KNOWLEDGE MANAGEMENT SYSTEM ADOPTION AND USE IN CITY OF JOHANNESBURG METROPOLITAN MUNICIPALITY

by

TSHEGOFATSO THERESA MATSHWANE

submitted in accordance with the requirements for

the degree of

MAGISTER TECHNOLOGIAE: INFORMATION TECHNOLOGY

in the

College of Science, Engineering & Technology

at the

UNIVERSITY OF SOUTH AFRICA

Supervisor: Dr. M.M. Phahlane

Co-Supervisor: Prof. N.M. Ochara

2021

DECLARATION

Name: Tshegofatso Theresa Matshwane

Student number: 46277714

Degree: Magister Technologiae: Information Technology

Knowledge Management System adoption and use in City of Johannesburg Metropolitan Municipality

---

I declare that the above dissertation is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.

_____ _____

SIGNATURE **DATE**

ABSTRACT

Whether in private or public sectors, the use and adoption of Knowledge Management Systems (KMS) is regarded as a strategic endeavour that promotes efficiencies in organizations. Through sound and effective adoption of KMS, entities can easily turn into learning organizations, whereby they are able to create, process and re-use their knowledge assets. This study sought to explore the perceived lack of use and adoption of KMS in the COJ and to further determine how KMS use and adoption levels could be heightened.

To achieve that, a qualitative research method was deployed with the aid of a purposive sampling technique for the selection of the sample. Participants constituted of COJ employees in the management echelons and professionals using KMS who are also champions who participate and form the Knowledge Management Forum (KMF). They were interviewed using semi-structured interviews from which primary data was gathered. The literature was particularly relevant for providing the secondary data.

Some components of theories such as Organizational Culture Theory and Task Technology Fit were merged to conceptualize a KMS adoption and use Research Framework which was used to understand and interpret the primary data obtained through interviews. This conceptual framework provided a model through which reasons for perceived lack of adoption and use of KMS could be understood and addressed.

There were numerous aspects identified from the findings. Key deductions from the findings were that management were found to be less supportive and persuasive in terms of the use and adoption of KMS, thus highlighting a misalignment on the municipal strategic objectives and KMS. That is, there is no direct correlation between the use and adoption of KMS by employees and their key performance indicators. Further, the findings suggest that during implementation phase, there was inadequate involvement and engagement with other key stakeholders thus resulting to a slow uptake in the use and adoption. High dependency on external service providers was also identified as a serious impediment to high levels of KMS use and adoption.

The study therefore presents an essential contribution in a form of a framework. This framework also unearthed key recommendations in which how KMS use and adoption levels could be heighted. In the first instance, the framework suggests that their management support and drive of

KMS use and adoption should be equally important as a strategic pillar. There should be rewards and penalties for the use and adoption of KMS and the lack thereof. Turning the municipality into a truly learning organisation should be seen as a responsibility of all stakeholders and should be driven more internally and outsourcing should be on a lesser scale. This framework is a resultant of certain components of TTF, TOE frameworks that were used as analytical lenses for this study.

Keywords: Knowledge; Knowledge Management; Knowledge Management Systems, City of Johannesburg (CoJ); Technology Use and Adoption.

ACKNOWLEDGEMENTS

I wish to thank my supervisor, Dr Mampilo M. Phahlane and co-supervisor, Prof Nixon M. Ochara for their continuous support and guidance during this study. Had it not been for their patience and tolerance, this would have just remained nothing but a dream. Thank you!

DEDICATION

I dedicate this dissertation to my family, my husband and my sons. Thank you for your continuous support and encouragement! You have been my best cheerleaders and surrendered a lot to see me through this journey. Your patience and unconditional love have been a great motivation and contributed vastly to the completion of this study. Thank you!

This thesis is also dedicated to my late aunt, Gadifele Mogotsi. Thank you for raising me with love, being a broad shoulder to cry on and supporting me in my studies. Your memories will live on. You are gone but you will never be forgotten Mama!

ABBREVIATIONS

CoJ	City of Johannesburg
GSPCR	Group Strategy Policy, Coordination and Relations
JIKE	Joburg Innovations & Knowledge Exchange
IKM	Innovation and Knowledge Management
KM	Knowledge Management
KMS	Knowledge Management Systems
OCT	Organisational Culture Theory
TAM	Technology Acceptance Model
TOE	Technology, Organisation and Environment
TTF	Task Technology Fit

TABLE OF CONTENTS

DECLARATION ..... **ii**

ABSTRACT ..... **iii**

ACKNOWLEDGEMENTS ..... **v**

DEDICATION ..... **vi**

ABBREVIATIONS ..... **vii**

Table of Contents ..... **viii**

List of figures ..... **xiii**

List of tables ..... **xiv**

CHAPTER ONE: INTRODUCTION AND BACKGROUND OF THE STUDY **1**

1.1 Overview of the chapter 1

1.2 Background of the study 1

1.2.1 Knowledge Management System Adoption 2

1.3 Research context 5

1.3.1 KMS in Private and Public sectors 5

1.3.2 KMS in Local Government 6

1.3.3 City of Johannesburg Metropolitan Municipality 7

1.3.4 Knowledge Management Systems in City of Johannesburg 8

1.4 Problem statement 11

1.5 Purpose of the research 12

1.6 Goal of the research 12

1.7 Research Question 12

1.7.1 Research sub-questions 12

1.8 Research Aim and Objectives 13

1.9 Justification of the study 14

1.10 Operational Definitions of the Study 15
1.10.1 Knowledge 15
1.10.2 Knowledge Management 15
1.10.3 Knowledge Management Systems 15
1.10.4 Use 16
1.10.5 Adoption 16
1.10.6 Learning Organization 16
1.10.7 Innovation 17
1.11 Thesis Outline 17
1.12 Summary of the chapter 18
CHAPTER TWO: LITERATURE REVIEW 19
2.1 Introduction 19
2.2 Local Government in South Africa 19
2.3 The City of Johannesburg Metropolitan Municipality 19
2.4 Knowledge Management Defined 20
2.4.1 Knowledge 21
2.4.2 KM Conversion Model - SECI 21
2.4.3 Knowledge creation process - The '*Ba*' concept 23
2.4.4 Knowledge creation process – Knowledge Assets 24
2.4.5 Variations of Knowledge 26
2.5 Knowledge Management Systems 26
2.5.1 Systems 29
2.5.2 Knowledge Management system functions and benefits 29
2.5.3 Adoption and use of KMS 30
2.5.4 Adoption 30

2.5.5 Use 31
2.6 Knowledge Management System in Local Government 31
2.7 KMS in the City of Johannesburg 32
2.8 Learning Organization 34
2.9 Innovation 34
2.10 Summary of the chapter 35
CHAPTER THREE: THEORETICAL FRAMEWORK 36
3.1 Introduction 36
3.2 Theories in Information Systems related to the study 36
3.2.1 Technology acceptance model (TAM) 36
3.2.2 Technology-organization-environment (TOE) framework 37
3.2.3 Task Technology Fit theory (TTF) 39
3.2.4 Organizational Culture Theory (OCT) 40
3.3 Conceptual Research Framework 42
3.4 Summary of the chapter 43
CHAPTER FOUR: RESEARCH METHODOLOGY 44
4.1 Introduction 44
4.2 Research Paradigm 44
4.3 Interpretivism 44
4.3.1 Rationale for adopting interpretivist paradigm 44
4.4 Research Approach 45
4.5 Research Strategy 45
4.6 Research Design 46
4.6.1 Unit of Analysis 46
4.6.2 Population 46

4.6.3 Sample 46
4.6.4 Sampling Technique 47
4.6.5 Data Collection Method 47
4.6.6 Data Analysis 48
4.7 Summary of Chapter Four 49
CHAPTER FIVE: DATA ANALYSIS AND INTERPRETATION 50
5.1 Introduction 50
5.2 Themes of Investigation 50
5.2.1 Theme one: Stakeholder management 52
5.2.2 Theme Two: Task Characteristics 64
5.2.3 Theme Three: Technology Characteristics 75
5.2.4 Theme Three: Support values 79
5.3 Framework development 87
5.3.1 The study's Conceptual Framework revisit 87
5.3.2 A framework for the adoption and use of KMS in a metropolitan municipality 88
5.4 Chapter Summary 93
CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS 94
6.1 Introduction 94
6.2 Summary of findings 94
6.3 Conclusions and recommendations of the study 95
6.3.1 Evaluation of the research methodology 97
6.4 Assessing the contribution of thesis' chapters 97
6.5 Contributions of the study 98
6.5.1 Theoretical contributions 98
6.5.2 Practical contributions 99

6.5.3 Contextual contributions 99
6.6 Limitations 99
6.7 Considerations for future research 100
References 101
Annexure A – Ethical clearance certificate 121
Annexure B – Request for permission to conduct research. 123
Annexure C - Permission letter 124
Annexure D – Consent to participate 125
Annexure E - Participant information 126
Annexure F – Interview questions 130
Annexure G – Language Editing Certificate 132
Annexure H – Turnitin Report 133

LIST OF FIGURES

Figure 1: Knowledge Management System Adoption Attributes (adapted from: 2
Figure 2: The structure of South African municipalities adapted from municipalities.co.za (2012) 6
Figure 3: KMS - SharePoint 2013 Roadmap (IKM unit, 2016)..... 11
Figure 4: Research Questions, Study Aim and Objectives 13
Figure 5: Organization of the study..... 17
Figure 6: SECI Model (Nonaka & Takeuchi, 1995) 22
Figure 7: '*Ba*' categories interaction (Nonaka & Takeuchi, 1995) 23
Figure 8: Categories of Knowledge Assets (Nonaka, et al., 2000) 25
Figure 9: DIKW Hierarchy (Rowley, 2007) 26
Figure 10: Knowledge Management system functions and benefits (adapted from: 29
Figure 11: Factors contributing to a successful use of a KMS 31
Figure 12: Elements of Knowledge Management System (adapted from: (Alavi & Leidner, 2001) 33
Figure 13: Technology acceptance model (TAM) model by (Davis, 1986)..... 37
Figure 14: Technology Organization Environment (TOE) framework by (Chen, et al., 2019)... 38
Figure 15: Task Technology Fit schematic by (Goodhue & Thompson, 1995)..... 39
Figure 16: Organizational Culture Theory schematic (adapted from: 41
Figure 17: KMS adoption and use Conceptual Research Framework 42
Figure 18: Data analysis key elements..... 52
Figure 19: CoJ departments relationship with service providers 60
Figure 20: Knowledge Management Progression Source: (Hoegl & Schulze, 2005) 65
Figure 21: Knowledge Management Progression Source: (Hoegl & Schulze, 2005) 67
Figure 22: Knowledge Management Progression Source: (Hoegl & Schulze, 2005) 69
Figure 23: Knowledge Management Progression Source: (Hoegl & Schulze, 2005) 72
Figure 25: Researchers' assessment on elements constituting the study's framework. 89
Figure 26: A revised view on the researchers' assessment on elements constituting the study's framework..... 90
Figure 27: A framework for KMS adoption and use in a Metropolitan Municipality..... 91

LIST OF TABLES

Table 1: Knowledge Perspectives and Their Implications (Alavi & Leidner, 2001) 28
Table 2: Discursive practices, types, and text analysis 51
Table 3: Sub-theme: Users 54
Table 4: Sub-theme: Content managers 55
Table 5: Sub-theme: Management 58
Table 6: Sub-theme: Service Providers 59
Table 7: Sub-theme: Marketing and Awareness 64
Table 8: Sub-theme: Knowledge Creation 66
Table 9: Sub-theme: Knowledge locating and capturing 68
Table 10: Sub-theme: Knowledge transfer and sharing 71
Table 11: Sub-theme: Knowledge Application 73
Table 12: Sub-theme: Collaboration 75
Table 13: Sub-theme: Reliability 76
Table 14: Sub-theme: Relevance 77
Table 15: Sub-theme: Accessibility 78
Table 16: Sub-theme: System maintenance 79
Table 17: Sub-theme: KM Strategy 81
Table 18: Sub-theme: Governance 83
Table 19: Sub-theme: Processes 84
Table 20: Sub-theme: Change management 86

CHAPTER ONE: INTRODUCTION AND BACKGROUND OF THE STUDY

1.1 Overview of the chapter

This chapter provides the rationale for the study and includes the background, research context, statement of the problem, primary research question and sub-questions, the aim, objectives, and study justification.

Further, the chapter addresses the background of the study in section 1.2, the context of the study in section 1.3, problem statement in section 1.4. This will be followed by the purpose and the goal of the research respectively in section 1.5 and 1.6. The research questions are presented in section 1.7, the research aim and the objectives in section 1.8. Then, presented in sections 1.9 and 1.10 are the justification and delimitation of the study, respectively. The operational definitions of the study are presented in section 1.11, followed by the thesis outline in 1.12. The chapter concludes with a summary in section 1.13.

1.2 Background of the study

Knowledge Management Systems (KMS) are intended to assist organizations with promoting the management and dissemination of organizational knowledge and experience. KMS are information technology enablers in organizations for efficiently and effectively managing the organization's knowledge (Assegaff & Hussin, 2012). Furthermore, KMS in organizations, are a combination of social and technical foundations of that organization, hence it is sometimes referred to as a socio-technical system (Grundstein & Rosenthal-Sabroux, 2007). These two attributes are equally important for the success of KMS in both the public and private sectors (Šajeva, 2010).

The development, adoption and use of KMS is deemed essential by both the private and public sectors (Butler & Murphy, 2007). Some researchers argue that the public sector is still lagging behind the private sector in the implementation of KMS in areas such as managerial support and control, knowledge creation, organizational culture, end-user relations, level of accountability and KMS use enforcement through performance metrics (Kammani & Date, 2009; Butler, et al., 2008; Talisayon, 2013). The implementation of KMS in the public sector is crucial in assisting organizations to have improved productivity and service delivery, efficient processes in place,

share and promote best practices and/or lesson learnt, preserve the institutional memory and be a learning organization (Salleh & Ahmad, 2008).

1.2.1 Knowledge Management System Adoption

An organization can implement the KMS but the adoption and use thereof is an imperative part of the process (Butler & Murphy, 2007). The study seeks to interrogate the benefits of a properly adopted and used KMS and equally, the challenges brought by lack of adoption and use of the system, specifically in a public sector organization. It thus becomes essential to attribute sound effective KM practice to high adoption and usage levels of organizational KMS.

The organizational culture and process of implementation of the KMS may depict the rate at which the system will be accepted and used by the employees (Esposito, et al., 2014). KM practice is also seen to be advanced by the deliberate deployments of KM systems, which are able to facilitate rapid and accurate input and processing of knowledge assets including the dissemination (Islam, et al., 2011). KMS further advance the collaboration sought and enjoyed by organizations (Romano & Nunamaker, 2001). Figure 1 below depicts the KMS adoption attributes.



Figure 1: KMS Adoption Attributes (adapted from: (Ryan, et al., 2000)

The KMS adoption is reliant on the alignment of the organizational structure and IT capability to be successful (Quaddus & Xu, 2004). The system should replicate the organizational structure to accommodate most if not all the knowledge created by the respective departments, and the IT infrastructure readiness and capability for storage of knowledge assets, is also deemed crucial for

the ease of KMS adoption (Biswas, 2017). Importantly, the leadership of the organization also has a critical role of supporting the adoption of the KMS to ensure its success (Lin, et al., 2020).

This is because technology change may bring challenges in an organization, and it is important for the leaders to manage the employees' expectations throughout the implementation process, to ensure that they understand the need for the system adoption, and also the benefits thereof (Lines, et al., 2017). It is imperative to evaluate the technical factors affecting the adoption of the system such as perceived usefulness, perceived availability, perceived user-friendliness and also to identify the non-technical factors like the organizational readiness, knowledge management proficiency amongst the knowledge drivers and employees, management support factors, evaluate the organizational behaviour and culture, to be able to manage change and the adoption of the system effectively (Quaddus & Xu, 2004; Gangwar & Date, 2015).

The key success factors in the adoption of a KMS in an organization include communication structure in the organization, the role of knowledge champions, understanding the requirements/needs, the standard operating procedures and incorporating user feedback upon completion of testing the system (Jennex & Olfman, 2005). Therefore, it can be said that the effects of a successful adoption of KMS encourages better system collaboration, sharing of the valued knowledge assets, and determination to use the knowledge captured on the system to increase the success rate of KMS adoption and use.

Butler & Murphy (2007), Islam, et al. (2011) and, Nonaka, et al. (2001) all agree that knowledge management processes can be supported by various technical solutions including, knowledge creation, application, storage, dissemination, and sharing. However, the factors impacting on both the KMS acceptance and its efficient use thereof, need to be understood by the knowledge workers. Biswas (2017) says that the successful use of a KMS depends on its characteristics, such as ease of use, training end-users, cost efficiency, low rate of maintenance and ease of access, while Gupta, et al. (2000) argue that the sound and effective practice of KMS results in an organization's increased productivity, improved collaboration, and most importantly leads to an organized management of knowledge assets.

Further, Rechberg & Syed (2014) posit that where there is strong evidence of KM practices through the use of KMS, organizations transform into learning organizations, thereby empowering the

employees to share their thoughts rationally, being aware of their intellects without concern of being judged, also encouraging team work to achieve common goals and increase their knowledge by collaborating and engaging with each other. Likewise, the contribution, involvement, commitment, support, and the leadership style of the managers within the organization play a crucial role towards the successful use of the KMS (Badpa, et al., 2018).

There are several critical factors that contribute to the success of KMS use, starting with the knowledge management strategy of the organization that outlines the goals and logical phases of adopting and using KMS (Bechina & Ndlela, 2002). End-user training is considered to be a good investment for an organization when implementing a new system or upgrading the existing one. It is also considered to be the most critical factor for increased KMS use to empower users with relevant skills (Venkatesh & Davis, 2003). Failure to provide adequate training prior to the system launch may result in users losing interest in use of the system, and not being able to acclimate to the new processes, way of work or resolving any arising system glitches (Victor & Kathaluwage, 2019).

Heier & Strahringer (2006), Lehmann (2016) and Leander (2017) argue that the organizational culture and change management factors are usually disregarded as part of KMS use. Heier & Strahringer (2006) further stress that proper training offered to the users will assist with the potential resistance from users, particularly the ones who are cautious to change. Organizations adopt the KMS for knowledge capturing and re-use. Knowledge audit, another factor, assists organizations in this regard to measure interest to KMS, the value of the system, opportunities created, insufficiencies, and problematic areas in order to give the organization a competitive advantage. Badpa, et al. (2018) recommend that satisfactory accountability, authority, influence, and responsibility be provided to users to influence them to use the KMS. Further, spreading of responsibilities relating to KMS with relevant knowledge workers and system users enhances the process of decision-making, increases collaboration and productivity, and ultimately inspires employees to use the KMS (Bechina & Ndlela, 2002; Chigada, 2014).

1.3 Research context

1.3.1 KMS in Private and Public sectors

The use and adoption of knowledge management systems (KMS) is not prevalent to any particular sector but is regarded as a phenomenon that is equally significant in both private and public sectors (Butler & Murphy, 2007; Biswas, 2017). For example, with regard to the private sector, the use and adoption of KMS was studied by Morrissey (2005) and Li, et al. (2019) in which they established that organizations' efficiencies are mostly realised when the use and adoption of KMS is effectively in practice. Spender (2008) further highlighted that organizations with reported high use and adoption of KMS were easily turned into learning organizations with ease. That is, these organizations are able to have the key traits of a learning organization which are, "*systems thinking, personal mastery, mental models, shared vision, and team learning*" (Sabeeh, et al., 2017, P7-8).

Benefits that are realised by organizations that implement KMS include being innovative and process re-engineered, knowledge retainment, better collaboration, and conversion of intellectual property into institutional memory (Martínez-Costa, et al., 2019). These benefits are also applicable for the public sector. KMS adoption and use in the public sector has also caught the attention of various scholars. For instance, Ali, et al. (2016) established that the success of a KMS in the public sector requires the consistent collaboration, good governance, and clear communication amongst the departments to realize its benefits thereof. The benefits of implementing KMS in the public sector range from increased collaboration, enhanced decision making, to improved productivity through the centralized management system (Lahohla, 2016).

Ahbabi, et al. (2019) reported that it is critical to have a complete understanding of the connection between KMS processes and organizational performance, to provide an effective motive to the decision and policy makers as to why the implementation of the KMS should be prioritized.
Furthermore, this alignment would enable the public sector to effectively and efficiently manage the existing KMS processes to improve their organizational performance and ultimately service delivery (Mothamaha & Govender, 2014). The public sector is segmented into three spheres—these are the national government, the provincial government, and the local government (Wenzel, 2007). The following section explores the use and adoption in Local government administration in the South Africa.

1.3.2 KMS in Local Government

Municipalities are the components of government that are tasked with delivering basic services to communities and fostering development in the community areas they manage (Lahohla, 2016). South African municipalities are divided into three categories, being the metropolitan municipalities (which are the eight largest cities), district municipalities, which include 44 urban and rural areas, and the 205 urban areas making up the local municipalities, as stipulated by the Local Government's Municipal Demarcation (Thornhill, 2014). Figure 2 presents below the structure of South African municipalities structure.

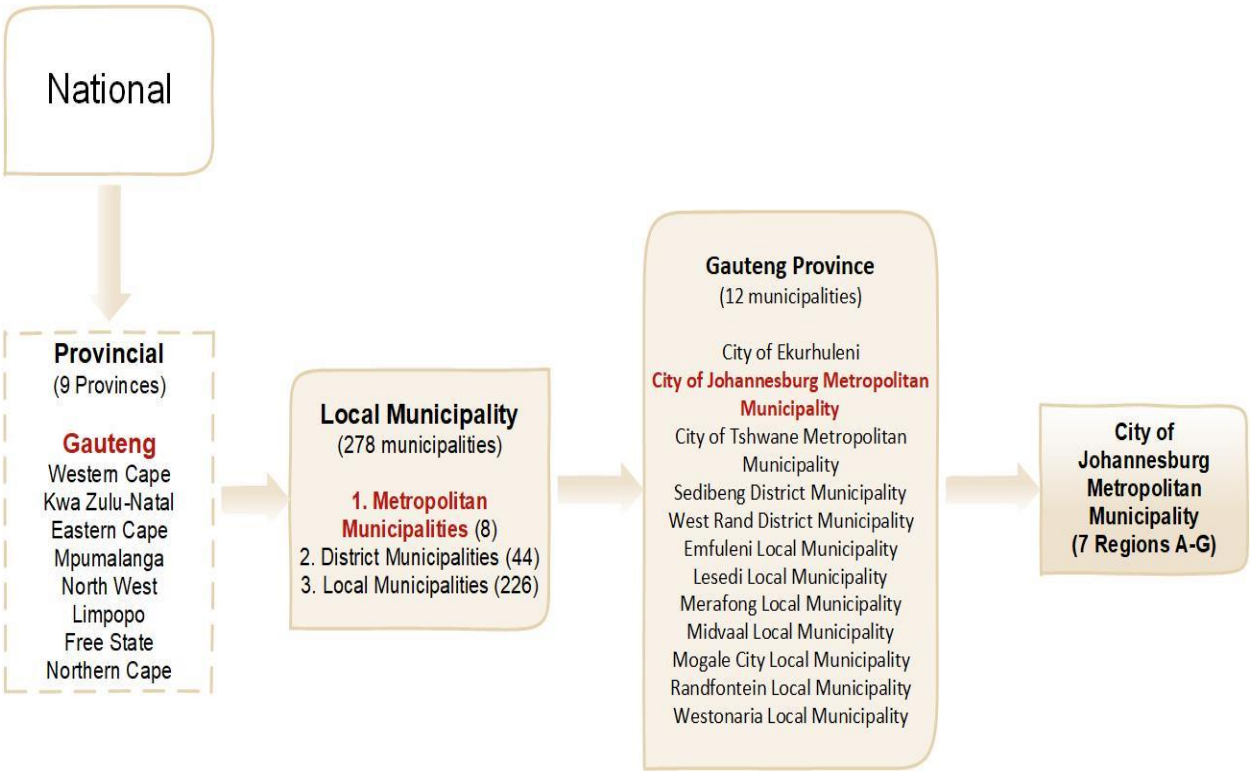


Figure 2: The structure of South African municipalities adapted from municipalities.co.za (2012)

South Africa, as a country, is estranged into National, Provincial and Local governments as demonstrated in Figure 2 above. The Provincial government has 9 Provinces, namely Gauteng, Western Cape, Eastern Cape, Mpumalanga, North West, Limpopo, Free State, Kwa Zulu-Natal and Northern Cape. Whilst the Local government is segmented into eight (8) metropolitan municipalities, forty-four (44) district municipalities and two hundred and twenty-six (226) local municipalities. The development of KMS in South African local government can improve the

effectiveness in managing knowledge. KMS simplify and provide an enabling platform for local government to capture, share and retain knowledge (Chigada, 2014).

The reflection of Local Government Authorities (LGA) indicates that they lack integrated IT infrastructure, which make them inconsistent, in generating data (Ozlen, 2013, p. 117), and that in turn means employees don't have up to date, consistent information generated by the KMS and that in turn affects their productivity and the service they offer to citizens. The designing phase of a KMS enables sharing of knowledge in local government departments. It requires a strong relationship between technology, people, information, and processes to be developed to support organizational identity, the relevant information, procedures and assists to strengthen interchange collaborations (Ncoyini & Cilliers, 2017). In local government, KMS enable organizations to develop and maintain the ability to organize and store invaluable knowledge to be used for business purposes every day (Schutte & Barkhuizen, 2015).

Schutte & Barkhuizen (2015) further indicate that the local government is a community figure characterized by dynamic changes, this requires the municipality to logically organize its KMS so that it can be used. Moreover, the key objective of municipalities is to render services of quality to the citizens who resides in their respective jurisdictions (Madumo, 2015). Thus, the delivery of these services is guided by processes in place, proper allocation of the budget and the acquisition the necessary skills (Thornhill, 2014). Therefore, the competitiveness and efficiency elements of delivering these services cannot be divorced from the municipalities and its employees. The KMS is then adopted to empower employees to easily share, collaborate and access the relevant knowledge assets that supports their daily work, which results in delivering better service delivery to the citizens of City of Johannesburg Metropolitan Municipality.

1.3.3 City of Johannesburg Metropolitan Municipality

Gauteng is the fastest growing province in the country with approximately 15.18 million people, which is 26% of the country's population (Diego, 2020). It is divided into three metropolitan municipalities—City of Johannesburg, City of Tshwane and City of Ekurhuleni and two districts Sedibeng District and West Rand District (Mkhize & Khanyile, 2020). City of Johannesburg contributes an estimated 5.74 million people to the total population of the province (City of

Johannesburg, 2020). It has approximately 33000 employees who are employed in different group functions, departments, and municipal entities (City of Johanneburg, 2019).

The CoJs proposed operating revenue budget is approximately R60.7 billion, with an operating expenditure of approximately R60.6 billion for the financial year 2020/21 (City of Johannesburg Council, 2020). The budget also includes the information technology infrastructure maintenance and support used by the 33000 CoJ employees to deliver services to the residents. KMS is one of those systems that CoJ has heavily invested in, with an expectation that employees will use it to promote the management and dissemination of the City's organizational knowledge, share and promote best practices/lessons learnt within the City.

The services offered by the City of Johannesburg Metropolitan Municipality include amongst others waste management, water and sanitation, building plans, public transport, metropolitan police services and emergency services (City of Johannesburg , 2020). It is on this basis that this study was undertaken—to seek clarity on the adoption and use of Knowledge Management Systems (KMS) in the City of Johannesburg Metropolitan Municipality (CoJ)—focusing more on how the employees have responded to the adoption and use of the respective system which seek to bring about employee productivity.

1.3.4 Knowledge Management Systems in City of Johannesburg

In 2008, CoJ Metropolitan Municipality realized that for the municipality and its employees to be competitive and for their processes and procedures in service delivery to be effective to the City's citizens, they had to streamline service by creating a dedicated Innovation and Knowledge Management (IKM) unit (City of Johannesburg, 2019). The mandate of the unit is to champion knowledge management to address the issues of knowledge creation, retention and sharing amongst employees (City of Johannesburg, 2013).

Although the IKM unit ensured that knowledge is created centrally, there was a need for KMS to capture the knowledge attained. The IKM unit adopted the KMS in 2010, and subsequently other departments in the municipality did the same. However, the existing narrative or indication is that the use of the KMS have not yielded the expected results. The use of the adopted KMS in CoJ has rather been at a minimum than initially projected as per the usage report that can be drawn from

system. These usage reports illustrate the number of employees accessing the KMS for different purposes such as searching and downloading documents on daily, monthly, or annual basis.

The KMS is aimed at assisting employees promote the management and dissemination of CoJs organizational knowledge and experience across group functions, departments and municipal entities. It contains information such as, CoJs key strategic documents, organizational strategic agenda and priorities, departmental sites, and libraries for easier collaboration. The purpose of the KMS is also to improve access to the organization's key knowledge documents to enhance decision-making, increase collaboration and productivity, share and promote best practices/lesson learnt within the City and build a "hub" of knowledge and business intelligence as part of preserving CoJ institutional memory (City of Johannesburg, 2013).

Ncoyini (2017) conducted a study on factors that influenced knowledge management systems to improve knowledge transfer in local government within Buffalo City Metropolitan Municipality (BCCM). The study discovered that while there was evidence of KMS adoption to improve the employee knowledge transfer in the BCCM, there was, however, no tangible evidence that the KMS was being used as expected. In another study, Mothamaha & Govender (2014) explored the role of Knowledge Management in improving service operations in select departments in the City of Johannesburg, South Africa. In this study, they did not explicitly set out to address the adoption and use of KMS, rather their study established that a service provider was contracted by the Office of the Chief Information Officer to draft a Business Case in support of rolling out of the identified Knowledge Management Systems, considering alignment between what the system enables in terms of the strategic levers identified. Typically, in order to quantify the business benefits, it becomes necessary to conduct a KM strategic review for the broader CoJ, taking into account current CoJ strategies (Human, 2008).

To take this forward, according to Mothamaha & Govender (2014), the service provider consulted with various stakeholders across CoJ by means of interviews. This was done in conjunction with the Innovation and Knowledge Management (IKM) Unit as the system owner, within the Group Strategy Policy Coordination and Relations (GSPCR) function, which was called Joburg Innovations & Knowledge Exchange (JIKE) before the name changed in 2010. The IKM Unit is responsible for designing and implementing integrated KM practices and systems within the CoJ,

with the aim of assisting the organization to remain competitive, efficient, and effective. The Unit has accomplished several key KM milestones over the years as part of promoting and embedding a culture of KM within the City.

The need for the KMS was derived from the question of which organizational information and knowledge existed and where one would find it within the City's service delivery system across departments. There is continuous generation of knowledge assets but, the sharing and integration of information and knowledge across core departments and municipal entities is poor. Hence there is a risk of duplicating initiatives across departments, coupled with the inability to systematically capture knowledge, more so from experienced, resigning or retiring employees, which further impacts on business continuity. Therefore, in addressing this problem, the creation of a functional knowledge management system was identified as part of preserving and retaining the City of Johannesburg's institutional memory. The organization has a wealth of knowledge resources however, this knowledge needs to be structured, managed and accessible for re-use and sharing purposes. Although the primary need for KMS is more for internal use by the employees, the CoJ citizens can also access some of the knowledge on the CoJ website.

There are number of knowledge management systems available on the market that are used such as Document Management Systems, Groupware systems & KM 2.0, Content Management systems, the intranet, and extranet, artificial intelligence tools, etc. (Edwards, 2014). IKM unit chose SharePoint as the KMS for CoJ because it provides a platform for various kinds of programs or features such as collaboration, social, document management and sharing features (Kumar & Sharma, 2017). In 2008, the unit piloted the tool as their knowledge management system and named it the Joburg Insider Knowledge Repository. The tool was rolled out to all the departments within the organization. In 2014, the decision was taken to upgrade and rebrand the system to SharePoint 2013 version to address the challenges encountered with the SharePoint 2007 version. The 2007 version was deemed not user-friendly, not easily accessible and did not allow for collaboration. The Roadmap below, Figure 3, summarizes the journey undertaken by the IKM unit with the KMS.

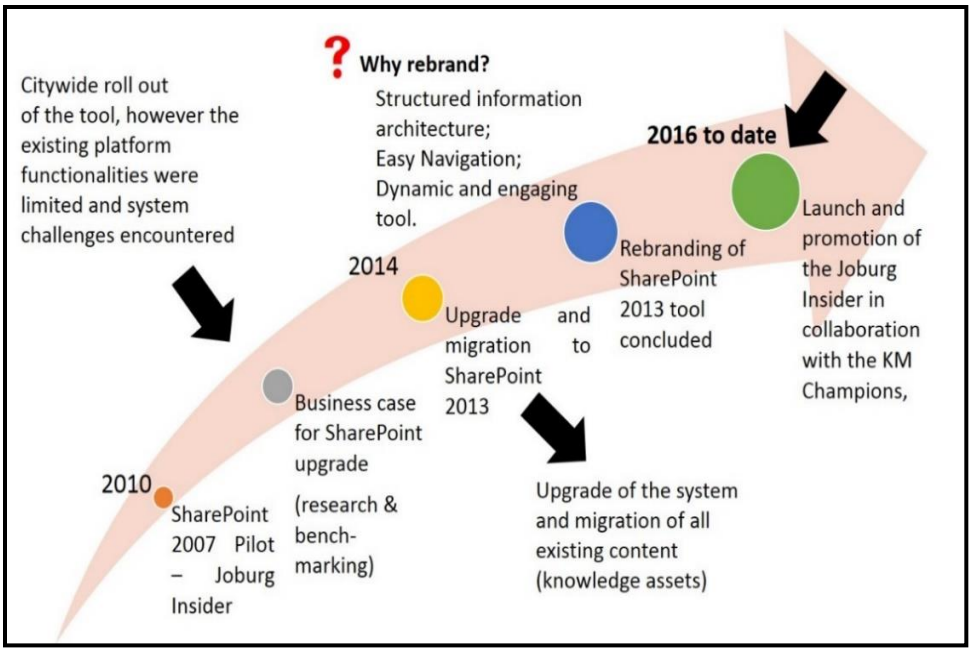


Figure 3: KMS - SharePoint 2013 Roadmap (IKM unit, 2016)

The upgrade and customization of the KMS was done in collaboration with the Group Information Communication Technology and Information Management (GICT) within CoJ. GICT later took a decision to migrate all the non-SAP systems to Microsoft Office SharePoint in 2016, such as the Joburg website, intranet, E-services, document management, records management, etc. Although the change did not affect the KMS objectives much, the major challenge that IKM unit faced was employees being confused by similarities within the systems, which also added to the low adoption and user-rate of the KMS. The employees seemed unmotivated to utilize the system, even after its upgrade and rebranding. This resulted in a huge problem of capturing, sharing and dissemination of knowledge within CoJ.

1.4 Problem statement

KM practice is seen to be advanced by the deliberate deployments of KMS, which are able to facilitate rapid and accurate input and processing of knowledge assets including their dissemination (Morrissey, 2005). KMS further advance the collaborations sought and enjoyed by organizations (Talisayon, 2013). The sound and effective practice of KMS results in an organization's increased productivity, improved collaboration and most importantly, leads to the organized management of knowledge assets (Islam, et al., 2011). Antunes & Pinheiro (2019) posit

that where there is strong evidence of KMS practices, organizations transform into learning organizations. It thus becomes essential to attribute sound effective KM practice to high adoption and usage levels organizational KMS.

In the case of CoJ as a metropolitan municipality, there is no existing clear picture in terms of KMS adoption and use. KMS has been adopted and is used since 2010 and preliminary investigations have revealed that the KMS has low user-rate. This has a direct impact on the productivity of the employees and interrupts the service delivery mandate to the citizens. The literature suggests that the benefits of high usage and adoption of KMS are not isolated to private sector, nor is the public sector immune to them. The study therefore sought to establish the levels of KMS adoption and use in CoJ, as a metropolitan municipality.

1.5 Purpose of the research

This study sought to explore and describe the use and adoption levels of Knowledge Management Systems in the City of Johannesburg Metropolitan municipality.

1.6 Goal of the research

The primary goal of this research study was to conceptualise a framework for sound use and adoption of Knowledge Management Systems in the City of Johannesburg Metropolitan municipality.

1.7 Research Question

The intention of the study was to answer the following research question: How should KMS be adopted and used for effective service delivery in the City of Johannesburg Metropolitan Municipality?

1.7.1 Research sub-questions

To answer the main research question, the following sub-questions were addressed:

1. How is KMS adopted and used in CoJ?
2. What are the levels of adoption and use of the KMS in CoJ?
3. What are the benefits of high levels of KMS adoption for CoJ?
4. How can the use and adoption of KMS can be elevated in CoJ?

1.8 Research Aim and Objectives

The aim of this study was to explore and understand the adoption and use of KMS in the City of Johannesburg Metropolitan Municipality. To address this aim, the study came up with the following key objectives:

1. To determine factors influencing the adoption and use of KMS in CoJ.
2. To evaluate the levels of adoption and use of the KMS in CoJ.
3. To identify the benefits of successful adoption and use of KMS.
4. To determine how the use and adoption of KMS can be elevated in CoJ.

Figure 4 below demonstrates the relationship between the primary and secondary research questions as well as the aim and objectives of the study. The research questions are derived to narrow down the research topic. The questions feed into the aim that highlights the purpose of conducting the study and the objectives which are the specific activities demonstrating the intention of the study and contributes to answering the research questions.

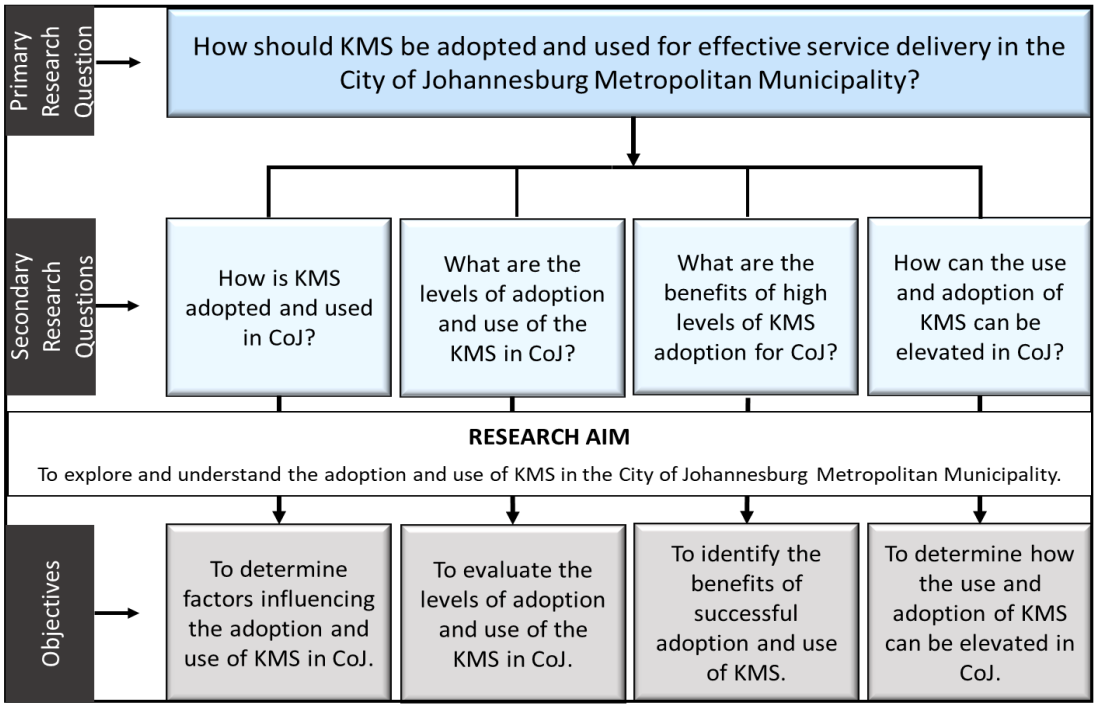


Figure 4: Research Questions, Study Aim and Objectives

1.9 Justification of the study

The City of Johannesburg Metropolitan Municipality has an obligation to ensure that there is sustainable service delivery to the citizens of the city. Emulating the national and provincial government structure, the City of Johannesburg is divided into the legislative arm, which is made up by the council, an executive arm, which comprises of the executive mayor and the mayoral committee members (MMCs), and the administrative segment is the third arm of the municipality. The Legislature consists of 270 councillors representing various political parties. The council members, together with the MMCs are the policy makers. They deliberate on local government matters, including policies and by-laws. The study hopes that its findings will assist the policy makers of the CoJ to realise the importance of preserving organizational knowledge, ensuring the practice and promotion of an effective knowledge management through putting in place processes and systems.

The administrative segment are the policy implementors/practitioners of the organization. The Group Strategy Policy Coordination and Relations department are in the forefront of policy coordination within the organization as the overseers of Joburg's vision of creating a liveable, resilient, and sustainable city. The department analyses, supports, monitors, and provides advice on policies to empower the strategic management and oversight capability of the City. This research hopes to contribute to the mandate of the IKM unit as the custodian of the city's strategic knowledge through a central knowledge repository (better practices, lessons learnt and innovative initiatives) for learning and sharing purposes. The study hopes its findings will assist the unit to identify issues relating to the adoption and use of the KMS, and also establish the best way to manage the KMS using policies to benefit the organization.

The adoption of Knowledge Management, including Knowledge Management System in both the private and public sectors are well researched. However, in terms of the City of Johannesburg Metropolitan Municipality, the literature speaks only of Knowledge Management. The study hopes to contribute to academia by providing in-depth and current research on KMS in CoJ. The researcher used the Organizational Culture Theory with the Task-Technology Fit Theory, which is new to academia, to conceptualize the framework. Lastly the study hopes that the creation of the CoJ KMS Conceptual Research Framework will be beneficial to future research.

1.10 Operational Definitions of the Study

The study is based on several key terms which are continually used throughout this study. This section therefore renders the definitions for these key terms including the context in which they have been deployed. The definitions are as follows:

1.10.1 Knowledge

Knowledge is described as an acceptable belief that increases an organization's ability for effective performance (Huber, 1991; Nonaka, 1994). For Cirnu and colleagues (2016) knowledge is a vital factor for modern organizations. Therefore, knowledge can be seen as an essential element for any growing, learning and innovative organization. Knowledge is then defined as an understanding or awareness of something, such as specifics, skills, or information which is attained through education or experience by observing, realizing, or learning.

1.10.2 Knowledge Management

Knowledge management is seen as a set of fairly new organizational activities that are intended to improve knowledge-related practices, organizational culture, decisions and behaviours (Mphahlele, 2010). Knowledge Management may also be understood as an efficient way of knowledge application from the lessons learnt on previous decision-making activities, to the current and future ones (Shams, et al., 2019). Knowledge Management in the City of Johannesburg Municipality intends to ensure that the knowledge generated as well as experiences acquired internally and externally are preserved and can be easily distributed among all the CoJs municipal-owned entities and departments.

Researchers and knowledge practitioners also suggest that knowledge management should be driven by the enhanced social and technological aspects and the lack of recognition and deliberation on these two aspects could derail the appropriate development and implementation of a KMS in an organization (Šajeva, 2014).

1.10.3 Knowledge Management Systems

KMS are expected to play a major KM role in enterprises that are increasingly confronted with paradoxical challenges of exploiting explicit knowledge resources and exploring new tacit knowledge (Abdelrahman, 2013). KMS can be referred to as any type of IT system that is used for

storage and retrieval of explicit knowledge, a collaboration tool for KM initiatives and as a supportive IT infrastructure for KM.

City of Johannesburg municipality identified Microsoft SharePoint 2013 as the Knowledge management system to encourage the control and distribution of the organizational experience and knowledge across the municipal entities and departments.

1.10.4 Use

A system usage is the way of assessing how the users interacts with the actual system or software installed (Hwang, et al., 2018). Leander (2017) defined usage as an ability to access and successfully use the system to complete essential activities. This study seeks to unpack and understand the level of usage of the KMS in CoJ, if there are any monitoring instruments in place to perform.

1.10.5 Adoption

Adoption in the context of this study refers to a position where users accept a fully functional system to perform a specific function or need. It might also be a transfer or migration from an old system to an upgraded system that is more comprehensive, better and faster (Zabadi, 2016). There are some relevant factors motivating the adoption of internal and external KMSs in firms investigated (such as innovation, operational management and market features) but also significant barriers such as the protection of intellectual capital and cultural barriers (Evangelista, et al., 2014).

1.10.6 Learning Organization

An organization that is able to modify its behaviour to reflect new knowledge and insights that is created, obtained, shared and transferred is considered a learning organization (Garvin, 1993). A learning organization is an organization that is continuously developing, constantly creating abilities to adapt to change and have competitive advantage (Luhn, 2016). In the case of this study, a learning organization is seen as the adoption and use of the KMS to its full capacity to encourage and drive knowledge creation, knowledge capturing, knowledge application and knowledge sharing in CoJ.

1.10.7 Innovation

Innovation involves the regeneration of organizational processes, generation of new knowledge or idea, new products, or services implementation, contributing to the growth of the organization, the increase in productivity and new employment (Kogabayev & Maziliausks, 2017). It is said to be management's responsibility to continuously seek ways to improve their products and services to so that the organization can have competitive advantage (Akgün, et al., 2009). The key component of knowledge management where innovation is applied, is that it affords management a framework to develop and improve their organizational capability to be innovative (Fischer, 2001). This research explores the possibility of the innovative ways that CoJ metropolitan municipality has adopted and made use of Knowledge Management Systems.

1.11 Thesis Outline

Figure 5 illustrates the organization of the study, which is divided into six chapters. The outline of each chapter follows:

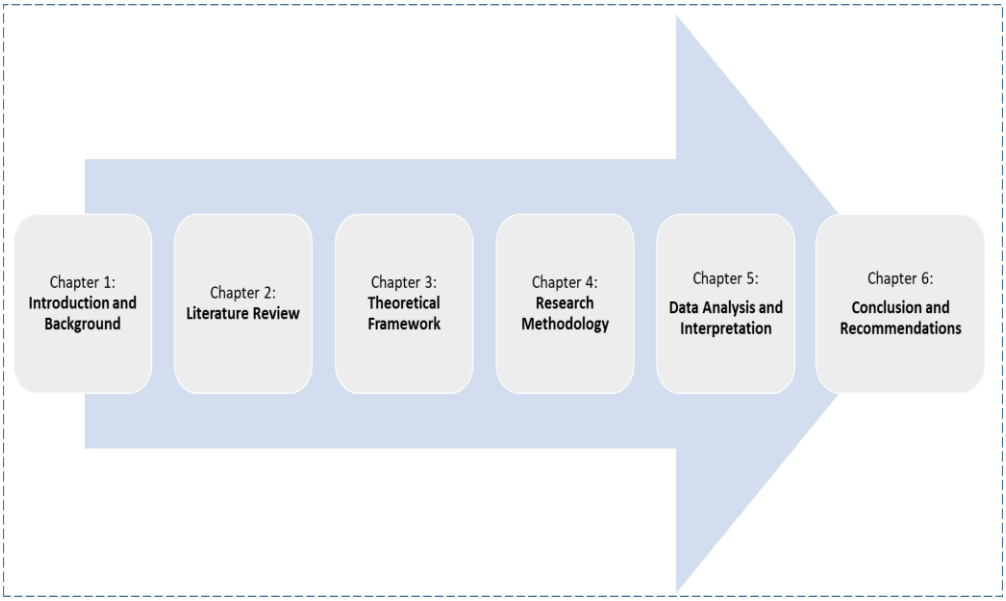


Figure 5: Organization of the study

Chapter 1: This chapter provides the introduction to the study, presenting the background to the study, the problem statement and also outlines the research question, secondary research questions including the objectives and aims of the research. The context and definition of some key terms used continuously in the study are also offered in this chapter.

Chapter 2: Literature review provides a view on the surveyed literature. This includes an elaboration on municipalities in the context of the Republic of South Africa, and government administration in general. Knowledge Management and some of its underpinning concepts, Knowledge Management Systems and technology usage and adoption in government administration is also largely explored and presented in this chapter.

Chapter 3: In this chapter, the theoretical frameworks largely deployed in the field of IT and IS in general are presented, particularly those referenced/ utilized in defining the framework underpinning this study. The CoJ KMS Conceptual Research Framework becomes critical in the data analysis and interpretation phases as it will be used as the basis upon which the meaning and explanations of the data will be extracted and presented.

Succeeding chapter 3 is the Research Methodology in **Chapter 4.** This chapter presents the thought process, tools and methods deployed and relied upon in the execution of this research. These pertain to the philosophical paradigm upon which the research is founded, the sampling techniques, data collection and analysis methods including the analytical lens vital for interpretation.

In chapter 5, the analysis and interpretation of the data is presented. This is done with the aid of the analytical lens defined and discussed in chapter 3. The data is organized and presented themes which have a direct correlation to the primary research question and underlying sub-questions.

Chapter 6 renders the recommendations and conclusion with a reflection/ evaluation on the study.

1.12 Summary of the chapter

This chapter has served as an introductory section to the study by first presenting the background to the research problem. This includes the assessment of key concepts to the study such as South African municipalities, focusing on the City of Johannesburg Metropolitan Municipality as a case study. KMS in CoJ is introduced and discussed with the identification of the type of system used for KM in CoJ, this being the Microsoft SharePoint platform. Further, the chapter provides the primary research question with the subsequent sub-questions, the objectives, context and aim of the study to understand why the research was undertaken. The organization of the thesis was presented in section 1.8. The operational definitions of the study are highlighted in section 1.9, which are key to unpack and respond to the research question.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The main purpose of this chapter is to review the literature aligned with the problem statement. The focus will be on adoption and use of the Knowledge Management System (KMS) specifically in the City of Johannesburg Metropolitan Municipality, South Africa. Further, the chapter provides the definition and analysis of the KMS, its elements, benefits, and components.

2.2 Local Government in South Africa

Local Government, also known as Municipalities, are the components of government who provides basic services such as waste management, water and sanitation, electricity, etc. locally to communities and also promote development locally to better the lives of people (Lehohla, 2016). South Africa has three types of municipalities, these are the metropolitan municipalities, which are the eight major cities; the forty-four (44) urban and rural areas classified as district municipalities, and 205 local municipalities which are more urban areas, according to the Local Government Municipal demarcation (Thornhill, 2014). The study focuses on the City of Johannesburg metropolitan municipality, as one of the eight major cities in South Africa.

It is deliberated that municipalities must be at the forefront of identifying, knowing, and understanding the needs of the citizens and are also the service delivery support of government (Crous, 2002). Local Municipalities are responsible for ensuring that services are delivered and there is an improvement for underdeveloped communities, and they ensure that all communities or citizens receive an unbiassed delivery of services (Lehohla, 2016). Reddy (2016) explains that the aftermath of poor service delivery and lack of accountability by local councillors mostly results in service delivery protests. This demonstrates the level of importance of the municipalities at the local level. This study therefore focuses on understanding the adoption and use of a Knowledge Management System within the City of Johannesburg Metropolitan Municipality to understand how it impacts the productivity of the employees and service delivery thereof.

2.3 The City of Johannesburg Metropolitan Municipality

The fastest growing province in the country, named Gauteng, is distributed into three metropolitan municipalities namely, City of Johannesburg Metropolitan, City of Tshwane Metropolitan, and

City of Ekurhuleni Metropolitan, and two districts - West Rand District and Sedibeng District (City of Johannesburg, 2019). The City of Johannesburg Metropolitan (CoJ) is regarded as a major contributor to the total population of the province with 5.05 million people and has approximately 33000 employees who are employed in different municipal entities and departments. (City of Johanneburg, 2019). The projected operating revenue budget of CoJ was approximately R53.3 billion with an estimated operating expenditure budget totals R51.7 billion for the 2020/21 financial year. Revenue is projected to increase by 11.9% and expenditure by 10.3% over the 2019/20 financial year. (City of Johannesburg Council, 2020).

The CoJ metropolitan also invests in technologies that can assist the employees to work smart and deliver services to the communities with ease. There is an expectation for the 33000 CoJ employees to use the KMS in order to promote the administration and distribution of the CoJs organizational knowledge, promote and share the best practices and lesson learnt within the City.

2.4 Knowledge Management Defined

Knowledge Management (KM) has gotten a lot of recognition over the years. As such, varying definitions have been attached to this concept. Before this study takes a closer look at definitions attached to KM, this study feels it is important to recognize that it is a concept built out of two keywords which require a closer examination, these terms are Knowledge and Management. Knowledge management is seen as a set of fairly new organizational activities that are intended to improve knowledge-related practices, organizational culture, decisions and behaviours (Mphahlele, 2010). Knowledge Management in the public sector must provide efficient and effective knowledge asset streams amongst individuals, and departments within the public organization, even feeding to other government departments (Mitrović, et al., 2018).

The organizational performance is pegged on the planning, organizing, motivating, and controlling of people, processes, and systems in the organization to ensure that its knowledge-related assets are improved and effectively employed (King, 2009). Therefore, if there are KM processes and procedures in place, it can improve effectiveness in an organization. In recent times, KM is no longer isolated, that is, it has had reliance on systems to facilitate efficiencies and organizational performance. Knowledge Management is envisioned to empower the City of Johannesburg to be

a knowledge driven and learning organization through the effective knowledge application of the employees and stakeholders. Knowledge Management is explored in the following sections.

2.4.1 Knowledge

Knowledge is a significant component to attaining the competitive advantage in a contemporary organization (Gaffoor & Cloete, 2010). Huber (1991) and Nonaka (1994) define Knowledge as an acceptable belief that increases an organization's capacity for effective performance. Cirnu, et al., (2016) also said Knowledge is a vital factor of modern organizations, that may be seen as an essential element for any growing, learning and innovative organization. Knowledge is then defined as an understanding or awareness of something, such as specifics, skills, or information which is attained through education or experience by observing, realizing, or learning.

Egbu & Olomolaiye (n.d.) posit that there are two variations/ types of knowledge—knowledge can be tacit or explicit in nature (Chinyamurindi & Gwena, 2018; Vij & Kainth, 2017). Tacit knowledge is defined as human knowledge—a type of knowledge that cannot be coded, it is about experiences that can only be shared in person (Hilburn & Jorna, 2001), also knowledge that resides in the minds of people which can be difficult to articulate (King, 2009). Further, tacit knowledge is concerned with knowledge that is internal to us, acquired through personal experiences and intensely rooted in one's emotions, values, norms, and ideas (Grundstein & Rosenthal-Sabroux, 2007).

Explicit knowledge on the other hand, as defined by (King, 2009), is captured in documents, computer programmes, sentences, and organized data. For Vij & Kainth (2017) explicit knowledge can be codified or captured easily, transferred, or shared. These types of knowledge are said to be dynamic (Nonaka, 1994; Chigada, 2014), that is, one form of knowledge can be transformed from one form to the other and the inverse. This is possible through a process defined by Nonaka & Takeuchi (1995) as the SECI Model.

2.4.2 KM Conversion Model - SECI

The acronym SECI stands for Socialization, Externalization, Internalization, Combination. Figure 6 below displays the SECI Model as prescribed by Nonaka & Takeuchi (1995).

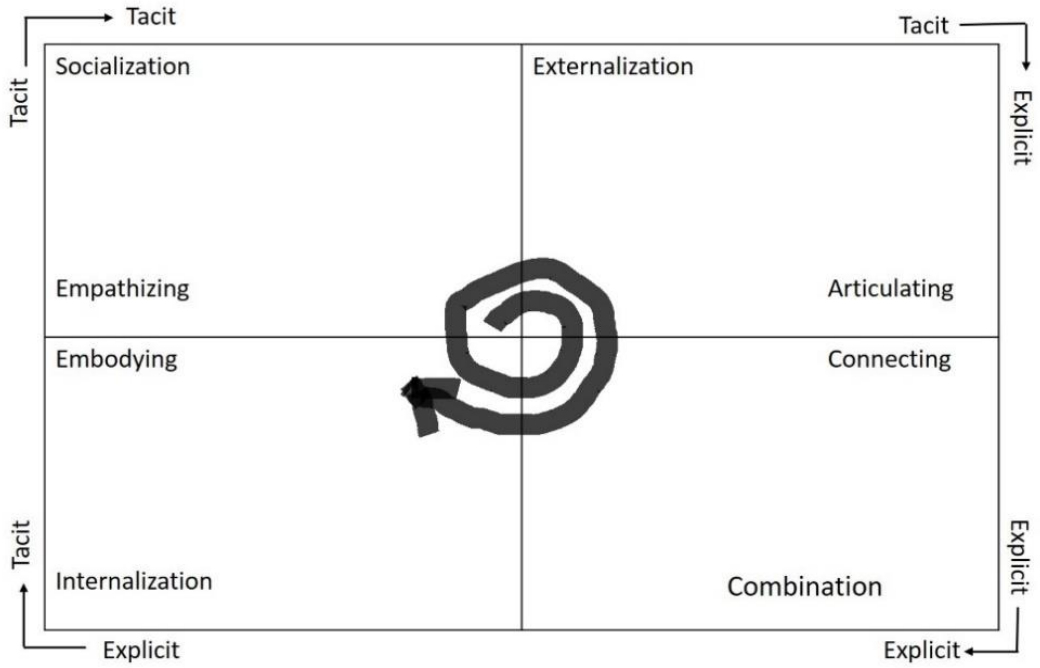


Figure 6: SECI Model (Nonaka & Takeuchi, 1995)

The Socialization phase of the process entails tacit knowledge creation and sharing through face-to-face communication or direct experience (Martínez-Costa, et al., 2019). This suggests that the socialization phase translates existing tacit knowledge into new tacit knowledge through the act of daily social interaction, sharing of experiences that takes place and the cultural processes and activities linked to the organization (Nonaka & Takeuchi, 1995). This can be, for example, through an internship program with a new graduate, training, etc.

The second phase of the SECI model, Externalization which refers to knowledge conversion from being explicit to being tacit (Hoe, 2006). This, however, could be difficult as tacit knowledge cannot be codified into manuals and documents at times, as well as the lack of evidence from the creativity process when tacit knowledge was made explicit (Ngulube, 2003). The Externalization phase is used create new knowledge that is easily interpretable and understandable (Zeeman, 2019).

Combination is the method of "*systematizing concepts into a knowledge system*" (Nonaka & Takeuchi, 1995, p. 67). The explicit knowledge can now be merged or combined with the existing ones using the system. This is most common in cases such as storing documents on the organization's KMS to organize and analyse knowledge easily (Biswas, 2017).

The phase which relates to the conversion of knowledge from tacit to explicit knowledge is called the Internalization. This is the fourth and last phase of the Nonaka and Takeuchi's model. It is regarded as "*a process of embodying explicit knowledge into tacit knowledge*", is "*closely related*" to "*the traditional notion of learning*", and to "*learning by doing*" (Nonaka, 1994, p.19; Nonaka & Takeuchi, 1995, p.10; Nonaka & Toyama, 2007, p.194).

The SECI model also has the important concept of '*Ba'* that is regarded as a framework within which knowledge is created, shared and used (Nonaka & Takeuchi, 1995). Kitaro Nishida, the Japanese philosopher proposed the '*Ba'* concept and Nonaka & Konno (1998, p.40) improved it to elaborate the knowledge creation model they have created and so consider the model "*to be a shared space as a foundation for knowledge creation*". They further said, knowledge is entrenched in '*Ba'* and it is attained through human experiences and learning from each other.

2.4.3 Knowledge creation process - The '*Ba*' concept

The knowledge is intangible and without the '*Ba'* concept it is considered information, which is tangible (Nonaka & Konno, 1998). The '*Ba'* concept has four categories as per the methods of knowledge conversion defined by Nonaka (1991) which are Originating '*Ba'*, Systemizing '*Ba'*, Exercising '*Ba'* and Dialoguing '*Ba'* (Nonaka & Takeuchi, 1995). Figure 7 demonstrates the interaction between the four categories of '*Ba'*.

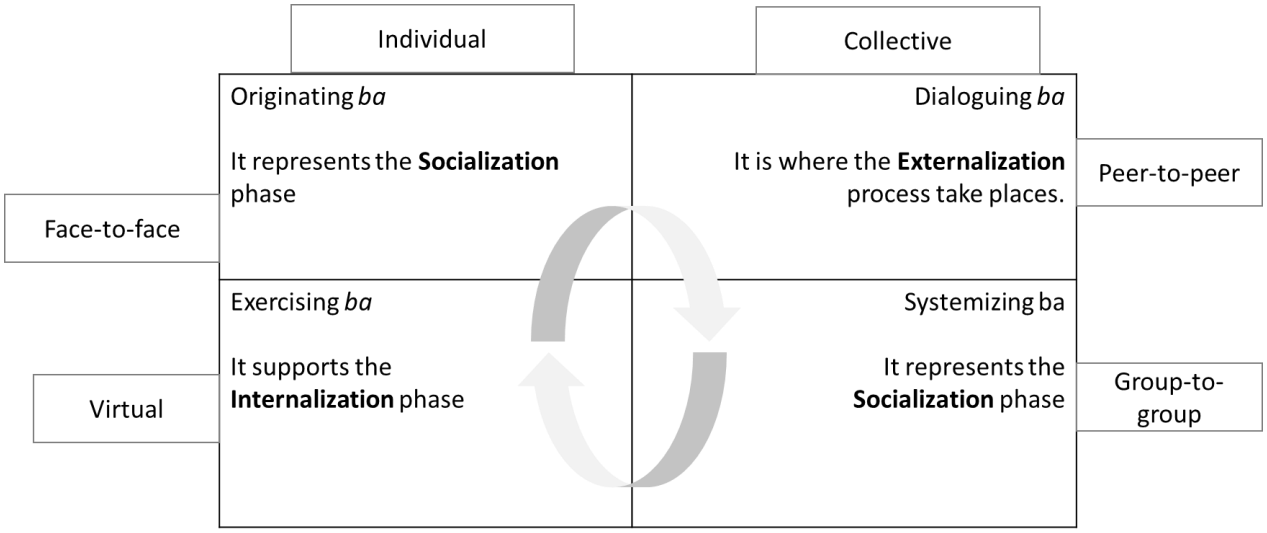


Figure 7: '*Ba*' categories interaction (Nonaka & Takeuchi, 1995)

Originating '*Ba'* is where knowledge creation and primary socialization processes starts, capturing the minds and senses expressed physically such as comfort or uneasiness, also allowing employees to share tacit knowledge through common experiences face-to-face (Nonaka, et al., 2000). It is an existing environment where commitment, belief or trust, empathy or understanding occurs between individuals, removing the barriers between themselves (Nonaka & Konno, 1998).

Dialoguing '*Ba'*, which is also known as 'Interacting *Ba*' where the externalization process transpires, allowing the exchange of knowledge and skills amongst the employees through face-to-face communications (Nonaka, et al., 2000). The tacit knowledge from individuals is uttered or shared between partakers through discussions and the process can be reversed where the uttered knowledge is sent back to the individuals' for further self- contemplation (Nonaka & Konno, 1998). In the dialoguing phase, it is imperative to identify individuals with the accurate knowledge and proficiencies to manage the creation of knowledge.

Exercising '*Ba'* is the simplified transformation of explicit knowledge to tacit knowledge (Nonaka & Toyama, 2007). It supports the internalization phase where there is constant enhancement of internalized knowledge, with the use of virtual applications or practical explicit knowledge and also avoiding the learning or training users through certain patterns which lacks analysis, strong participation and continuous self-improvement through on the job training (Nonaka, et al., 2000).

Systemizing '*Ba'*, also known as "Cyber '*Ba*'", is referred to as a platform of collaboration in a virtual space, instead of physical space, in real time where the combination of existing information and knowledge, and newly created explicit knowledge are systematised for availability organization wide (Nonaka & Konno, 1998). This combination becomes efficient when there is support and collaboration of environments using information technology (Nonaka, 1994).

2.4.4 Knowledge creation process – Knowledge Assets

Knowledge is an important aspect of creating a sustainable competitive advantage for the organization in recent times (Nonaka & Takeuchi, 1995). Although there are proposals to measure the knowledge assets in organizations, it is said that most still do not have enough operational systems, and required tools in place to monitor, measure, and evaluate knowledge assets generated

(Nonaka, et al., 2000). The systems are either insufficient for capturing the worth of knowledge assets or they do not exist (Butler, et al., 2008).

Knowledge assets cannot be purchased or traded from other organization; hence it is essential to create and use knowledge assets internally to realise the complete value (Nonaka & Takeuchi, 1995; Nonaka & Konno, 1998). Figure 8 below summaries the four categories of knowledge assets, defended by Nonaka & Takeuchi (1995).

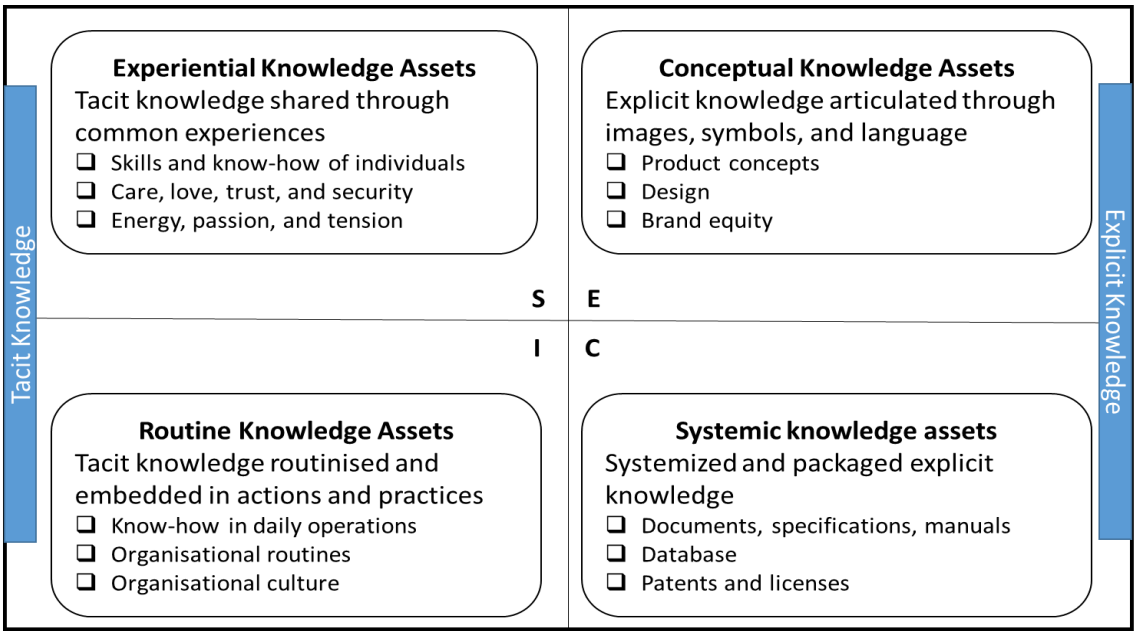


Figure 8: Categories of Knowledge Assets (Nonaka, et al., 2000)

Nonaka & Takeuchi (1995) describe Experiential Knowledge Assets as the tacit knowledge developed in a collective practice, which includes the cumulative skills and judgment of individuals, feelings such as resources inspiring participation, care and trust, and desires and strains. The Conceptual Knowledge Assets on the other hand are seen as the explicit knowledge in figurative method, which includes the product brand equity, artefact concepts, language and symbols (Nonaka & Takeuchi, 1995; De Geytere, 2005). Whereas Systemic Knowledge Assets are deemed to be organised, explicit, and orderly stored knowledge in various formats such as databases, documents, manuals, and patents (De Geytere, 2005). Routine Knowledge assets are described as tacit practical knowledge that are rooted in organizational culture and/or seen as regular routine practices or activities (Nonaka, et al., 2000).

2.4.5 Variations of Knowledge

The data–information–knowledge–wisdom pyramid (DIKW) as demonstrated in Figure 9, is becoming popular in many areas. In some domains it is referred to as a science and in some as a pyramid (Rowley, 2007). The DIKW model is a method that is often used in knowledge management, to illustrate how the data(D) is moved to information (I), knowledge (K) and wisdom (W) with an element of activities and decisions.



Figure 9: DIKW Hierarchy (Rowley, 2007)

From the definition above, it is clear that knowledge is derived from Information. Though the value of knowledge is built on information, not all information becomes or grows to the stage of knowledge (Alavi & Leidner, 2001). In its cleanest form, the knowledge management processes of all good and strong organizations starts with a database. It must be noted that information becomes knowledge only when it is clearly understood, well manipulated, and can be linked to a purpose (Stevens, 2010). In recent times, KM is no longer isolated, that is, it has had a relative effect on other organizational systems to trigger controls. The knowledge management systems are explored in the following sections.

2.5 Knowledge Management Systems

Knowledge management systems (KMS) is said to be a group of information systems employed to managing knowledge within the organization. KMS are IT-based systems developed to assist and improve the knowledge creation, storage/retrieval, transfer, and application processes of the organization (Alavi & Leidner, 2001). They further argue that IT can be used as an enabler in KM

initiatives, but stress that KM initiatives do not necessarily involve the implementation of IT solutions. KMS are expected to play a major KM role in enterprises that are increasingly confronted with paradoxical challenges of exploiting explicit knowledge resources and exploring new tacit knowledge (Abdelrahman, 2013). KM Systems can be referred to as any type of IT system that is used for storage and retrieval of explicit knowledge, a collaboration tool for KM initiatives and as a supportive IT infrastructure for KM.

The City of Johannesburg municipality identified the KM system to promote the management and distribution of knowledge and experience in its departments and municipal entities. Also, to improve access to the City's key organizational knowledge document to enhance key decision-making, increase collaboration and productivity, share, and promote best practices/lesson learnt within the City.

Knowledge, perceptions and assumptions towards KM and KMS

Earlier in section 2.4; 2.4.1; and 2.5; the definitions of Knowledge, Knowledge Management and Knowledge Management System were offered. One of the key deductions from these definitions is that these key concepts are interrelated. This means that one has implications over the others and inversely. In this section, however, the knowledge perspectives and its implications to KM and KMs are explored.

According to Alavi & Leidner (2001) the perspective or manner in which knowledge may be viewed can be summarized in 6 (six) forms. These are; knowledge verses data and information, state of mind, access to information, entity, process, and capability.

Table 1. Knowledge Perceptions and Assumptions

Perception	Assumptions for Knowledge Management (KM)	Knowledge management system KMS implications

Knowledge vs. data vs. information	Data is raw facts and/or numbers, when processed it becomes information and customized information is regarded as knowledge.	KM aims to uncover the useful information and the integration thereof to individuals.	KMS will be the expansion of the existing information systems for improving the integration of information.
State of mind	Knowledge is about insight and understanding.	KM necessitates the improvement of the individual's understanding and learning by the specified information.	Information technology position is to provide necessary access to knowledge generators and users.
Entity	Knowledge is an entity to be gathered and used.	The critical KM challenge is creating and managing knowledge resources.	The knowledge harvesting, capturing, transferring, and storing is the role of information technology.
Process	Knowledge is a process of utilizing the skill acquired.	The aim of KM is on knowledge streams, the process of knowledge creation, sharing, and knowledge dissemination.	Information technology offers a connection between knowledge resources to establish a broader scale of knowledge streams.
Information access	Knowledge is a method of information access.	KM aim is to organize content in an easy retrieval manner.	IT role is to offer successful search and retrieval processes to trace relevant information.
Capability	Knowledge has an ability to impact an action.	KM is concerned about creating strategic basic skills and understanding.	IT offers development support to individuals and the organisation to enhance intellectual wealth.

Table 1: Knowledge Perceptions and Assumptions (Alavi & Leidner, 2001)

2.5.1 Systems

There are three key types of knowledge management systems namely; enterprise-wide knowledge management systems such as content management systems; knowledge work systems (KWS) i.e. data warehousing, data mining, & OLAP; and business intelligent techniques such as artificial intelligence tools (Hajric, 2018). Content management systems such the knowledge management system can be built using different applications or software like SharePoint, as used by CoJ.

2.5.2 Knowledge Management system functions and benefits

A KMS is an application that is intended to store and capture the relevant, useful, and important information that is regarded as institutional memory of an organization (Abdelrahman, 2013). A well-structured KMS has many advantages or benefits and it will help the employees and the organization to find and reuse the resources, skills and expertise, improve productivity, better strategies, improved decision-making process through collaboration, increase efficiency, retain intuitional memory, have competitive advantage and benchmark against the competitors (Ali, et al., 2016; Gupta, et al., 2000). The benefits of the KMS can be realised when the system is adopted and used to its full capacity.

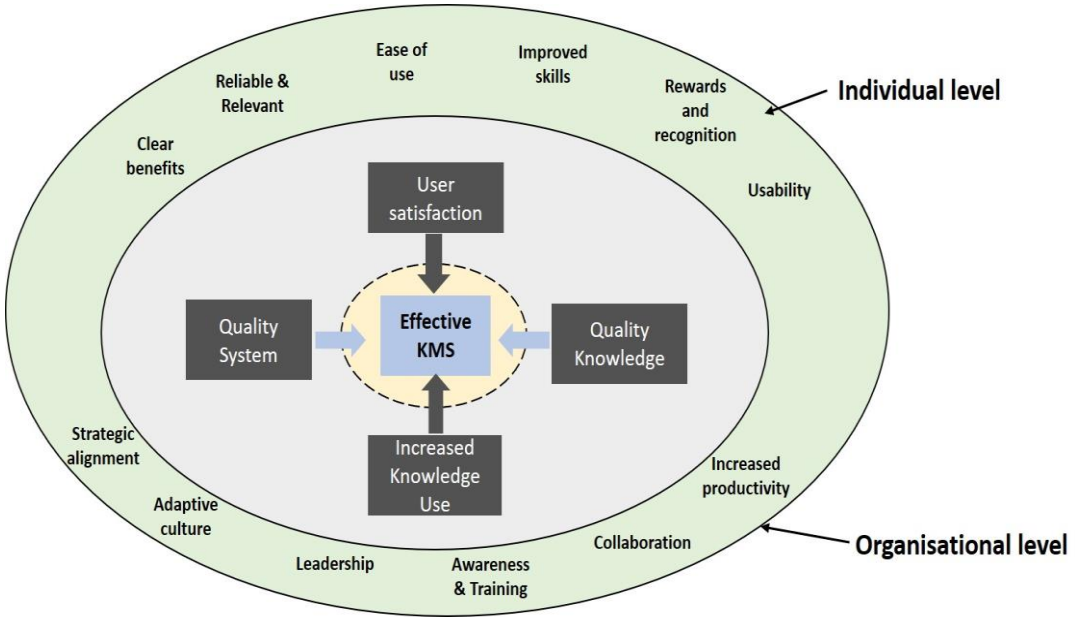


Figure 10: Knowledge Management system functions and benefits (adapted from: (Abdelrahman, 2013))

The functional knowledge management system has numerous individual and organizational benefits. The diagram above, Figure 10, illustrates the four elements of an effective KMS, which are:

- user satisfaction, where users see the relevance of the KMS and be able to use it fully.
- increased knowledge use, which speaks to the improvement of end-user skills and interest to use the system.

2.5.3 Adoption and use of KMS

Adoption and use are complementary. They are both essential in that they cannot lead to success when separated. Johnston, et al. (2013) differentiated the two concepts as "*software usage is how frequently or for what purposes the software is used, while software adoption is how fully utilized the software is*". Al-Ghaith, et al. (2010) described adoption as a process that starts with a user being aware of a new system or technology and embracing it. While usage was explained as the ability to successfully access and use the system to its full capacity to perform required activities.

All systems, processes and procedures can be in place but if user adoption lacks, the benefits of KMS will not be realized. There is no isolation between people, process and system (technology) when dealing with KM.

2.5.4 Adoption

Adoption is a position where users accept a fully functional system to perform a specific function or need. Additionally, adoption may also be perceived as a transfer or migration from an old system to an upgraded system that is more comprehensive, better, and faster, (Pearson & Grandón, 2004)

Adoption in the context of this study, refers to a position where users accept a fully functional system to perform a specific function or need. It might also be a transfer or migration from an old system to an upgraded system that is more comprehensive, better and faster (Zabadi, 2016). There are some relevant factors motivating the adoption of internal and external KMS in firms investigated (such as innovation, operational management, and market features) but also significant barriers such as the protection of intellectual capital and cultural barriers (Mustonen-Ollila & Lyytinen, 2004).

2.5.5 Use

Use is the method in which users exploit and utilize the functionalities of information system. A system usage is the way of assessing how the users interact with the actual system or software installed. For an organization to be able to assess the usage of a system, regular monitoring is required. This can be done by generating or creating automated report from the system.



Figure 11: Factors contributing to a successful use of a KMS (Shahmoradi, et al., 2015)

The factors on Figure 11 contribute directly or indirectly to the successful use of knowledge management system and they also have an influence on each other. These elements shows that organizations should have aligned organisational and knowledge strategies by constructing their knowledge architecture in an effective manner (Shahmoradi, et al., 2015). Cristescu & Cristescu (2008) divided knowledge management architecture into four parts—firstly, there are the people who are knowledge generators and require skills through training to manage the KMS, secondly, there is the information that can be shared as knowledge objects with clearly outlined benefits, thirdly, the technical infrastructure to enable easy usability should be considered, and lastly, knowledge management processes which include marketing and awareness of the KMS, the change management, and incentivizing knowledge contributors for motivation.

2.6 Knowledge Management System in Local Government

The competitiveness and efficiency elements in the delivery of the services cannot be divorced from the municipalities. This makes it critical to examine how KMS could be a factor in realizing these efficiencies and the desired competitiveness, especially because municipalities in South Africa undeniably face numerous service delivery challenges such as rates and taxes billing

systems, municipality staff lacks customer service, long travel distance to reach the municipal offices, limited operating hours offered by the municipal offices.

The creation of IT applications that assist the public sector with enabling Knowledge Management (KM) has been on the rise, although the exploration for developing effective and integrated KMS is lacking in some of the organizations within the sector (Butler, et al., 2008). An entrenched KMS has capabilities to provision the KM functions by providing knowledge exchange platforms and knowledge repositories (Kankanhalli, et al., 2003). It is therefore essential to clarify the stored knowledge assets in diverse local government departments and then distribute this knowledge to the users and train them on KMS implementation as public servants (Brusa, et al., n.d.). Therefore, the adoption of KMS by public administration employees is obligatory, to facilitate their daily work without duplication of efforts such as administrative tasks that are repetitive in nature, dispensation of documentation and files (Scheepers, et al., 2004).

2.7 KMS in the City of Johannesburg

According to Human (2008), the Office of the Chief Information Officer at CoJ contracted a service provider to draft a business proposal in support of deploying the recognized Knowledge Management System, considering alignment between what the system enables in terms of the strategic levers identified. Typically, to measure the benefits of the business, it is essential to perform a KM strategic review for the wider CoJ while taking into account current CoJ strategies (Human, 2008).

The service provider had consultations with several stakeholders throughout CoJ by means of interviews to kickstart the process. The process was running in collaboration with the Innovation and Knowledge Management (IKM) Unit within the Group Strategy Policy Coordination and Relations (GSPCR) function as the system owner, which was formerly known as Joburg Innovation & Knowledge Exchange (JIKE). IKM Units' responsibility is to design and implement unified knowledge management, systems and innovation practices within the organisation. This is to assist the organization to remain competitive, efficient, and effective. As part of fostering and embedding a culture of KM within the City, the IKM Unit implemented and achieved numerous key KM milestones over the years (Mange, 2019).

The necessity for the KMS was drawn from the following questions and queries: Which information and knowledge exists in CoJ and where to find it? Continuous creation of knowledge assets; poor collaboration, integration and sharing of knowledge and information transversely municipal entities and departments, which provides increase to the risk of initiatives duplication across departments; the knowledge that is not thoroughly captured, and occasionally misplaced, knowledge, skills transfer and retention when experienced employees leave the organisation, impacting on business continuity. In addressing this obstacle, the creation of a functional knowledge management system was deemed important as part of conserving the CoJs institutional memory (Clarke, 2021).

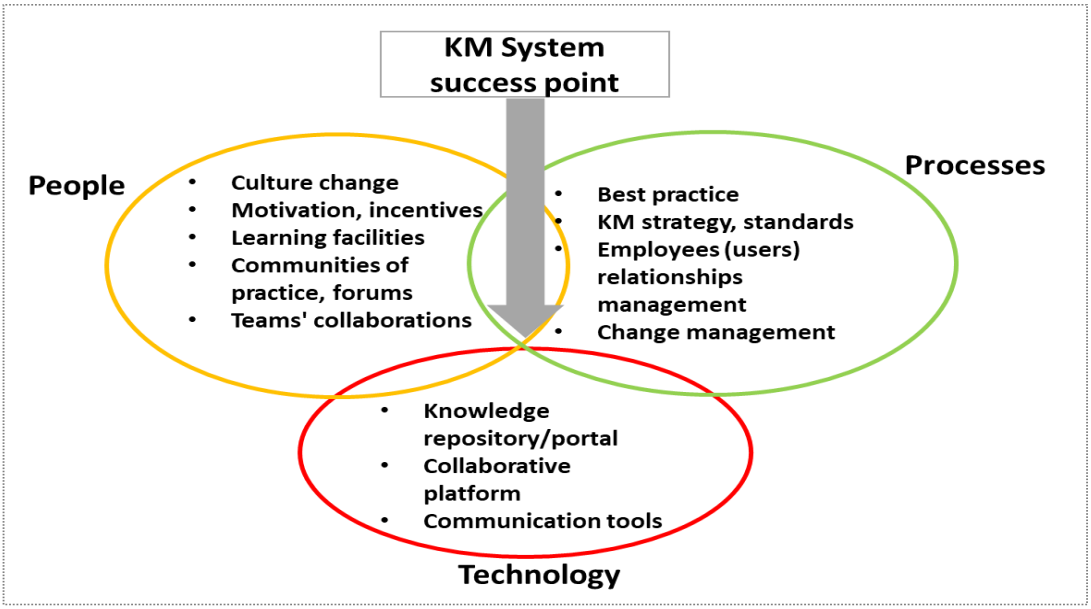


Figure 12: Elements of Knowledge Management System (adapted from: (Alavi & Leidner, 2001)

Figure 12 displays three elements of KM that City of Johannesburg uses—people, processes and technology. These elements seek to aid the organisation in achieving its vision of supporting the City of Johannesburg to be a knowledge driven and learning organisation through the successful utilization and use of the knowledge and intellectual capital of its employees. Knowledge Management in CoJ aims to certify that knowledge and relevant experiences generated internally and externally are captured on the KMS and easily shared across all the CoJs municipal-owned entities and departments to qualify the organisation to convert to a learning institution and achieve its strategic objectives and improve service delivery. The City of Johannesburg is wealthy of knowledge resources which requires well developed structures and management for easy

accessibility and re-use purposes. While the primary requirement for KMS is primarily for internal use by the employees, the CoJ residents should also be in a position to access certain knowledge assets on the CoJ website on a need-to basis.

2.8 Learning Organization

An organization that can modify its behaviour to reflect new knowledge and insights that is created, obtained, shared, and transferred is considered a learning organization (Bratianu, 2018). A learning organization is an organization that is continuously developing, constantly creating abilities to adapt to change and have competitive advantage (Yadav & Agarwal, 2016). Luhn (2016) described a learning organization as the ability to transfer knowledge swiftly and successfully within an organizations' departments or divisions. Further, Dawood, et al. (2015) opines that the knowledge that is stored in a personal or private domain or a repository of information in an organizations database without being transferred, cannot be used for learning purposes. For this reason, the learning organization notion is seen as people focusing on learning as a process and may therefore not have value if isolated from knowledge management as they complement each other (Gorelick, 2005).

2.9 Innovation

Innovation is perceived as the imperative element of competitive advantage, because it is assumed to be a process for taking initiative of new inventions or ideas that will assist an organization to develop (Kogabayev & Maziliauskas, 2017). Innovation is broadly recognised as a main regeneration process within organizations, a process upon which management must endlessly seek ways to improve their offerings in terms of products and services.

There are many innovation definitions available in extant literature. Innovation as defined by Drucker (1985), is the process of training or being equipped in innovative, new and improved proficiencies. Whilst Thompson (1965) defines innovation as the notion of creating, accepting and implementing new ideas and processes to improve product or services. The core of knowledge management where innovation is concerned is that it affords management with a framework in their effort to enhance and develop their organizational competency to be innovative. Innovation can, therefore, be seen as a way of applying improved solutions that meet new needs and requirements to give the organization a competitive advantage.

2.10 Summary of the chapter

Knowledge Management, the use and adoption of various systems that advance it (knowledge management systems) are widely explored disciplines. In this chapter, these areas were explored in order to comprehend how they have been widely in other studies and also understand how they have come to be core attributes to the problem statement of this research. This chapter further went on to explain the elements and attributes of KM and the composition of the local government administration in the Republic of South Africa. This is followed by the review and discussions of theoretical frameworks underpinning this research in the following chapter.

CHAPTER THREE: THEORETICAL FRAMEWORK

3.1 Introduction

The effective adoption and use of information systems broadly, comprising KMS are areas of research that have generated interest by individuals and organizations recently (Dube, 2017). Various research theories being applied in the perspective of technology innovation and the adoption and use of these systems, validate the user acceptance and system usage (Lai, 2017). Whereas there are several theories that could be employed in the field of systems' adoption and use, the universally used theories are the Technology-Organization- Environment Model (TOE), Task-Technology Fit Theory, Organizational Culture Theory (OCT) and Technology Acceptance Model (TAM). This study explored these theories, and they are presented in brief in the following section.

3.2 Theories in Information Systems related to the study

This section discusses the theories commonly utilised in Information Systems studies. They cover technology use and adoption, organisational culture disciplines including technology, organisation and environmental contexts.

3.2.1 Technology acceptance model (TAM)

As explained by Larsen & Eargle (2015) the technology acceptance model (TAM) is an addition of the Theory of Reasoned Action (TRA) to the field of Information System. Larsen (2003) posits that the perceived usefulness and ease of use of a system define an individual's intention to use a system with the intention to use serving as a mediator of actual system use. Perceived ease of use also directly impacts perceived usefulness. In his doctoral thesis, Fred Davis (1986) proposed the TAM model to initiate arguments or discussions concerning the use of new technologies as well as the insights, intentions and attitudes around the relationships.

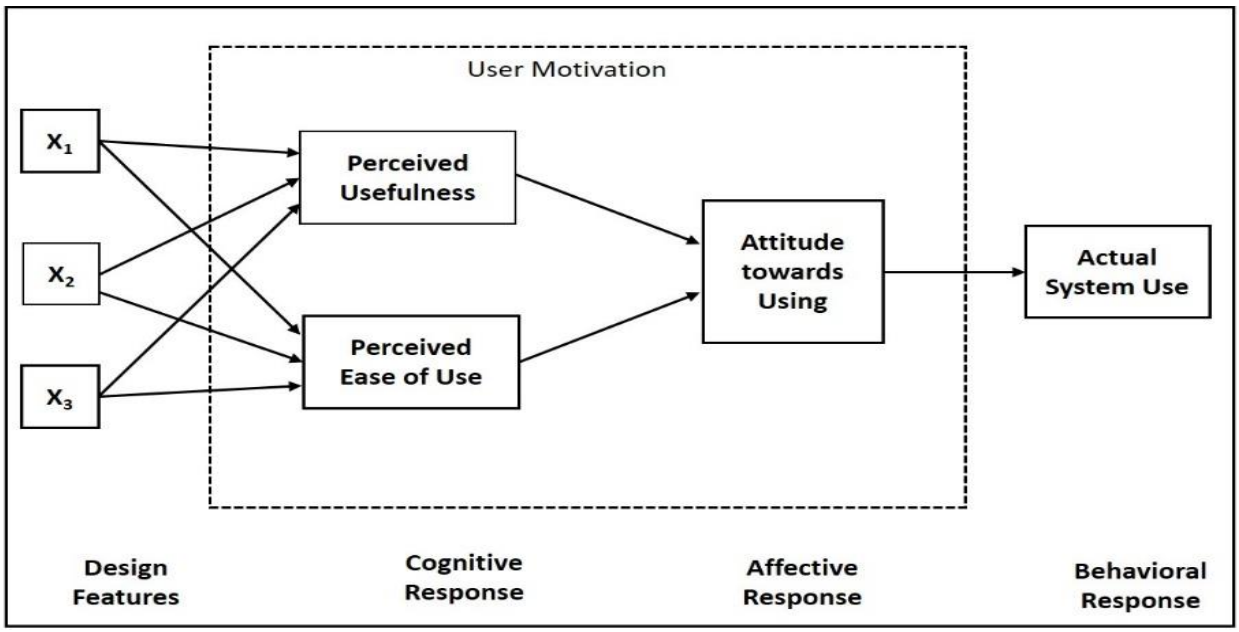


Figure 13: Technology acceptance model (TAM) model by (Davis, 1986)

Davis (1986) outlined the significance of TAM by highlighting the important factors, on Figure 13 above, which are; perceived ease of use to determine the level of user acceptance, the perceived usefulness for the benefits from using the technology, the attitude towards using the technology or system and the actual system use. The suggestions resulting from observations of the perceived usefulness and ease of use are facilitated by external factors which include the characteristics of the system, individual variances, influences from social factors and the conditions of the enabling environments (Portz, et al., 2019).

TAM was designed to envisage the acceptance and usage of technology and it is personalized to an Information System (IS) context (Venkatesh & Davis, 2003). Although TAM is fit for use by the study, it was not chosen by the researcher because it solely looks at technology acceptance in the organization and not much on the use element.

3.2.2 Technology-organization-environment (TOE) framework

TOE framework outlines the way organizations implement innovations, influenced by the organizational background which includes resources, size and structure of the organization and connection of employees, the technological background which refers to the external and internal technologies that are applicable to the organization and the environmental background refers to

the governing environment, structure and size of the productivity and the competitors (Lippert & Govindarajulu, 2006).

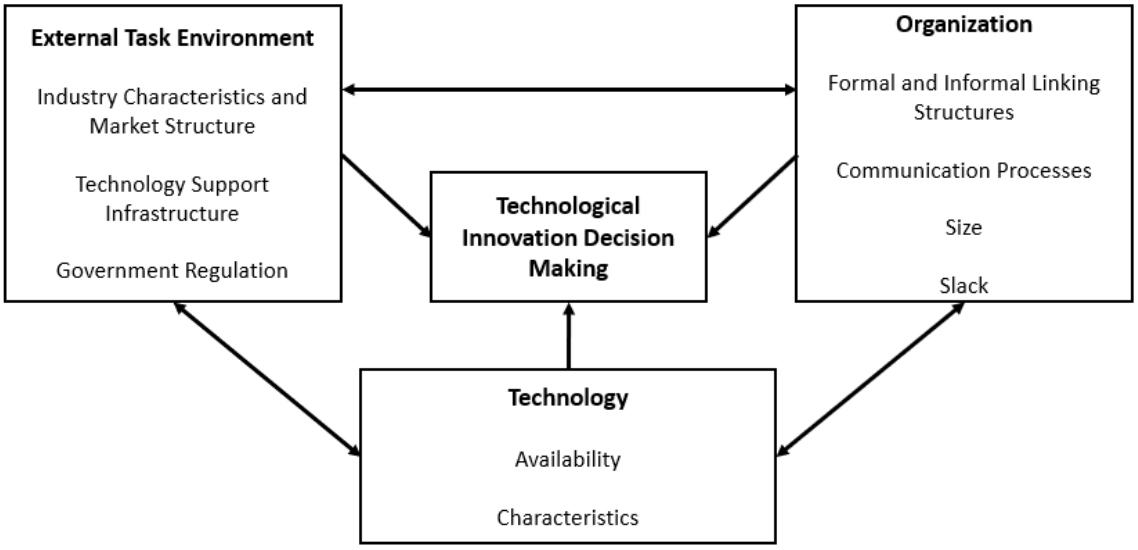


Figure 14: Technology Organization Environment (TOE) framework by (Chen, et al., 2019)

Figure 14 displays the TOE framework which categorizes significant decision-making factors for technological innovation adoption, relating the external task environment, organization, and technology factors (Gangwar & Date, 2015). To make data readily and easily available, all the technologies and processes guiding the technologies are available and included in the technological factors, which is also related to knowledge sharing and learning organization elements. TOE is a definitive framework that recommends a comprehensive set of features that explain and envisage the probability of technology adoption ((Awa, et al., 2016)

TOE framework is projected to study the technological innovations use in the IS environment, sustaining the decision to adopt innovations that supports technology based on the organizational and environmental factors as well as the technological features (Ahmed, 2020). They further said that the framework predicts "*a three-fold framework for technological innovation assumption and execution: the technical, the structural and the environmental context*". The TOE framework has been useful to private sector organizations in terms of explaining the acceptance of the innovation, which includes internet use in procurement, electronic data interchange, open systems and other information systems available (Chen, et al., 2019).

Public sector is not immune to the framework, as it has assisted the sector to also explain their adoption of innovations. For an example, understanding the e-government concept at the municipality level, the implementation of intranet solutions within government and execution of reinventing government improvements (Norris & Moon, 2005). Same as the TAM framework, TOE is not suitable for the study because it focuses more on the technology acceptance in the organization and not much on the use element.

3.2.3 Task Technology Fit theory (TTF)

The theory embraces that Information Technology (IT) is probable to have a beneficial impact on organizational and individual performance and be utilized, should the technology be the same as the tasks deemed to be performed by users (Goodhue & Thompson, 1995). Figure 15 demonstrates the factors contained by the TTF theory as developed by Goodhue & Thompson (1995), these can be spread into three categories, that is, utilization, fit, and utilization and fit combination. The theory demonstrates how technology is assumed to affect individual and organizational performance (Permana & Setianto, 2018).

The task-technology fit (TTF) model (Goodhue & Thompson, 1995) is another model that can evaluate IS implementation success. The TTF model adopts the fit notion and assess fit between task and technology (system) characteristics, which differs from other popular IS models (Overby & Konsynski, 2010).

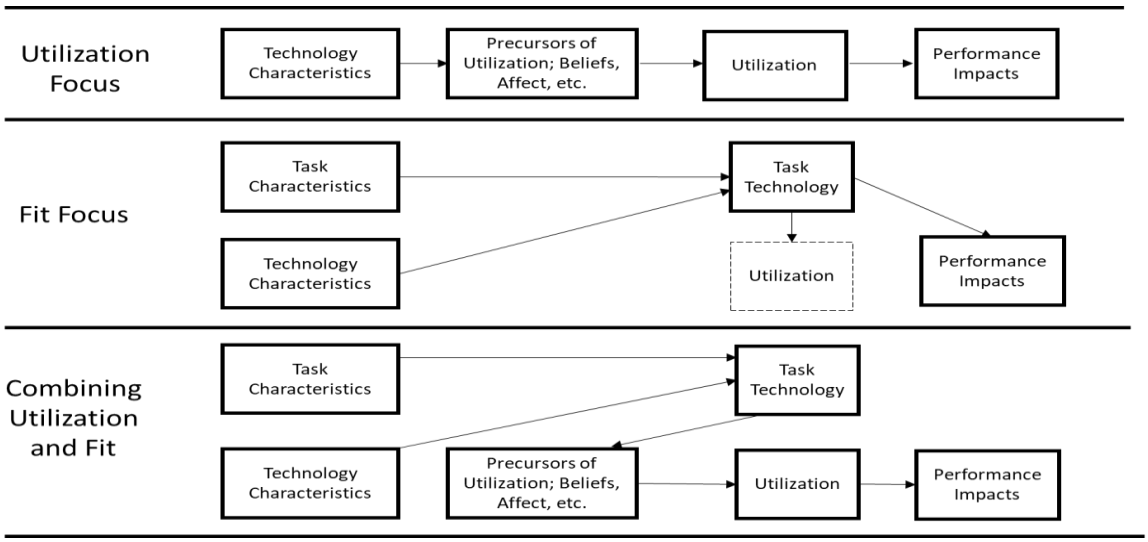


Figure 15: Task Technology Fit schematic by (Goodhue & Thompson, 1995)

The Utilization category comprises of user behaviour, views or opinions, attitudes, culture in order to predict the usage stats of information systems in an organization and how it affects the performance of the individual and the organization itself (Vanduhe, et al., 2020). The characteristics such as high-quality systems, system reliability or ease of use that are employed in the technology results in user satisfaction, attitudes and beliefs about the systems, which ultimately lead to the increase in usage (Goodhue & Thompson, 1995). Task-technology fit theory suggests that the "fit" has been showing greatest impact on individual performance as well as decision making (Goodhue & Thompson, 1995).

Overby & Konsyanski (2010) suggest that the "fit" focus is influenced by both the "technology" and "task" characteristics. Similarly, the study conducted by Dickson, et al. (1986) with the tabled data presentation from a number of researches, shows that the individual performance appeared to be relying on fit focus. Vessey (1991) proposed that discrepancies on supplementary data representations or decision processes for technology and tasks characteristics could potentially delay decision making performance, while other researchers such as Kositanurit, et al. (2011) found the linkage between the performance and "fit" focus of technology or systems, tasks, organization and individual characteristics more solid.

This study focuses on the adoption and use of the KMS, how it is used for effective service delivery in the City of Johannesburg Metropolitan Municipality. This theory is suitable as it looks at the "fit" of technology being the KMS to the tasks as well as performance of individuals in an organization.

3.2.4 Organizational Culture Theory (OCT)

In the 1980s, Edgar Schein developed the Organizational culture (OC) model to address the culture and culture change aspects of the organization using the organizational direct and indirect mechanisms he identified as the steps follow (Schein, 2004). Dauber, et al. (2010) further posits that the direct mechanisms impact the model, and although there is no impact by indirect mechanisms such as the vision, mission, corporate identity on the organizational culture model, these are still considered to be influential.

The main factors of this theory are performance, organizational effectiveness, employee commitment, and employee satisfaction. The self-regulating aspects of the OCT are organizational

culture type, strength and resemblance (Larsen & Eargle, 2015). Figure 10 below illustrates the Organizational Culture Theory schematic.

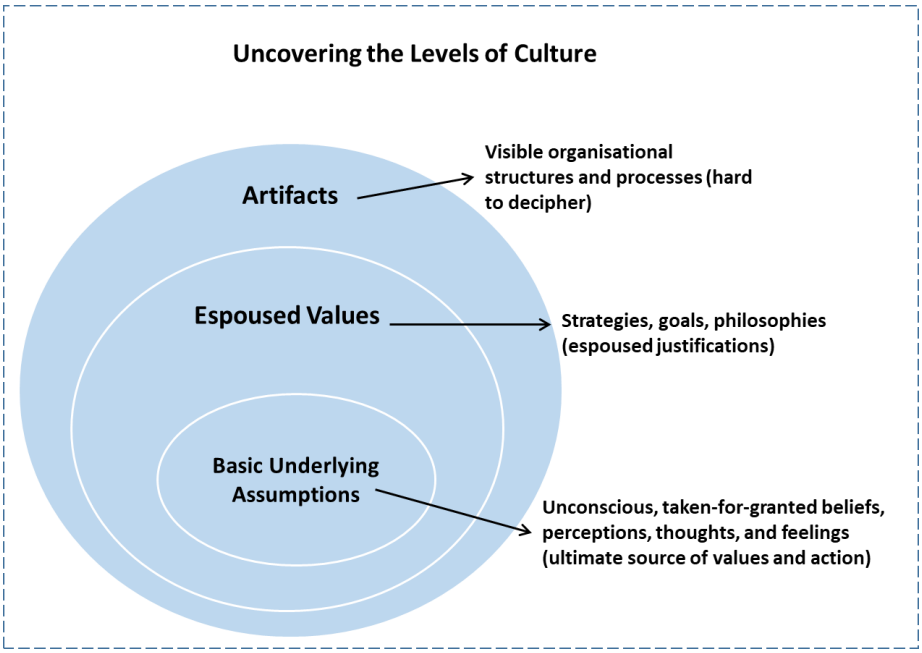


Figure 16: Organizational Culture Theory schematic (adapted from: (Schein, 1998))

There are 3 levels in the OC models, as defined by Schein (1998). The first one being the artifacts which is the external level of the organization that is visible to all, including external parties, it is easy to change, and it represents the more noticeable elements such as processes, procedures, logo, organizational structure (Dzomonda & Fatoki, 2019). The espoused values as the middle level which addresses the core values, standards, codes of conduct and elements that drives and ensure publication of the organization such as the main objectives, strategies, and beliefs (Staniškienė, et al., 2017). Lastly, the basic underlying assumptions level which is considered to be the most difficult level to change because of the nature of the assumptions being intensely rooted in the culture of the organization and difficult to recognize (de Guevara, 2014).

The research wants to probe how the low adoption and use of the CoJs KMS affects the performance and effectiveness of the organization. Are the employees satisfied (or not) with the system, and why, if at all, are they not committing to using it? It is important to also understand the culture type and strength of the organization which will lead to the root cause of the low adoption and use of the KMS.

3.3 Conceptual Research Framework

After a thorough analysis of existing literature on adoption and use of systems, the researcher discovered that the Task-Technology Fit Theory (TTF) and Organizational Culture Theory (OCT) are more applicable for the study as they look at the users conduct, affecting the adoption and use.

The framework diagram on figure 17, is an abstraction from the TTF and OCT theories, which is used to structure the study research questions and findings. The framework considers the concerns around CoJ culture regarding technology, how it influences the use of the adopted KMS. The key object of the study is the Knowledge Management System, referred to as knowledge repository in CoJ. During the interviews with the nominated study sample, the conceptual framework will assist with testing and measuring of the existing underlying assumptions since the adoption of the KMS. It is vital to examine the capabilities of users, decide on how to improve the intellectual capital, building the core competencies to use the KMS fully functionally.

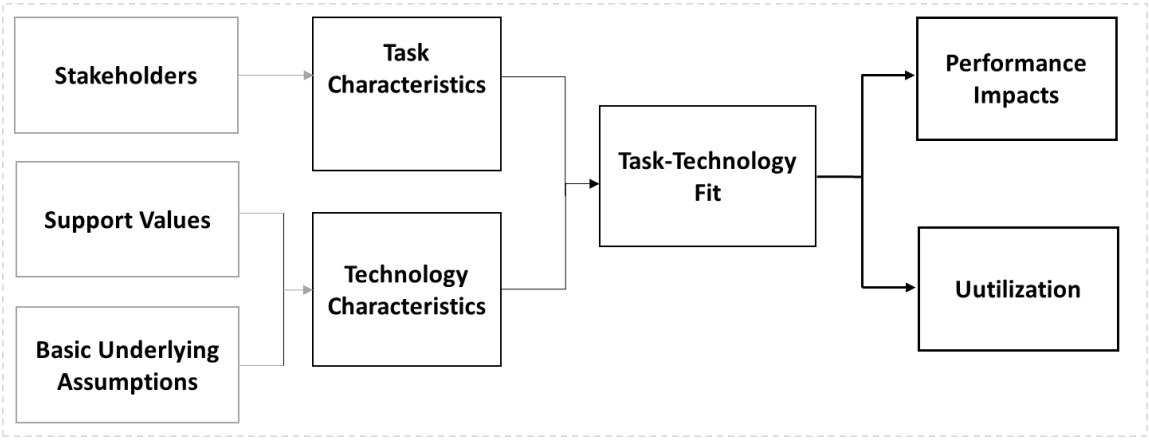


Figure 17: KMS adoption and use Conceptual Research Framework

The study sample for the interviews was nominated from the Stakeholders who are key contributors as they are knowledge workers tasked with knowledge creation, capturing, sharing and application. The technological characteristics was similarly addressed and tested through the interviews where the researcher sought to confirm with the stakeholders if the system met their expectations. The results thereof, determined the existing level of system use by employees, the repercussions, and recommendations on what to change, where to improve the KMS use to subsequently improve employee performance to better service delivery to the residents.

3.4 Summary of the chapter

To explore the phenomenon of the use and adoption of KMS in the CoJ, this chapter discussed various theories serving as analytical lenses, presenting multiple perspective from which to comprehend it. These theories included OCT, TAM, TTF and TOE, from which a conceptual framework for the study was developed. The next chapter presents a plan, in a form of a research methodology for the execution of the study.

CHAPTER FOUR: RESEARCH METHODOLOGY

4.1 Introduction

This chapter focuses on the research methodology for the study, where the research paradigm adopted by the study is identified and explained, the rationale for adopting the selected paradigm and research approach. In this chapter, the research strategy and design are deduced, including the selected unit of analysis, population, sample, sampling technique, data collection method and data analysis.

4.2 Research Paradigm

A research paradigm is the theoretical lens through which the researcher observes the aspects of the research methodology to determine the research methods that will be used to collect and analyse the data (Kivunja & Kuyini, 2017). Chilisa & Kawulich (2012) interprets research paradigm as the opinions that guides the assumptions, thinking, and beliefs about communities and individuals, and the structure of how we view the world. The three commonly used paradigms for qualitative research are critical theory, interpretivism and positivism (Antwi & Hanza, 2015). They are also used in social sciences and information systems research approach.

4.3 Interpretivism

The key focus of research undertaken within this paradigm is the way we as humans, attempt to make sense of the world around us (Goldkuhl, 2012). The concern one would have working within this paradigm would be to understand the fundamental meanings attached to organizational life (Saunders, et al., 2019). Further, Chowdhury & Gopal (2014) said that the purpose of interpretivist research is to create new, richer understandings and interpretations of social worlds and contexts. For business and management researchers, this means looking at organizations from the perspectives of different groups of people. This is the paradigm this study adopted.

4.3.1 Rationale for adopting interpretivist paradigm

Interpretivism was adopted in this study because it is typically inductive. Inductive reasoning starts with a minor observation or question and works its way to a theory by examining the related issues (Jackson, 2002) The study sought to explore and grasp, the root cause of lack of adoption and use

of the KMS in the City of Johannesburg. This was done by observing the organizational culture, engaging with the users of the systems as well as those who were not using the system.

4.4 Research Approach

Qualitative research approach enables the researcher to interpret the data collected in the form of words, images, company documents, interview records, websites and theoretical models, other than in the numerical format. (Louw, 2013). Qualitative research generally observes a constructivist view of the world and people, focus on meaning and may implement multiple methods to reflect different aspects of the issue researched (Thanh, 2015)

This study used a qualitative research approach which allowed the in-depth interrogation and analysis of data at the researcher's disposal.

4.5 Research Strategy

A research strategy is a step-by-step plan of action that gives direction to one's thoughts and efforts, enabling them to conduct research systematically and on schedule, and to produce quality results and detailed reporting (MacKenzie, 2014). MacKenzie further holds that a research strategy enables one to stay focused, reduces frustration, enhances quality and most importantly, saves time and resources.

Within research methodology, research strategy is understood to be the "general plan of how the researcher will go about answering the research questions" (Saunders et al. 2009; p. 90). There are seven types of research strategies: experiments, surveys, case studies, ethnography, grounded theory, action research and archival research. The strategy that will be used for this study is Case study.

The case study method enables a researcher to closely examine the data within a specific context. (Zainal, 2007). This focuses on an in-depth investigation of a single case (e.g. one organization) or a small number of cases. In case study research generally, information is sought from different sources and through the use of different types of data such as observations, survey, interviews and analysis of documents. Data can be qualitative, quantitative or a mix of both (Heale1 & Twycross, 2017)

The appropriateness of deploying case study as a research strategy for this inquiry was founded on the following factors. Firstly, the study was concerned with the adoption and use of KMS. Secondly, it sought to explore and understand the adoption and use of KMS in the CoJ Metropolitan Municipality. Moreover, whilst there are multiple municipalities in South Africa, CoJ as a Metropolitan Municipality is central to this investigation. It was the identified single case for an in-depth research from which the attributes concerning KMS adoption and use would be investigated.

4.6 Research Design

4.6.1 Unit of Analysis

The unit of analysis is the key object that will be analysed in the study (Trochim, 2006). It is specifying whether the level of investigation will concentrate on the collection of data about objects, individuals, organizations, or departments. The unit of analysis for this study was an organization (CoJ) at the adoption stage and the individuals at the use stage.

4.6.2 Population

In research, a population refers to all the individuals, or the larger group selected to participate in a study. Data is not always available for almost all individuals in a population. (Hanlon & Larget, 2011). The targeted population for this study was the City of Johannesburg Metropolitan Municipality employees including the top and middle management, KM practitioners and general employees.

4.6.3 Sample

A sample, in a research study, refers to a group of a fairly smaller collection of units or number of people selected from a population for investigation purpose (Alvi, 2016). A sample is a subgroup of a population that is used to represent the complete group, for which systematic errors can be defined as incorrect or false representation of the sample (Cherry, 2018). For this study, six employees were used as a sample and participated in the study and they are as follows: CoJ employees (two general staff members), Knowledge Management Champions (two), IKM unit team members (two including management) and Management. The IKM team members, KM Champions and Management were more involved at the KMS adoption stage and general employees at the use stage.

4.6.4 Sampling Technique

Sampling techniques are mostly categorized into two key types which are: probability sampling methods and non-probability sampling methods. This study will use non-probability sampling.

Non-probability sampling is where individuals selected are not given an equal chance of participation in the investigation. (Explorable.com, 2009). The following are the types of non-probability sampling: purposive sampling, snowball sampling, volunteer sampling, convenient sampling, quota sampling (proportional and non-proportional), matched sampling and genealogy-based sampling.

The purposive sampling was the relevant sampling method used to recruit participants who could provide comprehensive information for this research study.

4.6.5 Data Collection Method

Qualitative researchers lean towards providing detailed descriptions of individuals and activities in their natural settings. Interviews are thought to be a key aspect in research design as they are interactive, they can assist with probing for clear and complete answers (Alshenqeeti, 2014). An interview is considered a very good tool of data collection. Mphahlele (2010) is quoted stating that "advantages of an interview over a questionnaire are that the researcher can ask the respondent to clarify unclear questions and can follow up on interesting answers." Secondary data was collected from journals, books, internet, conference papers, and print media. Additionally, the researcher looked into what the literature contained, present developments and beliefs of authors about the subject.

The interviews were conducted with the intention to gain historical background of information in the various group functions, departments, and municipal entities and also to confirm the responses provided by the respondents. According to (Alshenqeeti, 2014) there are two types of interviews - structured and semi-structured interview. The structured interview is limiting as the questions are predetermined by the interviewer; hence it was not suitable for this study (Surbhi, 2016).

The interviews were semi-structured for more flexibility. It allowed for the opportunity on the part of the interviewer to probe and magnify the interviewee's responses. Both formal and informal interviews with individual knowledge management champions in the departments that form part

of this study as well as members of other departments that are not actively using the system to establish if there are any formal knowledge management activities in place within those departments were used for this study.

The researcher started conducting fieldwork by accessing the documents that were relevant to the study, made observations by attending knowledge management meetings and workshops within CoJ because there was readily available information about which departments are using and not using the KMS. This also gave the researcher a platform to meet the people who had been previously identified as KMS champions to understand how they were selected into these roles by the organization.

CoJ IKM unit's documents such as the Enterprise Knowledge Management Strategy, Knowledge Management System (Joburg Insider Knowledge Repository) governance policy framework, CoJ case studies, etc. were also used as part of data collection.

4.6.6 Data Analysis

The data analysis technique that was used for this study is content analysis. This technique interprets the content of text data through the organized grouping process of identifying themes (Shannon & Hsieh, 2005). The researcher chose this technique as used in qualitative research and also to complement the data collection methods which were interviews, observations and municipal documents. Every component of data collected was categorized into themes which were identified through literature. (Datt, 2016) outlines the method of the analysis as comprising of the following steps:

1. Preparation of data: Data needs to be transformed before the analysis can start. From the collected data sets, the researcher will choose the clearly defined and justified content. The researcher needs to know if all the data will be transcribed or not.
2. Defining the theme of analysis: The data collected should be classified into themes which are based on the objective of the study.
3. Developing categories: The qualitative content analysis can be based on both inductive and deductive approach, and this study will use the inductive approach where the objective is to

develop new theories. The secondary sources which are observations and documents will be evaluated to encourage original ideas.

4. Draw implications based on themes: The researcher has to draw implications on the basis of themes and categories generated by exploring the elements, measurements and identify the relationship and uncover patterns in order to present the analysis.
5. Presentation of results: the results can be presented in a form of conceptual framework, in such a way that the reader is able to understand the interpretations.

Qualitative Data Analysis software is another way that help to interpret information to make informed decisions (Sunday, 2000). Amongst other software like NVivo, webQDA, Annotations, the researcher used ATLAS.ti as it is one of the leading software for Qualitative Data Analysis that caters for detail-oriented individuals and exposes meanings that allows users to ground their findings in the data collected (Baugh, et al., 2010).

4.7 Summary of Chapter Four

The success of each research study is closely linked to the plan used to complete it. That is, if the plan is flawed, the successful completion of the study may be in jeopardy. This chapter presented how the study was executed, the approaches, strategies, and tools utilised. The study sought to understand factors enabling and impeding on the successful use and adoption of KMS in COJ, and as such employed a qualitative approach and used the case study approach.

CHAPTER FIVE: DATA ANALYSIS AND INTERPRETATION

5.1 Introduction

The research methodology outlining the approaches, methods, paradigms, and data analysis techniques employed in this study was presented in Chapter 4. In this section, this chapter presents the results of the study from the data collected in a metropolitan municipality through semi-structured interviews. The data was analysed using thematic analysis - a data analysis approach that is commonly used across qualitative strategies and is the focus of this methodology review. Thematic analysis is defined as a process of classifying themes or patterns within qualitative data that are important or interesting (Delahunt & Maguire, 2017).

This chapter comprises of two sections, namely, interview data analysis, organized according to the themes and the interpretation of the data analysed. The interview questions as well as the themes are formulated from the research questions and objectives of the study. The questions were grouped by the roles and responsibilities (i.e., management, employee, knowledge champion) and the areas of investigation had questions directed and responded to by the specific role. The primary research question of this study was "How is KMS adopted and used for effective service delivery in the City of Johannesburg Metropolitan Municipality?". To address this, four sub-questions were defined, each with its own set of unique attributes, out of which the areas of investigation of were devised.

5.2 Themes of Investigation

The key areas for investigation were derived from the four components of KM which are people, process, information technology and strategy. These were used in conjunction with the derived conceptual framework to investigate the factors affecting the adoption and use of KMS as well as the influence of the adoption process on the level of usage. The people component looked at the stakeholders involved in the project. It is important to have the right people onboard such as the senior management as sponsors and will provide intuition into the comprehensive organizational KM strategy. The process component, which is represented by task characteristics speaks to the KM processes followed by the organization to ensure that the knowledge flows within the organization. Whilst the information technology, denoted by task technology enables individuals to create knowledge, capture it on the system for easy access and reuse it. The organization needs

a clearly documented and relevant strategy which is denoted as support values to provide guidance of the knowledge needs to the employees, outlining the value proposition, budget, roles and responsibilities. The focus of the study was on stakeholders, task characteristics, technology characteristics, and support values as discursive practices and the indicators are the discursive types as displayed on the table below:

Discursive Practices	Discursive types
Stakeholders	Senior management Users Content managers Service Providers
Task Characteristics	Knowledge creation, knowledge capturing, knowledge sharing, knowledge application
Technology Characteristics	Reliability, Relevance, Usefulness, Completeness, System maintenance, Compatibility
Support Values	Knowledge Management Strategy, Processes, Governance

Table 2: Discursive practices, types, and text analysis

The themes and sub themes are presented in tables, which are arranged using the core attributes of CoJ KMS conceptual research framework as defined and modelled in Chapter 3. The table above have two categories being the discursive practices and types. The stakeholders, task characteristics, technology characteristics and support value being the discursive practices, will be classified as main themes for the analysis of the data collected for the study. The discursive types, which will be the sub-themes are the indicators related to the respective discursive practice as arranged on the conceptual framework. The analysis of the data collected is displayed in a table format, dividing the data analysis into three key elements, demonstrated in Figure 18, as the KMS usage in City of Johannesburg is measured by the number of users accessing the system and content uploaded.

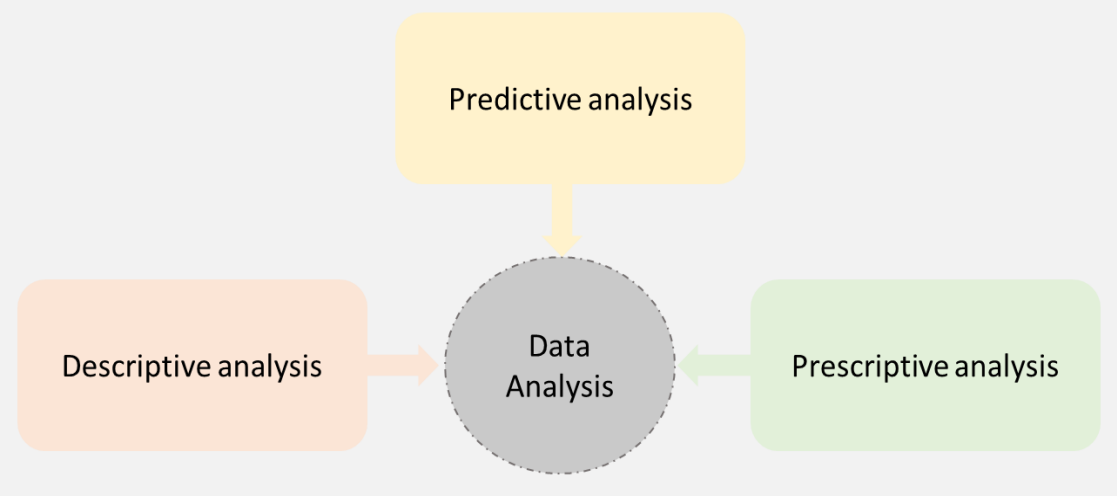


Figure 18: Data analysis key elements

Descriptive analysis being one of the data analysis elements, contains the historical information to help realize the impact of the past events and also to assist the organization to understand the current activities (Loeb, et al., 2017) and in this study it was represented by the participants expressions as discussed during the interviews. Kumar & Garg (2018) said that the predictive analysis forecasts the future on what might emerge, based on the historical trends and helps the organization with finding the way forward and for this research, it is represented by the researcher's views based on what was said by the study participants. Whilst the prescriptive analysis represents the proposed instruments to address the possible gaps and interruptions in this study, Lepeniotia, et al. (2020) described prescriptive analysis as a way to forecast on the happenings of the past trends and what needs to be done about the findings thereof.

5.2.1 Theme one: Stakeholder management

The Stakeholder theme examines the individuals, departments and organizations involved in the process of adoption and use of the KMS in CoJ. These Stakeholders provided the answers to the interview questions: How is KMS adopted in CoJ? When was the system adopted? Why was this specific KMS chosen? Was the system open for all the City's employees when it was launched? How does adoption influence use of the CoJ KMS?

Assumptions for each one of the sub-themes are also considered and incorporated in the table arrangement. As per (Larsen & Eargle, 2015) every analytical tool or lens should be underpinned by assumptions. It is for that reason assumptions also make up the sub-themes table. Following, is

the discussion of participants' responses for the respective sub-themes as they emerged during the data analysis phase.

5.2.1.1 Sub-theme: Users

A system user is an individual who has access to use the Information system or has supervisory/managerial obligation to the system as an owner or sponsor (Whyte, et al., 1997). User involvement in planning, design and development of any information system is a significant factor influencing implementation, adoption and use success or failure (Wong, 2014). User, within the City of Johannesburg context, were all employees from core departments, group functions and municipal entities. The table below comprehends the feedback received from the study participants as the users of the KMS in CoJ:

Reference	**Descriptive text**	**Predictive text**	**Prescriptive text**
Ref1	*"…What people expect us to do as KM and what we are currently doing sometimes can, they can be at discord between the two…"*	There's misalignment between KM deliverables and user expectations.	User engagement, strategic alignment
Ref2	*"…there is resistance, a little resistance when it comes to knowledge management because there is also lack of understanding of what it, what does knowledge management mean..."*	Users do not understand KM and the value of KMS.	Communication, Lack of awareness
Ref3	*"…I think when it comes to user adoption, if you don't have your ducks in a row, chances are people are not going to come back and visit the system…"*	The importance of system completeness prior to launching to capture user interest.	User satisfaction
Ref4	*"…the system is only as good as the people, the users that use it. Well the people that use it…"*	If the system is not used, it becomes redundant to the organization.	Performance impact

Ref5	*"…It's voluntary. People are not forced. They're not penalized. They're not incentivized either…"*	No obligation nor motivation to use the system.	Performance management
Ref6	*"…But internally we are struggling even in our own department because people don't see the importance of it…"*	The department owning the KMS does not use it.	Internal collaboration
Ref7	*"…so, I think certain colleagues in our department have bought into it. Some others just don't care for it…"*	There is lack of interest to use the system from not knowing the benefits.	Mindset change

Table 3: Sub-theme: Users

In almost all organizations using information systems, users are categorised according to their knowledge and level of understanding the existing computing technologies. Rockart & Flannery (1983) and Scaffidi, et al. (2005) identified six classifications of users, these are: (1) Non-programming end users who are not programmers or report generators; (2) Command level users who generates simple queries and single reports; (3) End-user programmers who apply expertise and technically develop applications for their own requirements; (4) Functional support personnel, who are cultured programmers, fast learners, eager to try new hardware and software and also supports other end users in their space; (5) End-user computing support employees, also known as technical support engineers who are habitually centralised at a support centre 24hrs for user support; and (6) the development engineers or programmers who develop programmes in computing languages.

These categories are not always applicable to all organizations, especially in government. All employees of City of Johannesburg are end-users of the KMS, from different standings. IKM unit being the primary support for the users, group ICT & IM and its partners provide technical support. The results above show that CoJ users, who are employees, generally do not understand the concept of knowledge management and the value of the knowledge management system. Those who attempt to use the system tend to have different views on what they are offered versus what they expect, and that results in users losing interest in using the system as they do not understand

its benefits. There is no official requirement by the organization such as, adding the use of the system to the performance scorecard, so as to enforce usage. The custodians of the KMS, GSPCR and IKM unit team members tend to not lead by example as they are also not using the system. It has been said that "a system is as good as the people who use it" which implies that the KMS is becoming redundant in CoJ.

5.2.1.2 Sub-theme: Content managers

Knowledge management champions are referred to as content managers in the City of Johannesburg. These are the individuals who form part of the knowledge management team, representing their respective departments. O'Callaghan & Smits (2005) described content managers as super users who are responsible for a website's content with responsibilities that include creation and updating of digital content. The table below contains the views of the participants, pertaining to content management in CoJ.

Reference	**Descriptive text**	**Predictive text**	**Prescriptive text**
Ref1	*"…we are the custodian of the knowledge repository. There's the system administrator, which is the specialist knowledge hub…"*	The IKM unit is capacitated to manage the system.	Resource availability
Ref2	*"…we then rolled out the system, started to work through the Champions Forum and really drill down into the departments when it came to the usage of the system …"*	Knowledge management champions are the ambassadors of the KMS.	User relations
Ref3	*"…we realized that champions actually weren't promoting the knowledge system capacity within their departments…"*	Knowledge management champions role to market the system is lacking.	Lack of communication

Table 4: Sub-theme: Content managers

The Innovation and Knowledge Management unit, as the custodian of the knowledge system, is capacitated to manage the system with one specialist who manages the repository. The role of the specialist being responsible for general administration, management of content and technical requests, system design, marketing and promoting the system, training the end-users and content managers, amongst others, is excessive for one person. The IKM unit also rely on the nominated KM champion as the ambassadors of the KMS in their respective departments. However, there is a concern that KM champions are lacking, in terms of promoting the system, as some departments are still uninformed about KMS in the City systems. An additional role for content managers is also to assist IKM unit with acquiring knowledge assets from different departments, to keep the KMS update and relevant.

5.2.1.3 Sub-theme: Top Management

Top management provides a vision and strategies for the organization as well as the support for the business processes change brought by the new technologies' adoption, to decrease user resistance, and show by action, the commitment to a successful adoption and use of the technologies' (Kulkarni, et al., 2017). City of Johannesburg as a government institution has a firm hierarchy of reporting. For a system of this magnitude to be deployed, adopted, and used to its full capacity, it requires full support and directive from the management team. The table below depicts the views of the study participants regarding the CoJ management and the KMS.

Reference	**Descriptive text**	**Predictive text**	**Prescriptive text**
Ref1	*"…in the city what we do is we start the project and you're like, oh wait, we need to consult. And then we consult midway. Yeah. And then people say, but why weren't we consulted in the beginning..."*	There is lack of proper planning prior project initiation.	Stakeholder engagement
Ref2	*"…I think also in the city of Joburg where people are very got by their reputation. So, it's*	Prioritising reputations vs. organizational mandate and/or deliverables.	Mindset change

	always about, you know, am I going to look good..."		
Ref3	*"...Some others do care for it, but if the management doesn't allow them, then they are stuck in between…"*	Employees interest hindered by lack of support by management.	Management support
Ref4	*"...one of the challenges with the adoption is that it's not driven from the city manager, from the apex of the organization…"*	The adoption of the KMS is not driven from the higher structures of the organization.	Management engagement
Ref5	*"...I don't think our management level, has even used the system… But management isn't from a user perspective, they haven't used the system at all…"*	Management are not using the KMS to guide and motivate the subordinates.	Mindset change, Management support
	:... I think a lot of the management team, they're from an older generation, so they expose exposure of certain technology back then and now it's different…"	Technological challenges affect the level of KMS usage by management.	End-user skills
	"...I don't think management is playing any role in supporting the tool and it should start up in there and escalate down…"	Lack of support from management.	Management support
	"...From GSPR management are supportive in terms of, um, uh, using the system…"	Minority management support within the department	Management support

	"…I've always believed in a top down and bottom up top of the project as well. Because what, what you actually want to achieve is by in, yes. So, buy in, you don't get that through instructions…"	Management and employees should collaborate to successfully adopt the system.	Internal collaboration

Table 5: Sub-theme: Management

As an additional responsibility to providing a vision and strategies, top management must be accountable for being fully supportive and provide guidance pertaining to any organizational processes change management that impacts the technology landscape of the organization, encourage employees to use the new technologies, and display commitment by communicating activities to ensure successful adoption (Achieng & Jagero, 2014). The study participants raised a concern around lack of support and involvement from most of top management when it comes to the KMS. This is evidence that top management do not use the system themselves, instead they prioritise their reputations over organizational mandate and/or deliverables. They are more concerned about their image and do not want to be associated with a system that is not fully functional.

The kind of support required from top management is a higher level of understanding the system and to drive the adoption and accelerate the usage (Hameed, 2017). The adoption of the KMS is not driven from the higher structures of the organization, it is more from the middle level down as there is only a minority management support within the department. It is believed that majority of the top management within CoJ are of an older generation, with less exposure to certain technologies and hesitancy from learning new technologies. This type of hinderance triggered by a lack of support from top management has direct impact on the lack of proper planning prior projects initiation as the understanding of information technologies is lacking and it also influences the employees' interest to use the KMS.

5.2.1.4 Sub-theme: Service provider (SP)

The service provider is an entity or individual who offers services to another entity, with a provision of services being administered by a service level agreement (SLA) (Liu, et al., 2020).

The Innovation and knowledge management unit are the custodians of the knowledge manage system in the City of Johannesburg, however they do not manage the system technically. They rely on the Group Information Communication Technology & Information Management department and their partners as service providers for support with all technical requirements of the system.

Reference	Descriptive text	Predictive text	Prescriptive text
Ref1	"…*So, when there are challenges beyond our scope, we have to log a call and uh, the city's approved ICT service provider has to assist us..."*	Technical queries/requests are managed by another department.	Internal collaboration
Ref2	*"…but we are still limited in terms of the certain functionalities or changes we can make on the system…"*	The IKM unit depends on IT department with technical changes.	Resource management
Ref3	*"...we had to ensure technical training, which we then facilitated through group ICT…"*	Training was facilitated through IT department.	Internal collaboration
Ref4	*"...will always follow due diligence because the IT department will guide the Knowledge Management Department on the best, uh, um, solutions out there and how those solutions we be put or plugged into the infrastructure of the IT department…"*	Dependency on IT department to provide guidance with new emerging technologies.	Performance impact

Table 6: Sub-theme: Service Providers

The skill and knowledge of a service provider tends to play a crucial role in developing good relationships with customers, and expertise improvement would act as a catalyst along with market orientation approach in customer satisfaction (Newell et al., 2016). City of Johannesburg outsourced part of its information technology areas. However, there is still an information

technology department in place. Figure 19 illustrates the relationship between departments, the IT department and the appointed service providers.

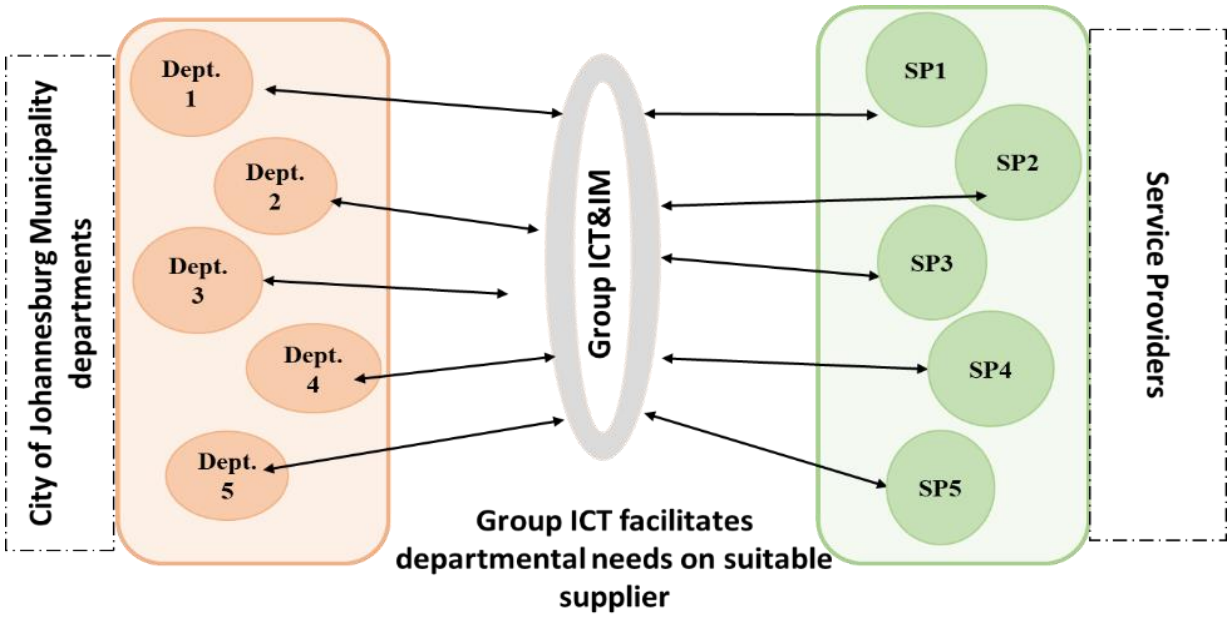


Figure 19: CoJ departments relationship with service providers

KMS is owned by the IKM unit, however there is a dependency on Group ICT & IM department as the sponsor of the system. The dependency on the IT department is to provide technical training for super users, guidance with new emerging technologies, i.e. the upgrade of the system, and any system challenges that emerges. Group ICT&IM appointed a service provider (SP1) to manage the technology platforms within CoJ working together with its employees. The KMS technical queries and/or requests are managed SP1 through Group ICT & IM, where a service call must be logged each time there is a technical issue. The challenge with this set up is mainly the delay with resolving technical queries, setbacks with the enhancement of the system such as system upgrade which has been pending for two years, and lack of accountability.

5.2.1.5 Sub-theme: Training

The successful adoption and use of a system are built on trained and skilled employees. A trained and skilled user will contribute to the improved usage, increased productivity, and effectiveness of the KMS. It is therefore important to design efficient training structure for end-users. This will ensure alignment between user's skills and organizational expectation for the use of the system. In

this case, it is important to ensure that the City of Johannesburg's general users are equipped with necessary skills to use the knowledge repository. The indication on how training element has been managed within the CoJ is outlined below.

Reference	**Descriptive text**	**Predictive text**	**Prescriptive text**
Ref1	*"...and the training that had been facilitated for the champions..."*	Super users were provided with training.	End-user training
Ref2	*"...we did the training manual internally, we had to find a suitable venue, um, and we had to really manage the training process from start to end, including the facilitation. Um, the specialist knowledge had to facilitate that training..."*	Customized and internally managed end-user training.	End-user training
Ref3	*"...and it was a train the trainer approach and it was then intended that those trainers will in turn train other users within in their department ..."*	Super users were trained to train users, however the IKM unit still trains users.	End-user skills
Ref4	*"...when it comes to training attendance in the usage of the solution, uh, more engagement needs to be done at the leadership level and the leaders are the ones who are supposed to encourage and make sure relevant or right people participate..."*	Management did not show interest in attending the training.	Engaged and supportive management

Ref5	*"…We also did training for our super users because that's what we needed to do…"*	Super users were trained to manage their departmental sites.	End-user skills
Ref6	*"…So, then we simplified the training and we then did a refresh with them, but then also we realized people don't necessarily always have the ability to train other people…"*	Lack of KMS usage and training skills resulted into a refresher training.	End-user skills
Ref7	*"…I think they realized they didn't have the necessary skills when it came to managing the repository…"*	KM champions did not have skills to manage their respective sites.	End-user training

Table 6: Sub-theme: Training

End-users regularly receive training to simplify the implementation and adoption of new systems (Marshall, et al., 2008). End-user training is crucial and used to assist the organization to increase productivity and be a competitive workforce (Davis, 1993). Within CoJ, KM champions, as super users, were offered technical training that was conducted by a service provider and due to lack of KMS use by KM champions over a period, refresher training was provided to those who had interest and who requested it. Following the technical training, IKM unit arranged a tailored and internally managed training where super users were trained to manage their departmental sites and general end-users were trained on system navigation. Knowledge champions still lacked skills to manage their respective departmental sites even after the training that was provided. The end-user training was offered city-wide; however, attendance was very poor as top management did not attend training to encourage their teams.

5.2.1.6 Sub-theme: Marketing and Awareness

Marketing consists of processes that communicate, create, deliver value, and manage stakeholder relationships to benefit the organization and its employees (Li Po, 2006). The promotion of the KMS is important to the IKM unit as custodians of the KMS to make the organization aware of

the system and its benefits. Participants views on marketing and awareness of the KM are as follows:

Reference	Descriptive text	Predictive text	Prescriptive text
Ref1	*"...And the purpose of the awareness session is more like an onboarding session to bring people on board and allow for the that adoption within that department..."*	Awareness session offered to departments for onboarding.	User engagement
Ref2	*"...Once you create the awareness, you know, but we, we want you to provide information, that type of thing. Its once off and then nothing. So, I think that's what it's, it's a continuous process..."*	Marketing and awareness should be a continuous process.	Communication
Ref3	*"...we didn't get to a stage where we launched it and we say please access the knowledge repository..."*	The system was not officially launched.	User engagement
Ref4	*"...if we had gone out in a very rigorous marketing campaign and our system was in order, chances are the adoption, the usage would be high in the beginning because people would be intrigued..."*	Lack of rigorous system marketing due to system completeness.	System readiness
Ref5	*"...it didn't have a, a big bang official launch of the knowledge repository, please*	Targeted marketing approach of the KMS was used.	End-user engagement

	exit. So, it was in a very structured phased approach and we brought people along on the way…"		
Ref6	*"…I think one of the things that we need to do to improve our system is actually going to market the benefits more and just remind the organization, constantly remind even our internal colleagues all the time…"*	A need to market the system by demonstrating its benefits to the organization.	Performance impact

Table 7: Sub-theme: Marketing and Awareness

The marketing and/or awareness of the system is important during the adoption phase of the system where users, who play a crucial part, are informed of the new technologies (Ghazvini & Shukur, 2016). Within CoJ, the system was not officially launched, due to lack of system completeness. However, there are number of mediums and channels adopted by the City of Johannesburg to market the KMS, such as; broadcast email, one-on-one sessions, intranet pop-up, roadshows and targeted awareness sessions, electronic brochures, and publicity leaflets. IKM adopted a targeted marketing approach of the KMS where awareness session was offered to departments for onboarding. The study participants believe the system's benefits were not marketed and demonstrated for the employees to realise the benefits of KMS to the organization.

5.2.2 Theme Two: Task Characteristics

Task characteristics are the elements defining the KMS purpose or reason for existence. They can be deemed time critical, mutually dependent on each other, or not following a routine, but the more addition of task characteristics the better the information technology model utilization (Shahriar, et al., 2013). For this study, task characteristics are what the content managers and the IKM unit members are required to do or are responsible for, to keep the KMS relevant and up to date for the interest of the users within the organization.

Following, is the discussion of study participants' responses for the respective sub-themes as they emerged during the data analysis phase.

5.2.2.1 Sub-theme: Knowledge creation

A longstanding theoretical principle by Nonaka & Toyama (2007) suggests that a combination of knowledge transfer, and interaction by different types of knowledge guides may be conceived as knowledge creation. On the other hand, Bratianu & Orzea (2010) defined knowledge creation as the ability to aid an organization to sustainably attain a competitive advantage on the market. Hoegl & Schulze (2005) outlined the importance of knowledge management in four phases as shown on figure on Figure 20.

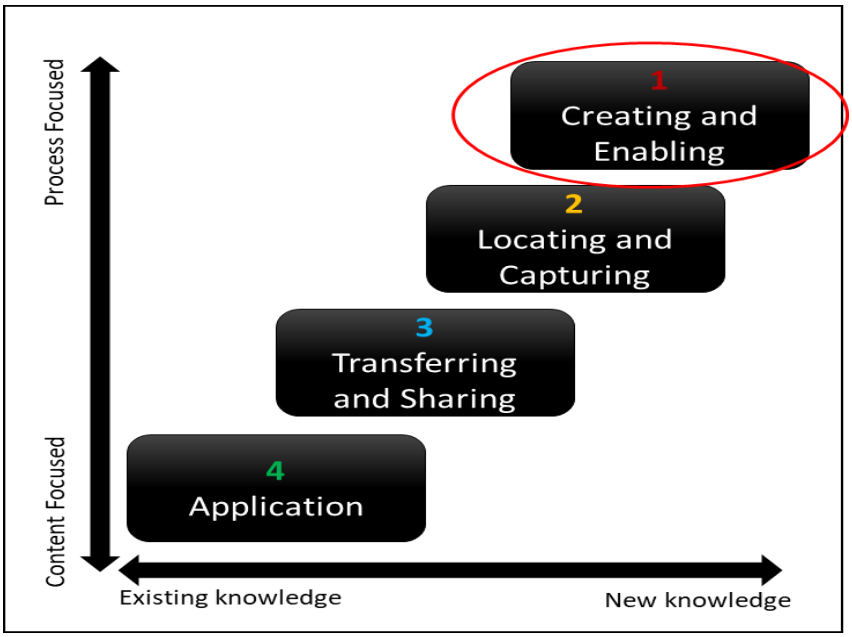


Figure 20: Knowledge Management Progression Source: (Hoegl & Schulze, 2005)

The first phase of the knowledge management progression sketch focuses on the knowledge creation and enablement. Nonaka & Toyana (2007) influenced the development of the knowledge creation framework by integrating the knowledge creation process (SECI) with the enablement of leadership, organizational culture and learning which inspires and stresses that knowledge is generated in any given context within the organization. Knowledge is created in a certain social framework and in a specific context with a relevant meaning, hence it can be considered contextual (Jakubik, 2008).

Knowledge creation, in the City of Johannesburg Metropolitan Municipality, is seen as appropriate employee experiences and knowledge generated internally and externally, and one that is generated, captured and shared across all the CoJs municipal-owned entities and departments such as annual reports, strategies, case study publications, reports and so forth. The table below encompasses the feedback received from the participants on knowledge creation:

Reference	**Descriptive text**	**Predictive text**	**Prescriptive text**
Ref1	"…*we've put in place the case study program as part of documenting institutional memory, but we can only encourage so far or influence people to use that knowledge of that particular knowledge product*…"	Knowledge created and available in other forms but there is minimal usage.	Change management
Ref2	*"…we had to be very creative and collaborative with other departments who had the resources to create knowledge assets…"*	Reliance on departmental knowledge champions for knowledge created	Internal collaboration

Table 8: Sub-theme: Knowledge Creation

Nonaka, et al. (2000) identified the three elements of the integrated model for knowledge creation as the SECI process, and ba which is a vital notion in the SECI model and knowledge assets as outlined in the literature section. The program to develop case studies publication runs annually, to capture institutional memory of the CoJ municipality, forming part of the organizational knowledge assets. The knowledge creation processes are built on the knowledge assets base which are the regulating factors, contributors, and outputs of the process and are defined as "*firm-specific resources that are indispensable to create values for the firm*" (Nonaka, et al., 2000, p. 20).

There is knowledge created in the organization, but there are challenges with locating the knowledge, due to lack of resources that contribute and support the system. This limits the IKM unit to build a firm knowledge-assets base on the KMS developed. The Unit does not create knowledge for the organization, but purely relies on the identified Knowledge champions, who are representatives of the departments, municipal entities, and group functions. Nonaka, et al. (2001) asserted that "knowledge belonging to given person may be shared, recreated or amplified when that person is an active actor in Ba". The Knowledge champions are not contributing to the system and are not also as active as anticipated. Hence, it is still a challenge for the departments to share the knowledge with the IKM unit to keep the KMS updated with relevant and usable knowledge assets. Consequently, IKM unit face the challenge of having outdated information on the system and lacking a way of enabling the organization to reach the desired level of the progression of knowledge management initiatives.

5.2.2.2 Sub-theme: Knowledge locating and capturing

Knowledge capturing affords an organization with innovation opportunities to minimize cost, advance methodologies guiding the projects, and reduce the time spent on design (Suresh & Egbu, n.d.). KMS also allows the organization to capture and store knowledge assets systematically for easier dissemination, accessibility and usability (Nonaka, et al., 2001).

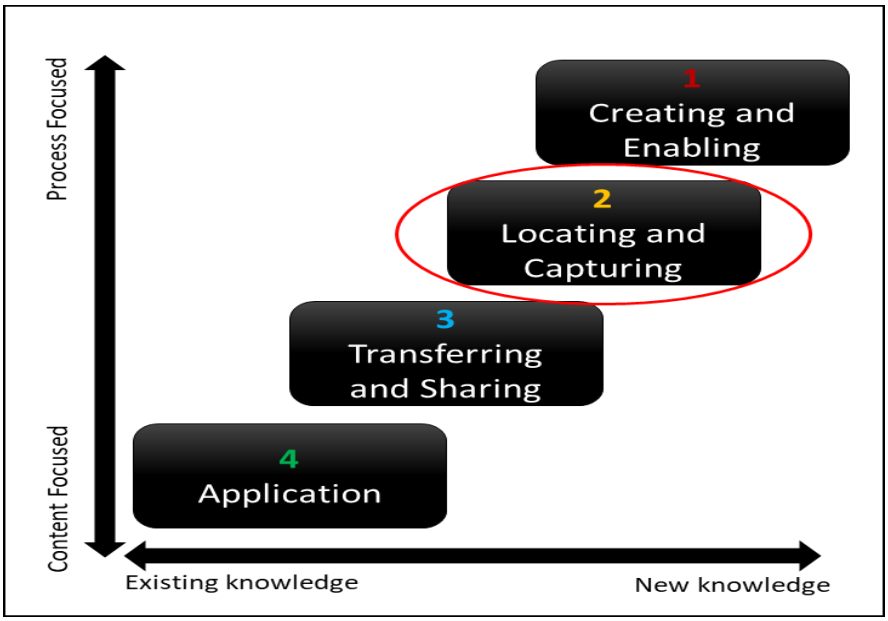


Figure 21: Knowledge Management Progression Source: (Hoegl & Schulze, 2005)

According to Hoegl & Schulze (2005), as displayed on Figure 21 above, the capturing and locating of existing knowledge assets is imperative as it is a base for knowledge management progression. The main objective was to locate, collect, capture, and manage the existing tacit and explicit knowledge as other assets in the information systems (Baydoun & El-Den, 2017). As proposed by Ulrick (1997), organizations must capture their employee's tacit knowledge successfully by encouraging management to fully engage with the employees in the activities of the organization. The table below covers the feedback received from the study participants on knowledge capturing:

Reference	**Descriptive text**	**Predictive text**	**Prescriptive text**
Ref1	*"... we have application, capturing and sharing of knowledge that will ultimately assist in the City achieving its strategic agenda, which is ensuring service delivery..."*	KMS availability for knowledge capturing to better productivity.	Learning organization and utilisation of available knowledge.
Ref2	*"...it was also very hard or difficult, uh, to track down a particular knowledge asset that's captured..."*	Difficulty to locate organizational knowledge.	Knowledge availability, Knowledge exchange,
Ref3	"... *We also capture the knowledge created by other departments on the system we have*..."	KMS is an organizational tool for knowledge capturing not specific department.	Internal collaboration, knowledge retention.
Ref4	*"...now there is a system and now we want new content. So now our challenge is also now finding new content created by departments..."*	Challenge with updated content on the KMS and lack of stakeholder participation.	Knowledge Exchange, internal collaboration
Ref5	*"...therefore, it's very important to get as much as possible of what's being paid for by public monies into that central repository..."*	Derived processes to capture and retain organizational knowledge	Knowledge retention, knowledge exchange

Table 9: Sub-theme: Knowledge locating and capturing

The KMS was developed to capture the knowledge assets created within the entire organization, for the benefit of the CoJ employees. It is therefore important to capture the knowledge in a simple and user-friendly manner for easy accessibility. The challenge faced by the organization is the information architecture of the KMS and users not being able to use the upgraded system or even not knowing about the changes implemented. The process of locating and capturing key organizational tacit and explicit knowledge plays an significant role in improving the systems adoption and use, as well as improving the competitive advantage of the organization (Portz, et al., 2019).

5.2.2.3 Sub-theme: Knowledge transfer and sharing

Knowledge transfer is a process of sharing skills, information, and thoughts with fellow employees within an organization (Danilo & Mário, 2020). (Paulin & Suneson, 2012) explained knowledge transfer as a practical technique for disseminating knowledge across the organization.

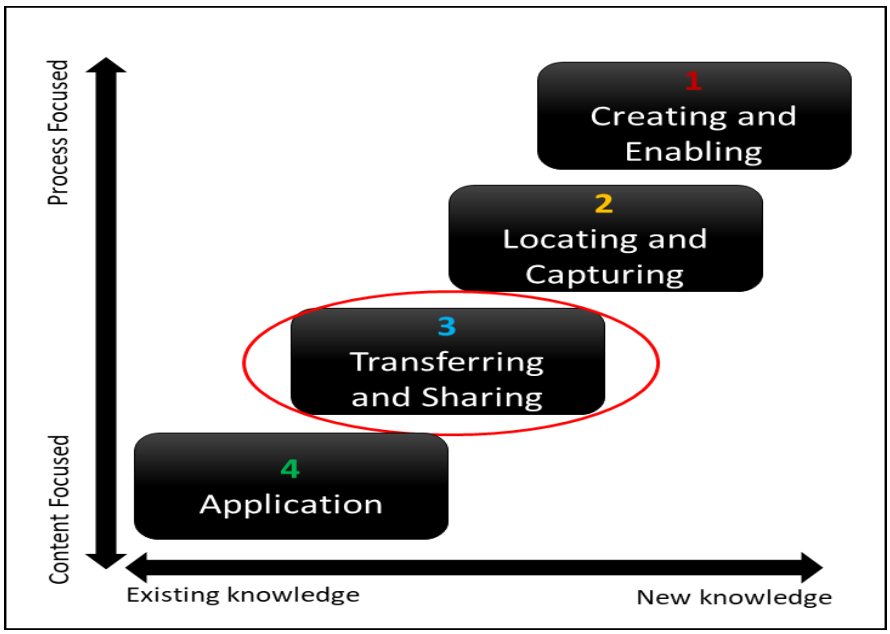


Figure 22: Knowledge Management Progression Source: (Hoegl & Schulze, 2005)

Hoegl & Schulze (2005) explain that the knowledge transferred and shared is highly pertinent practical knowledge as demonstrated on Figure 22. The transfer of knowledge can be typically structured when sharing the quantitative data that is searchable and easy to analyse, but for unstructured data, such as when the data is qualitative, additional work is required to comprehend and process it (Hilger, 2017). The more experienced individuals are, the more valuable knowledge

they can share to improve productivity within the organization, and to better manage customer relationship matters based on trust, experience and knowledge (Kuchciak & Wiktorowicz, 2020). Table 4 below encompasses the feedback received from the participants on knowledge transfer and sharing within CoJ.

Reference	**Descriptive text**	**Predictive text**	**Prescriptive text**
Ref1	*"...they're putting in place, the platforms and the programs for knowledge sharing…"*	The organization provides a platform for knowledge sharing.	Knowledge accessibility
Ref2	*"...with a system you, you now share it and there's a bigger platform of audience that you now can reach out to…"*	The system availability allows widely knowledge sharing and knowledge management.	System availability, knowledge management
Ref3	*"...People keep things to themselves because knowledge is power. You know, if you've got a document that somebody else don't have…"*	Resistance to information and knowledge sharing.	Change management, Mindset change
Ref4	*"...which they are more focused on how the City of Johannesburg information can be stored in one platform, manage and share it with the stakeholders at a wide range…"*	There is a need to centralize the organizational knowledge.	Knowledge architecture
Ref5	*"...So, one, when you put together documentation or doing the research or wanting to share departmental information with external stakeholders and internal*	KMS enables easy accessibility of knowledge assets.	Knowledge availability, knowledge exchange

	stakeholders, it is available timeously know at the press of a button…"		

Table 10: Sub-theme: Knowledge transfer and sharing

The purpose and benefits of KMS is realised by the employees, but the question still remains, how well is the system adopted and used organization-wide? Extant literature contends that Knowledge transfer is essential in leading changes within the organization and its culture and/or behaviour by encouraging organizational learning (Pun & Nathai-Balkissoon, 2011). The organization has a vast knowledge asset that employees could share to improve organizational productivity and ultimately deliver quality service to the City of Johannesburg municipality communities, however, the culture of transferring and sharing knowledge is lacking. Knowledge cannot be retained and reused if there is resistance to information and knowledge transfer and sharing. Knowledge transfer relies on knowledge application (Cohen & Levinthal, 1990).

5.2.2.4 Sub-theme: Knowledge Application

Knowledge used to complete tasks, accomplish responsibilities, and make decisions through processes and procedures is referred to as knowledge application (Becerra-Fernandez & Sabherwal, 2010). Organizations with widespread knowledge management are inclined to provide training to their employees in knowledge management systems as a method of knowledge transfer to simplify the knowledge application throughout the organization (Ramirez & Kumpikaite, 2012).

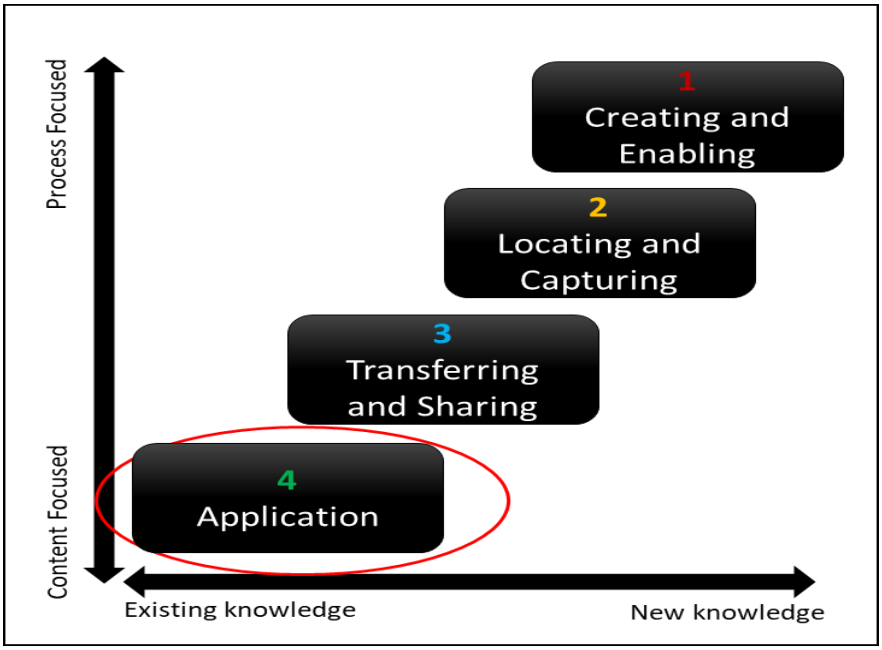


Figure 23: Knowledge Management Progression Source: (Hoegl & Schulze, 2005)

Figure 23 above demonstrates that knowledge application is content focused, and it happens when knowledge exists on the system. Hoegl & Schulze (2005) contend that if one wants to distinguish which of their knowledge transfer tools and applications are the most effective for sharing practice and know-how, they should seek the opinion of the users, as to how it has helped them achieve business objectives. This implies that the effective way to test whether the knowledge is applied correctly in the organization is through collaboration with the system users. The table below reviews the feedback received from the participants on knowledge application:

Reference	**Descriptive text**	**Predictive text**	**Prescriptive text**
Ref1	*"…think the expectation is that we are supposed to take it further, we should be able to know how people are using it, how they are applying it…"*	There is an expectation to monitor knowledge application.	User engagement
Ref2	*"…So, we've, application, capturing and sharing of knowledge that will ultimately*	Knowledge Application is one of the KM pillars in CoJ.	Strategic planning and execution

	assist in the City achieving its strategic agenda…"		
Ref3	*"…generate the quarterly usage report, which then outlines both the number of hits as well as the unique users…"*	Generation of reports to monitor knowledge application.	Knowledge monitoring

Table 11: Sub-theme: Knowledge Application

Knowledge application is considered as a method of integrating knowledge assets into the organization services and the ability to transfer knowledge across departments, to apply lessons learned as captured on knowledge assets to actual systems and applications (Calitz & Cullen, 2017). CoJ has four pillars of knowledge management which include the application, capturing and sharing of knowledge that will ultimately assist in the City in achieving its strategic agenda. Hence, there is an expectation for the IKM unit to monitor the KMS knowledge application, to know how the employees are using the system. There are processes in place used to monitor knowledge application such as the quarterly usage report that is generated to view the number of hits as well as the unique users.

5.2.2.5 Sub-theme: Collaboration

Collaboration is a process embarked on by departments to share responsibilities, resources and information, to cooperatively plan, implement, and assess activities contributing to achieving a common goal (Camarihna-Mato & Afsarmanesh, 2008). One of the critical factors to ensure the successful implementation of the knowledge management system is a requirement of positive collaboration with the relevant stakeholders within the organization (Parkinson, 2006). IKM unit as a custodian of the KMS, are not knowledge generators rather the unit requires to work closely with all the departments that produce knowledge. Group ICT & IM as a custodian of the CoJ ICT infrastructure, is also a vital stakeholder for the IKM unit. The following text highlights the status of collaboration within the organization.

Reference	Descriptive text	Predictive text	Prescriptive text
Ref1	*"...so, we collaborated with Group ICT, which is the department that is the custodian of the city's ICT agenda as well as information management..."*	Dependency on other departments.	Internal collaboration, Infrastructure management.
Ref2	*"...we had to be very creative and collaborative with other departments who had the resources..."*	Systems owners and/or managers are not knowledge creators.	Resource management
Ref3	*"...So, from time to time we collaborate with them just to make sure that we don't do duplication of efforts in terms of initiatives..."*	There are different systems that caters for similar purpose.	System integration
Ref4	*"...There is better collaboration. There's a cost saving when it comes to maintenance of the solutions and also there's a single view of information..."*	Shared resources within the organization.	Infrastructure management, resource management.
Ref5	*"...I think it was more of a collaboration because as I said earlier on, we're touching on the same stakeholders and rather than change management..."*	Lack of collaboration during inception resulted in duplication of systems.	Organizational goals alignment Change management and system integration.
Ref6	*"...I think those, um, engagements, those collaborative partnerships,*	Elimination of silo mentality and better	Improved organizational productivity

	they need to be improved because there's only within the city of Johannesburg…"	departmental collaboration required.	

Table 12: Sub-theme: Collaboration

Lai (2011) explained collaboration as a mutual engagement of participants in a coordinated effort to solve a problem together where collaborative relations are categorized by the goals shared, structure regularity, greatest negotiation, interdependency, and interrelationship. IKM unit as the system owners are not knowledge creators, hence there is dependency on other departments to share knowledge assets for the KMS to be kept updates. There is lack of collaboration and organizational goals alignment that has been identified between CoJs departments and this resulted in duplication of systems. The City has shared resources, and due to a silo mentality and lack of collaboration, there are different systems that cater to similar purposes.

5.2.3 Theme Three: Technology Characteristics

The aim of TTF is on the intensity as to which technology characteristic fits the user's task needs, with the vision of technology as a means by which an individual performs tasks (Goodhue & Thompson, 1995). A technology characteristic might impact the performance positively if it "fits" the supported task (Tripathi & Jigeesh, 2015). Irick (2008) and Goodhue & Thompson (1995) said user views around ease of use and usefulness of the system are prone to be built around the logical evaluations of the characteristics of the technology. Following, is the technology characteristics represented as sub-themes and the discussion of study participants' as they emerged during the data analysis phase.

5.2.3.1 Sub-theme: Reliability

Reliability entails dependability, consistency, and stability (Chen, et al., 2012). These elements are crucial for users to trust the KMS and also to realise the benefits of using it. If the system is not reliable, the users will not be motivated to use it as a tool, and it will end up being useless to the organization. Amrutkar & Kamalja (2017) described reliability as an identification of the weaknesses or critical system elements to measure the effect of component's failures. The CoJ employees will benefit from a stable and reliable KMS to ensure seamless service delivery. The text below outlines the assessments of the participants regarding reliability.

Reference	Descriptive text	Predictive text	Prescriptive text
Ref1	*"… the system is stable, we not having challenges in terms of the systems…"*	There are no technical challenges with the KMS.	Quality system
Ref2	*"…So, we managed to upgrade the system and really ensure that it was stable. It was a functional system, uh, that was in place…"*	KMS was upgraded to ensure stability.	Establishing credibility

Table 13: Sub-theme: Reliability

Reliability assessment has a critical value at all phases of managing and controlling in information systems, and apart from reliability assessment of the systems, the evaluation of the components is also a vital part (Amrutkar & Kamalja, 2017). The CoJ knowledge management system component has now been deemed stable with no technical challenges. When it was initially launched, there were constant challenges where the IKM unit had to regularly request technical assistance from the IT department. This affected the users' interest in using the system as it was not stable and also was mostly not available for use. A need for KMS upgrade to ensure stability resulted from continuous concerns raised by users.

5.2.3.2 Sub-theme: Relevance

The relevance concept is the underlying theory of general information retrieval and information science, which is regarded broadly as use in assessment of information retrieval (Kagolovsky & Möhr, 2001). Whilst KMS are deemed as a critical tool for enabling a learning organization, this theme assesses just how relevant KMS have been found to be in the municipality. That is, assessing how KMS can create, store, process and disseminate knowledge assets in the organization. Moreover, the theme considers whether knowledge assets are addressing organizational needs and whether users have the right levels of access to the KMS, and subsequently, the knowledge assets.

Reference	Descriptive text	Predictive text	Prescriptive text
Ref1	*"...So buy in, you don't get that through instructions, you know, it's that people need to see the relevance and the needs for the, uh, and then you can start to get that buy in as well. And it's not an overnight process…"*	The system must cater for users' needs to be used.	Infrastructure management
Ref2	*"...people actually want to see new knowledge assets as opposed to this new system…"*	KMS must be up to date with knowledge assets.	Quality, information control

Table 14: Sub-theme: Relevance

IKM unit strives to ensure that the KMS in CoJ caters for users' needs by containing relevant and up to date knowledge assets. However, the Unit is faced with challenges whereby there is resistance as pertains sharing of content by departments and employees to keep the knowledge assets updated and relevant. The aim for the KMS is to qualify the organisation to be a knowledge driven and learning organization, through the effective harnessing and application of the intellectual capital and knowledge of its workforce and stakeholders, and it cannot be achieved with the silo's mentality experienced at this stage.

5.2.3.3 Sub-theme: Accessibility

The system may be implemented but if it is not easily accessible it will not be used and ultimately nor add any value to the organization. System accessibility refers to all the permitted users having equal experience to use of the system (Lazar, 2002). Petrie & Bevan (2009) described system accessibility as the ability for all to navigate and understand the system and interact with the system. The KMS is meant to be used by all the City's employees and should be available at any point in time, anywhere, without any hiccups. This also applies to the knowledge assets on the system. Users will want to access relevant documents as and when required. The table below outlines the views of the participants on the system accessibility.

Reference	Descriptive text	Predictive text	Prescriptive text
Ref1	"*…it was very limited in terms of users in terms of access…"*	The system had limited user access when launched.	Ease of use
Ref2	"*… my understanding was that whoever was on the network was also able to access the system…*"	Employees do not require to login to access the KMS.	Easy access
Ref3	*"…When the system was rolled out, "… Certain documents that were logged on the system were not available to everyone…"*	Users did not have access to the key organizational knowledge.	Performance impact
Ref4	*"…one big environment, you have to have a lot of restrictions, firewalls, et cetera…"*	Some employees loose interest because of restrictions.	Infrastructure management

Table 15: Sub-theme: Accessibility

The intention of system accessibility is that a user should not experience any system-related difficulties when accessing or contributing to the system (Petrie & Kheir, 2007). The CoJ KMS had limited user access when launched, which resulted in users not having access to the key organizational knowledge. Employees lost interest because of the restrictions and not being able to access the system remotely. With the upgraded KMS, employees do not require to login to access the KMS, as all the employees that are on the domain have automatic rights to access the system. The municipal entities are disadvantaged as they cannot access the KMS as the CoJ systems are not integrated.

5.2.3.4 Sub-theme: System maintenance

In this study, system maintenance pertains to the upkeep and care of the Knowledge Management Systems in the municipality. This is crucial for ensuring that systems are always accessible and offer the capabilities they are expected to render. Maintenance is also aimed as a mitigation for the prevention of technical issues that have the potential of coming up at a later stage thus disrupting in the overall use and adoption of systems. According to Mehdiyev (2017) systems maintenance

may be viewed as an amendment of a system to correct faults, to improve the system performance, or to familiarize the system to environmental change.

This sub-theme therefore assesses and renders the analysis of findings in relation to system maintenance in the municipality.

Reference	Descriptive text	Predictive text	Prescriptive text
Ref1	*"...it becomes very difficult when you don't have the resources to do it, to deploy a knowledge management system, a smart knowledge management system for the organization..."*	The IKM unit depends on IT department for technical maintenance.	Infrastructure management
Ref2	*"...So, there was a lack of adoption and also the drive from our side to ensure adoption due to capacity issues..."*	The IKM unit was lacking capacity when the KMS was launched.	Resource capacity planning

Table 16: Sub-theme: System maintenance

System maintenance is a general term describing different forms of hardware or software maintenance required for optimal computer system running (Obinna, et al., 2017). The IKM unit depends on IT department for technical maintenance as they do not have a dedicated system developer residing with the Unit and also the IT policy requires departments to collaborate with Group ICT&IM for any technology related projects. The process of attaining assistance from IT at times hinders progress as it involves the service provider, where a call logged needs to be assigned by Group ICT&IM to the relevant SP. There is lack of capacity from IKM unit, as there is only one team member working on the system.

5.2.4 Theme Three: Support values

This theme looks at the adopted ethics, rules, standards, and principles by CoJ employees when it comes to the KMS. Some of these are not documented but applied by default and some are documented in the different artifacts, such as the CoJ KM strategy, KMS Governance Policy Framework and the defined processes.

5.2.4.1 Sub-theme: KM Strategy

A knowledge management strategy is considered as a plan of action, that defines the process to be followed by an organization when managing the knowledge, data, and information, with the aim of improving productivity and efficiencies (Greiner, et al., 2007). In the field of KMS use and adoption, strategy is particularly important in ensuring that there is alignment between Knowledge Management Systems and organizational goals. That is, from the choice of systems, their capabilities, buy-in of stakeholders and how these systems are eventually deployed and commissioned for use.

Reference	**Descriptive text**	**Predictive text**	**Prescriptive text**
Ref1	*"...we've, application, capturing and sharing of knowledge that will ultimately assist in the City achieving its strategic agenda, which is ensuring service delivery…"*	KM strategy that supports the organizational strategic plan in place.	Alignment with organizational goals
Ref2	*"...But ultimately, we have a very integrated approach to knowledge management in the unit…"*	The IKM unit is unified and works towards a single goal.	Strategic focus
Ref3	*"...we all do knowledge management, but in different ways. And within the, in the department, we are the only unit that's responsible for knowledge management. However, to suffice to say that within the city of Johannesburg there are pockets of knowledge management functions in some departments, but not all…"*	Duplicated knowledge management function within the organization.	Department integration
Ref4	*"...we realized that we can't deploy the system completely as it is. It needs to be in a phased approach because unfortunately I think as an*	The phased deployment approach was to minimize confusion; however, it delayed the adoption.	Strategic planning and execution

	organization would be totally overwhelmed by it…"		
Ref5	*"…it is imperative that if there's any IT roll out project, all key stakeholders should come together and plan activities in terms of each project rolling out so that there is synergy when it comes to activities where we talked to city of Johannesburg stakeholders at large…"*	All stakeholders must be involved from the inception of the project.	Stakeholder engagement
Ref6	*"…knowledge management should not be seen purely as a library function where things are stalled and then we as interested just come in…"*	Lack of understanding concerning knowledge management.	Knowledge management strategy

Table 17: Sub-theme: KM Strategy

City of Johannesburg has a knowledge management strategy that supports the organizational strategic agenda in place, which is to ensure service delivery. The latest available version of the strategy, however, was approved in 2013, which makes it a bit outdated, as the City's strategy agenda is constantly updated. The unit is planning to embark on a process of reviewing the strategy, as there are gaps identified pertaining to KM within the organization, that impact on the working of the KMS, such as the duplication of knowledge management functions within the organization, lack of understanding concerning knowledge management, et cetera. The KMS adoption was done in a phased deployment approach to minimize confusion. However, this action by itself delayed the adoption, and contributed to the lack of use as all the relevant stakeholders and users require to be involved from the inception of the project, in order to create interest in the use of the system.

5.2.4.2 Sub-theme: Governance

Knowledge management as an organizational function, requires continuous monitoring and control of its activities at both operational and strategic levels, such as ensuring that performance management is practiced and its activities are monitored to drive the organization towards continuous improvement and ultimately towards achieving organizational goals (Zyngier &

Venkitachalam, 2011). Governance, in this context, considers the prescripts governing the establishment and operations of KM structures, reporting dynamics and how various business units are interfacing with one another. This is explained below where the views of the participants are captured:

Reference	**Descriptive text**	**Predictive text**	**Prescriptive text**
Ref1	*"…we know the numbers, but I think from a quality point of view, it's not really the best report…"*	The quality of the usage report is substandard.	Quality reporting
Ref2	*"…Sometimes it's even built-in people's scorecards and people are held accountable for it. So, it's worked because it's, the message is literally driven from the top. Right now, we're working in the middle…"*	The use of the KMS is not enforced by performance management to the employees.	Strategic focus
Ref3	*"…we are the only unit that's responsible for knowledge management. However, to suffice to say that within the city of Johannesburg there are pockets of knowledge management functions in some departments, but not all…"*	Departments are working in silos.	Department integration
Ref4	*"…because of competing work responsibilities, the champions are appointed on a voluntary basis. They are actually appointed to do other functions and duties. Now being a KM*	The KM champion role is "ad hoc" and not a compulsory performance management deliverable.	Performance impact

	champion does not add on function…"		
Ref5	*"…It's even important to build that relationship and networks in different, uh, areas and departments as well to ensure that you continuously get fresh material in…"*	Building relations with knowledge creators is important, to keep the system updated.	Users relations
Ref6	*"…so they needed to look at the different IT systems look which are common, which are duplicating and consolidate into one single view of the system…"*	Assessment of the technology landscape within the organization to eliminate duplication.	Infrastructure management

Table 18: Sub-theme: Governance

The use of the KMS is not enforced by performance management to the employees in CoJ. This in turn does not encourage the employees use of the system. Thus, departments continue to work in silos, and derive their own knowledge management way of work, and duplication of systems catering for the similar organizational needs. The KM champion role is also considered "ad hoc" and not a compulsory performance management deliverable, which results in poor support from champions. The IKM unit resorted to building relations with knowledge creators so that it becomes easier to locate knowledge assets, to keep the system updated.

5.2.4.3 Sub-theme: Processes

Knowledge management is considered a process of creation, identification, capturing, controlling, sharing, and effectively utilizing the organization's intellectual assets to improve its competitiveness and performance (Igbinovia & Ikenwe, 2017). The process sub-theme considers two processes in the KM domain within the municipality. These are, KMS creation and learning management processes. The table below outlines the views of the participants regarding processes.

Reference	Descriptive text	Predictive text	Prescriptive text
Ref1	*"…Very user friendly, very, very user-friendly process of developing sites. Never had a problem with it…"*	Site development process is easy to follow.	Knowledge architecture
Ref2	*'…ultimately those lessons learned can assist in terms of improving the current processes or project operations, whatever it may be. Unfortunately, it's not our responsibility to ensure whether they adopt the lessons learned or they use the knowledge product…"*	Lessons learnt are available and some captured but not reused to improve productivity.	Learning organization
Ref3	*"…we went out on a process of redesigning, giving it a new modern looking feel. We rearranged the different knowledge assets…"*	Improved system to motivate employees to use the system.	System upgrade
Ref4	*"…the managing of it and the sign off of it then managing the process from start to end was primarily myself…"*	The system upgrade process was managed by an individual not a team.	Internal collaboration
Ref5	*"…We did not do an extensive stakeholder engagement process. And maybe that's a, uh, an oversight on our part…"*	Lack of stakeholder engagement.	Stakeholder engagement
Ref6	*"…because of our process which are also so rigid…"*	The organization is not flexible with processes.	Change management

Table 19: Sub-theme: Processes

The several processes are involved in knowledge creation, these are; knowledge location and capture, knowledge transfer and sharing, knowledge storage, knowledge sharing and application (Raudeliūnienė, et al., 2018). The KMS creation process refers to the creation of knowledge assets within the CoJ by different departments and individuals, while the learning organization process requires that the organization is skilled at knowledge creation, location, capturing, transfer, sharing and application. The organization is not flexible with processes, and this at times affects productivity, for example, the process of system upgrade is delayed by Group ICT & IM. The initial system upgrade process was managed by a non-technical individual not a team, resulting in omission of important steps such as user testing and stakeholder engagement.

5.2.4.4 Sub-theme: Change management

Change management is often seen as the process of easing the discomfort of change in employees (Rissanen, 2016). In CoJ, the change management process is managed by the Group ICT & IM department. Change management integrates the organizational tools utilized to assist users or individuals to successfully transition from the old tools to the new tools, ensuring the realization of change, and subsequently successful adoption (By, 2005). This sub-theme therefore assesses and renders the analysis of findings in relation to change management in the CoJ municipality.

Reference	**Descriptive text**	**Predictive text**	**Prescriptive text**
Ref1	*"…we still used to those set ways and people are not prone to change. If it's worked, why should I change…"*	Resistance to change	Culture
Ref2	*"…and I think that is one of the things that in an organization change management is not looked upon as the investment. And we rely on management to carry out change management activities and that is part of the performance management*	Change management does not form part performance management.	Organizational productivity

	agreement is not solely their job…"		
Ref3	*"…because you don't allow end users to because you don't want users to access the system and see old documents. They don't see any change…"*	Allowing end users to explore and interrogate the system through change management	Establishing credibility
Ref4	*"…there are a few that are willing and then there are a few, I don't know whether that, it's, it's as I said, other people take time to change…"*	Lack of proper change management process	Resistance to change
Ref5	*"…I think within the city of Johannesburg from a change management perspective, my personal perception is that after a solution has been deployed and the key people have been trained, it's stops there. There is no follow through to say, are you happy with the solution…"*	Project execution lacks planning for and facilitation of change management.	Planning and execution
Ref6	*"…if there is no change management within your department, the buyer, then they can solicit assistance from the group IT change management department to help in support to ensure that there's full user adoption of that solution that they have bought…"*	IT department has change management function available for all departments	Internal collaboration

Table 20: Sub-theme: Change management

Change in organizations may be perceived within the structure, employees, management, administration, technology, et cetera where employees can develop resistance and scepticism, creating the obstacle or making it unfeasible to implement organizational enhancements (Hashim, 2013). Group ICT & IM department runs the change management function available for all departments, however, a study participant from the department, who is the change specialist highlighted that the change management process in the organization seems not to be taken as an investment. This was evident with the KMS whereby, the employees were not taken through the change management process to prepare them for the new upgraded system. Majority of the employees were not told about the system upon launching it. It is clear that project execution lacked planning for and facilitation of change management which could have allowed the end users to explore and interrogate the system through change management. The major challenge in CoJ is that change management does not form part performance management, hence the function is not respected and there is resistance to change.

5.3 Framework development

This section follows data analysis and discussions. It focuses on the development of the framework for the adoption and use of KMS in a metropolitan municipality, in the South African context. This is done by first recapping on the conceptual framework, reflecting on elements that were incorporated and are still applicable and those that are no longer relevant with underlying explanations.

5.3.1 The study's Conceptual Framework revisit

Figure 24 presents the conceptual research framework initially presented in Chapter three. This was developed using some elements of TTF and OCT theories which were essential in framing the research questions of the study.

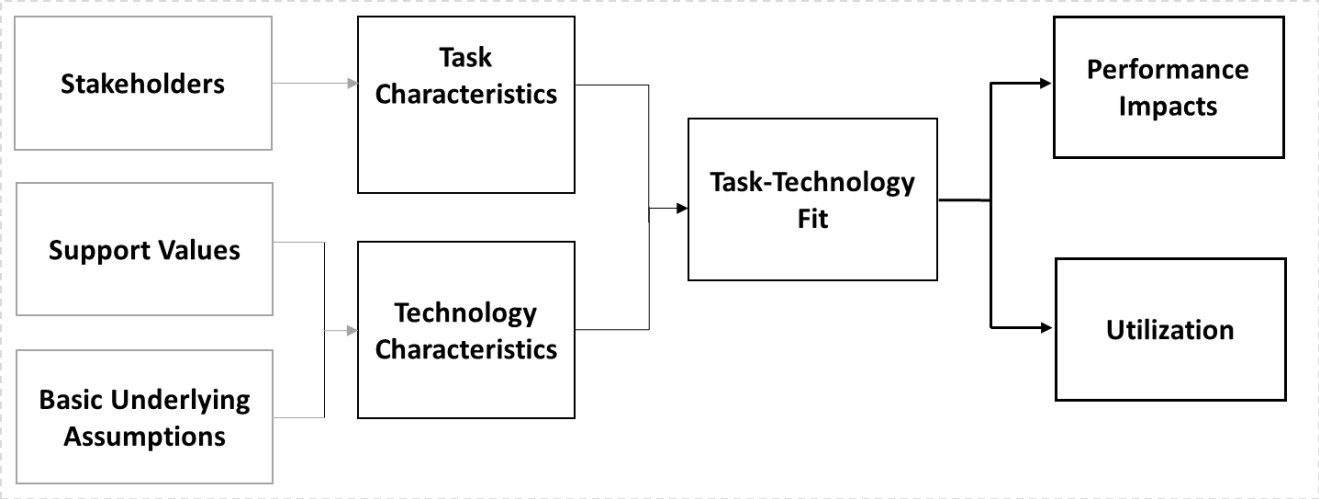


Figure 24: KMS Conceptual research framework

The framework assessed fundamental issues around the use and adoption of the KMS in a metropolitan municipality of South Africa. These are users as stakeholders, task and technology characteristics, and basic assumptions. Basic assumptions were also considered to establish the capabilities of users during interviews with the selected population sample. The support values were added to evaluate the principles, both documented and undocumented, that govern the adoption and use of the KMS in a municipality.

Further, task and technology characteristics intended to test the KMS attributes such as systems' quality, locatability, user training, relationship, and ease of use that impact on the adoption and use of KMS and ultimately, organizational performance. Essentially, this KMS adoption and use conceptual research framework entails stakeholders, who are influenced by support values on whether they adopt and use the KMS, or the inverse. These values are also guided by certain assumptions. The activities that need to be done, including some characteristics of technology components are also key attributes for consideration.

5.3.2 A framework for the adoption and use of KMS in a metropolitan municipality.

Figure 26 summarises the views and thoughts of the researcher when the framework was first conceptualized. These elements were thought to be critical in the conceptual framework and thus respond to research questions which were categorised into three spheres being technical factors, organisational factors and social factors. Technical factors comprise of the technology characteristics, whilst the organizational factor intends to cover the task characteristics and support

values of stakeholder and lastly, the social factor looking at the elements concerning the stakeholders.

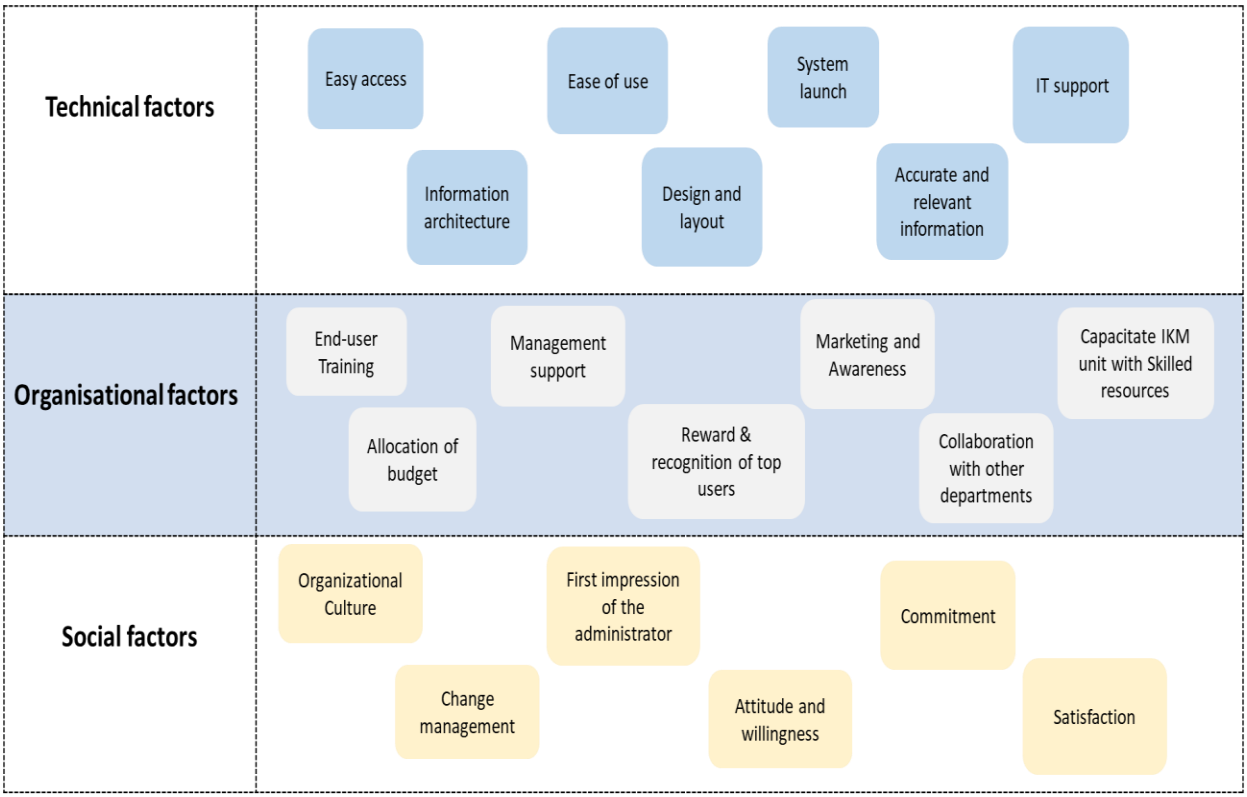


Figure 25: Researchers' assessment on elements constituting the study's framework.

The analysis of collected data and its interpretation thereof, highlights the differences on the conceptual framework that are either unnecessary, required, or misplaced. Crucial factors were omitted from on the conceptual framework as demonstrated on the proposed technology factors, organizational factors, and social factors on Figure 25. These changes are highlighted in the Figure 26. The compatibility and integration of systems is the City of Johannesburg was raised as a concern by participants, highlighting that departments and municipal entities hosts systems that are not compatible with each other resulting in isolated platforms. In some instances, there are conflicts within systems, especially with information, knowledge, and data management—most departments and municipal entities procure their own systems for information and knowledge management architecture and control.

KMS was developed to promote the administration and distribution of the CoJs knowledge and experience across municipal entities, group functions, and departments, however municipal

entities cannot access it as the systems are not integrated. Credibility and reliability of the KMS was also questioned by the participants. The deployment of KMS was not stable enough to grant the users confidence on the system as there were constant technical challenges including access restrictions and outdated content. The IKM unit relied entirely on Group ICT & IM with the infrastructure management as the unit did not have a dedicated skilled resource for the KMS.

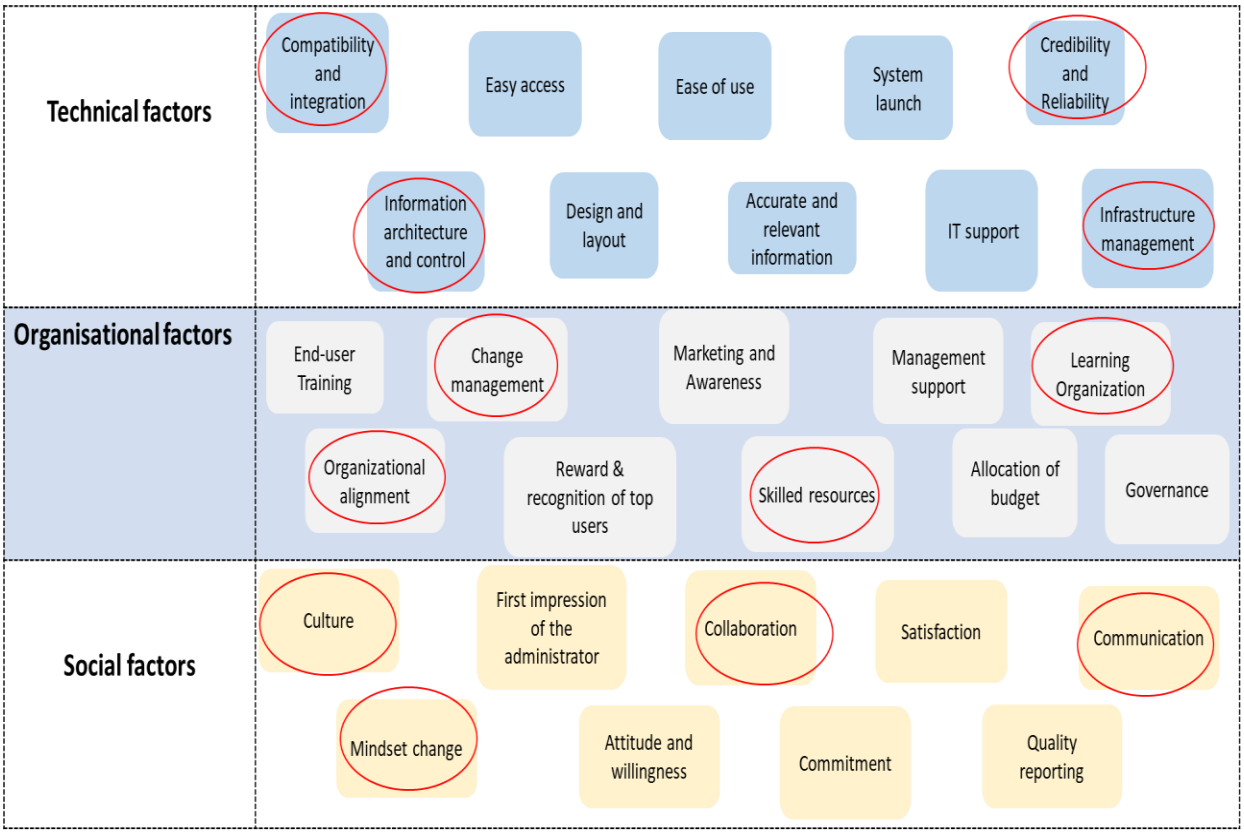


Figure 26: A revised view on the researchers' assessment on elements constituting the study's framework.

User acceptance is a crucial element of system adoption. This can be achieved through the change management process as it assists the organization to manage the people element with the transitions to achieve the required organizational goals (Wahdain & Ahmad, 2014). The change management process is one function that is not fully engaged in CoJ. There is no alignment as the processes are not documented and departments resort to working it isolation and not involving the change management team fully to assist once the project has been completed. Additional element to the organisational factor is the learning organization, which will enable the City of Johannesburg

to be a knowledge driven organization, through the effective harnessing of the intellectual capital and knowledge of its employees and stakeholders.

The social factors identified lacked collaboration, which is one of the critical success factors to ensure the successful implementation of the KMS. This should be applicable to departments and individuals, however, the culture of CoJ restricts positive collaboration as it has become common to work in silos or even not share knowledge. There is a need to change the mindset of all CoJ employees, particularly the management so that there can be influence and effective communication from top to bottom levels.

Having identified the gaps initially omitted, a framework for adoption and use of KMS had a few additions as demonstrated below on Figure 27.

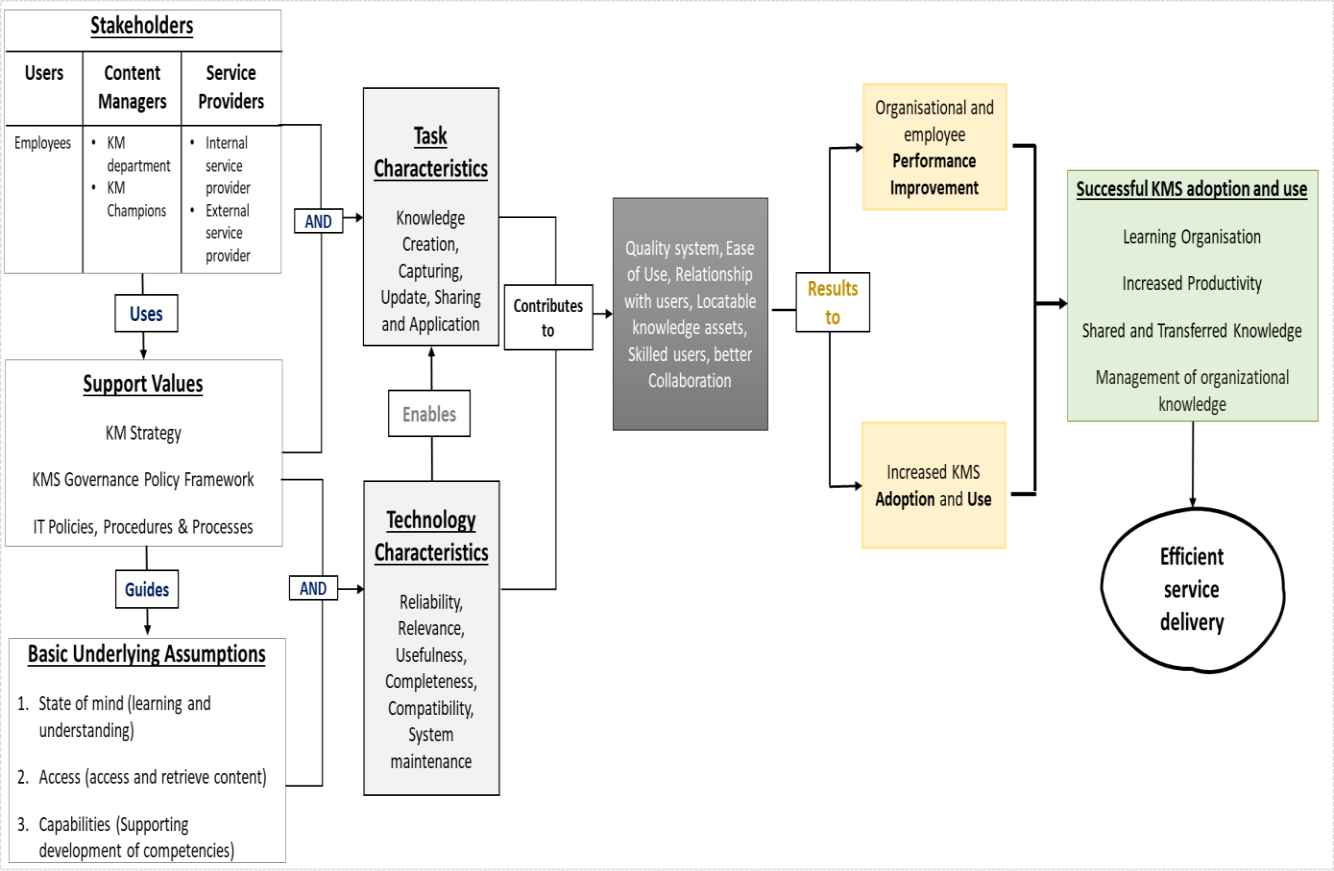


Figure 27: A framework for KMS adoption and use in a Metropolitan Municipality.

The analysis above aided in establishing some understanding as to why low levels of KMS adoption and use were experienced in the CoJ municipality. It further presented study participants'

views, understandings and opinions on what needed to be done to ensure that the situation is improved, and that the municipality truly becomes a learning organisation. By becoming a learning organisation, CoJ employees would be capable of sharing institutional memory with ease, control and disseminate the organizational knowledge to ultimately increase productivity and better service delivery within the organization.

The following section discusses the conceptual framework for use and adoption of KMS in a metropolitan municipality of South Africa.

The study sample for interviews was nominated from the stakeholders who are major contributors, and who are tasked with creating, capturing, updating, applying, sharing knowledge as well as system maintenance. They comprise of the CoJ employees who are general users, the IKM unit team members as the custodians of the system and knowledge management champions content managers, as well as the service providers comprising of the IT department and its partners.

The technological characteristics were also addressed and examined during the interviews where the researcher confirmed with stakeholders if the system meets their expectations, i.e., is it reliable, useful, relevant, complete, compatible with other systems used and maintained regularly. These are considered important as they determine the uptake of the system in an organization.

The adoption and use of KMS is guided by the CoJ KM strategy and KMS Governance Policy Framework which are collectively referred to as support values. They contain strategies, goals and values pertaining to the adoption and use. The existing basic underlying assumptions meanwhile the adoption of the KMS, like the users' state of knowing and understanding, will be improved through establishment of information, the users being able to access and retrieve the information and being empowered to effectively use the search and retrieval functionalities for locating relevant information. It is crucial to observe the capabilities of users, how to improve the intellectual capital, building the core competencies to exploit the KMS to their best of their abilities.

There are few elements that should be in place for an uptake in the adoption and use of KMS. These are both task and technology characteristics. Task characteristics suggest that the creation of knowledge should be sound, capturing and update should be done so seamlessly so as not to

discourage users. Further, sharing should be encouraged, and the application of the organisation's knowledge assets should be effective to positively drive the organisational performance. All these task characteristics require the support of technology elements to be fully realised.

This means that the technology should be reliable, relevant, useful, complete, compatible and well maintained. In the case of reliability, knowledge management systems should be accessible and able to perform the set of capabilities they have been employed to achieve at any point in time. Disruptions should be planned and well-coordinated so as not adversely impact on business operations. The deployment of KMS should be targeted, and they should be implemented to meet and address specific business requirements. Furthermore, KMS are to be compatible with other organisational systems and solution. This is to ensure that there is seamless interface across systems and that they are able to share data with one another, aiding in the accurate reporting and decision-making support.

Two key outputs, when technology adequately enables or supports the task characteristics, are an improvement in organisation and employee's performance including increased KMS adoption and use. These are the additional two elements added from the initial conceptual framework first presented in the preceding chapters. Therefore, this framework submits that an improvement in employee and subsequent organisational performance, including increased level of KMS adoption and use, lead to a successful state where a learning organisation is created, and increased productivity are ultimate resultants. These include knowledge assets that are easily and wisely shared as well as being well managed to the competitive advantage of the municipality and efficient delivery of services to citizens.

5.4 Chapter Summary

The chapter outlined the discursive practices as themes which are the main elements of the conceptual theory which are the stakeholder, task characteristics, technology characteristics and the support values. Whilst the discursive practices are supported by the discursive types of as sub-themes are represented by the factors of the main elements. The prescriptive text added on the table below are the indicators that derived from addressing the themes above.

CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

The analysis and interpretation of data was rendered in the preceding chapter. This was presented with the aid of themes and sub themes which are also in line with the objectives of this research. Interpretation entailed what the issues or positives deductions with the findings were the impact or implications and validation against the literature. This chapter therefore assesses the journey of the study by evaluating what has been achieved in line to what the study had intended to achieve, and the methods, strategies and approaches employed. It also presents the limitations of the study, key contributions, including suggestions for future research.

6.2 Summary of findings

This section reflects on the goal, objectives, and the research methodology including a view on the summary of findings.

This study set a goal to conceptualise a framework on how heighten the levels of Knowledge Management Systems use and adoption in the City of Johannesburg Metropolitan Municipality. The framework was conceptualised in Chapter Three and finally presented in Chapter Five following with considerations on key elements from both the literature and findings. Subsequently, achieving this goal therefore also renders the fourth objective ‘To determine how the use and adoption of KMS can be elevated in CoJ as met. The remaining three objectives of the study and how they had been addressed are as follows:

Objective 1: To determine factors influencing the adoption and use of KMS in CoJ

This objective set to establish the factors influencing the adoption and use of KMS. Factors such as a lack of management support from the strategic and operational levels, departments working in silos and exclusion of users in the requirements gathering, testing and implementation phases of KMS were identified as factors impacting on the use and adoptions of the systems. Further, the high reliance on external service providers and inadequate internal resourcing were also found to be key in this area.

Objective 2: To evaluate the levels of adoption and use of the KMS in CoJ

As part of the problem statement, and before outlining how levels of KMS use and adoption could be heightened, this second objective sought to make an evaluation of the current reported levels of use and adoption of KMS. The levels of use and adoption of KMS were found to be low, with some room for improvement. These were views shared by both professionals and the management teams. The usage report on one particular KMS was already referenced to emphasize on this element.

Objective 3: To identify the benefits of successful adoption and use of KMS

At the centre of the third objective was identifying key benefits that an organisation such as CoJ could enjoy with high and satisfactory levels of KMS use and adoptions. Key benefits from high levels of use and adoption were identified to be the creation of a learning organisation, increased productivity and high rate of sharing knowledge assets. Sound and effective management of knowledge assets including targeted dissemination and application of knowledge are also amongst those to be benefited by organisations when KMS is adopted and used properly.

Objective 4: To determine how the use and adoption of KMS can be elevated in CoJ.

This objective has been addressed by the framework for KMS adoption and use in a Metropolitan Municipality conception. It also contributes and summaries a practical technique into how the use and adoption levels of KMS can be enhanced in the City of Johannesburg Metropolitan municipality.

6.3 Conclusions and recommendations of the study

Knowledge management and the deployment of systems associated to its use and adoption, is a critical area of study and practice, especially in the creation of learning organisations. At the centre of this study was seeking to address reported low levels of the use and adoption of KMS in the City of Johannesburg. That is, CoJ had experienced levels which were not progressive and could be a hindrance in turning the municipality into a true learning organisation.

The study, therefore, sought to determine how the levels of use and adoption could be heightened. This was achieved through the development of the framework constituting of technology and task characteristics which includes a consideration and identifying of all key stakeholders, organisational values including some founding assumptions. The study went on to survey the

literature, gather perceptions, views, and understandings of key stakeholders from which an understanding on the status quo was understood and suggestions for achieving a future state were captured. By this, the study addressed the research question and subsequently bridging key gaps as outlined in Chapter One.

Key deductions from this study are that the adoption and use of knowledge management systems has a direct impact on the creation of a learning organisation. This deduction entails that, when systems promoting knowledge management are adopted and used effectively, organisations benefit from increased productivity and a high rate of sharing of knowledge assets. A further subsequent benefit is that knowledge assets would be effectively managed, and that knowledge assets application and dissemination would be targeted.

Furthermore, systems users are found to be more receptive and willing to adopt and use systems when they feel that they have been adequately consulted and involved (Korpelainen, 2011). Users require that they decide on certain elements of the systems they would be expected to use later on. In some cases, this includes being involved in requirements gathering, design, testing and training phases. Outsourcing was also found to be a contributing factor in low levels of adoption and use of KMS. The development and maintenance of most KMS were overseen by external service providers. This meant that internal capacity was weakened and fewer municipal professionals had the responsibility of driving KM initiatives and programmes pertaining to adoption and use of KMS with limited resources.

Based on these deductions, this study extends some recommendations on how KMS use and adoption in a metropolitan municipality can be achieved to ensure that a learning organisation is created. These are:

- Organisations should be deliberate about strategies driving the adoption and use of KMS. These should be embedded in the overall organisational strategy with key performance indicators to measure the levels of use and adoption.
- Management teams should be at the forefront of encouraging the change in behaviour where low levels of use and adoption are experienced. They should be well authorised in decision making and thus confidently removing any challenges and bottlenecks experienced by professionals.

- The implementation of KMS should be done in consultation with all users and employees. That is, these groups should be allowed to have inputs into the design and capabilities of the KMS to an extent. Further, users should be involved in the quality assurance activities of KMS and also be properly trained for ease of use.
- Internal capacity building through the KM champions model should be promoted. This entails that dedicated resources from the various directorates should be earmarked as champions to promote KM and KMS adoption and use organisation-wide. These roles should not be on an ad-hoc basis, but should be dedicated, performance driven, and measurable.
- Whilst outsourcing is a strategic decision, it should be controlled and targeted so as not to compromise the ability of a municipality to render its services without relying on service providers. As such, this study further recommends that the municipality should look at ways in which capacity can be built internally. This can include amongst others hiring qualified resources, structured ongoing training and human resources development interventions.

6.3.1 Evaluation of the research methodology

Qualitative research approach, including a semi-structured technique were utilised for the collection of data. This was particularly useful in this context as it afforded the researcher with insights on how the employees of CoJ (management and professionals) perceived KMS, their views, opinions and understanding on the current levels of use and adoption including what needs to be done in future to improve on the status quo.

6.4 Assessing the contribution of thesis' chapters

Each chapter of this study has made a significant contribution to the attainment of the aims, purpose and ultimately the research questions. The following section outlines how that has been the case:

Chapter one laid the foundation for the study. It outlined the problem statement, research questions, objectives, aims and the goal of the research. By doing so, it ensured that the study had direction and a set destination that had to be arrived at.

The review of the literature was done in **chapter two**. This entailed reviewing the key concepts guiding this study such as knowledge, knowledge management, types of knowledge, knowledge management systems and a survey on the current KM practices in local government administrations.

Chapter three of the study focused on the theoretical frameworks largely deployed in the field of IT and IS in general, with an extensive concentration on the ones particularly those referenced/ utilized in defining the framework underpinning this study. These theories helped formulate the CoJ KMS Conceptual Research Framework which became critical in the data analysis and interpretation phases.

Chapter four presented the thought process, tools and methods deployed and relied upon in the execution of this research. These pertain to the philosophical paradigm upon which the research is founded, the sampling techniques, data collection and analysis methods.

In **chapter five**, the analysis and interpretation of the data is presented. This was done with the aid of the analytical lens defined and discussed in chapter three. The data is organized and presented using themes which have a direct correlation to the research objectives.

Chapter six concludes the study and presents a reflection and an evaluation of the study using key attributes of the study such as goals, objectives, and the research methodology. It further presents the limitations and contributions of the study and concludes with considerations for further research.

6.5 Contributions of the study

This section presents the contributions of the study in the Information/ Knowledge Management body of knowledge. The three contributions made by this study are theoretical, practical, and contextual.

6.5.1 Theoretical contributions

The main research question for this study was ‘How should KMS be adopted and used for effective service delivery in the City of Johannesburg Metropolitan Municipality?’ To address this question, this study employed Task Technology Fit, Technology Acceptance Model, and Technology,

Organisational, and Environmental theories as analytical lenses through which to understand the KMS use and adoption phenomenon. Whilst these theories are common in KM related studies, most of these studies generally employ one of them, and hardly all at once. The combination of these theories therefore, brings a unique contribution to the body of knowledge as it aids in looking at the factors enabling and hindering high levels of KMS use and adoption from various, varying lenses.

6.5.2 Practical contributions

As part of addressing the fourth and final objective, the study produces a framework titled CoJ KMS Adoption and Use Framework. This framework outlines a practical approach into how the use and adoption levels of KMS can be heightened in the City of Johannesburg Metropolitan municipality. Not only is this based on the literature, but it is also underpinned on the empirical data collected.

6.5.3 Contextual contributions

KM is a well-researched and explored discipline. It has been explored in a multitude of sectors such as banking, public sector, and manufacturing amongst others. Whilst other studies have also explored the KM discipline in the CoJ, none have extended their studies to understanding the use and adoption of KMS. This study, therefore, renders a contribution by exploring this phenomenon in the CoJ. The CoJ is a unique context because amongst others it is in the Gauteng province in South Africa. Gauteng by itself is one of the smallest geographical provinces in SA, yet it is the economic capital of the country. Further, COJ is a metropolitan municipality, and understanding the use and adoption of KMS in this context is substantially beneficial to the broader KM body of knowledge.

6.6 Limitations

The limitations of the study are presented in this section.

In the first instance only six participants were interviewed. As per the scope of the study, these were in the GSPCR unit. Therefore, KM being such a complex and organization wide subject matter, the results are specific and applicable to the GSPCR directorate and cannot be simply regarded as a representation for all other directorates. That is, whilst the views of these participants were adequate to address the research question, the findings do not represent the views of the

majority of the CoJ stakeholders. Secondly, the study employed and qualitative research methodology. A qualitative research approach is subjective in nature and therefore, views, understandings and opinions would be the basis for the participants' responses. There is no correlation of the statistical nature of the results.

6.7 Considerations for future research

Considerations for future research are:

- A similar study should be conducted across various other directorates, expanding study participants to include the political leadership to constitute the mayor, representatives of the mayoral committee, and the council at large. This will provide an indication on whether KM and KMS use and adoption agenda is also driven from the top or not.
- A future study on KMS use and adoption utilising a combination of research methods in order to get a correlation of the statistical findings may also be useful. This will provide a quantitative view of which systems are more used and adopted than others and correlate that to the view and opinions of the participants.
- The study can further be conducted in other metropolitan municipalities to assess their levels of use and adoption and how those level impact on the quality-of-service delivery.

REFERENCES

Abdelrahman, M., 2013. Knowledge Sharing by Using Knowledge Management Systems to Support Decision-Making Processes in Multinational Corporations.

Achieng, D. & Jagero, J., 2014. Management Support in Adoption of Computer Integrated Model in Financial Forecasting. *International Journal of Academic Research in Accounting, Finance and Management Sciences,* 4(2), pp. 166-175.

Ahbabi, S., Singh, S., Balasubramanian, S. & Gaur, S., 2019. Employee perception of impact of knowledge management processes on public sector performance. 23(2).

Ahmed, I., 2020. Technology organization environment framework in cloud computing. 18(2), p. 716~725.

Akgün, A. E., Keskin, H. & Byrne, J., 2009. Organizational Emotional Capability, Product And Process Innovation, And Firm Performance: An Empirical Analysis. *Journal Of Engineering And Technology Management,* 26(3), p. 103–130.

Alavi, M. & Leidner, D., 2001. Review: Knowledge Management and Knowledge Management Systems. *Conceptual Foundation and Research Issues.*

Al-Ghaith, W., Sanzogni, L. & Sandhu, K., 2010. Factors Influencing the Adoption and Usage of Online Services in Saudi Arabia. *The Electronic Journal on Information Systems in Developing Countries,* 40(1), pp. 1-32 .

Ali, A., Nor, R., R., A. & Murad, M., 2016. Developing Conceptual Governance Model for Collaborative Knowledge Management Systen in Public System Organisations. *Journal of ICT,* 15(2), pp. 171-191.

Alshenqeeti, H., 2014. Interviewing as a Data Collection Method: A Critical Review.

Amrutkar, K. & Kamalja, K., 2017. An Overview of Various Importance Measures of Reliability System. *International Journal of Mathematical, Engineering and Management Sciences,* 2(3), p. 150–171.

Antunes, H. & Pinheiro, P., 2019. Linking knowledge management, organizational learning and memory. *Journal of Innovation and Knowledge,* Volume 5, pp. 140-149.

Antwi, S. & Hanza, K., 2015. Qualitative and Quantitative Research Paradigms in Business. *European Journal of Business and Management*, 7(3).

Assegaff, S. & Hussin, A., 2012. Review of Knowledge Management Systems as Socio-Technical System.

Awa, H., Ukoha, O. & Emecheta, B., 2016. Using T-O-E theoretical framework to study the adoption of ERP solution. *Operations, Information & Technology.*

Babski, C. & Carion, S., 2003. Kowscape - a collective knowledge architecture. *IEEE International Symposium on Virtual Environments, Human-Computer Interfaces and Measurement Systems.*

Badpa, A., Salim, J. & Yayaya, J., 2018. Understanding the effective factors of knowledge management system usage in petroleum industry in developing economy. *Journal of Theoretical and Applied Information Technology,* 96(14).

Baugh, J. B., Hallcom, A. S. & Harris, M. E., 2010. Computer assisted qualitative data analysis software: A practical perspective for applied research.

Baydoun, A. & El-Den, J., 2017. A Knowledge Capture and Sharing Approach to Effective Software Service Supply Chain Management. 3(4).

Becerra-Fernandez, I. & Sabherwal, R., 2010. Knowledge Management: Systems and Processes..

Bechina, A. & Ndlela, M., 2002. Success Factors in Implementing Knowledge Based Systems. *Electronic Journal of Knowledge Management ,* 7(2), pp. 211 - 218.

Biswas, S., 2017. Adoption of Knowledge Management Systems: A Study on How Wiki Systems Should Be Adopted by Minimizing the Risk of Failure. *Information and Knowledge Management,* 7(7).

Biswas, S., 2017. Adoption of Knowledge Management Systems: A Study on How Wiki Systems Should Be Adopted by Minimizing the Risk of Failure. *Information and Knowledge Management,* 7(7).

Bratianu, C., 2018. Organizational Learning and the Learning Organization. In: *Organizational Knowledge Dynamics: Managing Knowledge Creation, Acquisition, Sharing, and Transformation.* Hershey: IGI Global.

Bratianu, C. & Orzea, I., 2010. Organizational knowledge creation. *Academy of Economic Studies, Bucharest,.*

Brusa, G., Caliusco, M. & Chiotti, O., n.d. Enabling Knowledge Sharing within e-Government Back-Office Through Ontological Engineering. *Journal of Theoretical and Applied Electronic Commerce Research ,* 1(2), pp. 33 - 48 .

Butler, T. et al., 2008. Designing a core IT artefact for Knowledge Management Systems using participatory action research in a government and a non-government organisation. *The Journal of Strategic Information Systems 17(4):249-267.*

Butler, T. & Murphy, C., 2007. *Implementing Knowledge Management Systems in Public Sector Organisations: A Case Study of Critical Success Factors.* s.l., Association for Information SystemsAIS Electronic Library (AISeL).

By, R., 2005. Organisational Change Management: A Critical Review. *Journal of Change Management,* 5(4), pp. 369-380.

Calitz, A. P. & Cullen, M., 2017. The Application of a Knowledge Management Framework to Automotive Original Component Manufacturers. *Interdisciplinary Journal of Information, Knowledge, and Management,* Volume 12, pp. 337-365.

Camarihna-Mato, L. & Afsarmanesh, H., 2008. Concept of Collaboration. *Encyclopedia of Networked and Virtual Organizations,* Volume 1.

Chen, G., Kang, H. & Luna-Reyes, L., 2019. Key Determinants of Online Fiscal Transparency: A Technology-Organization-Environment Framework. *PUBLIC PERFORMANCE & MANAGEMENT REVIEW,* 42(3), pp. 606-631.

Chen, Y. et al., 2012. *On Component Reliability and System Reliability for Space Missions.* Hampton, NASA Langley Research Center.

Chigada, J., 2014. The role of knowledge management in enhancing organizational performance in selected banks of South Africa.

Chilisa, B. & Kawulich, B., 2012. Selecting a research approach: Paradigm, methodology and methods. *Doing social research: A global context,* 5(1), pp. 51-61.

Chinyamurindi, W. & Gwena, C., 2018. Effects of knowledge management on innovation capabilities amongst small and medium enterprises in South Africa: The case of Buffalo City Metropolitan Municipality. Issue ISSN: (Online) 2071-3185.

Chowdhury, R. & Gopal, R., 2014. Leadership styles and employee motivation: An empirical investigation in a leading oil company. *International Journal of Research in Business Management,* 2(5), pp. 1-10.

Cirnu, C., Nedelko, Z. & Potocan, V., 2016. Knowledge Management utilization in organizations: Empirical evidence.

City of Johanneburg, 2019. *Intergrated Annual Report.* [Online]
Available at:
https://www.joburg.org.za/documents_/Documents/Annual%20Reports/20182019%20Annual%20Report/2018-19%20City%20of%20Johannesburg%20Annual%20Report%20.pdf
[Accessed 18 12 2020].

City of Johannesburg , 2020. *Integrated development Plan 2020/21 review.* [Online]
Available at:
https://joburg.org.za/documents_/Documents/Joburg%20IDP%2020/Final%202020-21%20IDP.pdf
[Accessed 3 September 2020].

City of Johannesburg Council, 2020. *Joburg.org.za.* [Online]
Available at:
https://www.joburg.org.za/documents_/Documents/Budget/Budget%202020/Budget%202020%20Final/2020-21%20-%202022-23%20Medium%20Term%20Budget%20Covering%20Report.pdf
[Accessed 02 12 2020].

City of Johannesburg, 2013. *City of Johannesburg Group Knowledge Management Strategy and Implementation Plan.* Johannesburg: s.n.

City of Johannesburg, 2019. *Joburg 2040 Growth Development Strategy (GDS).* [Online]
Available at:
https://www.joburg.org.za/documents_/Documents/Joburg%20GDS%202040/Joburg%202040%20GDS_March%202019.pdf
[Accessed 10 11 2020].

City of Johannesburg, 2020. *www.jourg.org.za.* [Online]
Available at:
https://www.joburg.org.za/documents_/Documents/Joburg%20IDP%2020/Final%202020-21%20IDP.pdf
[Accessed 17 12 2020].

Clarke, S., 2021. Lessons from the City of Johannesburg's review of the Group KM Strategy, UCLGA. Available at https://uclga.org

Cohen, W. & Levinthal, D., 1990. Absorptive capacity: a new perspective on learning and innovation. 35(1), pp. 128-52.

Cristescu, M. & Cristescu, C., 2008. Knowledge Management Architecture – Principles and Tendencies. *Revista Informatica Economică,* 4(48).

Crous, M., 2002. Service delivery in the South African public service: Implementation of the Batho Pele principles by Statistics South Africa. *The degree Magister Administrationis (Public Administration)* .

Danilo, M. & Mário, F., 2020. Knowledge transfer in the context of inter-organizational networks: Foundations and intellectual structures. *Journal of Innovation & Knowledge,* 5(2), pp. 130-139.

Datt, S., 2016. *8-step procedure to conduct qualitative content analysis in a research.* [Online]
Available at: https://www.projectguru.in/publications/qualitative-content-analysis-research
[Accessed 09 11 2018].

Dauber, D., Fink, G. & Yolle, M., 2010. A Generic Theory of Organizational Culture.

Davis, F., 1986. A Technology Acceptance Model for Empirically Testing New End-User Information System.

Davis, S. A., 1993. Training End Users: An Experimental Investigation of Roles of the Computer Interface and Training Methods. *MIS Quarterly,* 17(1), pp. 61-85.

Dawoood, S., Mammona, Fahmeeda & Ahmed, A., 2015. Learning organization–Conceptual and Theoretical Overview. *International Journal of Humanities Social Sciences and Education (IJHSSE),* 2(4), pp. 93-98.

De Geytere, T., 2005. *SECI model (Nonaka Takeuchi).* [Online]
Available at: http://www.12manage.com/methods_nonaka_seci.html
[Accessed 03 02 2021].

de Guevara, B., 2014. On methodology and myths: exploring the International Crisis Group's organisational culture. *Third World Quarterly,* 35(4), pp. 616-633.

Delahunt, B. & Maguire, M., 2017. Doing a Thematic Analysis: A Practical, Step-by-Step, Guide for Learning and Teaching Scholars, Dundalk Institute of Technology. Volume 3.

Dickson, G., DeSanctis, G. & McBride, G., 1986. Understanding the effectiveness of computer graphics for decision support: A cumulative experimental approach. In: *Understanding the effectiveness of computer graphics for decision support: A cumulative experimental approach.* s.l.:Communications of the ACM, pp. 40-47.

Diego, I., 2020. *2020 Mid-year population estimates,* Pretoria: Department of Statistics SA.

Drucker, P., 1985. Innovation and entrepreneurship. *INNOVATION AND ENTREPRENEURSHIP Practice and Principles.*

Dube, R., 2017. An Analysis of the Knowledge Management Systems in an Organization with a Center-Periphery Knowledge Management Landscape.

Dzomonda, O. & Fatoki, O., 2019. Evaluating the Impact of Organisational Culture on the Entrepreneurial Orientation of Small and Medium Enterprises in South Africa. *Bangladesh e-Journal of Sociology,* 16(1).

Edwards, J., 2014. Knowledge Management Systems: Finding a Way with Technology. *Journal of Knowledge Management.*

Egbu, C. & Olomolaiye, O., n.d. Tacit VS. Explicit Knowledge – The current approaches to knowledge management, School of the Built and Natural Environment.

Esposito, E., Evangelista, P., Lauro, V. & Raffa, M., 2014. The Adoption of Knowledge Management Systems in Small Firms.

Evangelista, R., Guerrieri, P. & Meliciani, V., 2014. The economic impact of digital technologies in Europe. *Economics of Innovation and New Technology,* 23(8), pp. 802-824.

Fischer, M., 2001. Innovation, Knowledge Creation And Systems Of Innovation. *Annals Of Regional Science,* Volume 35, p. 199–216.

Gaffoor, S. & Cloete, F., 2010. Knowledge management in local government: the case of stellenbosch municipality.

Gangwar, H. & Date, H., 2015. Understanding determinants of cloud computing adoption using an integrated TAM-TOE model. *Journal of Enterprise Information Management.*

Garvin, D., 1993. Building a Learning Organization.

Ghazvini, A. & Shukur, Z., 2016. Awareness Training Transfer and Information Security Content Development for Healthcare Industry. *(IJACSA) International Journal of Advanced Computer Science and Applications,* 7(5).

Goldkuhl, G., 2012. Pragmatism vs interpretivism in qualitative information systems research. *European Journal of Information Systems ,* 21(2).

Goodhue, D. & Thompson, R., 1995. Task-Technology Fit and Individual Performance.

Gorelick, C., 2005. Organizational learning vs the learning organization: a conversation with a practitioner. *The Learning Organization,* 12(4), pp. 383-388.

Greiner, M., Bo¨hmann, T. & Krcmar, H., 2007. A strategy for knowledge management. *Journal of Knowledge Management,* 11(6), pp. 3-15.

Grundstein, M. & Rosenthal-Sabroux, C., 2007. Knowledge management system as a sociotechnical. Issue hal-00948705.

Gupta, A., Govindarajan, V. & Kisfalvi, V., 2000. Knowledge Flows Within Multinational Corporations. *Strategic Management Journal,* 21(4).

Hajric, E. 2. K. M. T. a. D. 2., 2018. [Online]
Available at: http://www.knowledge-management-tools.net/knowledge-management-systems.html
[Accessed 2 December 2019].

Hameed, M., 2017. A Conceptual Model for the Organisational Adoption of Information System Security Innovations. *A Model for the Adoption of IS Security Adoption.*

Hashim, M., 2013. Change Management. *International Journal of Academic Research in Business and Social Sciences,* 3(7).

Heier, H. & Strahringer, S., 2006. *Knowledge Management Systems and Organizational Change Management: The Case of Siemens ShareNet.* Berlin Heidelberg, Springer-Verlag, pp. 97-105.

Hilburn, B. & Jorna, P. G. A. M., 2001. Workload and air traffic control. *Stress, workload and fatigue,* p. 384–394.

Hilger, J., 2017. *KM Institude.* [Online]
Available at: https://www.kminstitute.org/blog/knowledge-management-structured-and-unstructured-information
[Accessed 24 November 2020].

Hoegl, M. & Schulze, A., 2005. How to support knowledge creation in new product development: an investigation of knowledge management methods. *European,* 23(3), pp. 263-273.

Hoe, S. L., 2006. Tacit knowledge, Nonaka and Takeuchi SECI model and informal knowledge processes. *International Journal of Organization Theory & Behavior,* 9(4), pp. 490-502.

Huber, G., 1991. Organizational Learning: The Contributing Processes and the Literatures. *Organi-zation Science ,* 2(1), pp. 88-115.

Human, W., 2008. Knowledge Management Tool Business Case. *Masana Technologies* .

Hwang, Y., Lin, H. & Shin, D., 2018. Knowledge system commitment and knowledge sharing intention: The role of personal information management motivation. *International Journal of Information Management,* Volume 39, pp. 220-227.

Igbinovia, M. & Ikenwe, I., 2017. Knowledge Management: Processes and Systems. *Inofrmation Impact,* 8(3), pp. 26-38.

Irick, M., 2008. Task-Technology Fit and Information Systems Effectiveness. *Journal of Knowledge Management Practice,* 9(3).

Islam, S., Kunifuji, S., Miura, M. & Hayama, T., 2011. Adopting Knowledge Management in an E-Learning System: Insights and Views of KM and EL Research Scholars. *Knowledge Management & E-Learning: An International Journal,* 3(3).

Islam, Z., Ahmed, S., Hasan, I. & Ahmed, S., 2011. Organizational culture and knowledge sharing: Empirical evidence from service organizations. *African Journal of Business Management,* 5(14), pp. 5900-5909.

Jackson, M. J. P. M. S. &. K. T. (. I. (. (. 2. .., 2002. The social construction of technology in studies of the workplace.. *The handbook of new media,* p. 236–253.

Jakubik, M., 2008. 'Experiencing collaborative knowledge creation processes'',. *The Learning Organization: The International Journal of Knowledge and Learning Management,* 15(1), pp. 5-10.

Jennex, M. & Olfman, L., 2005. Knowledge Management Success Factors and Models.

Johnston, K., Begg, S. & Tanner, M., 2013. Exploring the factors influencing the adoption of Open Source Software in Western Cape schools. *International Journal of Education and Development using Information and Communication Technology,* 9(2), pp. 64-84.

Kagolovsky, J. & Möhr, J., 2001. A New Approach to the Concept of "Relevance" in Information Retrieval (IR). *Studies in Health Technology and Informatics,* pp. 348-352.

Kammani, A. & Date, H., 2009. Public Sector Knowledge Management: A Generic Framework.

Kankanhalli, A., Tanudidjaja, F., Sutanto, J. & Tan, B., 2003. The role of IT in successful knowledge management initiatives. 46(9).

King, W., 2009. Knowledge Management and Organizational Learning. *Annals of Information Systems,* Volume 4.

Kivunja, C. & Kuyini, A., 2017. Understanding and Applying Research Paradigms in Educational Contexts. *International Journal of Higher Education,* 6(5), pp. 26-41.

Kogabayev, T. & Maziliauskas, A., 2017. The definition and classification of innovation of innovation. *Journal of Business and Public Administration,* 8(1).

Kogabayev, T. & Maziliausks, A., 2017. The definition and classification of innovation. *Journal of Business and Public Administration,* 8(1), pp. 59-72.

Korpelainen, E., 2011. Theories of ICT System Implementation and Adoption – A Critical Review. *Theories of ICT System Implementation and Adoption– A Critical Review.*

Kositanurit, B., Osei-Bryson, K. & Ngwenyama, O., 2011. Re-examining information systems user performance: Using data mining to identify properties of IS that lead to highest levels of user performance. In: *Re-examining information systems user performance: Using data mining to identify properties of IS that lead to highest levels of user performance.* s.l.:Elsevier, pp. 7041-7050.

Kuchciak, I. & Wiktorowicz, J., 2020. In: *Individual Determinants for the Transfer of Knowledge in the Financial Sector.* s.l.:s.n., p. 133.

Kulkarni, U., Robles-Flores, J. & Popovic, A., 2017. Business Intelligence Capability The Effect of Top Management and the Mediating Roles of User Participation and Analytical Decision Making Orientation. *Journal of the Association for Information Systems,* 18(7), p. 516–541.

Kumar, S. & Sharma, S., 2017. SharePoint Analyzer Tool – A Windows Desktop Application Using Data Extraction and Exportation. *International Journal of Computational Intelligence Research,* 13(8), pp. 1907-1916.

Kumar, V. & Garg, M., 2018. Predictive Analytics: A Review of Trends and Techniques. *International Journal of Computer Applications,* 182(1).

Lahohla, P., 2016. *The state of basic service delivery in South Africa: In-depth analysis of the Community Survey 2016 data*, Gauteng: STATISTICS SOUTH AFRICA.

Lai, E., 2011. *Collaboration: A Literature Review,* s.l.: Pearson's Research Reports.

Lai, P., 2017. The literature review of technology adoption models and theories for the novelty technology.

Larsen, K., 2003. The Technology Acceptance Model: Past, Present, and Future. *Communications of the Association for Information Systems ,* 12(50), pp. 752-780 .

Larsen, K. R. & Eargle, D., 2015. *Theories Used in IS Research Wiki.* [Online]
Available at: http://IS.TheorizeIt.org
[Accessed 20 February 2020].

Lazar, J., 2002. Integrating Accessibility into The Information Systems Curriculum.

Leander, W., 2017. *Usage vs. adoption: The real measure of success for it transitions.* [Online]
Available at: https://www.santarosaconsulting.com/news-and-events/usage-vs-adoption-real-measure-success-transitions/
[Accessed 2 September 2020].

Lehmann, C., 2016. *Change Management for the Successful Adoption of Clinical Information Systems.* s.l.:Springer, Cham..

Lehohla, P., 2016. *The state of basic service delivery in South Africa: In-depth,* s.l.: Stats SA.

Lepeniotia, K., Bousdekis, A., Apostolou, D. & Mentzas, G., 2020. Prescriptive analytics: Literature review and research challenges. *International Journal of Information Management,* Volume 50, pp. 57-70.

Li Po, F., 2006. The Internet as a Medium for Marketing Communication.

Lines, B., Asce, A. & Vardireddy, P., 2017. Drivers of Organizational Change within the AEC Industry: Linking Change Management Practices with Successful Change Adoption. *Journal of Management in Engineering,* 33(6).

Lin, W., Yip, N., Ho, J. & Sambasivan, M., 2020. The adoption of technological innovations in a B2B context and its impactonfirm performance: An ethical leadership perspective. *Industrial Marketing Management,* 09 January, Volume 89, pp. 61-71.

Lippert, S. K. & Govindarajulu, C., 2006. Technological, Organizational, and Environmental Antecedents to Web Services Adoption. *Communications of the IIMA,* 6(1).

Liu, W., J. R., Nian, C. & Ryu, K., 2020. Identifying the Types and Impact of Service Provider's Responses to Online Negative Reviews in the Sharing Economy: Evidence from B&Bs in China. *Sustainability.*

Li, Y. et al., 2019. IoT-CANE: A unified knowledge management system for data-centric Internet of Things application systems. *Journal of Parallel and Distributed Computing,* Volume 131, pp. 161-172.

Loeb, S. et al., 2017. *Descriptive analysis in education: A guide for researchers,* Washington, DC: U.S.: Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance.

Luhn, A., 2016. The Learning Organization. *Creative and Knowledge Society.*

Luhn, A., 2016. The Learning Organization. *Creative and Knowledge Society,* 6(1), pp. 1-13.

Madumo, O., 2015. Developmental Local Government Challenges and Progress in South Africa. 23(2).

Mange, T., 2019. Knowledge Management Practices in Local Government: The Case of the City of Johannesburg

Marshall, B., Mills, R. & Olsen, D., 2008. The Role Of End-User Training In Technology Acceptance. *Review of Business Information Systems,* 12(2).

Martínez-Costa, M., D, J.-J. & Rabeh, H., 2019. The effect of organisational learning on interorganisational collaborations in innovation: an empirical study in SMEs. *Knowledge Management Research & Practice,* 17(2), pp. 137-150.

Matshwane, T., 2018. *Repository Governance Policy Framework,* Johannesburg: City of Johannesburg Metropolitan Municipality - Intranet.

Mehdiyev, S., 2017. Computer system's maintenance in a corporate environment. *Problems of information technology,* 1(1), pp. 84-90.

Mitrović, Z., Obradović, V. & Suknović, M., 2018. Knowledge management in the public sector - The case of Serbian local government. *Serbian Journal of Management,* 13(2), pp. 293-309.

Mkhize, T. & Khanyile, S., 2020. *The changing municipal and provincial boundaries of Gauteng.* [Online]
Available at: https://www.gcro.ac.za/outputs/map-of-the-month/detail/changing-municipal-and-provincial-boundaries-gauteng/
[Accessed 10 February 2021].

Morrissey, S., 2005. The Design and Implementation of Effective Knowledge Management Systems. *Ford Motor Company MBA Fellowship.*

Mothamaha, W. & Govender, K., 2014. Exploring the role of knowledge management in improving service operations: The case of the select departments in the City of Johannesburg, South Africa. *International Journal of Managerial Studies and Research,* 2(5), pp. 1-8.

Mothamaha, W. & Govender, K., 2014. Exploring the role of knowledge management in improving service operations: The case of the select departments in the City of Johannesburg, South Africa. International Journal of Managerial Studies and Research. 5(2), pp. 1-8.

Mphahlele, M., 2010. Knowledge Management Practices in the South African Public Sector.

Mphahlele, M., 2010. Knowledge Management Practices in the South African Public Sector. *Information and Knowledge Management.*

Municipalities.co.za, 2012. *Municipalities of South Africa.* [Online]
Available at: https://municipalities.co.za/
[Accessed 13 07 2020].

Mustonen-Ollila, E. & Lyytinen, K., 2004. How organizations adopt information system process innovations: a longitudinal analysis. *European Journal of Information Systems (2004) 13, ,* Volume 13, p. 35–51.

Ncoyini, S., 2017. Factors that influence knowledge management systems to improve knowledge transfer in local government: A case study of Buffalo City Metropolitan Municipality.

Ncoyini, S. & Cilliers, L., 2017. *Factors that influence knowledge management systems to improve knowledge transfer in local government: A case study of Buffalo City Metropolitan Municipality.* Johannesburg, University of Fort Hare.

Ngulube, P., 2003. Using the SECI knowledge management model and other tools to communicate and manage tacit indigenous knowledge. Innovation. 27(1), pp. 21-30.

Nonaka, I., 1991. The knowledge-creating company, Harvard Business Review. 69(6), pp. 96-104.

Nonaka, I., 1994. A dynamic theory of organizational knowledge creation. *Organization Science,* 5(1), p. 19.

Nonaka, I. & Konno, N., 1998. The Concept of "Ba": Building a foundation for knowledge creation. *California Management review,* 40(3).

Nonaka, I., Krogh, G. & Voelpel, S., 2006. Organizational Knowledge Creation Theory: Evolutionary Paths and Future Advances. Organization Studies. 27(8), pp. 1179-1208..

Nonaka, I. & Takeuchi, H., 1995. The Knowledge Creating Company. How Japanese Companies Create the Dynamics of Innovation.

Nonaka, I. & Toyama, R., 2007. "Why Do Firms Differ? The Theory of the Knowledge Creating Firm". *Knowledge creation and management.*

Nonaka, I., Toyama, R. & and Konno, N., 2000. SECI, Ba and leadership: a unified model of dynamic knowledge creation. *Long Range Planning,* 33(1), pp. 5-34.

Nonaka, I., Toyama, R. & Byosiere, P., 2001. A theory of organizational knowledge creation: understanding the dynamic process of creating knowledge", in Dierkes, M.,Antal, A.B., Child, J., Nonaka, I. (eds.),. *Handbook of organizational learning and knowledge,* pp. 487-491.

Norris, D. & Moon, M., 2005. Advancing E-Government at the Grassroots: Tortoise or Hare?. 65(1), pp. 64-75.

Nunamaker, J. & Romano, N., 2001. *Meeting Analysis: Findings from Research and Practice.* s.l., IEEE.

O'Callaghan, R. & Smits, M., 2005. *A Strategy Development Process for Enterprise Content Management Management (CRISM).* The Netherlands, Center for Research on Information Systems.

Obinna, O. et al., 2017. Description of Installation, Maintenance and Repairs of Computers. *Journal of Scientific and Engineering Research,* 4(6), pp. 181-186.

Overby, E. & Konsynski, B., 2010. Task-Technology Fit and Process Virtualization Theory: An Integrated Model and Empirical Test.

Ozlen, M., 2013. Comparison of the adoption of knowledge management systems among the employees of a Turkish Municipality. Journal of Community Positive Practices. pp. 112-128.

Parkinson, C., 2006. Building Successful Collaborations: A guide to collaboration among non-profit agencies and between non-profit agencies and businesses.

Paulin, D. & Suneson, K., 2012. Knowledge Transfer, Knowledge Sharing and Knowledge Barriers – Three Blurry Terms in KM. *The Electronic Journal of Knowledge Management,* 10(1), pp. 81-91.

Pearson, J. & Grandón, E., 2004. Electronic commerce adoption: An empirical study of small and medium US businesses. *Information & Management,* 42(1), pp. 197-216.

Permana, I. & Setianto, D., 2018. The Impact of Task Technology Fit, system quality and Information quality to user performance: Peceived ease usefullness and percived ease of use as mediation. *The International Journal of Organizational Innovation,* 12(2).

Petrie, H. & Bevan, N., 2009. The evaluation of accessibility, usability and user experience. *The Universal Access Handbook.*

Petrie, H. & Kheir, O., 2007. *The Relationship between Accessibility and Usability of Websites.* San Jose, CA, USA, Empirical Studies of Web Interaction.

Portz, J. et al., 2019. Using the Technology Acceptance Model to Explore User Experience, Intent to Use, and Use Behavior of a Patient Portal Among Older Adults With Multiple Chronic Conditions: Descriptive Qualitative Study. *JOURNAL OF MEDICAL INTERNET RESEARCH.*

Pun, K. & Nathai-Balkissoon, M., 2011. Integrating knowledge management into organizational learning: A review of concepts and models. *The Learning Organization,* 18(3), pp. 203-223.

Quaddus, M. & Xu, J., 2004. Adoption and diffusion of knowledge management systems: field studies of factors and variables. *Knowledge Based Systems,* Volume 18, pp. 107-115.

Ramirez, A. & Kumpikaite, V., 2012. Creation, Transfer and Application of Knowledge and its Importance for Business Innovation and Organizational Performance. 46(6).

Raudeliūnienė, J., Davidavičienė, V. & Jakubavičius, A., 2018. Knowledge Management Process Model. *The International Journal.*

Rechberg, I. & Syed, J., 2014. Knowledge Management Practices and the Focus on the Individual. *International Journal of Knowledge Management,* 10(1), pp. 25-41.

Reddy, P., 2016. The politics of service delivery in South Africa: The local government sphere in context. *The Journal for Transdisciplinary Research in Southern Africa.*

Rissanen, T., 2016. Introduction to Change Management Tools for change, with a case study. *Industrial Management and Engineering.*

Rockart, J. & Flannery, L., 1983. The management of end-user computing. Commun. *ACM,* 26(10), p. 776–784.

Romano, N. & Nunamaker, J., 2001. *Meeting Analysis: Findings from Research and Practice.* Hawaii , Hawaii International Conference .

Rowley, J., 2007. The wisdom hierarchy: representations of the DIKW hierarchy. *Journal of Information Science,* Volume 33, pp. 163-180.

Ryan, S., Abitia, S. & Windsor, J., 2000. *Factors Affecting the Adoption of KnowledgeManagement Technologies: An International Perspective.* s.l., AMCIS 2000 Proceedings.

Sabeeh, Z., Mustapha, S. & Mohamad, R., 2017. Classifications, assessments and characteristics as factors towards analyzing organizational knowledge. *Journal of Theoretical and Applied Information Technology*, pp. 7-8.

Šajeva, S., 2010. The analysis of key elements of socio-technical knowledge management system. *Economics and management.*

Šajeva, S., 2014. *Encouraging knowledge sharing among employees: how reward matters.* Latvia, ELSEVIER, pp. 130-134.

Salleh, K. & Ahmad, S., 2008. *Knowledge Management in Public Sector Organisations: A Suitable Platform for e-Government.* Australia, Thomson ISI Index: ISTP/ISI Proceedings.

Saunders, M., Lewis, P., Thornhill, A. & Bristow, A., 2019. Research Methods for Business Students" Chapter 4: Understanding research philosophy and approaches to theory development. In: *Research Methods for Business Students.* s.l.:Pearson Education, pp. 128-171.

Scaffidi, C., Ko, A., Myers, B. & Shaw, M., 2005. Identifying Categories of End Users Based on the Abstractions That They Create.

Scheepers, R., Venkitachalam, K. & Gibbs, M., 2004. Knowledge strategy in organizations: refining the model of Hansen, Nohria and Tierney. *Journal of Strategic Information Systems,* p. 201–222.

Schein, E., 1998. Innovative Cultures and Organisations.

Schein, E., 2004. *Organizational Culture and Leadership.* 3rd ed. San Francisco: Jossey-Bass.

Schutte, N. & Barkhuizen, N., 2015. Knowledge Management and Sharing in Local Government: A Social Identity Theory Perspective. Journal of Knowledge Management. *The Electronic Journal of Knowledge Management,* 13(2), pp. 130-141.

Shahmoradi, L., Zahmatkeshan, M. & Karami, M., 2015. *Factors Affecting Knowledge Management & Knowledge Use - A Case Study.* Kashan, Iran, s.n.

Shahriar, A., John, D. & Concepcion, S., 2013. Application of the Task-Technology Fit Model to Structure and Evaluate the Adoption of E-Books by Academics. *Journal of the American Society for Information Science and Technology,* 64(1), pp. 48-64.

Shams, S. M. R. et al., 2019. The Importance of a Knowledge Management System to Manage Relevant Knowledge in an International Scenario. *Cross-functional Knowledge Management: The International Landscape,* pp. 195-207.

Shannon, E. & Hsieh, H., 2005. *Three Approaches to Qualitative Content Analysis.* [Online] Available at: http://journals.sagepub.com/doi/abs/10.1177/1049732305276687?journalCode=qhra [Accessed 11 11 2018].

Spender, J., 2008. Organizational Learning and Knowledge Management: Whence and Whither?. *Management Learning.*

Staniškienė, E., Stankevičiūtė, Z. & Ramanauskaitė, J., 2017. Organisational Culture Towards Quality Management Practices Considering Pro-ecological View. *Environmental Research, Engineering and Management,* 73(3).

Stevens, R., 2010. Managing human capital: How to use knowledge to transfer knowledge in today's multi-generational workforce. *International Business Research,* 3(3), pp. 77-83.

Sunday, C., 2000. The role of theory in research.

Suresh, S. & Egbu, C., n.d. The role of knowledge capture for improved competitiveness in small and medium enterprises in the UK construciton industry: An empirical study.

Talisayon, S., 2013. *Report on the APO Research on Knowledge Management for Public-sector Productivity (11-RP-09-GE-RES-B),* Japan: Asian Productivity Organisation.

Thompson, V., 1965. Bureaucracy and Innovation. Administrative Science. Issue Quarterly, 10, 1..

Thornhill, C., 2014. South African municipalities Prospects and challenges: An African perspective. *African Journal of Public Affairs,* 7(4).

Thornhill, C., 2014. South African municipalities Prospects and challenges: An African perspective. *African Journal of Public Affairs,* 7(4).

Tripathi, S. & Jigeesh, N., 2015. Task-Technology Fit (TTF) Model To Evaluate Adoption of Cloud Computing: A Multi-Case Study. *International Journal of Applied Engineering Research,* 10(3), pp. 9185-9200.

Ulrick, D., 1997. Organising around capabilities, In Hesselbein, F., Goldsmith, M., Beckhard,R. (Eds). *The organization of the future.*

Vanduhe, V., Nat, M. & Hasan, H., 2020. Continuance Intentions to Use Gamification for Training in Higher Education: Integrating the Technology Acceptance Model (TAM), Social Motivation, and Task Technology Fit (TTF).

Venkatesh, V. & Davis, F., 2003. User Acceptance of Information Technology: Toward a Unified View. pp. 425-478.

Vessey, I., 1991. Cognitive fit: A theory-based analysis of the graphs vs. tables literature. In: s.l.:Decision Sciences, pp. 219-240.

Victor, L. & Kathaluwage, K., 2019. The Impact of Training and Development on Knowledge Management. 5(1).

Vij, S. & Kainth, N., 2017. Transforming Tacit Knowledge into Explicit Knowledge for Delivering Business Goals, International Conference on 'Strategic Management: Delivering Business Goals.

Wahdain, E. & Ahmad, M., 2014. User Acceptance of Information Technology: Factors, Theories and Applications. *JOURNAL OF INFORMATION SYSTEMS RESEARCH AND INNOVATION* .

Wenzel, P., 2007. Public-sector transformation in South Africa: Getting the basics right. 7(1).

Whyte, G., Bytheway, A. & Edwards, C., 1997. Understanding user perceptions of information systems success. *Journal of Strategic Information Systems ,* Volume 6, pp. 35-68.

Wong, E., 2014. A Study of User Participation in Information Systems Development. *Journal of Information Technology.*

Yadav, S. & Agarwal, V., 2016. Benefits and Barriers of Learning Organization and its five Discipline. *IOSR Journal of Business and Management (IOSR-JBM),* 18(12), pp. 18-24.

Zabadi, A., 2016. Adoption of Information Systems (IS): The Factors that Influencing IS Usage and Its Effect on Employee in Jordan Telecom Sector (JTS): A Conceptual Integrated Model. *International Journal of Business and Management,* 11(3).

Zeeman, A. (., 2019. *SECI Model (Nonaka & Takeuchi).* [Online]
Available at: https://www.toolshero.com/quality-management/seci-model-nonaka-takeuchi/
[Accessed 12 11 2020].

Zyngier, S. & Venkitachalam, K., 2011. Knowledge management governance-A strategic driver. *Knowledge Management Research & Practice,* 9(2), pp. 136-150.

ANNEXURE A – ETHICAL CLEARANCE CERTIFICATE

RECEIVED
2019 -06- 26
OFFICE OF THE EXECUTIVE DEAN
College of Science, Engineering and Technology

UNISA university of south africa

UNISA COLLEGE OF SCIENCE, ENGINEERING AND TECHNOLOGY'S (CSET) RESEARCH AND ETHICS COMMITTEE

18 June 2019

Ref #: 016/TTM/2019/CSET_SOC
Name: Mrs Tshegofatso Theresa Matshwane
Staff #:
Student #: 46277714

Dear Mrs Tshegofatso Theresa Matshwane

Decision: Ethics Approval for 3 years
(Humans involved)

Researchers: Mrs Tshegofatso Theresa Matshwane, 29 Tuscany Manor 1, Vintage Street, Wilgeheuwel, tshego.matshwane@gmail.com, +27 83 200 2778

Project Leader(s): Dr Mampilo Magdeline Phahlane, phahlmm@unisa.ac.za, 011 670 9135

Working Title of Research:

Knowledge Management System adoption and use in City of Johannesburg Metropolitan Municipality

Qualification: MSc in Computing

Thank you for the application for research ethics clearance by the Unisa College of Science, Engineering and Technology's (CSET) Research and Ethics Committee for the above mentioned research. Ethics approval is granted for a period of three years, from 18 June 2019 to 18 June 2022.

1. The researcher will ensure that the research project adheres to the values and principles expressed in the UNISA Policy on Research Ethics.
2. Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study, as well as changes in the methodology, should be communicated in writing to the Unisa College of Science, Engineering and Technology's (CSET) Research and Ethics Committee. An amended application could be requested if there are substantial changes from the existing proposal, especially if those changes affect any of the study-related risks for the research participants.

University of South Africa
Preller Street, Muckleneuk Ridge, City of Tshwane
PO Box 392 UNISA 0003 South Africa
Telephone: +27 12 429 3111 Facsimile: +27 12 429 4150
www.unisa.ac.za

The researcher(s) will conduct the study according to the methods and procedures set out in the approved application.

3. Any changes that can affect the study-related risks for the research participants, particularly in terms of assurances made with regards to the protection of participants' privacy and the confidentiality of the data, should be reported to the Committee in writing, accompanied by a progress report.
4. The researcher will ensure that the research project adheres to any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study. Adherence to the following South African legislation is important, if applicable: Protection of Personal Information Act, no 4 of 2013; Children's act no 38 of 2005 and the National Health Act, no 61 of 2003.
5. Only de-identified research data may be used for secondary research purposes in future on condition that the research objectives are similar to those of the original research. Secondary use of identifiable human research data requires additional ethics clearance.
6. No field work activities may continue after the expiry date (18 June 2022). Submission of a completed research ethics progress report will constitute an application for renewal of Ethics Research Committee approval.

Note:

The reference number 016/TTM/2019/CSET_SOC *should be clearly indicated on all forms of communication with the intended research participants, as well as with the Unisa College of Science, Engineering and Technology's (CSET) Research and Ethics Committee.*

Yours sincerely

Dr. B Chimbo

Chair: Ethics Sub-Committee SoC, College of Science, Engineering and Technology (CSET)

Prof I. Osunmakinde

Director: School of Computing, CSET

Prof B. Mamba

Executive Dean: CSET

University of South Africa
Preller Street, Muckleneuk Ridge, City of Tshwane
PO Box 392 UNISA 0003 South Africa
Telephone: +27 12 429 3111 Facsimile: +27 12 429 4150
www.unisa.ac.za

ANNEXURE B – REQUEST FOR PERMISSION TO CONDUCT RESEARCH.

Science campus (Florida, Roodepoort)
Cnr Christiaan de Wet and Pioneer str
C-Block

Request for permission to conduct a research

This letter is to confirm that Tshegofatso T. Matshwane student number _46277714_ is registered for the degree M-Tech (Information Systems). The title of her study is:

Knowledge Management System adoption and use in a metropolitan municipality: A case of City of Johannesburg.

The student has selected City of Johannesburg Metropolitan Municipality as the case for the study and would thus require access to the municipal's information through documents, observation and interviews in order to complete her studies.

I am confident that should the student be assisted with the necessary authorisation to conduct her research at City of Johannesburg Metropolitan Municipality, she will complete her studies diligently, in time.

Sincerely

Dr Mampilo Phahlane (M-Tech supervisor)

0116709135

0740316667



Signature

ANNEXURE C - PERMISSION LETTER

City of Johannesburg
Office of the City Manager
Group Strategy, Policy Coordination and Relations
Innovation & Knowledge Management Unit

16th Floor A-Block
Metropolitan Centre
158 Civic Boulevard
Braamfontein

PO Box 1049
Johannesburg
South Africa
2000

Tel +27(0) 11 407 6455 (O)
Fax +27(0) 11 339 1580

www.joburg.org.za

16th October 2018

Tshegofatso Matshwane
University of South Africa
Email: tshegofatsomat@joburg.org.za
Tel: **061 486 1181**

SUBJECT: KNOWLEDGE MANAGEMENT SYSTEM ADOPTION AND USE IN A METROPOLITAN MUNICIPALITY

Dear Ms. Matshwane

Thank you for approaching City of Johannesburg Metropolitan Municipality, Gauteng, with regard to your request to undertake M-Tech Degree research on **Knowledge Management System adoption and use in a metropolitan municipality.**

We are very hopeful that the research would equally provide useful findings and insights for the City of Johannesburg as your focus is aligned to the City's 2040 Growth and Development long term Strategy as well as the City's 2016- 2021 Integrated and Development Programme in relation to knowledge management programmes.

The City of Johannesburg does not have any objection and hereby gives you consent to do your research work with focus on relevant departments/divisions of the City of Johannesburg providing service delivery to citizens/business/other entities. The CoJ will provide necessary support in terms of facilitating any relevant information with regard to conduct of interviews and questionnaire survey at the identified department/divisions/directorates in consultation with CoJ as useful to your research work.

We wish you best of luck in your M-Tech Degree completion and looking forward to receiving a copy of the report.

Thank you.

Nobantu Lesia
Acting Director: Innovation and Knowledge Management
Group Strategy, Policy Coordination and Relations
City of Johannesburg
(t) 011 407 6470
(E-mail) nobantul@joburg.org.za

ANNEXURE D – CONSENT TO PARTICIPATE

UNISA university of south africa

CONSENT TO PARTICIPATE IN THIS STUDY

I, _____ (participant name), confirm that the person asking my consent to take part in this research has told me about the nature, procedure, potential benefits and anticipated inconvenience of participation.

I have read (or had explained to me) and understood the study as explained in the information sheet.

I have had sufficient opportunity to ask questions and am prepared to participate in the study.

I understand that my participation is voluntary and that I am free to withdraw at any time without penalty (if applicable).

I am aware that the findings of this study will be processed into a research report, journal publications and/or conference proceedings, but that my participation will be kept confidential unless otherwise specified.

I agree to the recording of the interview.

I have received a signed copy of the informed consent agreement.

Participant Name & Surname…….. (please print)

Participant Signature…… .Date……

Researcher's Name & Surname…….. (please print)

Researcher's signature…….. Date……

University of South Africa
Preller Street, Muckleneuk Ridge, City of Tshwane
PO Box 392 UNISA 0003 South Africa
Telephone: +27 12 429 3111 Facsimile: +27 12 429 4150
www.unisa.ac.za

ANNEXURE E - PARTICIPANT INFORMATION

UNISA university of south africa

PARTICIPANT INFORMATION SHEET

Ethics clearance reference number: _____

Research permission reference number (if applicable):_____

Date: _____

Title: Knowledge Management System adoption and use in City of Johannesburg Metropolitan City.

Dear Prospective Participant

My name is Tshegofatso Matshwane and I am doing research with Dr Mampilo Phahlane, a senior lecturer in the Department of Information Systems, School of Computing, College of

Science, Engineering and Technology at the University of South Africa towards a Magister Technologiae: Information Technology. We are inviting you to participate in a study entitled Knowledge Management System adoption and use in City of Johannesburg Metropolitan City.

WHAT IS THE PURPOSE OF THE STUDY?

The purpose of this study is to explore how Knowledge Management Systems (KMS) have been adopted and used in the CoJ. Further, it seeks to establish what has been the enabling and constraining elements to the successful adoption and use of KMS. Where constraining factors are identified, the study will make available a range of recommendations in addressing those.

WHY AM I BEING INVITED TO PARTICIPATE?

You are invited to participate in the research as a City of Johannesburg Metropolitan Municipality employee, who has access to the KMS. Your contact details were obtained from the Innovation and Knowledge Management (IKM) unit within Group Strategy Policy Coordination and Relations (GSPCR). The research will consist of six potential participants who will be interviewed.

University of South Africa
Preller Street, Muckleneuk Ridge, City of Tshwane
PO Box 392 UNISA 0003 South Africa
Telephone: +27 12 429 3111 Facsimile: +27 12 429 4150
www.unisa.ac.za

WHAT IS THE NATURE OF MY PARTICIPATION IN THIS STUDY?

The study involves semi-structured interviews, which will be no longer than 30 minutes. The questions to be asked are focused on the current KMS, which is known as Joburg Insider Knowledge Repository.

CAN I WITHDRAW FROM THIS STUDY EVEN AFTER HAVING AGREED TO PARTICIPATE?

Participation in the study is voluntary and there is no penalty or loss of benefits for non-participation. You are under no-obligation to consent to participation. If you do decide to take part, you will be given this information sheet to keep and be asked to sign a written consent form. You are free to withdraw at any time before the interview is conducted but you will not be able to withdraw once the interview has been conducted.

WHAT ARE THE POTENTIAL BENEFITS OF TAKING PART IN THIS STUDY?

The potential benefits for a participant and organization include providing information for the GSPCR department, Knowledge champions and CoJ employees in general that are interested in the KMS adoption and use. The information to be provided includes:

- Insight into the state of KMS adoption and use in CoJ
- The challenges and successes in relation to KM adoption and use in CoJ
- Ideal approaches and mechanisms in how best KMS can be adopted and used

Essentially, this would shed light to the GSPCR department on the current usage and adoption challenges, and the suggestion on how best to address the shortcomings. Further this study would ensure that the value of KMS is appreciated organization wide, thus ensuring that knowledge is captured, retained and shared.

ARE THEIR ANY NEGATIVE CONSEQUENCES FOR ME IF I PARTICIPATE IN THE RESEARCH PROJECT?

There are no negative consequences that have been identified in the research project. All participation will be anonymous.



University of South Africa
Preller Street, Muckleneuk Ridge, City of Tshwane
PO Box 392 UNISA 0003 South Africa
Telephone: +27 12 429 3111 Facsimile: +27 12 429 4150
www.unisa.ac.za

WILL THE INFORMATION THAT I CONVEY TO THE RESEARCHER AND MY IDENTITY BE KEPT CONFIDENTIAL?

You have the right to insist that your name will not be recorder anywhere and that no one, apart from the researcher and identified members of the research team, will know about your involvement in this research. No one will be able to connect you to the answers you give. Your answers will be given a code number or a pseudonym and you will be referred to in this way in the data, any publications, or other research reporting methods such as conference proceedings

Your answers may be reviewed by people responsible for making sure that research is done properly, including the transcriber, external coder, and members of the Research Ethics Review Committee. Otherwise, records that identify you will be available only to people working on the study, unless you give permission for other people to see the records.

A report of the study may be submitted for publication, but individual participants will not be identifiable in such a report.

HOW WILL THE RESEARCHER(S) PROTECT THE SECURITY OF DATA?

Hard copies of your answers will be stored by the researcher for a minimum period of five years in a locked cupboard/filing cabinet on UNISA premises for future research or academic purposes; electronic information will be stored on a password protected computer. Future use of the stored data will be subject to further Research Ethics Review and approval if applicable. Hard copies will be shredded and/or electronic copies will be permanently deleted from the hard drive of the computer through the use of a relevant software programme.

WILL I RECEIVE PAYMENT OR ANY INCENTIVES FOR PARTICIPATING IN THIS STUDY?

No

HAS THE STUDY RECEIVED ETHICS APPROVAL?

This study has received written approval from the Research Ethics Review Committee of the School of Computing, UNISA. A copy of the approval letter can be obtained from the researcher if you so wish.

HOW WILL I BE INFORMED OF THE FINDINGS/RESULTS OF THE RESEARCH?

If you would like to be informed of the final research findings, please contact Dr Mampilo Phahlane on (011) 670 9176 or phahlmm@unisa.ac.za. Should you require any further

University of South Africa
Preller Street, Muckleneuk Ridge, City of Tshwane
PO Box 392 UNISA 0003 South Africa
Telephone: +27 12 429 3111 Facsimile: +27 12 429 4150
www.unisa.ac.za

information or want to contact the researcher about any aspect of this study, please contact Tshegofatso Matshwane on 0832002778 or tshego.matshwane@gmail.com.

Should you have concerns about the way in which the research has been conducted, you may contact Dr Mampilo Phahlane on (011) 670 9176 or phahlmm@unisa.ac.za. Contact the research ethics chairperson of the School of Computing's research ethics committee, Dr Bester Chimbo on (011) 670 9105 or Chimbb@unisa.ac.za, if you have any ethical concerns.

Thank you for taking time to read this information sheet and for participating in this study.

Thank you.

_____

Signature

_____

Name



University of South Africa
Preller Street, Muckleneuk Ridge, City of Tshwane
PO Box 392 UNISA 0003 South Africa
Telephone: +27 12 429 3111 Facsimile: +27 12 429 4150
www.unisa.ac.za

ANNEXURE F – INTERVIEW QUESTIONS

Research Interview Questions:

Primary Research Question How KMS was adopted and is used by the City of Johannesburg Metropolitan Municipality in order to realize efficiencies in the citizens' service delivery by employees?	**Roles of Participants**		
Area of Investigation	**Management**	**Employee**	**Knowledge Management Champions**
Introductions	• May I please ask you to introduce yourself – Your name, role, and organisation? • What does your role entail? • How long have you been employed by City of Johannesburg Metropolitan Municipality? • Which other departments do you interface with? • How is your team structured?	• May I please ask you to introduce yourself – Your name, role, and organisation? • What does your role entail? • How long have you been employed by City of Johannesburg Metropolitan Municipality (CoJ)? • Do you interface with the Innovation and Knowledge Management (IKM) unit within the Group Strategy Policy Coordination and Relations (GSPRC)?	• May I please ask you to introduce yourself – Your name, role and organisation? • How did you become a Knowledge Management (KM) champion and how long have you been a champion? • What does the role of a KM champion entail? • How often do you interface with the IKM unit? • The work you do as a KM champion, does it influence your main role in your department in any way? • Does your department benefit from you being a KM champion?
KMS use	• In the context of your organisation, how would you describe Knowledge Management? • Which processes or programmes are associated with them? • Are these any system enabling or supporting those?	• Do you know about Knowledge Management (KM) in CoJ? • In your department, which system do you use to capture knowledge? • Are there any KM programmes and processes you are aware of?	• Please describe KM in the context of your department? • Are there any KM programmes and processes you are aware of? • What is your role and involvement in those?

	• If so, please explain how? • What are the uses for each one of those system? • Who are the users of these systems?	• Do you know about the Knowledge Management System that managed by the IKM unit? The purpose of the system, how to access and use it?	• Are there any specific systems used for these? • If so, please explain how • How do you as a KM champion use them in comparison to other employees?
KMS adoption	• How would you describe the level of adoption for each one of these systems? • How is adoption being tracked? • What was the user's involvement during the commissioning of a KMS? • Have you offered training? • What was the focus of the training? • How long was the training, how often was it conducted, and who was conducting the training?	• Did you ever notice the promotion material of the KMS anywhere around the organisation?	• How have these systems been adopted? • How is adoption measured? • Where are the challenges? • Where are the successes? • What is your role during commissioning and systems' upgrade? • Are there any KM forums constituted? • How are they operated and what is their role?
Factors influencing adoption and use	• What are the challenges with regards to the actual use and adoption of KMS? • What interventions are in place? • Where are the successes? • What would you attest as factors enabling success? • What about the inhibiting factors?	• What do you think are the challenges with regards to adoption and use of the systems around the organisation?	• What are the challenges with regarding to the actual use and adoption of KMS? • What interventions are in place? • Where are the successes? • What would you attest as factors enabling success? • What about the inhibiting factors?

Manifestation of these factors	• How are these factors manifesting? That is:
	  ○ Where challenges re adoption and use exist, what are the implications to the KM programmes, to the business unit and the organisation as a whole?
	  ○ If the use and adoption levels are satisfactory, how is that benefiting the programmes, BU and the organisation?		

ANNEXURE G – LANGUAGE EDITING CERTIFICATE

My Copy-Editors

copy-editing & proofreading services

CERTIFICATE OF LANGUAGE EDITING

Document Title: Knowledge Management System adoption and use in City of Johannesburg Metropolitan Municipality

Author: Tshegofatso Theresa Matshwane

Student Number: 46277714
University of South Africa

DATE: 21/04/2021

To whom it may concern

This document serves to confirm that the above titled Master's Thesis, was edited and proofread for English Language grammar to enhance the style, clarity and tone of the document, in addition to eliminating and correcting errors in grammatical use, spelling, and punctuation, to ensure consistency in language mechanics and flow.

While doing this, the editor endeavoured to ensure that the author's intended meaning was not altered. All amendments were tracked with MS Word's "Track Changes" feature. Therefore, the author had the option to accept, or reject each change individually.

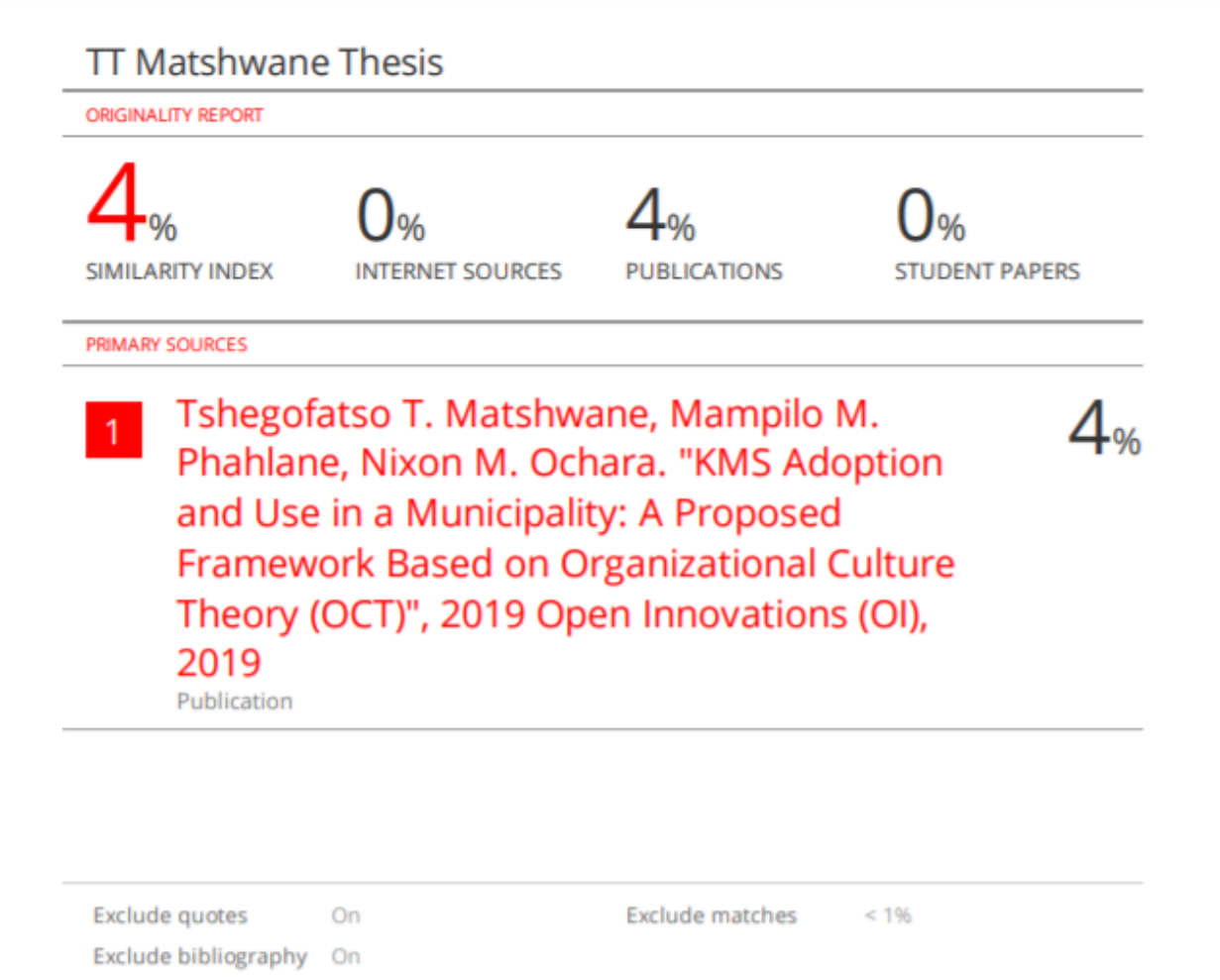
Sincerely,



Evelyn Baru
Language Practitioner
BEd (Arts) BA Hons (Applied Language Practice) UP
Associate Member, Professional Editors Guild (BAR0018)

My Copy-Editors | 1066 Burnett Street, Hatfield Pretoria 0002 | (+27) 670 892 777 | 2copyeditors@gmail.com

ANNEXURE H – TURNITIN REPORT



TT Matshwane Thesis

ORIGINALITY REPORT

4%	0%	4%	0%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	Tshegofatso T. Matshwane, Mampilo M. Phahlane, Nixon M. Ochara. "KMS Adoption and Use in a Municipality: A Proposed Framework Based on Organizational Culture Theory (OCT)", 2019 Open Innovations (OI), 2019 Publication	4%

Exclude quotes	On	Exclude matches	< 1%
Exclude bibliography	On		