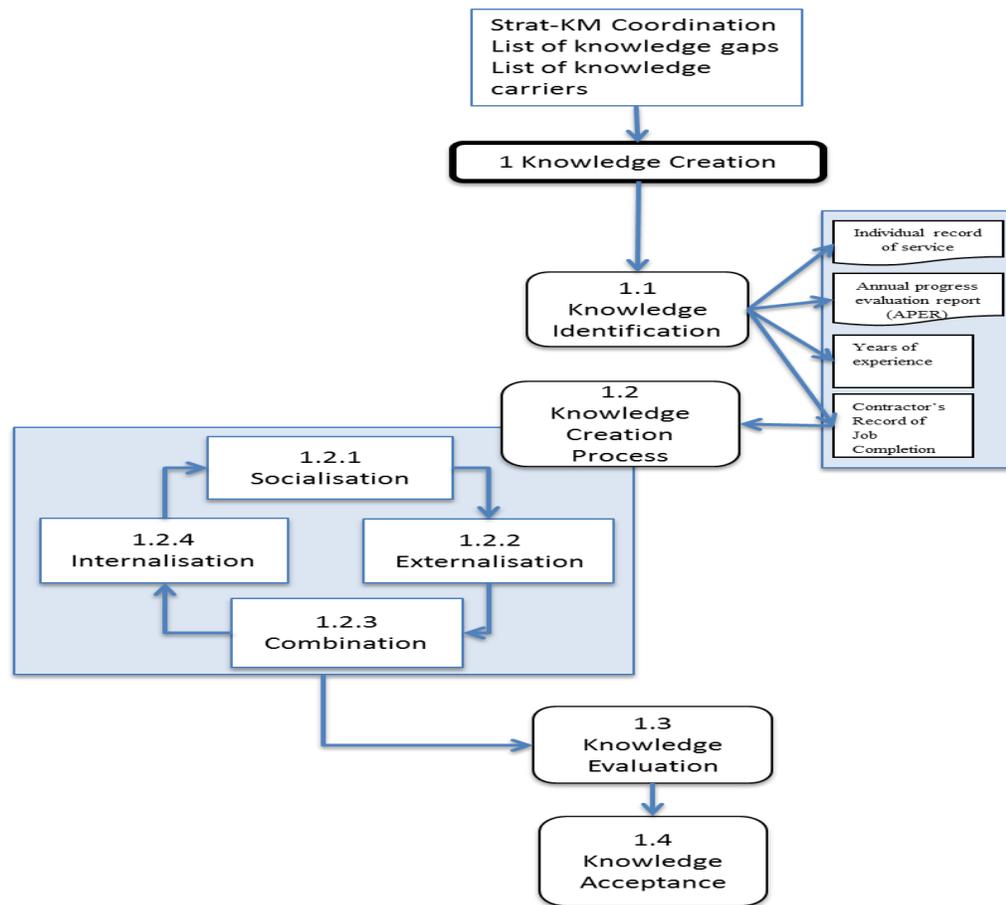
In an organisation like the Nigerian public sector, the need for knowledge creation is a continuous or cyclical process (Nonaka and Toyama 2003). Before knowledge is created, there must be need for such knowledge. The need is a conscious efforts and processes to identify gaps in business processes which require knowledge.

In the Strat-KM, the need to create knowledge begins in step 1 (CBSA) of the co-ordination process. At this stage, business process is analysed as a result of the need to improve work processes, solve problems or the filling of missing knowledge. This is followed by activities in step 2 of the co-ordination process (target state) to identified specific knowledge in relation to the problems to be solved tasks performed.

To describe the process of knowledge creation (fig in 7.6) in the Strat-KM, Nonaka and Takeuchi (1995) SECI framework was adopted. The SECI framework is described within the context of Socialisation, Externalisation, Combination and Internalisation as shown in section 1.2 of fig 7.6. For more discussion on the SECI framework, see section 7.5.1.2

The rationale for the adoption of the SECI framework is based on its being widely used as a guiding framework for knowledge creation processed for many knowledge management researchers. Secondly, the SECI framework has also been widely used for knowledge sharing beside creation. Knowledge creation and sharing are the main building block for the Strat-KM frameworks hence the consideration for SECI framework to elucidate the idea within the knowledge creation process in the current research.

Figure 7.7: Strat-KM Operation - Knowledge creation process



Before knowledge can be created, it is assumed that a need has been determined that requires knowledge as indicated in the entry box in fig 7.7. Depending on the type of need to be satisfied, the knowledge required approach may vary, however, for this research, the approach in the fig 7.7 will suffice for most task processes in the Nigerian public sector suffice. The theoretical description of knowledge creation based on the Strat-KM is given in the following sub-sections starting with knowledge identification.

7.5.1.1 Knowledge Identification

Strat-KM Knowledge Creation can involve external knowledge creation such as knowledge acquired from consultancy reports and project execution documentation from government contractors, as well as from internal knowledge generation. However, with the identification of obsolete and spurious knowledge in Fieldwork-2 which are internal and unavailable

knowledge in Fieldwork-3, Knowledge Acquisition in Strat-KM focuses primarily on extracting knowledge from existing knowledge carriers and sources within the Nigerian Public Sector.

In knowledge management practicing organisations, researchers advocate that many individuals with required skills or knowledge should be considered (Kucza 2001; Davenport & Prusak 2005). However, in the Nigerian public sector, there are usually two staffs performing the same job functions (schedules). The set of two individuals performing the same tasks provide an initial pool of staff within which required knowledge can be generated once need identification is determined.

The identification of individuals with the required knowledge or knowledge carriers are based on Sarnika and Deoka (2009) knowledge classification theory of knowledge sources which includes people, artifacts and organisational entities. The theory is refined and summarised in a table 7.6 which is consistent with section 1.1 of fig 7.7 and further explained in the bullet points below.

Table 7.6: Summarised process of identifying personnel and required knowledge

Knowledge sources	<ul style="list-style-type: none"> ▪ People (individuals): Experts from the public service based on years of experience ▪ Artifacts (documents): APER, individual record of service, consultant/contractor’s report
Objective	To identify knowledge sources within the Nigerian public sector
Activities	<ul style="list-style-type: none"> ▪ Review internal sources for required knowledge through record of service, APER, experts in the service through years of experience ▪ Review external sources including project appraisal documentation from contractors and consultant reports
Outcome	Identification of personnel and artifacts with required skill set

- **Years of Experience:** Staff experience in an organisation usually comes with improved knowledge of tasks performed. Researchers (Macdonald 2010) believed that experience or skill comes with performing same functions over a period of time (years of experience) and improves ones level of skill set. With the document “Record of Service”, most tasks

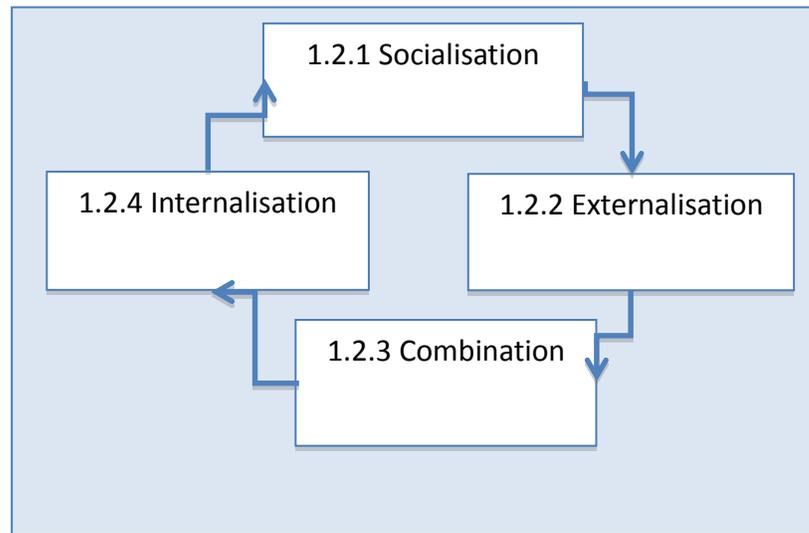
performed by officers are documented from the time of employment until retirement. Accessing this document thus far provides the possibility to know which officers have particular knowledge required for a particular need.

- **Record of Service:** This document provides information about various tasks performed by individuals during a particular period (usually a year). This document is updated by job function forms completed by staff at least once every year and signed off by a superior officer (Assistant Directors and Directors) as the case may be. As in the year of experience, this document provides an opportunity to access knowledge carrier for any particular task.
- **Annual Progress Evaluation Report (APER):** This document provides records of individual tasks performed in the previous year and appraisal by superior officers. In the Nigerian public sector, based on participant's views from fieldwork-1, it was discovered that the objective of the APER is good, however, its implementation is sometimes subjective (biased). This document when accessed can give an insight to individuals who have performed a particular task accurately and effectively over given period based on the rating from the assessors.
- **Contractors Record of Job Completion (CRJC)** details numbers of jobs (successful or failed) completed is held for contractors by every ministry. The CRJC sometimes details the nature and description of the job including drawings and processes (knowledge required) involved in completing a job (project). These drawings, processes and reports held by ministries can be sources of knowledge which in turn individuals or ministries supervising such project can rely upon for personal and organisational knowledge upgrades.

7.5.1.2 Knowledge Creation Process

Once the officers and knowledge have been identified, the knowledge creation process is achieved using the Socialisation, Externalisation, Combination and Internalisation (SECI) framework of (Nonaka & Takeuchi 1995) as indicated in fig 7.8

Figure 7.8: Strat-KM Operation - Knowledge creation process



The SECI framework for knowledge creation is based on a process that converts knowledge within the two forms of knowledge (tacit and explicit). However, the usage of the SECI for the Strat-KM is based on the conversion process as well as the findings from fieldwork-1. Each of the stages of the SECI framework in the context of the Strat-KM is explained as follow:

- **Socialisation:** Socialisation is the degree of tacit knowledge accumulation and the intra-firm social information gathering process which in this instance is through training and social interaction between individuals or group members.

In the context of the Strat-KM, viewing from the Nigerian public service perspective, the process of socialisation to create knowledge is and should be done through seminars and workshops where civil servants meet to interchange knowledge which is documented for later uses.

The seminars and workshops are usually set up in an informal ways where the emotions, passion and commitment of individuals provide an atmosphere in generating knowledge. Furthermore, in-training also known as induction (mentoring) conducted for newly employed staff is another important tools that can be used in generating (converting tacit to tacit) knowledge in the Nigerian public sector. During the process

of induction, older personnel in the service are met with mentor a new staff, in this instance, knowledge of the older officer can be captured through the process of feedback and other informal training or mentoring.

- **Externalisation:** is the process of capturing (converting) tacit knowledge and transforming it into explicit knowledge. This implies the documentation of knowledge embedded in an experienced officer through interaction (during induction and or in-house training or even mentoring practice) with other officers. The documentation by officers thus triggers knowledge creation process and can also form bases for the expansion of an individual is knowledge repertoire.
- **Combination:** In the combination process, knowledge (explicit) in document form are further analysed and refined into finer knowledge in document format. In Strat-KM, the process of combination starts through the formalisation of standard practice and protocols by agencies into various communicable documents such as; memos, circulars, drafts, civil service rules and regulations for public servants.

Another method for combination in the current framework is based on lesson learned and feedbacks from workshops and training are to be documented into standardised form of knowledge. This form of knowledge conversion process is highly common in the Nigerian public sector as a result of its document centric organisational nature.

- **Internalisation:** Internalisation is the ability of individual to acquire organisation documented knowledge (explicit) into tacit (internalised) knowledge. The effect of internalisation becomes effective when the experience or knowledge gained through organisational wide documented knowledge help reshape the mind of civil servants when actually performing official tasks. As an example, knowledge picked up by staff from documents such as memos, circulars or consultant reports can enable individuals (civil servants) to increase or upgrade knowledge within task performance.

Fundamentally, the SECI framework explained the categorisation of knowledge creation into a perspective of how knowledge is converted in a spiral format by way of learning to create and share knowledge for organisational use.

7.5.1.3 Knowledge evaluation

Not all knowledge identified and collected are required for organisational businesses. Incorporating invalid or unrequired knowledge into business process could have negative value to the organisational objective. Therefore, new and updated knowledge needs to be properly evaluated before being accepted as working knowledge.

The process of knowledge evaluation begins when all knowledge has been captured. All captured knowledge (tacit or explicit) at this stage (in a cluster form) may contain some element of unwanted or unrequired knowledge. From the context of the Strat-KM, knowledge created at this stage needs to be reformulated to ensure it meet the public sector specified or usable form. The reformulation process should be in form of experts (two or three Officers from Director level) set up to sensitise or clean up the knowledge pool to the required knowledge for a given task. Table 7.7 provides a summary of knowledge evaluation activities within the Strat-KM context.

Table 7.7: Summarise knowledge evaluation process

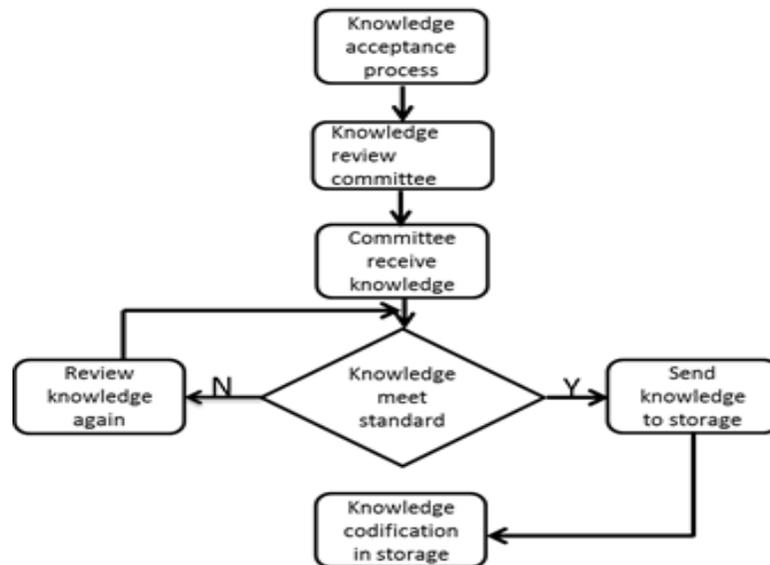
Objective/goal	<ul style="list-style-type: none"> ▪ To evaluate knowledge been created
Activities	<ul style="list-style-type: none"> ▪ Evaluation of organisational documents (memos, circulars, financial regulations, civil service rules), external journals and articles in order to accept only knowledge that meet process needs ▪ Observation and recording of staff task performance ▪ Interview staff with series of questions and if answer satisfactorily, answers can be consider working knowledge
Outcome	<ul style="list-style-type: none"> ▪ Required knowledge accepted as a working knowledge

Carrying out this evaluation process will ensure that only required and standardised knowledge are accepted before passing into the storage area for future use. Standardised knowledge is an organisational working knowledge for effective a particular task.

7.5.1.4 Knowledge Acceptance

Knowledge acceptance is set up to ensure that only required knowledge is created for organisational use. After knowledge is created and evaluated, the accepting knowledge process begins (see fig 7.9). The acceptance of knowledge triggers the storage process in the Strat-KM framework. This is the process that guarantees that the expert body has the opportunity to review knowledge before it is passed to the storage media.

Figure 7.9: Summarised knowledge acceptance process



As indicated in fig 7.9, before knowledge can be accepted as working knowledge it has to go through an evaluation process through a committee that is expert in the task area. This is to ensure that only accurate knowledge needed for a particular task is accepted for use. Once the created knowledge has been accepted by the committee, knowledge can then be sent to the officer(s) responsible for the codification of knowledge in the storage media.

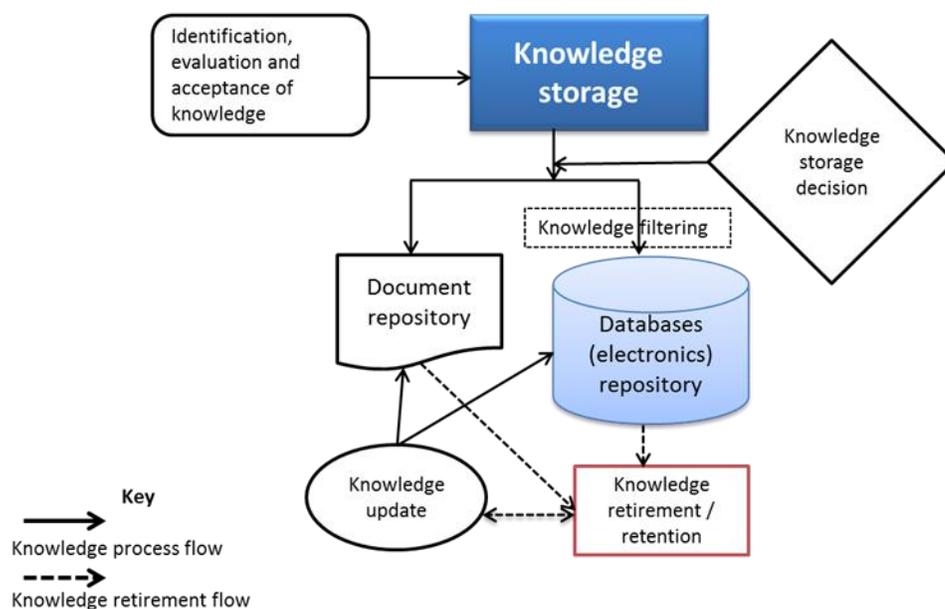
7.5.2 Knowledge storage

The Nigerian public sector like most organisations collects and stores knowledge. Depending on the knowledge type an appropriate storage medium needs to be put in place. The storage medium should either be documentary or electronic (e.g. databases) that enables access to and retrieval of knowledge as and when required.

The type of knowledge storage medium mostly used in the Nigerian public sector is the documentary repository. This is because, Nigeria like most public sector organisation in developing countries is a document centric organisation (Rasul and Rogger 2015; Fieldwork 1). However, accessing knowledge documents is sometime problematic as it was evident during Fieldwork-1 and the study of “Management of Bureaucrats and Public Service Delivery: Evidence from the Nigerian Civil Service by Rasul and Rogger (2013)

As a result of the difficulties (no access to knowledge files as and when due) usually encountered by staff in accessing documented knowledge (fieldwork-1), current research recommends through its Strat-KM framework an electronic repository (database) systems (see fig 7.10) for the Nigerian public sector.

Figure 7.10: Knowledge Storage



For the Strat-KM, the electronic database recommendation is borne out of the belief that database systems storage are more secure, easy to access, suitable for instantaneous update and archiving when the need arises (Samoilenko and Nahar 2013; Canzano and Grimaldi 2012). Furthermore, the choice of the electronic system for knowledge management practice in this research is based on the assumption that the electronic database will reduce difficulties in accessing documented knowledge by staff of the sector.

In the Strat-KM, knowledge evaluation and acceptance triggered the knowledge storage processes (fig 7.10). Once the knowledge creation process is completed, knowledge is accepted at this stage is then passed on to the storage medium. However, before knowledge can be passed to the database a filtering process is triggered.

The knowledge filtering by extension is the process that ensures the right knowledge in the right format (code) are passed through to the knowledge management database systems. It is to further refine knowledge created to ensure that the standard of the knowledge going into the storage meet organisational need as defined in the Target State of the Co-ordination process of the Strat-KM. Knowledge from the filtering stage can then be passed to the database system for use in effecting business process. The next stage within the knowledge storage process is the knowledge update followed by knowledge retirement and retention.

7.5.2.1 Knowledge update

In today's business environment, changes are bound to occur and organisations need to keep up with such changes. A change in business processes for example needs new strategies to keep up-to-date.

In the current research, it was discovered in Fieldwork-2 and 3 that most knowledge for business processes in the Nigerian public sector is obsolete. Thus, exiting knowledge needs to be updated to ensure business process (task execution processes) are on par with the current business demands.

The findings from fieldwork 2 indicate that there are obsolete and missing knowledge within task processes in the Nigerian public sector. Thus, there is need to re-evaluate existing knowledge currently been used by staff of the sector.

The process of knowledge update should begin with a re-evaluation exercise that should be set up in such a way that an expert knowledge worker (Director's grade level) examines existing knowledge and recommends updating or creating new knowledge to replace existing obsolete knowledge as summarised in table 7.8

Table 7.8: Summary of knowledge update

Objective	To determine knowledge updates in a repository
Actions	<ul style="list-style-type: none">▪ Evaluate existing knowledge▪ Accept evaluated knowledge▪ Retire unwanted knowledge
Outcome	Refresh knowledge repository with new and current knowledge.

As indicated in table 7.8, before any knowledge set is updated in the database, such knowledge goes through a process of evaluation and acceptance as highlighted in sections 7.5.1.3 and 7.5.1.4. Once existing knowledge is found to be obsolete, missing knowledge within the obsolete knowledge or new knowledge can be created to replace existing ones.

Knowledge updates in the Strat-KM take the form of knowledge removal, joining or creating new knowledge entirely to replace existing ones.

Knowledge removal and joining usually takes the form of moving old knowledge (obsolete) from the repository. Obsolete knowledge can be determined through knowledge auditing. Once existing knowledge can no longer support current business process efficiently and effectively during a needs analysis in the Co-operation process phase then knowledge auditing should be triggered to identify where knowledge is needed to satisfy current business need.

7.5.2.2 Knowledge retirement and retention

Knowledge is the skill set that has been embedded in various repositories which is either in individual or organisational artifacts (Schmitt et al. 2011). In knowledge retirement, the emphasis is on archiving obsolete and unwanted knowledge. Knowledge in archive from the Strat-KM is to serve two purpose; a. It serves as an organisational knowledge reference; and b, it provides an opportunity for knowledge creation and update as part of a specific knowledge artifact may become relevant in the future for addressing a given problem.

The discussion of knowledge retention in this research is centred on preventing knowledge loss due to employee leaving the public sector for various reasons (Levy 2011). According to O'Dell and Hubert (2011), various strategies exist to help organisation avoid knowledge loss and enjoy the benefits of retaining organisational knowledge. Most of the common knowledge retention practices are:

- Community of Practice
- Job-related job transfer
- Mentorship
- Consultancy services

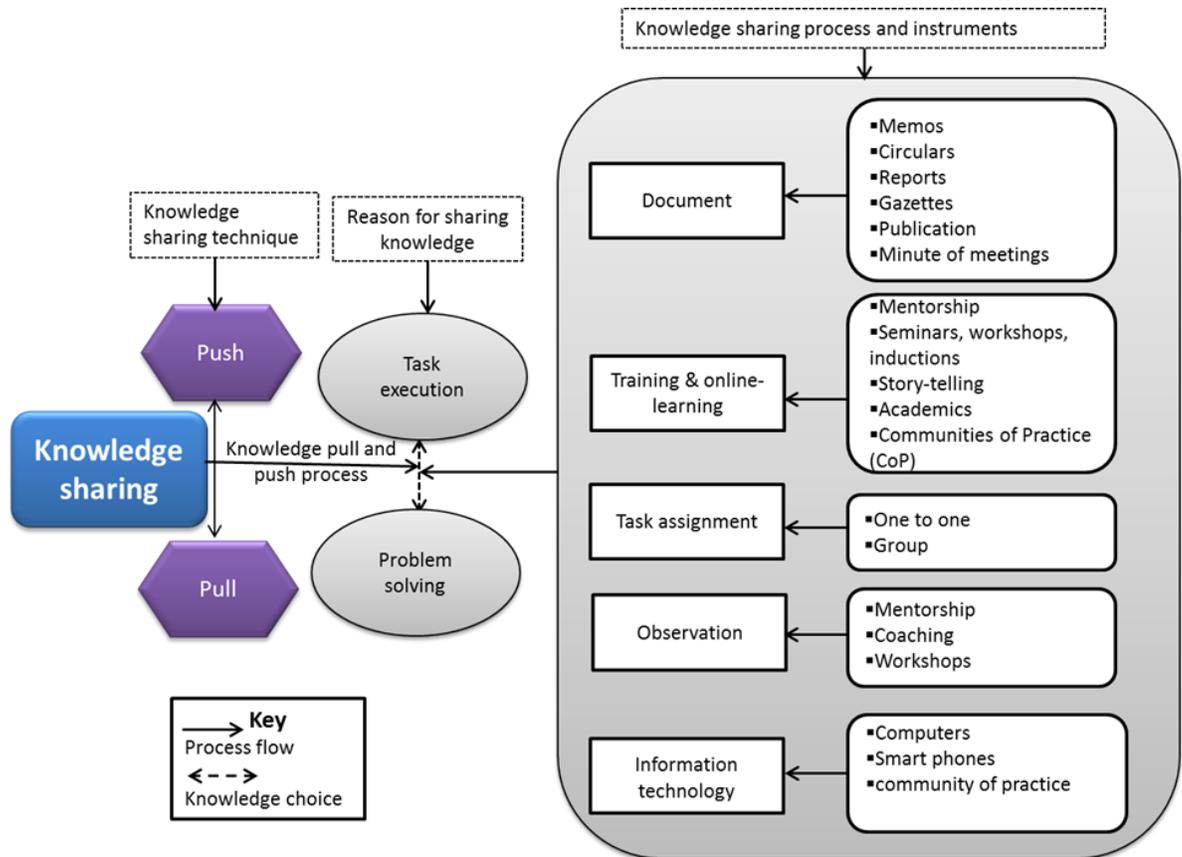
7.5.3 Knowledge sharing

This section focuses on knowledge sharing process of the Strat-KM. This involves the process of transmitting or exchanging knowledge between organisational individual (Wang & Wang 2012). Knowledge sharing in any organisation including the public sector is either carried out as a regular (based on daily task activities) or event triggered (based on specific activity that occurs occasionally) knowledge sharing processes (Kucza 2001). For this research, both regular and event triggered knowledge sharing are considered to mean knowledge sharing processes.

The main objective of knowledge sharing is to facilitate successfully exchange of knowledge between individuals or groups within an organisation. Many techniques and tools exist for the exchange of knowledge within an organisation. Many of the knowledge sharing techniques and processes are highlighted in the State of New Hampshire (2002), CEN (2004), Kucza (2001) and the findings from the empirical studies 1 and 2 of this research provided the foundation for the knowledge sharing processes in the Strat-KM design. The knowledge sharing processes recommended by State of New Hampshire and CEN have been widely used because of their standardisation of processes for private and public service knowledge management implementation.

In fig 7.11, the main knowledge sharing techniques as well as instruments for sharing knowledge within the Strat-KM for the Nigerian public sector is presented.

Figure 7.11: Strat-KM Knowledge Sharing Processes



An analysis of the current state of knowledge sharing processes in the Nigerian public sector indicates that knowledge is shared mostly through documents and they include; memos, circulars and minutes of meetings (Ekeke 2011). In the current research, this method of knowledge sharing is acknowledged; however in the Strat-KM, extensions were made to the traditional method of knowledge sharing processes to include; training and online-learning, and information technology as indicated in fig 7.11. Next section discusses knowledge sharing techniques from the Strat-KM perspective

7.5.3.1 Knowledge Sharing Techniques: Pull and Push

The method of knowledge pull involves an individual requesting specific knowledge within an organisation to meet specific task processes. The first step in the knowledge pull involves task identification and processes defined by individual. The knowledge pull process then begins with knowledge search, retrieve and adopt either through direct communication or using IT systems (Kucza 2001). The activities within knowledge pull in the context of the Strat-KM is highlighted in table 7.9

Table 7.9: Knowledge pull process

Objective	<ul style="list-style-type: none"> ▪ Task identification ▪ Search for knowledge in response to task
Activities	<ul style="list-style-type: none"> ▪ Define and convert task processes into knowledge search criteria ▪ Search for knowledge within the organisation (databases or individual) ▪ Request
Outcome	<ul style="list-style-type: none"> ▪ Request or retrieve specific knowledge content from within the public sector (Unit, department or ministries systems) to effect task processes

In the knowledge push, specific knowledge is sent or pushed to an individual with a knowledge request in order to meet the task process need. The knowledge push is based on the search criteria of the pulling individual as a result of task analysis previous defined. This process of knowledge is expatiated in table 7.10

Table 7.10: Knowledge push process

Objective	<ul style="list-style-type: none"> ▪ Provision of specific knowledge to individual within an organisation
Activities	<ul style="list-style-type: none"> ▪ Analyse existing knowledge based on task processes in search criteria from knowledge pull ▪ Announce knowledge to requester
Outcome	<ul style="list-style-type: none"> ▪ Provide specific knowledge in response to knowledge request

The concept of the knowledge pull is grounded in the identify task, search for knowledge, retrieve and use for organisational task. While the knowledge push is hinged on the transfer of specific knowledge to user either directly through communication or IT infrastructure (electronic repository see section fig 7.6) which is the main objective of the Strat-KM.

7.5.3.2 Knowledge Sharing: Documents (organisational documents)

In the Nigerian public sector, documents serve as the main method for knowledge sharing. The process involves knowledge in files being moved from one officer to another. Most of the documents used as instruments for sharing knowledge in this context are:

- Memos
- Circulars
- Consultant reports
- Gazette
- Government publications
- Minute of meetings

The current process of using documents for knowledge sharing has its drawbacks including delay in getting access to knowledge. This traditional method of knowledge sharing (documents) is still relevant. However, in the Strat-KM, this traditional method of knowledge sharing is extended to enable organisational members (unit, section and ministry) view, search and retrieve knowledge in a database system using key words that may aid knowledge search criteria (see table 7.8 and 7.9 activities sections) and capability based on coded information in such documents.

7.5.3.3 Knowledge Sharing: Training and Online-learning

This is a dynamic and stimulating way for knowledge sharing through a group learning process. Training is an instructional method of learning how to perform a task or acquiring skills in a hands-on approach either in a formal or informal forum.

In the Nigerian public sector, the system of transferring skill from experienced public servants to less experience staff is one major way of knowledge sharing. The format for this training ranges from in-house training to mentoring through seminars, workshops, self-training and academics. Other form of training been used by the public sector to transfer knowledge from older officers to less knowledgeable officers are story-telling and collaboration between officers.

Training in the context of Strat-KM, takes the form of planning and scheduling, and providing learning materials relating to operational processes (specific task) to staff and feedbacks from such training are recorded to be used as knowledge for task based processes (see table 7.9).

On the other hand, online learning provides a platform for an individual’s self-learning using the benefits of IT infrastructures. This training method is limited in the public sector because of insufficient IT infrastructure. However, it was observed (Fieldwork-1) that most staff in the Nigerian public service use smartphones for accessing online materials for self-learning and other activities. From the Strat-KM perspective, table 7.9 provides a summary of how training and online-learning help knowledge sharing processes.

Table 7.11: Summary of training for knowledge sharing

Objective	Strategies for knowledge sharing through training and online-learning
Activities	<ol style="list-style-type: none"> 1. Planning and preparation for training <ul style="list-style-type: none"> ▪ Identified task, ▪ Break task into manageable task processes ▪ Identified knowledge within the task processes ▪ Design teaching materials and methods to fit into task processes 2. Present the task process to knowledge users <ul style="list-style-type: none"> ▪ Introduce task and its processes to officers ▪ Introduce the task benefits to fit into organisational objective ▪ Perform and describe task processes practically to civil servants 3. Practical performance

	<ul style="list-style-type: none"> ▪ Observe officers while they perform task ▪ Ask officers to demonstrate task processes they have performed ▪ Reversed processes until all task processes is understood
Outcome	Officers' gain required skill set for a particular task during training

Adopted from: State of New Hampshire (2002)

7.5.3.4 Knowledge Sharing: Task Assignment (sharing)

In most organisations, either public or private, task sharing has become a method for creating a shared mental context for knowledge (tacit) sharing. Though, the public sector provides training and documentation for knowledge sharing, however, task sharing has proven successful for the same context between individuals, units and departments by way of pairing officers to solve a particular problem or task (Hu et al. 2009).

Task sharing takes the form of one-to-one or group task sharing through mentorship or induction. Mentorship creates learning relationship environments between employees. The process involves the mentor (older and more experience civil servants) sharing knowledge on a specific task with a less experience officer or group of officers. While induction provides an environment for teaching or passing knowledge to newly recruited officers after three months of resumption.

7.5.3.5 Knowledge Sharing: Observation

Within the context of knowledge sharing in the public sector organisation, observation is a highly effective method of sharing knowledge with regards to the level of involvement between the observer and the observed, the relationship between both parties and the task under observation (Dehghani and Ramsin 2015)

In the Nigerian public sector, this method of knowledge sharing has a well-defined process where a knowledge officer mentors a younger inexperienced officer in the process of achieving a task or to solve a given problem. The main methods for sharing knowledge under this context are:

- **Workshops and seminars:** In the traditional seminars and workshops, participants listen to the presenter story without the opportunity of practice. However, in the context of knowledge management practices and as adopted in the Strat-KM, a more dynamic approach is considered. In this consideration, officers are encouraged to interact, perform a practical task in relation to organisational business processes. In this context, as officers share the expertise during task performance knowledge is exchanged between individuals.
- **Mentorship:** This involves the process of a knowledgeable officer working together with an inexperienced officer. In this instance, the mentor acts as a teacher or advisor and coach to the inexperienced officers. In mentoring the inexperienced officer, knowledge and skills required for the given task are passed from the mentor to the inexperienced officers.

In the Strat-KM, the mentoring process of knowledge sharing is designed to be formal organisational directives where older and experienced officers (Director and Assistant Directors) perform certain tasks while less experienced officers observe the way such tasks are performed. Furthermore, senior officers in the organisation can visit the less experienced officers with a view to interact and story-telling in a given context of task processes.

7.5.3.6 Knowledge Sharing: Information Technology

In a contemporary public sector organisation, Information Technology (IT) is an enabler for employees to obtain and apply organisational knowledge for business processes. Thus, IT is a key medium for knowledge communication and flow within the organisation (Choi *et al.* 2008).

In the Nigerian public sector, IT infrastructure is limited; this may pose certain challenges to the sharing of knowledge between members of the sector (Fieldwork 1). However, many staff in the sector have and use smart phones for most IT related tasks. Moreover, things are changing in the Nigerian public sector as more and more IT infrastructure is being implemented to support government business processes.

In the Strat-KM like many other knowledge management frameworks, the main IT instruments are computers, smart-phones and related devices. However, the main processes for sharing knowledge within the IT infrastructure are:

- **Community of practice (CoP).** Sharing of knowledge under the CoP involves group of individuals coming together and sharing knowledge in a common practice mostly in a separated geographical locations (State of New Hampshire 2002). Though, members of the CoP are not a formalised organisational work team, they enable members of the group to share relevant knowledge faster. In recent years, most social media present the opportunity for individuals to engage in the exchange of knowledge across the globe.

The composition or structure of the CoP group is dependent on the members themselves. This in mind, the personnel in the Nigerian public sector can come together in a social setting to discuss and share the relevant knowledge needed for a given task they perform. This type of knowledge sharing processes is already a common practice within the Nigerian public sector.

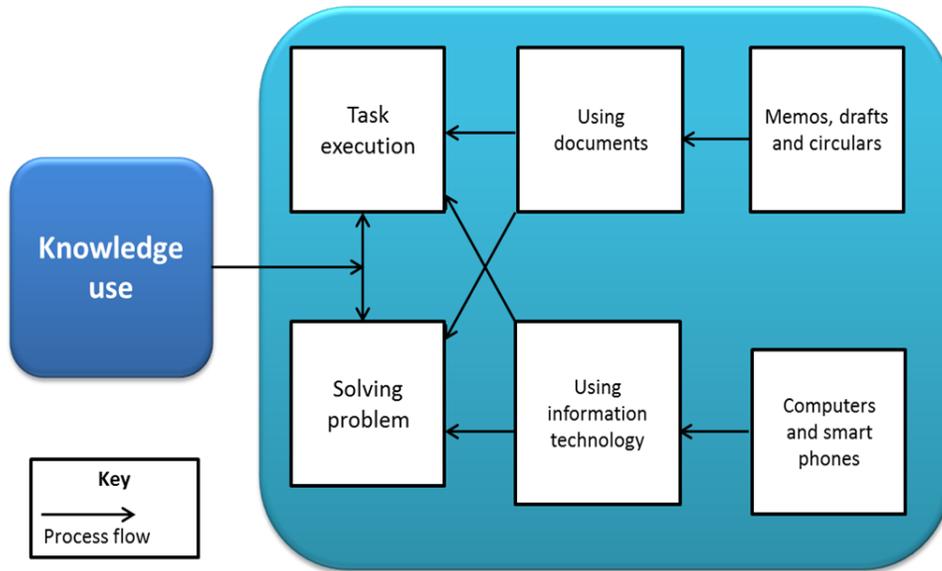
- **Forum and meetings:** In the Nigerian public sector, small groups and meetings are already established processes for sharing knowledge and learning. In some ministries and departmental meetings are held often to share experiences on a given issue and problem. The minute of meetings from the discussion are documented to become explicit organisational knowledge for future use.

In the Strat-KM, these meetings and group discussion can be planned and arranged using the benefits of IT (internet and intranet based) which is now becoming an accepted and useful medium for sharing knowledge.

7.5.4 Knowledge Use

This is the process that allows knowledge to be applied to solving problems or to perform official functions. Fig 7.12 provides a typical knowledge use within and organisation.

Figure 7.12: Knowledge uses process



Knowledge and knowledge management is used to provide required knowledge to individuals. However, sifting through the myriad of knowledge content within an organisation like the Nigerian public sector is a challenging task. To address this problem, Strat-KM incorporates some aspect of knowledge selection criteria in its documented knowledge sharing process (see section 7.5.3.2).

As indicated in fig 7.12, knowledge use is triggered through the elaboration and analysis of a task or problem to be solved. As with the Strat-KM, individual officers identify tasks and plan for the method (s) on how to request and use required knowledge through one of the following methods:

- **Knowledge document:** Documented knowledge in the Nigerian public sector has its challenges, thus it's not a main concern in the Strat-KM framework in the context of knowledge uses. However, as with the structure in fig 7.12, performing tasks can still be achieved through the use of documented knowledge. Some of the documented knowledge in the Nigerian public sector is; memos, circulars, consultant reports, drafts, civil service rules and regulations.

- **Information Technology:** In recent years, IT has become one of the main effective mechanisms for sharing and using organisational knowledge. As with knowledge sharing in section 7.5.3.6, computers and accessories as well as smart phone tools for knowledge use in most contemporary organisations (e.g. Nigerian public service).

In general, the main purpose for using knowledge in an organisation is to perform effectively a task assigned. In the Nigerian public sector, thus using the right knowledge is fundamental to providing quality services to the people. It was observed during the empirical studies carried out in this research that most available knowledge to officers of the sector is either obsolete or missing. Thus, the ability to create, present and use necessary knowledge is key to the effectiveness of the Nigerian public sector.

7.6 *Strat-KM Validation*

One of the main objectives of knowledge management frameworks are that they are constructed as a practical solution to knowledge management implementation in an organisational setting (Pawlowski & Bick 2012). Thus, the development of the Strat-KM is built as an approach based on thorough analysis of knowledge management framework literature and empirical studies carried out in this research. The validation of the Strat-KM is initiated based on understanding from literature reviewed and expert (Directors) opinion from the Delta State public service. The validation with the experts serves as a proof-of-concept for the Strat-KM as a conceptual knowledge management framework for the public sector (e.g. Nigeria).

Ten experts (Directors) from the Delta State public service and a Knowledge Management expert (also a public service officer from the Bayelsa State, Nigeria) were purposefully selected for the actual validation of the framework. The ten Directors from the Delta State public service were selected based on their years of experience, knowledge of business processes and understanding of their ability to assess the Strat-KM based on their knowledge of business processes in the sector. While the selection of the expert from the Bayelsa State public service was based on his training as knowledge management expert during his Doctorial study from Aberystwyth University, Wales and he is also a Senior Director in the Bayelsa public service in Nigeria.

In validating the Strat-KM, Construct Validation Principles (CVP) of Translation Validity was adopted. This is consistent with Kulkarni and Freeze (2004) knowledge management framework validation concept. The Translation Validity (TV) is a principle that attempt to assess the degree to which accurate translation of a construct occurred during operationalisation of a construct. The construct in this instance is the Strat-KM while the contents are the four pillars of knowledge management; knowledge creation, storage, sharing and uses. Table 7.12 present summarised goals and questions from the validation script

The main Operational process of the Strat-KM, the four strands (knowledge creation, storage, sharing and use) were designed and explained with Ms PowerPoint presentation and the researcher’s voice recorded and synchronized according to contents in the framework using audacity.

Table 7.12: Summarised goals and questions from the validation

Four pillars of the Strat-KM	Goal of the Strat-KM contents	
	Description	Main questions
Knowledge creation	Identification and capturing of relevant knowledge to effect government business processes	<p>To what extent does this framework reflect knowledge creation, sharing and use in your ministry?</p> <p>Can you critically evaluate the framework and provide feedback on what part of the framework you think can be remove or add to?</p> <p>Provide additional comment(s) that might improve the feasibility of this framework</p>
Knowledge Storage	Encourage centralized electronics repository systems	
Knowledge sharing	Present the knowledge sharing processes and tools to enable knowledge sharing activities between staff, units, departments and ministries	
Knowledge uses	Encourage the identification of relevant knowledge within the systems that can be used to perform specific task	

All eleven (11) experts participated in the validation exercise. To make sure the participants understood the contents of the framework, follow up calls were made to explain the Strat-KM construct, its contents and the purpose for the validation.

7.6.1 Results of the Strat-KM validation

All of the experts selected were asked to comment on the consistency of the translation of the Strat-KM concept whether it fit into government business processes or task performed within their respective ministries. Data and feedback from the validation exercise was analysed using Content Analysis (CA) and the result is presented as follows:

- The result indicated that the framework is a consistent translation of the existing knowledge management practice in the Nigerian public sector. However, the Strat-KM provides an extensive and additional formalised approach to knowledge management practice worthy of implementation in the Nigerian public sector.
- All participants agreed that knowledge creation process (SECI), knowledge evaluation and filtering will encourage the provision of standardised knowledge in relation to task processes within the service.
- The framework to a very large extent proves helpful especially in the area of knowledge storage, sharing and use. This implies that the Strat-KM knowledge will improve the use of knowledge by officers and provide a centralised storage repository within the public sector that will improve or aid knowledge search and implement which was lacking in the existing practice
- 80% of the experts from Delta State believed that the Strat-KM is suitable for knowledge management practice in the Nigerian public service.
- 9.09% of the experts recommends the inclusion of Community of Practice and Information Management to the Strat-KM.

The summarised findings from the validation of the framework with the experts' show that the Strat-KM has the potential to create theoretical as well as practical guides to the

implementation of knowledge management practice in the Nigerian public sector. The validation of Strat-KM provides the following understanding based on:

- **Usefulness**

The usefulness of the Strat-KM is viewed from the perspective of having the potential to support the implementation of knowledge management practice within the Nigerian public sector. The feedback from participants indicate that the framework can support organisational knowledge creation and uses within the frame of providing required knowledge to the end user in relation to task performance. The interpretation is that the Strat-KM if adopted has the potential to provide the right knowledge to the right people through knowledge creation, storage, presentation and use by officers within the Nigerian public sector in relation to actualising effective government business processes

- **Understanding**

The understanding of the framework was also commented on by the expert participants. With the feedback, all experts believed that the framework is impressive, instructive and contained all the basic components in a knowledge management processes. This implies that the experts understood the various components in the Strat-KM and the way each component inter-connected both in process and knowledge flow. Further doubt on the framework construct and the inter-connectivity were cleared with the follow up calls.

7.7 Summary

This chapter has demonstrated the rigorous construction of a knowledge management framework for the implementation of knowledge management practice in the Nigerian public sector. The construction of the framework was based on the combination of various frameworks and result of the three empirical studies carried out in Nigeria.

The framework (Strat-KM) was validated through the Content Validity principle and analysed through content analysis. In validating the framework, the theoretical organisation, practical relevance and applicability was considered which is consistent with the study by Pawlowski and Bick (2012). Based on proof-of-concept and the content validity principle, it was observed

as a result that the artefact (Strat-KM) has the potential that can guide the implementation of knowledge management practice as well as leading to the efficiency and effectiveness of business processes in the Nigerian public sector.

After demonstrating the relevance of this chapter based on the findings from the three empirical studies carried out in this research, next chapter is taken to present the discussion of findings for this research.

8 Chapter Eight: Discussion of Findings

This chapter presents the collation, interpretation and synthesis of the findings from the various empirical studies carried out and the literature reviewed. As illustrated in fieldworks 1, 2, and 3, the findings and conclusions were made based on the data collected and analysed for each of the fieldworks.. All of which were critically designed to answer the research question; “*Can Knowledge Management improve the efficiency and effectiveness of the Nigerian public sector*”? The findings from literature reviewed and the empirical studies have been presented in chapters two, four, five and six. It is noteworthy to say that the findings from the progressive research constitute the development of a knowledge management framework for the Nigerian public sector and related organisation intending to implement knowledge management.

The aim of this chapter is to present the research findings as an integrated approach as well as issues and results from the contemporary literature context. To discuss this aim, this chapter is divided into two main sections with other supporting sections. The first section presents specific fieldwork and their findings as well as implications.

The second section presents a discussion around the proposed framework (Strat-KM) development for the implementation of a knowledge management practice in the Nigerian public sector and related organisations in developing countries. Preceding these two main sections are the discussion on the contribution to knowledge as well as the limitations of this study and finally the summary of the contents of this chapter.

8.1 Empirical studies

Three empirical studies carried out in this research were critically thought out to answer the research question. Each of the studies is distinctive but interrelated in justifying the research problem. Though, details of these empirical studies are presented in chapters four, five and six, this section highlights and discusses their results in relation to the objective of the research.

8.1.1 Fieldwork-1

The focus of this study is to explore mainly the efficiency and effectiveness of the Nigerian public sector from the public service staff perspective. This is in response to the widely acclaimed belief that the Nigerian public sector is inefficient and ineffective in terms of service delivery.

As a second objective, this study focuses on understanding existing knowledge management practices in Nigeria. The understanding that Knowledge Management is a concept that can improve efficiency and effectiveness provides an opportunity to investigate its existence in the Nigerian public sector to see whether the existing practice conformed to contemporary knowledge management concepts identified in literature (Anand 2011).

The third objective of this empirical study is to investigate and the integration of Information and Communication Technology in government business processes in Nigeria. This is against the backdrop that ICT is an driver to effective and efficient organisational business processes (Wanjun, Wei, and Fajie, 2010). Finally, this study explore the impact of culture on the way knowledge is currently being managed in Nigeria public service. Culture is a critical success factor (Sánchez, Sánchez, Collado-Ruiz, and Cebrián-Tarrasón, 2013) if public sector organisations are to succeed in terms of knowledge management deliverables; therefore, it is imperative to explore the cultural aspect if the public service in Nigeria is to implement knowledge management practice.

8.1.2 Fieldwork-2

In response to the findings in fieldwork-1, empirical study 2 was carried out to explore embedded knowledge within task processes in the public service of Nigeria. The direct implication of this study is to understand whether the right knowledge has been drawn upon during task performance by staff of the sector. Applying the wrong knowledge in a process provides ineffective products or services (López-Nicolás and Meroño-Cerdán, 2011). Performance improvement is the foundation on which this research is grounded; therefore, exploring knowledge within a task is necessary if the objective of the research is to be achieved.

8.1.3 Fieldwork-3

This study focuses on the sources (start point) of inefficiency and ineffectiveness within the Delta state public service. Several literatures exist on the claim that the Nigerian public sector is inefficient and ineffective on the way government goods are delivered. However, none of the literature provides empirical evidence on the sources of the inefficiency and ineffectiveness as it relates to various research investigations.

In an organisation like the Nigerian public sector facing challenges of public demands for quality services, it is expectedly that all government resources (e.g. human knowledge) should be up-date and easily accessible by staff who needs what and when.

Findings from fieldwork-1 and 2 (see chapter four and five) indicate that the Nigerian public sector is inefficient and ineffective in the way services are delivered and there are knowledge gaps in tasks processes within the sector. Therefore, it is logical to trace the start point at which inefficiency and ineffectiveness crept into tasks performed by staff. Understanding the start point of the inefficiency and ineffectiveness is fundamental to addressing the problem of poor service delivery by implementing a knowledge management practice that will enable staff to gain access to up-date knowledge during task performances.

8.2 *Presentation of Results*

This section present results of the empirical studies carried out as well as mapping these results where appropriate with knowledge gained from reviewed literature with a view to addressing the research question postulated in chapter one. The presentation of the results naturally falls into categories according to the empirical studies. The result presented in section 8.2.1 deals with the perception of personnel on the issue of efficiency and effectiveness of the Nigerian public sector as generated from fieldwork-1, while section 8.2.2 presents a discussion on study 2 which focused on identifying embedded knowledge within task processes and the report on the third study (fieldwork-3) is presented in section 8.2.3 which specifically focused on identifying sources of inefficiency and ineffectiveness in the Nigerian public sector. The aggregations of these result as well as knowledge gained from literature provide understanding for the development of the proposed framework in chapter seven.

8.2.1 Efficiency and Effectiveness in the Nigeria Public Sector: Understanding the Research Problem (fieldwork-1)

In chapter four, results about the fieldwork-1 have already been presented. This section however, present information about the implication of the various element of the study which includes; efficiency and effectiveness, knowledge management, IT integration with government business processes and the impact of culture on knowledge management in the Nigerian public sector.

8.2.2 Efficiency and effectiveness of the Nigerian public sector

The study reveals that the Nigerian public sector is inefficient and ineffective in the way government resources are utilise in providing services to the people. The result 66% (questionnaire), 100% (semi-structured interview) and 100% (focus group) strongly confirm that the Nigerian public sector is inefficient and ineffective at providing quality services to the people. This result is consistent with findings from (Okeke-Uzodike and Subban, 2015; Ekpe, Daniel, and Ekpe, 2013).

The concept of efficiency and effectiveness according to Adam (2014) is the ratio between resource input and outcome achieved. Using this concept to measure the perception of staff of the delta state staffs, the findings from this indicates that more government resources are committed to producing less goods and services. This claim is partially supported by the finding of Performance Management study of the Nigerian public sector by Esu and Inyang (2009).

Overall, the finding in terms of efficiency and effectiveness of the Nigerian public sector in this study did not discover new trend owing to the fact that many literature researches publish already emphasis this claim. However, this section of the fieldwork provides the foothold and start point on which the research problem is addressed.

8.2.3 Knowledge management

The main focus of the research is to investigate whether knowledge management can improve the efficiency and effectiveness of the Nigerian public sector. In this context, this research has highlighted that knowledge management can naturally improve organisational performances.

In fieldwork-1, the study reveals that there exists some element of knowledge management in the public sector of Nigeria. The knowledge management approach in existence in the Nigerian public sector is informal.

This result reveals that informal knowledge creation and sharing occurred in the Nigerian public sector but mostly through inter-relationship between peers, colleague, department's heads and mentors. This is consistent with the findings by (Ekeke 2011). Consistently, formal tacit knowledge management practice requires interaction and socialisation among individuals which ultimately promotes organisational efficiency and effectiveness (Hamid 2012).

Furthermore, in accessing the essence of knowledge management (explicit knowledge), various items were listed (see chapter 4) as potential sources of knowledge creation, sharing and use. This includes; memos, circulars, drafts, civil service rules and regulations, newspapers. A high percentage (over 80%) of respondents answered that they know where and how to get knowledge when in need. The various sources of knowledge according to the respondents is limited to the individual staff who creates the document that contains knowledge. The implication of this method is that the owner of knowledge within the Nigerian public sector is not well defined.

In accessing the potential of knowledge management as a strategy for improving employee performance, most participants interviewed agreed that they believe with effective knowledge management practice, the public service can provide better services. The implication of this perception of the public service staff indicate that if management of the Nigerian public sector can institute better ways of managing knowledge within the sector then performance of employee and the overall service provision by individuals, units, departments and ministries will improve.

This perception of the public service staff highlights the possible answer to the research question 'Can knowledge management improve the efficiency and effectiveness of the Nigerian public sector?' In the affirmative, this finding correlates discoveries by other researchers (Holste and Fields, 2010; Turner and Minonne, 2010) that management have the potential to improve organisational sustainability, development, efficiency and effectiveness.

8.2.4 Information and Communication Technology integration to Business process

The ICT service examined in this study was to understand the level of integration and impact of ICT infrastructure in business processes of the Nigeria public sector similar to those identified in knowledge management literature by Palvalin, M., Lonnqvist, A. and Vuolle (2013). The benefits of ICT in organisation business processes is time saving and major driver for knowledge management (Chen, Elnaghi, and Hatzakis, 2011).

In the study, respondents were asked to comment on the level of ICT infrastructure integration in business processes in their ministry and the entire public service. The fieldwork-1 further enhances the relationship between ICT infrastructure and the way knowledge is shared between staff.

The findings reveal that there is insufficient ICT infrastructure within public service business processes. However, the situation is changing as most state public services in Nigerian are now implementing one form of ICT infrastructure to organisation businesses. With the establishing of the Vision 2020, integrating ICT in all government tasks and business processes is now a priority.

This finding is in line with the objective calculation which is a identified lack of ICT infrastructure in key business process in Nigeria (Ekeke, 2011). Most of the respondents believed that with better ICT infrastructure, government service delivery and the possibility of sharing knowledge will be much more effective and ultimately impact positively on the way staff achieve task objectives.

One possible explanation to the belief of the public service staff on ICT integration to government businesses is grounded on the expected benefits from ICT being a major driver with the potential to improve the way knowledge can be shared between peers and group of individuals in an organisation. Thus, it can be claimed from an employee perspective that business processes can improve efficiently and effectively if the government is committed to providing ICT infrastructure to aid staff in carrying out their daily tasks effectively and efficiently.

8.2.5 Cultural Impact on Knowledge Management

Cultural impact on knowledge management has been discussed in much literature (Tseng 2010). The Nigerian public sector is not an exception when discussing the impact of bureaucratic culture in the way knowledge is created and shared. Findings in this study reveal that the way the Nigerian public sector is structure in terms of communication affects the way knowledge is manage in the sector.

The findings by Ekeke (2011) collaborate the findings of this research in the context of negative impact of culture on the way knowledge is shared (manage) in the Nigerian public sector. Specifically, the Nigerian public sector is grounded on a vertical (top-down) structure which does not support effective knowledge generation and sharing. In this structure, senior officers find it difficult accepting knowledge identified and created by junior officers even if the knowledge is better suited to a given task process. In most cases, the way knowledge is generated and distributed within the Nigerian public sector is from superior officer to junior officers and not the other way round.

Effective knowledge management is better suited in an organisation with an horizontal (Zheng, Yang, and McLean, 2010) structure where knowledge can be generated across all aspect and individual within the organisation. With this kind of structure, effective and important knowledge can be identified and generated by staff with the knowhow of a given task and passed on to management for approval and validation before being accepted as a working knowledge.

Knowledge hoarding is another aspect of culture the study investigates. Prior to the study, the assumption is that there is knowledge hoarding in the Nigerian public sector. Knowledge hoarding is an aspect of culture viewed with negative impacts on knowledge sharing based on the popular belief that '*knowledge is power*' (Hansen, 2011).

The study reveals that there is no knowledge hoarding among staff of the Nigerian public sector. One possible explanation to this is that staffs already appreciate knowledge sharing mechanism in an informal process through interaction and socialisation either within or

outside office environments. This method of knowledge sharing (management) identified in this study is congruent with Ekeke (2011).

8.2.6 Analysing Knowledge User Tasks (Fieldwork-2)

The overall position of participants in fieldwork-1 is that staff believed appropriate knowledge is being used to effect task processes. To further investigate this, fieldwork-2 audit investigate knowledge within task processes in an organisation to ascertain whether appropriate knowledge is drawn upon during task processes.

Based on the aim of the study and analysis of data collected, two key concepts were highlighted to formulate the findings of the study. The first was to understand embedded processes within task processes in the government sector of Nigeria. The second was to identify knowledge within the embedded task processes. The understanding of the two concepts is to identify areas where knowledge is drawn for task performance.

Reviewed literature suggest that knowledge in task processes is critical if the organisations are to be effectively (Cao, Thompson, and Triche, 2013). Knowledge experts and managers mainly focus on how knowledge in a given task is mostly based on the usefulness of the business and business process to the organisation.

The analysis and results of the study reveals that most of the knowledge being used for task process by employees in the Nigerian public sector are obsolete. The main explanations to this, is that knowledge within the sector are explicitly entrenched on documents such as civil service rules dated back to July 2001 (see Delta State Public service Rules, 2001) which staffs refers to for their daily task performances. Drawing on old knowledge for task processes most times returns negative impact to the organisation service delivery systems. This assertion is consistent with the study by Niri, Akhavan, and Atashgah (2010) on Managing Organizational Knowledge Active Forgetting: How top managers understand the concept of managing old and obsolete knowledge? For the Nigerian public service to meet its mission and vision of providing quality services to the people, there is a need to re-evaluate the existing knowledge and knowledge management systems.

Another result of the study shows that there are knowledge gaps within the task reviewed. Due to knowledge gaps or missing knowledge in the task processes, employees rely on guess knowledge for task perform. The implication of the guess knowledge for task processes will result on wrong or inadequate knowledge being used to perform tasks inadvertently such task will be performed poorly resulting in inefficiency and ineffectiveness of the organisation.

The study results also identify commonality of functional processes of task across several individuals, units, departments and ministries. This duality of functions most time causes bureaucratic bottle necks. As a result of the bottle necks service provision are sometimes delayed beyond normal duration. Therefore, the recommendation is to identify and provide knowledge in relation to a task rather than spreading single task processes across multiple individuals, units and departments.

8.2.6.1 Identifying the Sources of Inefficiency and Ineffectiveness in the Nigerian Public Sector

This empirical work provides insight on the investigation of the start-point of inefficiency and ineffectiveness from individual and organisation perspective in the Nigerian public sector. The main areas the study focused on are as follows: The first aspect is the analysis of 20 projects executed (manage) by the Delta State government from 2005 to 2013 with a view to identify possible areas where inefficiency and ineffectiveness starts. The second focus area is to explore individual distractions of public service staff during office hours. This is to identify the impact interference (distraction) plays in the way individuals perform their tasks efficiently and effectively. Each of the focus findings is presented and discussed below:

In the analysis of project documents (over 1000 documents), taken projects delays and cost as our hypothesis, the study reveals that all 20 project documents analyse have both delays and higher costs indicating inefficiency and ineffectiveness of the project executing processes. The main explanation to the delays and higher costs of projects is as a result of the lack of project execution knowledge by the officers who originate the memo that triggers the project execution processes. Thus, the starting point of inefficiency and ineffectiveness of the organisational project execution is triggered through the various information and knowledge contained in the memo originated by the Schedule Officer.

Further analysis of the project documents reveal that contractors may not necessarily be satisfied with higher cost, however, contractors were not satisfied with the delays in the payment process. The implication is that contractors loose more money as a result of the delays in the payment. Overall, the finding indicates the potential of inefficiency and ineffectiveness triggered by direct sources of inefficiency and ineffectiveness built in by Schedule Officers.

8.3 Framework development

One of the goals of this research is to develop a framework, Strategy Knowledge Management (Strat-KM) framework, for the Nigerian public sector and other related organisation with the intension of implementing knowledge management. The potential impact of the framework is to enable the provision of the right knowledge to the right people. This was done to conceptualised improvement to efficiency and effectiveness through knowledge management practice for public service in Nigeria

The combined knowledge gained from the literature reviewed, managers of the public service and public service staff provide the groundwork for the development of the Strat-KM. The acceptance of the framework is expected to provide the foundation for the implementation of knowledge management in the Nigerian public sector. In general, the context of the developed framework creates the frame for the structure; concepts and practice that underpin knowledge management practice focusing in the public sector within developing countries (especially in Africa). This view is consistent with the position by Acheampong (2014) knowledge management framework for the Ghana public service.

The building block for the developed framework is selected from various expert knowledge management literature including but not limited to Pawlowski & Bick (2012); Ekeke (2011); Kucza (2001) and synthesised findings from three empirical studies conducted in Nigeria. The building blocks are defined as knowledge creation, storage, sharing and use. Details of this are discussed in section 7.5

8.3.1 Validation of the Framework

The validation of the developed framework is initiated and based on the understanding from literature, Directors opinions from the Delta State public service and a Knowledge Management Expert, Dr. Ekeke, a senior Director from the Bayelsa public sector. The validation with the experts serves as a proof-of-concept for the acceptance of the framework and as a conceptual knowledge management framework for the public sector organisation (e.g. Nigeria). The validation of the Strat-KM was based on the Construct Validation Principles (CVP) of Translation Validity. The validation of the framework in this study is consistent with the Kulkarni and Freeze (2004) knowledge management framework validation concept. The framework validation exercise is detailed in section 7.5.5

The findings validated framework reveals a consistent translation of the existing knowledge management practice in the Nigerian public sector. However, the developed framework provides an extensive and additional formalised approach to knowledge management practice worthy of implementation in the Nigerian public sector according to 80% of the expert whom participated in the validation exercise.

8.3.2 Expectation from Strat-KM

The final result of the Strat-KM validation indicates that the concept within the developed framework provide a base for which knowledge gaps within the public sector can be address. For example, various Directors within the Delta State public sector are beginning to find ways for the re-evaluation of the existing knowledge management structure within the sector.

In general, the framework provides and defines a process of knowledge creation, storage, sharing, and use and aligns its concepts to business values of implementing knowledge management practice to provide sustainable development, innovative ideas and improvement to efficiency and effectiveness within the Nigerian public sector and related organisation in developing countries.

As a final remark, the Strat-KM is pivoted on the expectation of the management of the Nigerian public sector, the civil servants, policy makers and administrators of the Visio 2020

who may be involve in the identification and generation of knowledge in respect to improvement in service delivery within the sector.

8.4 Contribution to knowledge, novelty and originality

The processes of knowledge management concept to create, distributes and apply knowledge to business processes no doubt has the potentials to improve effectively both private and public sector business processes (Girard and McIntyre, 2010) which in turn enable the achievement of competitive advantage and sustainable development (Chawla and Joshi, 2010). Knowledge Management therefore is a necessity for public sector organisations if they are to keep improving the level of service provided. Public sector organisations in developing countries that are yet to fully appreciate the benefits of knowledge management practice need to find a better way to explore and apply the concepts, theories and frameworks of knowledge management for business processes; a feat not yet acknowledged in knowledge management literature. Against the back drop of the above observation, this research contributes to knowledge both in theory and practical as discussed in the following sub-sections:

8.4.1 Theoretical contribution

The field of knowledge management is still in its early stage with no universally accepted answer as to: what is knowledge management? Various theories and concepts exist in explaining the meaning and direction of knowledge management as a discipline. However, there is uniformity in research and practice that knowledge is a core resource and organisation needs to effectively nurture and or manage it in order be proactive, innovative and efficiently meet the vision and mission of the organisation.

In this context, this research is a significant addition to the knowledge management literature both in context and theory. This study expands the tenets of knowledge management concept from the Nigerian public sector perspective. It extends the works of Ekeke (2011); Suraj and Ajiferuke, (2013); Bamgboje-ayodele & Ellis (2015) who have attempted to create the awareness of knowledge management within various aspect of the Nigerian economy. Additionally, this study contributes to the campaign to embrace knowledge management for developing countries (Africa) in accordance with the World Bank summits on knowledge management for Africa in 2002.

8.4.2 Methodological contribution (Metrics, Hierarchical Task Analysis and Swimming Lane Sequence)

This research has a significant contribution to the knowledge management discipline literature in terms of its methodological approach. From an academic perspective, the progressive research approach and the combination of various instruments for data collection and techniques for data analysis in arriving at the research findings is a very important contribution to the field of knowledge management. The combination of the various instruments across three empirical studies provides significant contribution towards expanding the tenets of knowledge management in public sector organisation:

First, the development and application of numerical metrics in analysing data relating to sources of inefficiency and ineffectiveness within the project management context of a public sector organisation is a significant contribution on its own. With the application of the metrics, it was clear during data analysis areas where the Nigerian public sector needs to re-evaluate project management processes. Furthermore, the metrics development process will provide a necessary framework for researchers intending to develop and apply metrics as a mechanism for data analysis in their research.

Second, the application of Hierarchical Task analysis for data collection as well as the use of the Swimming Lane Sequence Diagram for analysing data further add to instruments and concept for data management in a knowledge management research process. The way these instruments were applied at different stages of data manipulation in this research brings to bear a framework that can guide our understanding and the interpretation of data from the perspective of embedded knowledge within task processes in an organisational business processes.

In specific context, this study through the application of various instruments, theories and concepts has provided fundamental insight into the practice of knowledge management through a well thought at knowledge management framework, knowledge audit and the identification of the sources of inefficiency and ineffectiveness within public sector organisations not only in Nigeria but also from a global context.

8.4.3 Practical contribution:

8.4.3.1 Framework development and implication

One of the most important contributions of this study is the development of a knowledge management framework for the Nigerian public sector and other related organisations intending to implement knowledge management strategy. This research through its empirical studies had assessed essential elements of knowledge within the public sector task processes as well as comprehensive reviews of literature on the concepts and theories of knowledge management all guided the development of the Strat-KM framework for this study.

It is hoped that the developed framework will address the challenges of utilising key knowledge for business processes by public service staff in Nigeria. The framework will help public service staffs in Nigeria have the opportunity to critically explore in a practical and flexible manner and to grow intellectually in a formal process of knowledge creation, sharing and use. This will in turn help individually and collectively the improvement of efficient and effective service delivery processes of government's services.

8.4.3.2 Knowledge management for Nigerian Public Sector

Practically, this research provides a major step in the right direction in instituting knowledge management practice in the Nigerian public sector. Drawing from the World Bank Economy submit in 2002 and Acheampong (2014), besides helping to meet the needs of public sector agenda in developing countries (Africa) knowledge management initiative this study will help leverage and reduce the many challenges facing the Nigerian public sector service provision through creation and sharing of required knowledge across ministries, departments and units as envisage by the then Head of Service (Ama Pepple, 2009).

The Vision 2020 established by the Nigerian government will benefit greatly from the research findings and the developed framework in terms of exploring and redefining vast knowledge within the sector. For example, the auditing of knowledge in task processes from fieldwork-2 and identification of the sources of inefficiency and ineffectiveness can serve as a starting point for re-evaluating the existing knowledge within the sector and initiate public

service reforms to encourage the creation, updating, distribution and application of knowledge across businesses processes.

8.5 *Limitations of study*

This research no doubt has made positive contribution to the expansion and awareness of knowledge management in the Nigerian public sector and other related organisation especially in the developing countries perspective. Even in the light of the research contributions, there are certain limitations that must be recognised.

Drawn from the methodological aspect, it is possible to use multiple case studies for research of this nature. Although a single case (Delta State public sector) was studied in this research, a multiple case would have produced further understanding into the research objectives. The choice of one case to investigate in this research exposes some limitations.

First, the data for this study is generated from one state in Nigeria, a spread of data collection to cover more states or more of the six geopolitical zones in Nigeria would have help to fully generate data from wider categories sample in answering the research question and achieving the research objectives. Against this backdrop, it is therefore recommended that a wider participants spreads among more states or cases be adopted.

Furthermore, the proposed framework is specifically designed for the Nigerian public sector and data collected was from a single case in Nigeria, therefore, limitations exist in its generalisation. In this specific context, any organisation attempting to apply the concept of the framework (Strat-KM) in this research is recommended to further carried studies in relation to the particular organisational characteristics and possible modifications to the framework are recommended.

The official background of the researcher as a staff of the Delta State public service may have introduced some element of biasness to this research. To reduce bias that may arise as a result of the relationships with the case study organisation, the concept of conscious ignorance by Chan, Fung and Chien (2013) was adopted to minimise any bias that may occur during data collection and analysis.

8.6 Personal reflexivity

Reflecting on the overall research, this research has been an important journey in my life which has equipped and improves my independent learning process. Specifically, on independent learning, I have gained competencies in the directions:

First, this research has collected huge amount of data both primary and secondary. This research has taught and equipped me with the ability to analyse available data from all sources in a critical form relating to the research aim and objectives. The critical and analytical process adopted through the analysis of data collected has offered me a range of substantial benefits in terms of skills needed to inform critical judgments of fact in the future.

Secondly, the research process required a extensive planning, preparation and execution of all stages in the research in an organised manner which has impacted positively in terms of my personal and professional ways of managing a given task. Although, there were challenges at the beginning and the end of this research, these issues were dealt with through task structure and planning and re-adjustment of time plan. Overall, the experienced gained during the research has contributed to my personal and professional attitude through time management, planning and execution of task processes.

Thirdly, prior to this study, my confidence level in dealing with issues has always been low. My confidence level has increased significantly as a result of undertaking this research. This was achieved through personal interaction with many people from different backgrounds based communication processes and etiquette, higher education teaching involvement and the various seminars attended as both presenter and attendee.

No doubt, I have benefited greatly from undertaking this research. As a researcher, the study has increased my analytical ability as well as my confidence level in making informed judgment in relation to influencing positive actions both as individual and in my professional life. As an individual who is pursuing a career in the academia, this research has improve my teaching ability and improved my communication skills in presenting a life changing vision to students as it is required. Overall, being engaged in this research has contributed to

management skills which will translate into better planning and execution in terms leadership positions for any of my future endeavors.

8.7 *Suggestion for Future Study*

By integrating insights and ideas from existing literature as well as assessment from the empirical studies, this research has provided a common platform underpinning discussion on improvement to efficiency and effectiveness through knowledge management from public sector perspective in Nigeria.

The sample and data for this research does not cover the entire ministries and states in Nigeria in relation to improvement to efficiency and effectiveness. In this context, future research is recommended to empirically cover more states, ministries and extra ministerial departments.

One of the main focuses of this study is the development of a framework for the implementation of knowledge management for the Nigerian public sector. As a result, the framework as well as the research findings may have some limitations which may not be applicable to other public sector organisations. Therefore, there is need to exercise caution when generalising the application of the research framework and findings. Further studies could develop similar framework for organisations intending to implement knowledge management initiatives.

Although, this research is one of the few that evaluate the source of inefficiency and ineffectiveness and audit knowledge within task processes, the results do not cover evidence from other organisational variables. Cardoso et al. (2012) argued that organisations as organic and dynamics structure are always evolving according to environmental changes. Therefore as a recommendation for future research, it will be interesting to develop longitudinal studies and explore other variances in relation to organisational improvement to efficiency, effectiveness and the framework developed in this research.

8.8 *Summary*

This chapter has presented an overview of the accomplishment of the research objective through the discussion of findings and comparing the same with findings from other research

literature in the knowledge management discipline. The discussion of this chapter was also drawn from the research contribution to knowledge within the premise of a knowledge management framework. Specifically, the research contribution of the framework perspective has been spread around the knowledge management theories and concepts from earlier researchers and finding of the three empirical works carried out in this research.

The final discussion of this chapter is drawn from the limitation of study leading to future work within the frame of public sector organisation with an emphasis on the Nigerian public sector. The chapter concludes with a personal reflective on the entire research and its implication.

9 Chapter Nine: Conclusion

This thesis sought to answer the research question, “*can knowledge management improve the efficiency and effectiveness of the Nigerian public sector?*” In answering this question, an exploration of the efficiency and effectiveness of the Nigerian public sector, knowledge audit of task processes and identifying the sources of inefficiency and ineffectiveness was conducted with the public service staff in Delta State, Nigeria. The findings were used to inform a framework development (Strat-KM) which aims to guide the implementation of knowledge management that may support improvements to efficiency and effectiveness in the Nigeria public sector. Thus, in this final chapter, the main conclusions from this research are presented.

Firstly, the operational efficiency and effectiveness of the Nigerian public sector was explored through mixed methods of data collection and analysis with senior public servants in Nigeria. The research concludes that the Nigerian public sector is **inefficient and ineffective at delivering government goods to the people**. The implications or explanations of these findings are:

One, the Nigerian public sector had implemented various strategies such as; reforms, restructuring, policy development and implementation and adoption of various management tools to improve the performance of the government sector, the research respondents and personnel still perceived that the Nigerian public sector is inefficient and ineffective in the way government resources are deployed for effective service delivery. The exploration is evidenced in participant’s perceptions drawn from the empirical study presented in chapter four. Arguably, one explanation to this finding is that the measures adopted by the sector in addressing the issue of efficiency and effectiveness is slow and yet to achieve the desired result. The perceptions of the participant suggest the need for further implementation of measure to address and improve performance, efficiency and effectiveness of the organisation.

Two, perception of personnel on inefficiency and ineffectiveness of the Nigerian public sector can be attributed to the rigid organisational structure (top-down and bottom-up), organisational culture (bureaucratic) and lack of information and communication technology integration to

government business process (see empirical study one, chapter four). Evidently, favourable organisational structure and culture as well as ICT integration to business process are drivers to organisational efficiency and effectiveness (Mihaiu, Operana, and Cristescu, 2010; Hookana, 2011). Thus, lack of these organisation drivers undermines organisational efficiency and effectiveness. Evidenced in this findings of the research empirical study one calls for further reviews on the impact of these factors and drivers on efficiency and effectiveness of the public sector of Nigerian and related organisations if the sector is to enhance the way government goods are distributed to the people.

Secondly, this research concludes that there is **poor, missing and non-standardised knowledge within embedded task processes in the public sector in the Nigerian public sector**. This is evidenced in Fieldword-2 in chapter five where obsolete and knowledge gaps were identified as one of the factors for inefficiency and ineffectiveness of the Nigerian public sector. This thesis has provided an evaluation of auditing knowledge used in the Nigerian public sector, findings indicates that personnel believed that they are using the right knowledge in effecting organisational processes, but in reality, the knowledge within the organisation task processes are obsolete and with knowledge gaps within the task processed.

In knowledge management context, having critical, standard and up-to-date knowledge impact positively in organisational business processes, however, applying old and obsolete knowledge to business processes impact negatively thus promoting inefficiency and ineffectiveness of an organisation. In this perspective, following Niri, Akhavan, and Atashgah (2010), organisations should critically evaluate the value of knowledge and actively update knowledge as necessary in order to reduce all possible negative impact on organisational adaptation and progress.

Thirdly, this research investigates the source of inefficiency and ineffectiveness using contract execution documents and employee distraction as a measure for the sources of inefficiency and ineffectiveness. This research concludes that **the source of inefficiency and ineffectiveness are input even before projects are approved for execution and that external distractions to employee performance are the main sources of inefficiency and ineffectiveness in the Nigerian public sector**. The findings are of particular importance to the

management of the public sector organisation, as it presents the opportunity for the revalidation of organisational business processes and knowledge within the organisation in relation to project management. This research has clearly demonstrated and outlines an approach through Hierarchical Task Analysis, Swim-Lane Sequence Diagram and the application of metrics in accessing and understanding task processes and knowledge within task for any organisation as well as identifying the source of inefficiency and ineffectiveness in a project execution. The findings are evidenced in chapters six and seven of this thesis. These findings are of particular importance as they will help in re-evaluating and validating existing organisational structure, culture and knowledge for business processes in relation to reducing the inefficiency and ineffectiveness within the sector.

Fourthly, this research concludes that **knowledge management can improve the efficiency and effectiveness of an organisation, particularly the Nigerian public sector**. This is evidenced in the development and validation of the proposed knowledge management framework (Strat-KM) for this research in chapter seven. The development of the proposed knowledge management framework based on already tested principles and concepts from literature aids the formulation of the claim that knowledge management can improve the efficiency and effectiveness of the Nigerian public sector in the context or performance both from individual and organisational level. Feedback on the Strat-KM validation from the ten knowledge experts in the Nigerian public sector and a knowledge management professional (Dr. Ekeke) from the Bayelsa public sector indicates that the knowledge management framework developed can help create not only the necessary but also the right knowledge for the right people to function which will ultimately impact positively in improving the efficiency and effectiveness of the Nigeria public sector.,

Fifthly, this research concludes that knowledge management practice especially from the developing countries perspective and the Nigerian public sector in particular is limited. In the review of extant literature and empirical studies, it was evidenced that there has been little or no comprehensive research in the domain of knowledge management as a precursor to improvement to efficiency and effectiveness in any organisation (e.g. the Nigerian public sector). Thinking along with other researchers it is the opinion of this research that knowledge

management no doubt can improve performances of both individuals and organisations. However, the question as regards the Nigerian public sector is *‘are there a platform or guiding principles and concepts for the management of knowledge in core Nigeria public sector ministries and other government agencies?’* The answer is clearly a no. This is because, since 2009 when management of the Nigerian public sector discovered that knowledge management can help improve the efficiency and effectiveness of the sector, no distinctive and effective initiative in the form of a framework that can guide the sector in identifying, creating, storing, distributing and applying of knowledge to effect the various business processes within the sector efficiently and effectively has been adopted.

As a final remark, this research concludes that knowledge management can improve the efficiency and effectiveness of any organisation including the Nigerian public sector. This is evidenced in the literature reviewed in chapter two as well as the various study findings in chapters four, five, and six as well as the developed framework in this thesis. However, this thesis stressed that before a knowledge management project can be approve and implemented in an organisation like the Nigerian public sector, there is need to re-evaluate most business and task processes to see areas were business processes need improvement as well as to re-validate existing knowledge structure in relations to business and task processes. By doing this, it is envisaged that inefficiency and ineffectiveness within the Nigerian public sector can be reduced significantly all this being equal.

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Appendices

Appendix i: Survey: Knowledge Management in the Nigerian Public sector

1. Background Information:

Please put a tick (✓) as appropriate and fill in where necessary.

State	Ministry/Agency	Department	Grade Level
<input style="width: 100%;" type="text"/>			

How many years have you worked for this organisation?

- 1-5
 6-10
 11-15
 16-20
 21 or above

Educational Qualification (please tick the highest qualification you have)

- Polytechnic/NCE
 Graduate
 Masters
 PhD

2. Organisational Efficiency and Effectiveness

The following reflects how objectives are met efficiently and effectively. Indicate you level of agreement:

Statements	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
Usually, objectives are met effectively					
You usually meet the demand of the people efficiently					
The people are usually not happy with the quality of services provided					
Have ever measure effectiveness of your organisation in relation to services provides					

Please indicate how you have measured efficiency and effectiveness of the sector.

3. Knowledge Sharing

A. For the following sources of knowledge, indicate how often you get knowledge:

Statements	Very Frequently	Frequently	Occasionally	Never
Official circular, memos, civil service rule, financial regulation				
Website and internet , Newspapers, Newsletters				
Seminars, workshops, conferences, academic sponsorships				
Relational conversation with colleagues and friends				
Telephone conversations with colleagues and friends				
Research and consultancy reports				
Electronic databases				
The experiences of staff who has retired from the service				
The experiences of staff still in service				
Feedbacks from employees after seminars, conferences and academic training				
Others Specify:				

Statements	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

There is regular meeting for sharing knowledge					
When officer needs knowledge for a particular task they know exactly where to find it					
The organisational knowledge-sharing systems enhance work process					
Knowledge hoarding exists in this organisation					

B. How do you rate the knowledge sharing and use in this organisation?

4. Organisational culture

Indicate your level of agreement with the following statements:

Statements	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
My organisation's culture is shaped by both internal and external factors					
The organisational culture makes knowledge sharing difficult					
The organisational structure impede flexible knowledge sharing					
There is poor staff commitment in the organisation					
Management encourages employees to challenge how well things are done					

Others

specify

.....

5. Technology

Indicate your level of agreement with the following statements:

5 4 3 2 1

Statements	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
I make good use of technology (conferencing, groupware) for sharing knowledge					
There is insufficient IT infrastructure to aid knowledge sharing					
There is inconsistent network (internet) connectivity to aid knowledge sharing					
A large number of report that circulate knowledge exist within the organisation					
Policies and procedural manual that forms part of knowledge are frequently updated					

Please add any additional comments about your organisational knowledge sharing.

Appendix ii: Research Interview Questions

1. Interviewee Background

How long have you been with your organisation?

_____ in your present position?

_____ in this Ministry?

Briefly describe your role/background in this organisation?

2. Efficiency and Effectiveness

- a) The objective of your organisation is to deliver quality services. Can you describe how efficient your organisation is in meeting this objective?
- b) Has this organisation ever measure its efficiency?
 - If “yes” how is efficiency been measured? And what tools do they use?
 - If “No”, why have they not been measuring it? Would you recommend measuring techniques to management?
- c) Briefly describe the challenges you face in providing service to the people?
 - How have you manage to resolve these challenges?
- d) In your view, how can the government help in enhancing the quality of service delivery?

3. Knowledge Management Practice

- a) Can you describe how knowledge is organised and shared in this organisation?
 - From your opinion, would you consider the process described in 2 effective for knowledge sharing in this organisation?
 - If “no” what do you think is the way forward towards improving the current approaches to knowledge organisation and sharing?
- b) From you experience, what role organisational culture plays in the way knowledge is shared in this organisation?

- c) In your opinion, the processes, routines and procedures (culture) staff follows for their daily operation, would you say it facilitates knowledge sharing?
- d) What are the processes put in place to retain (knowledge retention) knowledge of officers leaving the organisation?

4. The Role of Culture

- a) Briefly describe the role culture (such as secrecy, knowledge hoarding and communication processes) plays in the way knowledge is shared in this organisation?
- b) Kindly describe the greatest barrier (s) to the process of sharing knowledge in this organisation?

5. Technology

- a) Can you describe the type of technology (ies) use supporting the performance of officers in this organisation?
- b) Do officers have access to these technologies?
- c) What are the biggest challenges you face in implementing new approach in this organisation?

6. General comments

Is there any issue or concern that you will like to mention?

Appendix iii: Diary data analysis form

Type of Interference	Monday	Tuesday	Wednesday	Thursday	Friday
Resume duty					
Prayer session					
Official schedule					
Unofficial meetings					
Phone calls					
Misplaced schedule					
Mobile hawkers					
Colleagues and Bosses intrusion					
Family intrusion					
Friends intrusion					
School runs					
Watching movies or TV programs					
Engaging in personal activities					
Unofficial conversations with colleagues					
Official conversations with					

colleagues/Boss					
Internet surfing					
Playing computer games					

Appendix iv; Summarised Interview coding for Efficiency and effectiveness (fieldwork 1)

Question: Based on the findings of the analysis of interview, the opinion of interviewee coded as follows:	
Codes (Interviewees)	Indication
S2, S3,S6,S7,S9, S10 <i>S1, S5, S6 andS8</i>	Efficiency and Effectiveness <ul style="list-style-type: none"> ▪ Understand the meaning of efficiency and effectiveness as successful delivery of government services
S3, S4, S5, S7, S8, S9 and S10	<ul style="list-style-type: none"> ▪ The Nigerian public sector is inefficient and ineffective in the way government services are delivered
S1 and S2	<ul style="list-style-type: none"> ▪ The Sector is efficient and effective
S1, S2,S4,S6,S7and S10	<ul style="list-style-type: none"> ▪ Efficiency and effectiveness are measured at both individually and organisational level
S3, S5 and S9	<ul style="list-style-type: none"> ▪ Efficiency and effectiveness not measure
S3, S4, S6, S7, S8 and S9	Knowledge Management <ul style="list-style-type: none"> ▪ Existence of informal knowledge management: regular weekly meetings, training, Minute of meeting and memo vetting
S4, S8 and S10	Impact of Organisational Structure and Culture <ul style="list-style-type: none"> ▪ Impacts negatively on the way task are performed in the Nigerian public sector. ▪ Does not encourage free knowledge sharing
S1, S4, S7, S8 and S10	Information Technology <ul style="list-style-type: none"> ▪ Insufficient information technology in the service

Impact of the Doctoral programme to personal and professional life of the researcher

No doubt PhD training do have positive impacts on individuals that embark on the journey. Prior to the PhD programme, the researcher is use to taking backseat in most of the decisions in his official life by taking instructions from above with the capability to evaluate the impact of such instructions.

Undertaken the PhD programme has made the researcher a better person both in his professional and private life. The impact of the Doctoral training on the researcher's personal and professional life is enormous. First, completing the PhD programme is self fulfillment in terms of the highest academic level attained. In this context, self dignity and official has improved. The added academic career has become a source of motivation for friends and colleagues for educational pursuit. Personally, the PhD hast provided the researcher the opportunity for better career prospect in the future.

The PhD training has had positive impact on the way the researcher relate with people, view thing and perform various (private and official) task professionally. Prior to under-going the PhD programme, the researcher accepts and view things without the confidence of been critical in evaluating entities. But, the PhD programme has provided the courage and competencies to critically evaluate things, relate with people and perform task professionally.

Furthermore in the professional context, the PhD programme is seen as a project that needs to be managed from the academic perspective. Thus, managing the entire PhD process has turned the researcher into a better project manager in terms of managing time, people and other resources.

As a final comment, the researcher will like to thank all individuals especially his family, friends and colleagues within the Delta public service and University of Sunderland who has supported the researcher in one way or the other during the long and fruitful academic journey. My biggest thanks go to my Director of Study (Dr. Lynne Hall), my supervisory team

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