University of Fort Hare

Together in Excellence

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

By

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Dissertation

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Abstract

The demand for improved service delivery requires new approaches and attitudes from local government. One of the ways this can be achieved is to focus on continuous improvement by driving innovation and lessons learnt from the municipalities' past successes and failures. For local government authorities to rethink service delivery, they need to find better ways to share information assets, business processes and staff expertise with their citizens and business partners. The lack of Knowledge Management (KM) and, therefore, a low level of information and knowledge transfer in the public services have been identified as two of the main contributors to poor service delivery. The implementation of knowledge transfer process is one of the factors that will impact on the improvement of service delivery.

The main purpose of this research study was to investigate how knowledge management systems can be used to improve the knowledge transfer at Buffalo City Metropolitan Municipality (BCMM). The research study focused on knowledge transfer within the Municipality as the general area of research. The objective of this study was to produce critical success factors that would improve knowledge management systems and knowledge transfer among employees at BCMM, which would ultimately improve service delivery.

The data was collected by means of semi-structured interviews. Eight respondents were sampled, namely, an Information and Communication Technology manager, two directors, two heads of departments, KM champion and two staff members from the Knowledge Management Department. The snowball sampling technique was employed by asking members of the population to identify other participants who might have a similar status or be experts in the field. The qualitative interviews were analysed by means of thematic analysis and NVivo was also used to analyse the data.

The study found that the culture within the Municipality is not supportive as the hierarchical and bureaucratic management supresses any attempts at openness and support. At human resources level, information is not seamlessly transferred between managers and their subordinates. There seems to be a culture of knowledge hoarding in attempts to augment personal importance or worth. Most of the Municipal employees still believe that knowledge management falls under the Knowledge Management Department and should mainly reside in employees working in this department.

The study, therefore, recommends that BCMM must ensure that knowledge transfer practices and initiatives are fully supported and promoted by the top management. This will ensure that sufficient resources to support knowledge transfer are allocated. To solve the knowledge transfer problems found to be challenging the Municipality, Knowledge Management must be aligned with the organizational strategy. Official KM strategies must be developed and aligned to organizational strategies to ensure that top management makes and shares a vision on knowledge transfer and continually plans on realising the agreed upon KM objectives. The Municipality must ensure that the organizational structure is flexible so that distribution of knowledge and cooperation can be increased.

Declaration

I, **Samuel Sibongile Ncoyini**, hereby declare that:

- The work in this dissertation is my own work.
- All sources used or referred to have been documented and recognised.
- This dissertation has not previously been submitted in full or partial fulfilment of the requirements for an equivalent or higher qualification at any other recognised institution.

Signature: _____

Date: 01 September 2017

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To Buffalo City Metropolitan Municipality, I would like to thank my research participants from Information Technology and Information, Knowledge Management, Research and Policy departments. Without you valuable input, this research study would not have reached this level.

I would also like to express my sincere gratitude to my family. To my beloved wife Vathiswa, thank you for being a pillar of my strength. To my children Nkazi, Kuhle and Liwa, thank you for understanding when I could not be there for you at times when you needed me.

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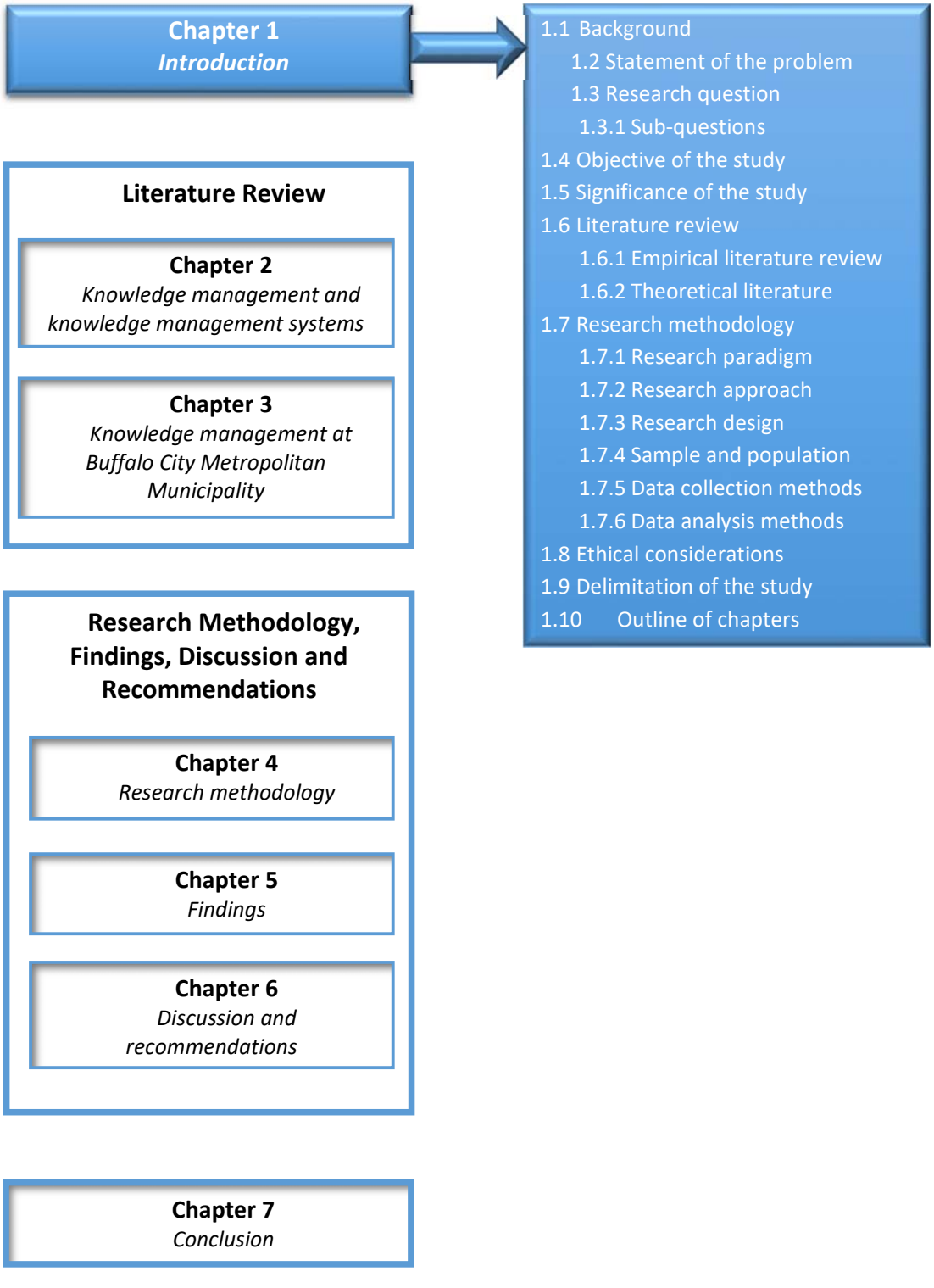
Acronyms

Acronym	Full Description
AI	Artificial Intelligence
BCMM	Buffalo City Metropolitan Municipality
CMCs	Core Managerial Competencies
CoP	Communities of Practice
CRMS	Customer Relationship Management System
CSFs	Critical Success Factors
DMS	Document Management System
EDMS	Electronic Document Management System
DSS	Decision Support System
E-LP	E-Learning Platform
ICT	Information and Communication Technology
IT	Information Technology
KC	Knowledge Creation
KM	Knowledge Management
KMRG	Knowledge Management Reference Group
KMS	Knowledge Management System
KPI	Key Performance Indicator
KPS	Knowledge Portal System
KS	Knowledge Sharing
KT	Knowledge Transfer
R&D	Research and Development
SACN	South African Cities Network
SALGA	South African Local Government Association
SCMS	Supply Chain Management System
SECI	Socialisation, Externalisation, Combination, and Internationalisation
SNS	Social Networking Site
STS	Socio-Technical System
VHRMS	Virtual Human Resources Management System

Chapter 1: Introduction



1.1 Background

The local government sector exists in an environment that is transformed and influenced by political, economic, technological and scientific changes (Theriou, Maditinos, & Theriou, 2011). In addition, communities demand adequate service delivery from municipalities. Where local government has been unable to deliver basic services, this has resulted in a series of protests across South Africa (Managa, 2012). The May 2016 press release by Municipal IQ indicated a total of 164 service delivery protests between January to December 2015 in the country (Municipal IQ, 2016). This is slightly less than the 191 service delivery protests that were recorded in 2014. Twenty-four per cent (24%) of these service delivery protests, the highest percentage when compared to other provinces, occurred in the Eastern Cape in 2015. Dikotla, Mahlatji and Makgahlela (2014) state that service delivery problems remain unresolved in almost all South African municipalities.

Munzhelele (2012) states that service delivery is used as the key focus area in assessing the performance of private or public sector organisations. There are several factors that contribute to poor delivery of government services. Managa (2012) found that among the key challenges that are facing the South African local government are institutional capacity problems such as lack of key personnel and a clear strategy to manage institutional information, high levels of corruption, mismanagement of public funds and lack of public participation.

The demand for improved service delivery requires new approaches and attitudes from local government. One of the ways this can be achieved is to focus on continuous improvement by driving innovation and lessons learnt from the municipalities' past successes and failures (Kitchin, Ovens, & Turpin, 2013). Etherington (2013) believes that for local government authorities to rethink service delivery, they need to find better ways to share information assets, business processes and staff expertise with their citizens and business partners.

Ondari-Okemwa and Smith (2009) state that lack of Knowledge Management (KM) and, therefore, a low level of information and knowledge transfer in the public services have been identified as two of the main contributors to poor service delivery. Munzhelele (2012) also argues that the implementation of KM is one of the factors that will impact on the improvement of service delivery. A range of initiatives can be implemented by organisations to recognise, share and exploit their knowledge resources. According to Yun (2013), Knowledge Transfer

(KT) by means of Knowledge Management Systems (KMSs) enables local government employees to acquire and understand suitable knowledge that will influence the quality of service delivery. KT is fundamental to the process of learning. KT is sometimes used interchangeably with knowledge sharing in literature (Paulin & Suneson, 2012). Therefore, in order to explore KT, knowledge sharing (KS) should not be ignored. Knowledge sharing, on the other hand, is often considered synonymous with knowledge transfer. Knowledge sharing is a key aspect of both organisational learning and knowledge management processes (Deverell & Burnett, 2012). "Knowledge sharing is the process where individuals mutually exchange both tacit and explicit knowledge, and jointly create a new knowledge" (Deverell & Burnett, 2012, p. 132). Deverell and Burnett (2012) demonstrate that KS is central to the interaction between knowledge and people. Knowledge sharing is considered to be an essential component of the knowledge management model. Knowledge sharing is not only about transferring knowledge from one department of the municipality to another; employees are actively involved in the transfer process so that knowledge is transformed into that that is relevant to the receiver.

In 2005, the Knowledge Management Reference Group (KMRG) was formed to encourage a shared-learning partnership around KM in South African municipalities to support good governance (Kitchin et al., 2013). The aim of this initiative was to strengthen the competencies among the municipalities to identify the opportunities for recognising and sharing knowledge in a way that would assist in finding, harnessing and managing their knowledge assets. In 2007, this formation was further strengthened by a strategic collaboration between the South African Cities Network (SACN) and the South African Local Government Association (SALGA). Therefore, the KMRG members are SALGA, SACN and its member cities, which include City of Cape Town, Buffalo City, Ekurhuleni, Johannesburg, eThekwini, Mangaung, Nelson Mandela, Msunduzi, and Tshwane.

Kitchin et al. (2013) conducted an overview of the KM status within the nine KMRG members. The study indicated that Buffalo City Metropolitan Municipality (BCMM) conducted a knowledge audit process in 2010 which revealed a lack of central data repository and data sharing which hampered the data capturing processes within the municipal directorates. Data collection efforts were duplicated and access to vital information was limited to certain individuals. The Information Technology (IT) infrastructure was found not to be integrated, limiting the flow of information within the Municipality. Kitchin et al. (2013)

further revealed that document sharing was found to be limited and only the staff directly responsible for the documents knew about them. This led to poor updating of documents and poor content management. The research problem will be discussed in the next section.

1.2 Statement of the Problem

A lack of institutional capacity in local government is one of the primary reasons why service delivery is still an issue in almost all of South Africa's provinces. Munzhelele (2012) indicated that the implementation of KM is one of the factors that will impact on the improvement of service delivery as it will improve institutional capacity. Dikotla et al. (2014) state that government employees do not share their knowledge and experience as their counterparts do in the private sector.

The success of KS cannot be measured without taking into account the culture of the environment in which the sharing takes place. Cultural concerns such as leadership, trust, reward and communication (discussed under 3.7.1) may impact negatively or positively on KS between and within municipalities (Deverell & Burnett, 2012). The culture of knowledge sharing may then be thought to be one in which the influence and importance of such issues for enabling or preventing KS is acknowledged and addressed. In order to address these issues, BCMM became a member of the KMRG with the aim of strengthening its capacity to identify the opportunities for recognising and sharing knowledge in a way that would assist in finding, harnessing and managing the Municipality's knowledge resources.

A knowledge audit process conducted at BCMM in 2010 revealed a lack of integrated IT infrastructure that limits the flow of information (Kitchin et al., 2013). Knowledge transfer has been found to be limited in the Municipality and staff members found it difficult to share their knowledge with their colleagues. Therefore, the problem is that while there is evidence of KMS being introduced and implemented to improve knowledge transfer in the Buffalo City Metropolitan Municipality, there is, however, no tangible evidence.

1.3 Research Question

This section provides the main question of this research study. It will also outline and explain the three sub-questions formulated to aid in answering the main research question:

What factors will impact on knowledge management systems to improve knowledge transfer in Buffalo City Metropolitan Municipality?

1.3.1 Sub-questions

The main research question above has been answered through the following sub-questions:

- *How well are knowledge management systems embedded in the Buffalo City Metropolitan Municipality to enable it to improve institutional capacity?*

  This sub-question seeks to address the extent to which the BCMM has leveraged on KM to enhance its capacity to function intelligently. The question also seeks to find out if there are any failures in the Municipality so far and what the causes thereof could be.

- *Which knowledge management systems can be employed to improve the knowledge transfer at BCMM?*

  The aim of this sub-question is to identify knowledge management systems that can be used by the Municipality to improve the knowledge sharing culture.

- *Which factors affect Buffalo City Metropolitan Municipality employees' attitudes toward an intention to use knowledge management systems?*

  This sub-question helps to understand better and assess the influence of the factors affecting the application of KMS and knowledge transfer among employees of BCMM. This sub-question will assist in further developing successful decision-making skills using the Municipality's knowledge assets.

1.4 Objective of the Study

The main purpose of this research study is to investigate how KMS can be used to improve the KT at Buffalo City Metropolitan Municipality. The research study focuses on KT within the Municipality as the general area of research. KT is critical in local government because of its contribution to knowledge application, innovation and competitive advantage (Wang, Noe, & Wang, 2014). Therefore, the objective of this study is to produce Critical Success Factors (CSFs) that will improve KMS and KT among employees at BCMM, which will ultimately improve service delivery.

In order to support this objective, two conference papers were published from the researcher's honours research project to assist with the background and identification of the research problem. The two articles were titled *Knowledge management systems to improve the knowledge sharing culture among local government employees* (published at International Conference on Information Resource Management 2016) and *An evaluation of knowledge sharing in South African local government* (Published at 28th Annual Conference of the Southern African Institute of Management Scientists).

1.5 Significance of the Study

A KMS would enable BCMM to build up organisational knowledge through the systematic capture and organisation of the wealth of knowledge and experience of staff, stakeholders, clients, partners and beneficiaries. Knowledge management systems leverage knowledge that already exists within and outside BCMM and can make this knowledge readily accessible to the Municipality employees. The effectiveness of KMSs would help BCMM to become more competitive and have the ability to serve the needs of Buffalo City residents better. The KMS would enable the right information to be accessed by the right employees at the right time for effective decision-making. The management of knowledge would empower and motivate the staff and would also support innovation, learning and improve service delivery within the municipality.

1.6 Literature Review

1.6.1 Knowledge Transfer in Local Government

Knowledge has been recognised as the primary driver of an organisation's growth and competitive advantage (Wang, Lee, & Lim, 2009). This is also supported by Assegaff and Hussin (2012, p. 130) who claim that "knowledge is believed as a potential asset that could bring sustainable competitive advantages for organisation. To gain value from the knowledge, an organisation should be able to manage it effectively". An approach implemented by organisations to manage their knowledge is recognised as KM. Therefore, organisations are becoming more interested in implementing KM programs to manage their knowledge resources. KMS are used to support and improve the processes of knowledge generation, sharing, storage and application (Wang et al., 2009).

The formation of knowledge involves the transformation of data into information and information being transformed into knowledge, which finally develops into wisdom (Gaffoor & Cloete, 2010). Scientific data are objective facts that describe an event without any judgment, perspective or context and it becomes information when meaning is added to it (Mohamed, 2014). Information is the result of processed and structured data, it can be transferred into knowledge by means of connections, comparisons, conversations and consequences. Knowledge derives from information which is anchored in the beliefs, views and obligations of its holders (Ramdhania, 2012).

Knowledge transfer involves knowledge being transferred or disseminated throughout the organisation. As a process, KT involves the contribution of knowledge by the organisation and the collection, application and assimilation of knowledge by employees (Van der Meer, 2014). The value of knowledge grows and increases as it is shared within an organisation. When employees use knowledge, they add more insights to it and refine it further, thereby adding more value. When knowledge is used it grows, but when not used it depreciates (Teimouri, Emami, & Hamidipour, 2011), meaning that knowledge will keep on growing whenever a employees share what they have; when employees transfer their knowledge, they do not lose it. Knowledge transfer requires the preparedness of and individual or a group to work with others and share knowledge to their mutual benefit. When knowledge is not shared within an organisation, it is nearly impossible for it to be transferred to other employees. This indicates that KT will not happen in an organisation except the employees and teams exhibit a high level of co-operative behaviour.

The goal of KT in local government organisations is to improve decision making among employees so as to improve service delivery and achieve business goals through the sharing of knowledge between the municipality and citizens (Mohamed, 2014). Knowledge transfer improves organisational learning, which in turn improves service delivery, by reducing customer response times (Van der Meer, 2014). If municipalities share knowledge with external organisations, they can develop their own knowledge bases and thus improve innovation. Municipalities can access different expertise, competencies and capabilities that may be costly or unobtainable through other avenues.

The South African (SA) public sector is making use of the sectoral network that was created by the Department of Public Service and Administration. The aim of the sectoral network is to

enhance the model of a client-centred public service sector by applying the "Batho Pele" principles (Mothamaha & Govender, 2014). This ideal of a client-centred public service sector was endorsed by the SA government and resulted in the creation of several initiatives to establish a client-centred philosophy. During the mid-1990's the international public sector reform policies, that stemmed from the "New Public Management" (NPM) theory, placed an emphasis on the SA public sector's performance with regards to financial efficiency and budget parameters (Mothamaha & Govender, 2014).

Considering the above influences, it is apparent that the SA public sector functions in a business-like style where the central idea of service provision is to respond to the needs of the citizens and provide inclusive and integrated service delivery (Dikotla, Mahlatji, & Makgahlela, 2014; Gaffoor & Cloete, 2010). This means that they have to adopt the idea of KT as a mechanism of achieving a competitive advantage by making use of human and intellectual resources within their organizations. Dikotla, Mahlatji and Makgahlela (2014) disagree with Gaffoor, arguing that although KT has been seen as a mechanism of improving municipal governance, the majority of South African municipalities do not have formal functional KM programmes in place. Knowledge sharing culture does exist within individual municipalities but not across the municipalities. Those municipalities that perform well do not share their best practices with the underperforming ones (Dikotla et al., 2014).

In South Africa, KM has become a priority within the local government context (Gaffoor & Cloete, 2010). Knowledge management has been recognized by South Africa's Provincial and Local Government Department as a strategic management skill for local government senior management personnel. Gaffoor and Cloete (2010, p. 5) contend that "at local government level, cognisance must be taken of the fact that South African municipalities function in an environment characterised by greater uncertainty and competition than in the past."

In South Africa, there are legal frameworks in place that regulate the legal aspects of KM. The *Intergovernmental Relations Framework Act of 2005* has influenced local government to ensure that a coherent system for knowledge sharing is in place (MILE, 2010). According to this Act, local government organizations should take all reasonable steps to ensure that they have institutional capacity and effective processes to consult, collaborate and share information with other organs of the state.

More legal frameworks that stem from the *Bill of Rights* include the *Promotion of Access to Information Act of 2013* (PAI) and the *Electronics Communications Act of 2005*. The primary objective of the PAI Act is to influence the constitutional right of access to any information held by the government, and by any other person that is necessary for the application or protection of any rights (Gaffoor, 2008). The PAI Act ensures that good governance, transparency and accountability are exercised to promote better decision making and participation. The *Electronics Communications Act of 2005* provides a regulatory framework for South African electronic communications (Gaffoor, 2008). The Act provides for research and development within the Information and Communication Technology (ICT) sector. The Act further provides for information security and reliability of networks.

SALGA (2015) reported that BCMM was the first South African municipality to appoint political KM champions. The Municipality also conducted KM training for councillors, senior and middle management, as well as departmental KM champions, in terms of the KM strategy and framework. KMRG identified BCMM's councillor training as a best practice that must be used as the basis for training councillors in other municipalities and members of both parliament and provincial legislatures (SALGA, 2015).

The success of KS cannot be measured without taking into account the culture of the environment in which the sharing takes place. Cultural concerns such as leadership, trust, reward and communication (discussed under 3.7.1) may impact negatively or positively on KS between and within municipalities (Deverell & Burnett, 2012). A KS culture may then be thought to be one in which the influence and importance of such issues for enabling or preventing KS is acknowledged and addressed. Since prominence has been given to the need for effective KS practices and to the value of intellectual capital within organisations, it would be advantageous to promote a KS culture in municipalities (Schutte & Barkhuizen, 2014). Due to the increasing interdependencies between jobs expectations and the information explosion, many local government officials, if given a chance, have knowledge (know-how) that could add some value to the institution. Municipalities that embrace a culture that restrains KS will never be able to create a competitive edge, as knowledge sharing is believed to be significant in creating and leveraging knowledge assets. A knowledge sharing culture is thus an imperative for the South African municipalities, in order to distinguish them as institutions of service (Schutte & Barkhuizen, 2014).

1.6.2 The Role of KMS Infrastructure in Knowledge Transfer

Knowledge management involves the transfer of knowledge while technology is used to search, store, retrieve and access the information. According to Tan and Noor (2013), KMS's infrastructure facilitates the transfer of knowledge by employees. KMSs are technology-supported information systems that help document, transfer and distribute between employees the tacit and explicit knowledge that improves organisational efficiency (Wang et al., 2014). The role of KMS infrastructure includes supporting collaboration, communication and the search of information and knowledge. Becerra-Fernandez and Sabherwal 2010) indicate that IT facilitates, shares and accelerates knowledge growth. A KMS makes use of a variety of KM technologies and mechanisms to support the KM processes.

The objective of a KMS is not to manage all the available knowledge within the organisation, but the selected knowledge is managed and made available to assist employees create, store and transfer or share it within the organisation (Greco, Grimaldi, & Hanandi, 2013). The types of KMSs include customer relationship management systems, decision support systems, document management systems, knowledge portal systems, eLearning platforms, supply chain management systems, virtual human resource management systems, and artificial intelligence (see section 2.4 for more details on the systems). The following section will discuss the theoretical framework of the study.

1.6.3 Factors that affect employees' attitudes toward Knowledge Management Systems

As knowledge is personal, created and developed by employees, the sharing of it is important for its development, distribution, and management at all higher levels. Knowledge cannot be shared without the participation of the employee, which requires learning (Duan, Nie, & Coakes, 2010). For knowledge sharing to be effective, fundamental changes in the way municipalities run their businesses are required (Ismail & Yusof, 2010). The recent developments in ICT have resulted in many public organisations adopting ICT-based KMSs to support their employees' KT and they are engaging in virtual Communities of Practice (CoP) (Zhang, Vogel, & Zhou, 2012). Contrary to the expectations, organisations are facing serious problems as these ICT-supported KT projects have high failure rates. Zhang et al. (2012) state that KMSs are more prominent in improving KT in large units with routine tasks, and that

junior employees have a good attitude towards making use of communication tools to share their knowledge.

Individual factors such as attitude, self-efficacy, motivation, trust and reciprocity influence the local government employees' intentions to share knowledge. The results of a study by Tamjidyamcholo, Bin Baba, Tamjid, and Gholipour (2013) show that attitude is found to have the biggest influence on an employee's intention to participate in KT. Attitude is also alleged to play a critical role in employees' intentions to share their knowledge as those that are positive towards KT will be more motivated to participate in KT activities. Knowledge cannot be transferred effectively if employees are not motivated to share it (Amayah, 2013). A high level of self-efficacy in an employee encourages self-confidence about the skills and abilities, and strengthens motivation (Tamjidyamcholo et al., 2013). The high level of trust among the employees encourages their attitudes towards KS (Seba, Rowley, & Lambert, 2012). These individual factors will be discussed in more detail in Section 3.7.1.

Kathiravelu, Mansor, and Kenny (2013) investigated factors that influence KS behaviour among Malaysian public service employees. Their study revealed that organisational influences have a direct bearing on employees' KS behaviour. Lee and Hong (2014) examined the factors that affect hospital employees' KS intentions, KS behaviour, and innovation behaviour. They found that organisational factors and individual factors significantly influence KS intentions. The next section will discuss the theory applied in this study.

1.6.4 Socio-Technical Systems Theory

New information technologies are regarded as important driving forces that address systematic and complex problems that our societies face (Fischer & Herrmann, 2011). Information technologies alone cannot improve the human behaviour and social structures in an organisation, therefore the design of socio-technical systems is essential. The socio-technical term originated and was used in literature in 1951 by Trist and Bramforth to highlight the interrelationship between technological and social factors in understanding an organisation (Assegaff & Hussin, 2012; Lusa & Sensuse, 2012). The motivation behind examining the socio-technical problems is to describe other organisational aspects that are a combination of social and technological sub-systems in the operational activities.

Since the socio-technical perspective offers a suitable framework in helping to realise the manner in which the technology is implemented and utilised in organisations (Chai & Kim, 2012), this study has adopted Socio-Technical Systems (STS) Theory to investigate the extent to which information systems can be used to improve the knowledge transfer in local government.

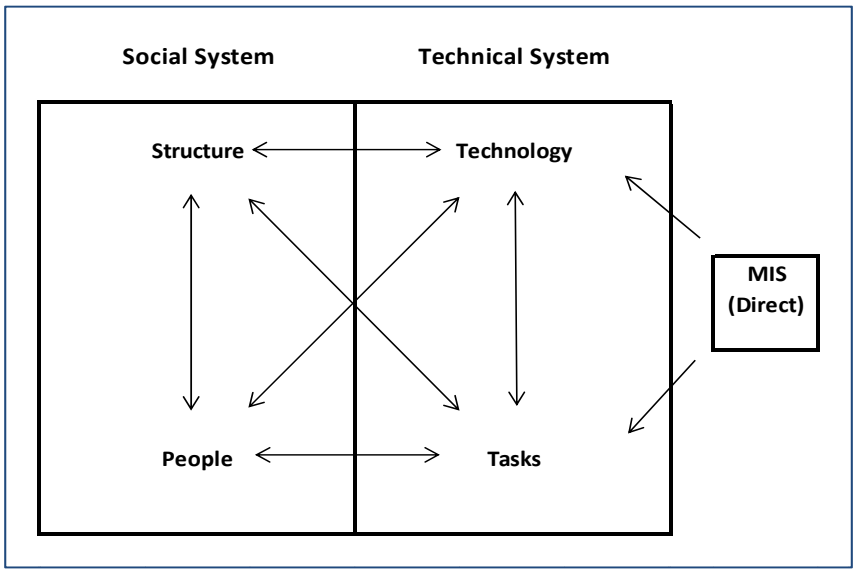


Figure 1: Socio-Technical Systems Theory (Cartelli, 2007)

Chai and Kim's (2012) study, which employed a socio-technical approach, examined the factors that affect knowledge contribution behaviours of Social Networking Sites' (SNS) users who share user-created contents with one another. Their findings indicated that by applying socio-technical systems, users' knowledge inputs in SNS were positively influenced by a sense of belonging to the SNS, ethical culture and social connections with one another. Oyefolahan and Dominic (2013) investigated how socio-technical factors essential in organisational practices and KMSs led to the emergence of autonomous motivation to use KMSs, which in turn, influenced actual utilisation and competency development as an impact of KMS utilisation. Their study found that the actual utilisation of KMSs was found to contribute significantly to competency development among knowledge workers.

Research done on South African local government by Gaffoor and Cloete (2010) in Stellenbosch found the Municipality to have a top-down, hierarchical organizational structure which is not the most favourable to knowledge management efforts. The structure was branded

by its bureaucratic nature and was not open to changes being implemented. It was also found that the structure was restraining the flow of horizontal communication. Dikotla, Mahlatji and Makgahlela (2014) also found cultural differences to have an adverse impact on knowledge sharing.

In a study of the manner in which eThekwini Municipality's intranet was enhancing KS, Averweg (2012) found that the intranet seemed to be at a medium maturity level in this municipality. The study revealed that although there was information sharing in eThekwini Municipality, the intranet seemed to be ineffective as a knowledge sharing structure. The results indicated that there seemed to be an opportunity for the development of the content on the intranet. The next section introduces the methodology followed to collect and analyse the primary data for this study.

1.7 Research Methodology

1.7.1 Research Paradigm

According to Yin (2014), research design is a functional plan where procedures and research methods are combined to gain a reliable and valid body of data for empirically grounded analysis, theory formulation and conclusions. According to Saunders, Lewis, and Thornhill (2012), research paradigms are used to study social phenomena from which certain understandings of these phenomena can be achieved and justifications attempted.

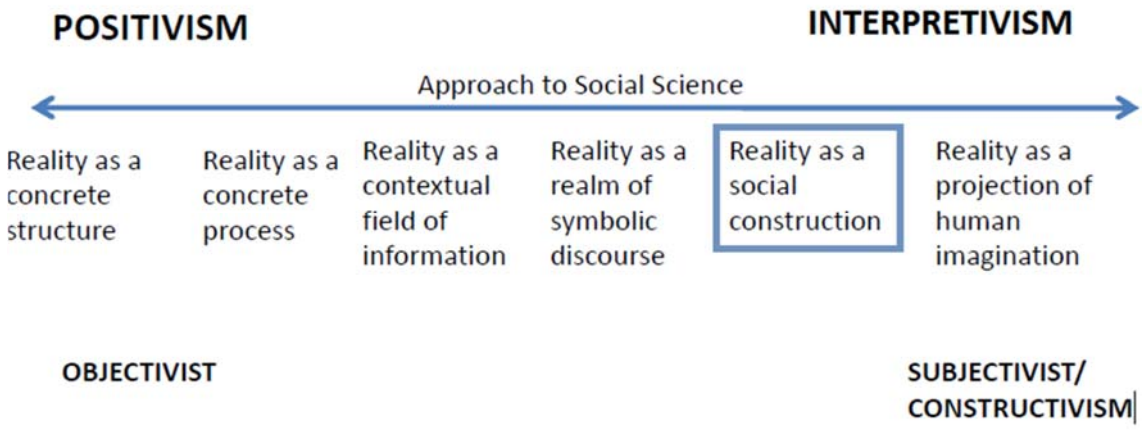


Figure 2: Continuum of core ontological assumptions (Collis & Hussey, 2009)

According to Saunders et al. (2012), interpretivism defines a manner in which individuals make sense of the world around them. People are in a continual process of interpreting the social world around them in that they interpret the actions of others with whom they interact; this interpretation leads to the modification of one's actions and meanings. The continuum of core ontological assumptions, illustrated in Figure 2, indicates that this study falls into the *"Reality as a Social Construction"* stage. At this stage, which is the fifth stage of the continuum, Collis and Hussey (2009) state that individuals create the social world through language, actions and routines. For the purposes of this study, the researcher has used the interpretivist paradigm, making use of a case study involving interviews. Therefore, the interpretivist paradigm has been considered appropriate for the study as qualitative data were collected and used to inductively interpret the attitude towards and behaviour of employees at the BCMM towards knowledge management systems. The next section will discuss the research methodology that will be used in this study.

1.7.2 Research Approach

A qualitative research approach has been applied in this study. This approach is characterised by the collection of descriptive data which is done by making use of interviews and open-ended questionnaires. An inductive approach, which is in line with qualitative research, has been the research approach used. This approach is mainly concerned with the generation of new theories from the data collected (Punch, 2014).

1.7.3 Research Design

This study made use of a case study design. The aim of the researcher was to provide a detailed account of the knowledge sharing culture at BCMM. The case study has thus focused on how a KMS can be used to facilitate KT among employees in order to improve the knowledge sharing culture within the Municipality. Yin (2014) defines a case study as a first-hand investigation focusing on an existing phenomenon within its real-life environment, and boundaries between phenomenon and its environment are not clearly evident. Case studies are thus suitable for studying complex social phenomena as this case study seeks to investigate the complex knowledge management systems in the BCMM and how the employees make use of these systems to share knowledge.

1.7.4 Sample and Population

The population identified for the purpose of this study included the employees of BCMM in East London. With regards to the sampling of participants, a convenience sampling technique was used. In convenience sampling method, participants are usually those who are most easily available. With convenience sampling the researcher can choose the study participants that are thought to provide the most valuable information for the study (De Vos, Strydom, Fouche, & Delport, 2011). According to Engel and Schutt (2013), convenience sampling is the most common method used in evaluative research, such as evaluating the effectiveness of a program. Eight participants were sampled in this study. These participants were an ICT manager, two directors, two heads of departments, a KM champion and two staff members from the KM unit. The snowball sampling technique was also employed by asking members of the population (BCMM staff) to identify other participants who might have a similar status or be experts in the field.

1.7.5 Data Collection Methods

According to Creswell (2014), data collection includes setting the boundaries for the study, collecting information through unstructured, structured or semi structured interviews and observations, visual materials and documents, as well as establishing procedures for recording information. Primary and secondary data were collected. Primary data included data collected by the researcher for the first time, while secondary data included data that had been collected and recorded by someone else but was readily available from other sources (Surbhi, 2016).

1.7.5.1 Secondary Data

This study collected the secondary data by means of conducting desktop research which involved reviewing literature from previous studies such as articles from academic journals, books in both print and electronic formats, conference proceedings, relevant websites, and theories relating to this study. Electronic databases such as *ACM Digital Library*, *Sage Online Journals*, *Science Direct*, *Springer Link* and *Sabinet Reference* were used to find relevant literature. Research study keywords such as ‘knowledge management’, ‘knowledge sharing’, ‘knowledge management systems’, and ‘local government’ were used as search terms. The secondary data collected informed the interview questions used to collect the primary data, which is discussed in the next section.

1.7.5.2 Primary Data

The primary data were collected by means of interviews. In qualitative studies, interviews are generally semi-structured or open-ended (Yin, 2014). The use of semi-structured interviews allowed the participants to expand on responses and enabled further probing by the researcher when necessary. The interview questionnaire used in this study was constructed from questionnaires used in previous similar studies such as Phakola (2011), see Appendix 6. The next section discusses how the data was analysed.

1.7.6 Data Analysis Methods

The qualitative interviews were analysed by means of Thematic Analysis (TA). TA is defined by Crowe, Inder, and Porter (2015, p. 617) as "a process of interpretation of qualitative data in order to find patterns of meanings across the data" (p. 617). An interview can generate multiple pages of transcription. Ethical and practical issues related to managing the massive amounts of data need to be considered. An electronic qualitative data management system called NVivo was used to analyse the data. NVivo helps researchers to organise and manage data and further facilitate the identification of themes, analysis of data, gathering insight, and developing conclusions (Sotiriadou, Brouwers, & Le, 2014).

Informal member checks were done to establish credibility. After the interviews, the summarised notes were shared with participants to establish whether they were true reflections of what had been said during the interviews. Research results were also shared with the participants for comment (Mertens, 2005). A confirmability audit was conducted to minimize the influence of the researcher's judgment. Participants' views were fairly presented to ensure a balanced view of all perspectives, beliefs and values. The next section discusses the ethical considerations.

1.8 Ethical Considerations

This study collected the primary data by means of interviews. Therefore, ethical approval was pursued from the University Research Ethics Committee (UREC), see ethical clearance certificate **CIL021SNCO01** (Appendix 1). Ethics with regards to participants' confidentiality, privacy and willingness to take part in the study were considered.

Participants of the study were presented with the following rights, as identified by Oates, (2006), during data collection:

- **Wilful participation**: Participants were not forced to participate in this research study but were encouraged to.
- **Informed consent**: Before data was collected, the participants were informed of how the data would be used and of any thrid parties who would have access to it.
- **Withdrawal**: Participants were also allowed to withdraw from the study should they feel that their rights were being infringed upon.
- **Anonimity**: The identity and location of the participants would be withheld and protected unless the participant gave explicit permission to disclose it.

The next section will discuss the delimitation of the study.

1.9 Delimitation of the Study

This study has been conducted in Buffalo City Metropolitan Municipality and not any other metropolitan municipalities in the country. The main purpose of this research study is to investigate how KMSs can be used to improve the KT at Buffalo City Metropolitan Municipality. Only communication within the Municipality or among the employees was evaluated. The following section presents the outline of chapters proposed for this study.

1.10 Outline of the chapters

This study consists of eight chapters. An overview of each chapter is provided below to guide the reader to understand the reasoning and flow of the content.

Chapter 1: An introductory chapter which provides background to the study. This chapter states the problem of the study and explains the research question which is divided into three sub-questions. This chapter also explains how this study has been designed and provides the methodology used in conducting the research.

Chapter 2: This chapter provides an overview of knowledge and its dimensions. Knowledge management is discussed focussing on the knowledge management processes. Based on the first and second sub-questions, this chapter seeks to identify the KMSs that can be used by BCMM to improve the knowledge transfer among their employees.

Chapter 3: This chapter is based on the third sub-question which focuses on how social and technical factors affect Buffalo City Metropolitan Municipality employees' attitudes and their intentions toward the use of intention to use knowledge management systems. Literature has been explored to understand better and assess the impact of the factors affecting the implementation of KMSs and to further develop successful managerial strategies using knowledge resources.

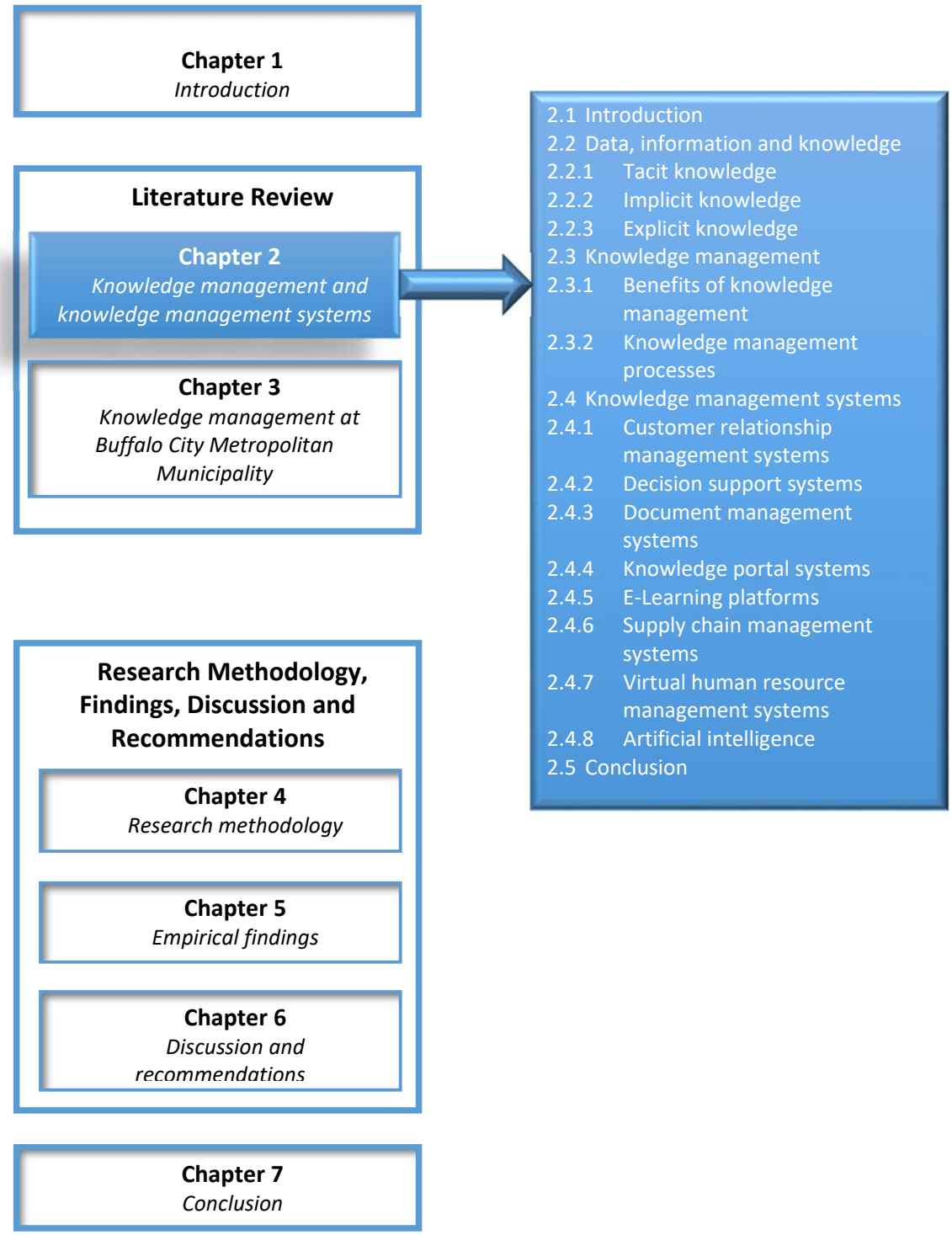
Chapter 4: This chapter covers the research methodology that was used in conducting this study. A detailed explanation of how the study was conducted and the tools that were used have been discussed in this chapter.

Chapter 5: This chapter provides an analysis of the data obtained from the interviews.

Chapter 6: This chapter provides a discussion of the results of this study and makes recommendations.

Chapter 7: This chapter provides the conclusion based on the research findings and suggests future research possibilities.

Chapter 2: Knowledge Management and Knowledge Management Systems



2.1 Introduction

We live in a world where knowledge has become a basic commodity (Ansari, Youshanlouei, & Mood, 2012). Organizations that depend on their knowledge assets rather than their physical assets are expected to be more sustainable in the future as they have accepted knowledge as a strategic resource which is crucial for their competency and stability within the competitive environment. In order to use knowledge as a valuable asset, it is a necessity for organisations to manage it appropriately. This means that the organisation must prioritise and put in systems for creating, storing, transferring, and employing knowledge within the organization. (Ansari et al., 2012).

This chapter provides an overview of knowledge and the two dimensions that can be associated with it, which are tacit and explicit knowledge. Knowledge management is then discussed including the two knowledge management processes which consist of knowledge creation and knowledge transfer. This chapter closes with a detailed description of various knowledge management systems that can be used in an organisation, such as the local municipality.

2.2 Data, information and knowledge

Data, information and knowledge play a fundamental role in both a knowledge management system and an information system, therefore, it is important to examine their relationship. According to Galandere-Zile and Vinogradova (2004), the terms data and information are often used interchangeably. Figure 3 on page 21 illustrates the relationship between the three terms.

Van der Meer (2014) describes data as isolated facts such as structured records but with little context, while Mohamed (2014) defines data as objective facts that define an event without any judgment, perspective or context. Data only becomes information when meaning is added to the data. Galandere-Zile and Vinogradova, (2004) argue that managers differentiate between data and information intuitively and describe information as data that has been processed through contextualization, condensation, categorization, calculation, and/or correction processes. Data could offer valuable insights that would facilitate greater understanding of the needs of Buffalo City residents. Lonergan (2013) proposed that the municipality employees can use the wide range of customer insight data available to them.

These data could help the employees to understand residents' needs, and manage resources more effectively in a similar way to that in which private companies tailor their responses according to customer data.

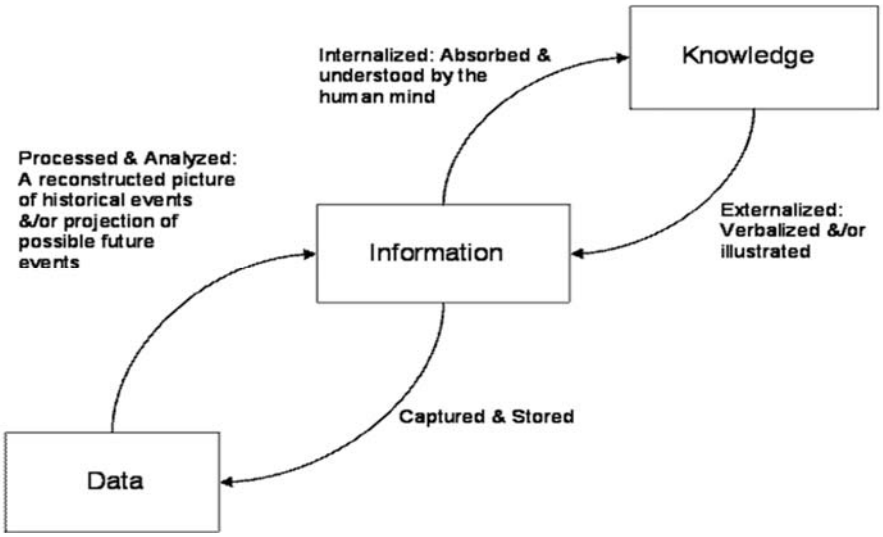


Figure 3: Relationships amongst Knowledge, Information and Data (Liew, 2007)

Information is gained from processed and structured data (Mohamed, 2014). Information is transferred around the organization, in this case BCMM, in both hard and soft (electronic) format, through social and electronic networks (Galandere-Zile & Vinogradova, 2004). In order for information to be translated into knowledge, the activities of comparison, connections, conversation, and consequences must take place (Mohamed, 2014).

Knowledge is considered to be deeper, richer and more extensive than data and information. Knowledge is a combination of contextual information, experiences, important values and expert insight. Knowledge emulates the cultural, institutional and social environment in which it is developed. Therefore, it reflects specific national characteristics such as culture, technological development, resource endowments, demand and supply conditions, organization of industry, and scientific, regulatory, and technological environments (Jandhyala & Phene, 2015). According to García-Sánchez, García-Morales and Bolívar-Ramos (2015, p. 2), ‘‘knowledge often becomes embedded not only in documents or repositories but also in organizational routines, processes, practices, and norms.’’ Therefore, the formation of knowledge is preceded by data storage and analysis plus information processing. Knowledge

shared among employees can be categorised as either explicit or tacit. The following sub-sections will discuss these types of knowledge.

2.2.1 Tacit Knowledge

Tacit knowledge, first introduced by Michael Polanyi in 1958, is the knowledge acquired by individuals or groups in the workplace through the process of learning by doing a task (Panahi, Watson, & Partridge, 2013). Tacit knowledge is difficult to communicate as it is internalised to the employees' mind. It is more dependent on its holder and deeply grounded in employee's experience and actions. This is supported by Hau, Kim, Lee and Kim (2012) when they argue that tacit knowledge is not easily organised or expressed because it is entrenched in the employee's experience. Tacit knowledge is associated with employee skills while embedded in context (Kothari et al., 2012).

Hau et al. (2012) believe that tacit knowledge is harder to transfer between employees than explicit knowledge, since its dissemination is associated with considerably more time and effort. The use of tacit knowledge assists local municipalities or organisations to apply essential knowledge during operational activities, which then result in better financial performance, value creation and improved efficiency (Arnett & Wittmann, 2014). Panahi, Watson and Partridge (2012) also attest that tacit knowledge plays a significant role in improving one's competitive advantage plus one's organisational and individual productivity. Tacit knowledge can be a foundation of competitive advantage and, therefore, it is imperative for local government to understand how it can be exchanged and transferred.

2.2.2 Implicit Knowledge

Implicit knowledge can be simply defined as knowledge that is not explicit (Davies, 2015). Cole et al. (2013, p. 560) define implicit knowledge as "procedural knowledge: the rules, functions and mechanisms of how we know, which includes priming procedures and categorization procedures." The management of implicit knowledge involves techniques, tools and approaches that capture these apparently intangible thought processes and make them more generally available to the organization (Frappaolo, 2008). According to Mostert and Snyman (2007), implicit knowledge is the portion of tacit knowledge that can be communicated through formal systematic language to generate explicit knowledge in the external environment.

2.2.3 Explicit Knowledge

Explicit knowledge is prescribed, codified and clearly expressed (Dagada, 2012). Examples of explicit knowledge in local government can include organisational procedures, policies, systems and directives. The advantage of explicit knowledge is that when employees articulate their knowledge in documents, process descriptions, drawings, or other forms of explicit knowledge assets, the knowledge can be quickly disseminated throughout an organization or externally through use of information systems (Sanchez, 2000). Table 2 below provides the differences between tacit and explicit knowledge.

Table 1: Properties of tacit and explicit knowledge (Panahi et al., 2012)

Tacit Knowledge	Explicit Knowledge
Resides in human minds	Articulated, structured and documented
Unconscious knowledge that is both known and unknown to the holder	Consciously accessible
Unstructured, difficult to see, estimate, codify, investigate, write down, formalize, capture and communicate accurately	Easy to recognise, formalise, codify, store, communicate, share, and use
Transferred through conversation and narrative	Can be found in journals, books, databases, etcetera
Learnt through experiences, intuitive feeling, observation, skills, beliefs, mental modes and values	Learnt through instruction, repetition, or recitation
Expert knowledge and know-how	Know-that, know what
Highly individual and personal	Academic language

The significance of knowledge as an essential resource has inspired organisations in both the private and public sectors to consider KM implementation. Large organizations throughout the world have employed KM strategies, programs and policies (Gharehbiglo, Shadidizaji, & Yazdani, 2012). The next section will discuss knowledge management.

2.3 Knowledge management

Knowledge management is "a discipline that promotes an integrated approach to identifying, capturing, evaluating, retrieving, and sharing all of an enterprise's information assets. These assets may include databases, documents, policies, procedures, and previously un-captured expertise and experience in individual workers" (Meihami & Meihami, 2014, p. 81). The above definition is supported by Al-Khouri (2014) who states that knowledge management is a strategy that enables employees to develop a set of activities to capture, create, share, transfer and use knowledge to improve organisational effectiveness. Knowledge management enables organizations to selectively "apply knowledge from previous experiences of decision-making to current and future decision-making activities with the express purpose of improving the organization's effectiveness" (Theriou et al., 2011, p. 101).

KM in local government can be identified when employees share their knowledge either in the form of tacit or explicit knowledge (Lusa & Sensuse, 2012). When KM is implemented in organisations, it does not only provide benefits to the organization, but also to the employees who are part of the organization. Some of the advantages perceived by employees are an increase in proficiency and experience in working together and sharing knowledge. In addition, learning processes do occur among employees. These learning processes improve the employees' personal performance, resulting in better career progression (Lusa & Sensuse, 2012). The next section will discuss how knowledge management can benefit local government organisations.

2.3.1 Benefits of knowledge management

The effect of good KM in an organization increases the efficiency in business operations by means of an increase in the effectiveness of good decision-making, appropriate planning, increased performance or optimisation of the operation time (Kuras & Kuras, 2015). Table 3 below provides a summary of the KM benefits.

Table 2: Benefits of knowledge management

	Category	Benefit
Benefits from knowledge management	**Internal benefits**	▪ Improvement in the quality of the operation of public institutions in the dimension of: efficiency, economy, transparency, responsiveness and accountability; ▪ Strengthening the ethos of public service; ▪ Change in the organizational culture of public institutions.
	External benefits	▪ Making space for economic and social projects of the residents and their unions; ▪ Strengthening the capability of the state to control development processes and increasing its capabilities to effect the decisions taken internationally; ▪ Reducing transactional costs of economic and social projects; ▪ Participatory co-government based on the principles of partnership, autonomy and subsidiary; ▪ Improving the quality of public services; ▪ An increase in social and economic and spatial cohesion of the state; ▪ Creating the conditions for an increase in competitiveness and innovativeness of the economy; ▪ Creating and developing accurately addressed policies and public programs; and ▪ Increased trust for public institutions.

2.3.2 Knowledge management processes

Knowledge management emphases on four main components which include people, technology, knowledge and processes, as illustrated in Figure 4 below. For organizations to succeed in their KM initiatives, deliberations and interactions among all of these components are essential (Al-Khouri, 2014). These components embody the four steps of KM: creation, storage, transfer and use.

When García-Peñalvo, Hernández-García and Llorens-Largo (2015) reviewed literature on KM processes, they concluded that in all the models there are two common stages, which are knowledge creation and knowledge transfer or sharing. Therefore, in the next sections knowledge creation and knowledge transfer will be discussed in more detail while the other two stages, knowledge storage and knowledge use will be discussed briefly.

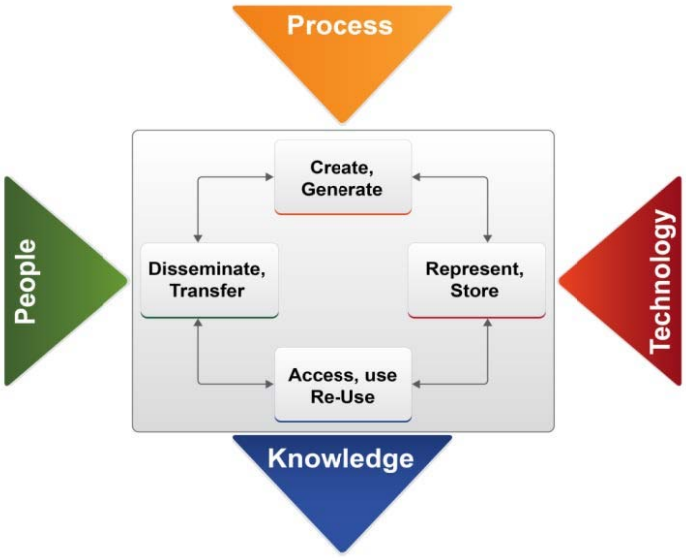


Figure 4: KM Components and Process (Al-Khouri, 2014)

2.3.2.1 Knowledge creation

Beck, Rai, Fischbach and Keil (2015, p. 394) define knowledge creation (KC) as "the codification and development of new knowledge in the form of new pages or adding knowledge to pages created by others, thereby translating personal experiences possessed by an individual into explicit knowledge". According to Durst and Edvardsson (2012) KC refers to methods that emphasise the construction of new knowledge. New knowledge can be acquired from outside the firm or created internally. KC means discovering or generating new knowledge through Research and Development (R&D), lessons-learned, experimentation and innovation, which is the most advanced phase of knowledge management (Ranjbarfard, Aghdasi, López-Sáez, & López, 2014). KC is the building block, which supplements knowledge creation and embraces all management efforts intentionally directed at producing competencies.

According to López, Pérez, Aguilar and Alexander (2016), the KC model is based on the realisation that personal knowledge is created and developed through social interaction of

explicit and tacit knowledge. This interaction is called knowledge conversion. It is considered to be a social process that is not limited within the individual, as this has a social interaction when a person perceives things. Then, through this process of social conversion, tacit and explicit knowledge expands both in quality and quantity. On the premise that knowledge is created by conversion between tacit and explicit knowledge, Panahi et al. (2013) state that Nonaka and Takeuchi developed a KC model in 1995 called the SECI model. The SECI model illustrated in Figure 2, presents four phases for knowledge conversions.

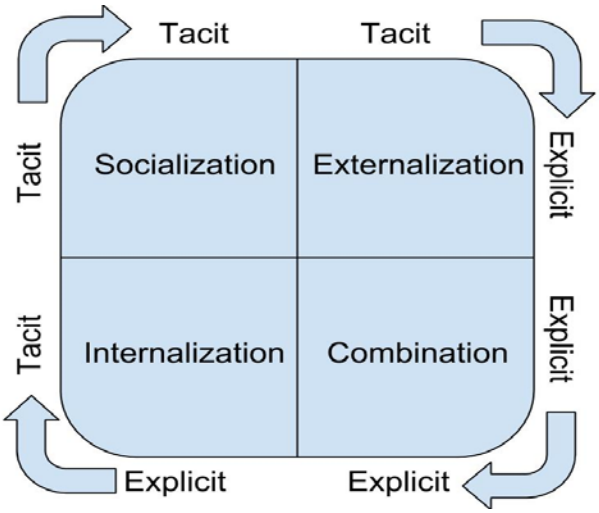


Figure 5: The SECI Model (Panahi et al., 2013)

- *Socialization* (tacit to tacit): this is the process by which employees attain tacit knowledge. In local government this can happen through employees sharing their experiences, observing others, and practice, which improves or develops shared mental models. An example of socialization is on-the-job training (Richtnér, Ahlström, & Goffin, 2014).
- *Externalization* (tacit to explicit): is the way by which tacit knowledge is articulated. Externalization is initiated by conversations among employees in an organization, such as local government. This also includes the development of new codification schemes and the use of metaphors (Richtnér et al., 2014).
- *Combination* (explicit to explicit): is where the association of different pieces of explicit knowledge creates new knowledge. Examples of combination include the creation of documents, databases and manuals that can be accessed by other employees in local government (Richtnér et al., 2014).

- *Internalization* (explicit to tacit): happens when employees share their technical know-how and mental models. Internalization is often referred to as the process of learning-by-doing (Richtnér et al., 2014).

Three of these conversions, socialization, externalization, and internalization, are the main processes of tacit knowledge transfer.

In knowledge creation there are a variety of tools that can be used to identify new patterns between existing knowledge. These tools include discovery tools, data mining, text retrieval and relational databases (Canzano & Grimaldi, 2012). Systems that can be used to create new knowledge are intelligent software agents and conceptual mapping. Knowledge discovery systems are used in local government organizations to provide for the improvement of explicit or tacit knowledge from data and information or from blending of prior knowledge (Becerra-Fernandez & Sabherwal, 2010). According to Rasoulinezhad (2009), corporate repositories, online expert systems, discovering patterns and transactional processing systems are KMSs used for knowledge acquisition.

For knowledge generation, South African municipalities make use of the following platforms provided in the toolkit (Kitchin et al., 2013):

- After action reviews enable employees to provide constructive suggestions and actionable recommendations during or after a project. They are used to capture knowledge gained in a project before a team disbands.
- Brainstorming helps municipalities to generate ideas to solve problems through stimulating the creativity and innovation of a group of people.
- Briefings are conducted to inform executive and senior management about policy issues or projects.
- Communities of practice enable experts to collaborate in sharing experiences, practices and tools that are relevant to a specific topic.

2.3.2.2 Knowledge storage

Knowledge storage is a process that encompasses the documentation of organisational and individual knowledge repositories. In these repositories, knowledge is organised, structured and maintained (Denner & Diaz, 2011). The process of knowledge storage is concerned with moving knowledge into a state where it is kept available for future use.

Knowledge storage can be supported by data warehouses because they act as central repositories for storing the local government relevant information (Canzano & Grimaldi, 2012). Data warehouses can be accessed by employees through intranets. Document management systems (DMS) control store and control access to files in the repositories. Content or index terms are used to search the files within a DMS (Canzano & Grimaldi, 2012). Frost (2010) also supports the above statement by indicating that DMSs are systems that enable organisations to store, publish, index and retrieve the documents.

For knowledge storage, South African municipalities make use of the following platforms provided in the toolkit (Kitchin et al., 2013):

- IT-based tools: Information technology provides tools and systems that enable knowledge management to fulfil its goals. These tools encompass intranet, groupware systems, content and document management systems, and data warehousing and mining.
- Directories of experts help employees to find who has expertise or knowledge for a particular project or task. These directories also help employees to seek guidance from other employees in other organisations.

2.3.2.3 Knowledge transfer

According to García-Sánchez, García-Morales and Bolívar-Ramos (2015), knowledge transfer (KT) is the process through which one organisational section is affected by the experience of another section. From time to time, KT had been used interchangeably with KT, so in order to explore KT (Paulin & Suneson, 2012), this study will not ignore knowledge sharing (KS). The KT theory was first suggested in 1978 by Findlay and has since been renamed to knowledge flow, knowledge sharing, and knowledge acquisition (Sheng, Chang, Thompson, & Yuh-Feng, 2013). The transfer of knowledge has been viewed as the transmission (representing or sending knowledge to a prospective receiver) of a message from a source to the receiver in a given context. This message is then absorbed by, and changes the behaviour of the receiver.

The transfer of knowledge between the municipality's different directorates and experts stimulates the usage of knowledge required to produce services and goods that necessitate a combination of various areas of expert knowledge (García-Sánchez et al., 2015). The use of

knowledge becomes more efficient when the number of knowledge transfers from various trained and qualified staff members are higher.

Sheng, Shen-Yao, Thompson and Yuh-Feng (2013) stated that the use of knowledge necessitates the consideration of knowledge transfer. Knowledge ambiguity and knowledge stickiness have been regarded as two major KT barriers. Knowledge ambiguity is the "basic ambiguity concerning the nature of the causal connections between actions and results" (Sheng et al., 2013, p. 464). Knowledge ambiguity inhibits the KT process. Knowledge stickiness, which is also referred as unwillingness or inability to transfer knowledge, stops the flow of knowledge and has been quoted as the main cause for failures in KT processes.

Knowledge transfer process in local government can be supported by the Internet as it has the ability to enable users to have access to any information anywhere and anytime (Canzano & Grimaldi, 2012). Chigada (2014, p. 61) acknowledges that KT systems enable organizations "to integrate vast assortments of disparate application interfaces, controls and datasets, thus enabling information sharing and centralized management of information and knowledge across the organization." Intranets also facilitate KT in organizations. Web portals are also used for KT as they provide links to other sites and offer opportunities to search other pieces of information (Canzano & Grimaldi, 2012). According to Becerra-Fernandez and Sabherwal (2010), systems that facilitate knowledge exchange are groupware; web-based access to data and databases, and repositories that include best practice databases and lessons learned systems.

For knowledge transfer South African municipalities make use of the following platforms provided in the toolkit, which is an overview of the KM status among the KRMG members (Kitchin et al., 2013):

- Publications are used to share knowledge around events, practices and information.
- Social media is used to encourage knowledge sharing and networking through collaborative and social tools. It facilitates self-directed, informal and social learning using online web-based resources. Municipal customers, stakeholders and partners can connect and communicate using social media.

- Story telling is used by municipalities to share values, knowledge and organizational culture. Commitment and trust are developed through story telling. It is also used to capture past knowledge that can be adapted to the present and future.
- Communities of practice enable experts to collaborate in sharing experiences, practices and tools that are relevant to a specific topic.
- Conferences and seminars provide an opportunity for employees to network, learn and interact with other employees working in a similar field.
- Directories of experts help employees to find who has expertise or knowledge for a particular project or task. These directories also help employees to seek guidance from other employees in other organizations.

2.3.2.4 Knowledge use

Knowledge use is the final step of the knowledge management process. Knowledge use allows organisations to understand the information presented within its internal and external environment (Gaffoor, 2008). The use of knowledge can generate value within the Buffalo City Metropolitan Municipality. If knowledge is not shared and used by BCMM employees, it becomes lost knowledge. Whether new knowledge has been developed internally or acquired from outside the organisation that knowledge needs to be utilised. The use of knowledge drives innovation, enhances customer satisfaction as well as escalates the municipality's profits and productivity (Durst & Edvardsson, 2012).

Systems used for knowledge application enable employees to utilize knowledge that is possessed by other employees without learning or acquiring that knowledge (Becerra-Fernandez & Sabherwal, 2010). Intelligent software agents are valuable in knowledge application as they have the potential to discover and access information from many sources, to resolve irregularities and incorporate information essential to recognize the knowledge application process (Canzano & Grimaldi, 2012).

For knowledge application, South African municipalities make use of the following platforms provided in the toolkit (Kitchin et al., 2013):

- Mentoring empowers inexperienced employees in new jobs to acquire new skills and knowledge. This is achieved by using the organization's existing knowledge and expertise.

- Training programmes are used by municipalities to ensure that their staff members learn and acquire new skills and qualifications; to enable ongoing professional development; and to motivate and retain key employees.
- Knowledge fairs are platforms where municipalities showcase their information or particular issues. In this process, employee and team achievements are recognized. Problem solving and networking are also fostered through knowledge fairs.
- Lessons-learned help local government employees to learn from mistakes at the end of projects. These help in planning and preparation of future projects.
- Directories of experts help employees to find who has expertise or knowledge for a particular project or task. These directories also help employees to seek guidance from other employees in other organizations.

The next section will discuss the concept of knowledge management systems and the types thereof.

2.4 Knowledge management systems

An organization's capability to transfer knowledge between departments is essential for a number of organisational processes and performance outcomes, including innovation, creativity, and new product development (Tortoriello, Reagans, & McEvily, 2012). García-Sánchez et al. (2015) also indicate that KT among the organisation's staff supports the application of additional flexible production processes, lessens the possibility of repeating errors, and improves organisational performance.

Knowledge Management Systems (KMSs) are information technologies that support organisations to manage their knowledge efficiently and effectively (Assegaff & Hussin, 2012). Meihami and Meihami (2014, p. 6) describe KMSs as organisation's "computer-based communication and information systems applications" that support the KM processes. Wang, Noe and Wang (2014, p. 979) also define KMSs as "technology-supported information systems that help document, distribute, and transfer between employees explicit and tacit knowledge to increase organisational effectiveness." A KMS is not technologically distinct from Information and Communication Technologies (ICT), but include databases such as directories and networks, and lessons-learned repositories. It is planned to set organisational members in contact with recognized experts in a variety of topic areas (Meihami & Meihami, 2014).

In KM, the use of technology plays a significant role, but, knowledge is primarily about people and the role of technology can only be in a supporting capacity. KMSs are established to enhance and support the organisational processes of knowledge creation, knowledge storage, knowledge transfer, and knowledge application (Kekwaletswe & Bobela, 2011). Pinto (2012, p. 2079) supports Kekwaletswe and Bobela (2011) by stating that "KMSs are tools developed with the purpose of supporting KM processes, namely knowledge creation, storage and retrieval, transfer and application and the flows between them." These systems support explicit and tacit knowledge by enabling the sharing of experiences and knowledge throughout the organisation.

A KMS incorporates a broad range of tools and their goal is not to manage all the available knowledge within an organisation, but to manage selected knowledge and make it available to assist employees create, store and transfer or share it inside the organisation (Greco, Grimaldi, & Hanandi, 2013). This improves individual and organisational performance. The following sections will discuss the different types of KMSs.

2.4.1 Customer Relationship Management System

Khodakarami and Chan (2014, p. 29) describe a Customer Relationship Management System (CRMS) "as a group of information systems that enable organisations to contact customers and collect, store and analyse customer data so as to provide a comprehensive view of their customers." According to Greco et al. (2013), the name CRMS describes all the management systems that have an emphasis on new market strategies and concepts, on information systems and organization. The most key characteristic of CRM, is the management of the customer life-cycle and its value. As per Khodakarami and Chan (2014), CRMS mainly fall into three categories:

- *Operational systems* are used for automation and to increase the effectiveness of customer relationship management processes;
- *Analytical systems* are used to analyse knowledge and customer data; and
- *Collaborative systems* are used to integrate and manage customer interaction touch points and communication channels.

2.4.2 Decision Support System

Organizations use Decision Support Systems (DSS) to update and store their strategic knowledge in databases for better retrieval and use of the knowledge in decision making processes (Greco et al., 2013). DSS are defined by Power, Sharda and Burstein (2015) as a group of high-tech information systems that support decision making activities. They are designed artefacts that have specific functionality. They provide five DSS types, which are:

- *Communications-driven DSS* are communication technologies that are used to support decision making processes;
- *Data-driven DSS* provide access to large data stores and analytics to generate information;
- *Document-driven DSS* use documents to make available information for decision making processes;
- *Knowledge-driven DSS*, also called expert systems or recommender systems, and
- *Model-driven DSS* use quantitative models for functionality and they are also called computationally oriented or model-oriented DSS.

2.4.3 Document Management System

A Document Management System (DMS) helps organizations to store and distribute their documents and inform employees about the state of the advancement of their processes and activities (Greco et al., 2013). Pinto (2012) provides the main functionalities of DMS. These include: edition collaboration, document sharing, versions control, document management, support for all content types (audio, graphs, text, web, xml, video, etcetera.), searching and retrieval mechanisms. All of these functionalities are typical activities that employees of local government will perform on a daily basis and are thus relevant to this study.

2.4.4 Knowledge Portal System

A Knowledge Portal System (KPS) is a web-based application that offers single access to numerous sources of knowledge. The KPSs are regarded as the fastest and best resolution for sharing information and knowledge between employees (Greco et al., 2013). These systems improve knowledge transfer within an organization and are considered as an extension of the information portal to knowledge management.

Examples of Knowledge Portal Systems used by South African municipalities, also accessible through the SALGA Knowledge Hub, are briefly described below.

- ***Centre for Municipal Research and Advice (CMRA):*** established in 2005, CMRA is a vibrant consultancy and research, and is a technical service provider in the field of local government (CMRA, 2014). The goal of CMRA is to strengthen and support municipalities and Local Government Associations in Southern Africa. CMRA conducts quantitative and qualitative research on local government themes; provides technical support to municipalities so that they can improve their services through effective reduction of Red Tape. CMRA provides support and training to ward committees, councillors and officials on issues such as the enhancement of operational community involvement in municipal governance (CMRA, 2014). Buffalo City Metropolitan Municipality is a CMRA partner.
- ***HIV/AIDS Local Government Learning Network (HALOGEN)*** is a network of consultants, researchers and other partner organisations working on HIV/AIDS and local government in South Africa. The primary purposes of HALOGEN are to share information and learning about HIV/AIDS and local government amongst organisations, researchers, government officials and consultants working in this arena; and to document and disseminate good practice, as identified during learning events, that are of benefit to various stakeholders involved in local governance processes, including communities and municipalities (HALOGEN, 2015). SALGA is a member of this network.
- ***South African Cities Network (SACN)*** is a recognised system of South African cities and partners that promotes the exchange of information, experience and best practices on urban development and city management. SACN, together with SALGA, also facilitates the Knowledge Management Reference Group (KMRG), a learning and sharing platform, to support KM practice in SA cities, and municipal districts (SACN, 2016).

2.4.5 e-Learning Platform

The ICTs are used to facilitate and support learning processes. E-Learning is the process whereby employees use electronic devices such as computers together with learning technology (Greco et al., 2013). E-Learning Platforms (E-LP) are regarded as a solution for

complex organisations in developing new skills and knowledge, either individually or in partnership with others.

2.4.6 Supply Chain Management System

Supply Chain Management System (SCMS) play a significant role in organisations in the creation of competitive advantage and profitability. According to Greco et al. (2013), SCMSs stress the significance of knowledge within the supply chain departments. The SCMs also "improve the strategic importance of efficient data, information or knowledge among members of the SCM network, such as suppliers, manufacturers, distributors and retailers" (Greco et al., 2013, p. 3).

2.4.7 Virtual Human Resource Management System

A Virtual Human Resource Management System (VHRMS) is an information technology application that is used for networking and supporting employees to share their activities within an organization. VHRMSs include an extensive range of human capital reskilling events that are conducted within the organisations, such as career development activities (Greco et al., 2013).

2.4.8 Artificial Intelligence

Becerra-Fernandez and Sabherwal (2010, p. 93) define Artificial Intelligence (AI) as "the science that provides computers with the ability to represent and manipulate symbols so they can be used to solve problems not easily solved through algorithmic models." In KM, AI supports user profiling and corresponding profiles, search and retrieval, text and web mining. AI-based technologies support organizations in handling their knowledge (Birzniece, 2011). AI systems, such as genetic algorithms, neural networks and intelligent agents provide intelligent tools for text mining, semantic text analysis, pattern matching and user profiling. Table 3 below indicates which knowledge management systems can be used to support the creation of knowledge creation and transfer.

Table 3: Systems that enable knowledge creation and transfer

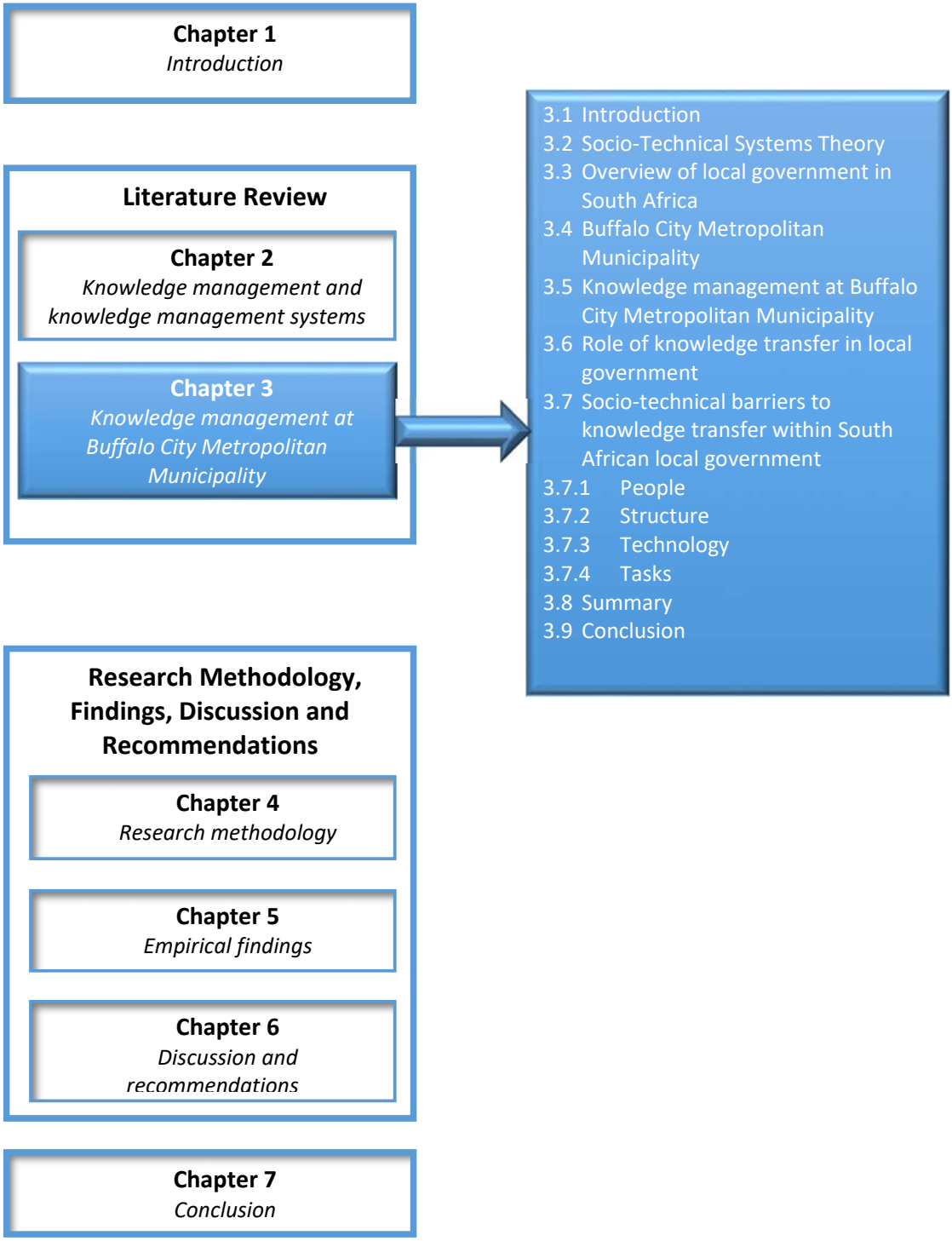
KMS	Knowledge creation	Knowledge transfer
Customer Relationship Management Systems	X	
Decision Support Systems	X	X
Document Management Systems	X	X
Knowledge Portal Systems		X
e-Learning Platforms	X	
Supply Chain Management Systems	X	
Virtual Human Resource Management Systems		X
Artificial Intelligence	X	

2.5 Conclusion

An organization's ability to transfer knowledge between departments is essential for a host of organizational processes and performance outcomes, including innovation, creativity, and new product development (Tortoriello, Reagans, & McEvily, 2012). García-Sánchez et al. (2015) also indicate that KT among the organization's staff supports the application of additional flexible production processes, reduces the possibility of repeating errors, and improves organizational performance.

This chapter has reviewed literature related to knowledge, knowledge management, knowledge transfer, and knowledge management systems. When KM is implemented in organisations, it does not only provide benefits to the organisation, but also to the employees who are part of the organisation. Some of the advantages perceived by employees are an increase in proficiency and experience in working together and sharing knowledge. Now that these concepts have been unpacked, the next chapter reviews literature BCMM and knowledge transfer. The next chapter seeks the best practices that can be employed to improve institutional capacity at BCMM.

Chapter 3: Knowledge management at Buffalo City Metropolitan Municipality



3.1 Introduction

Knowledge management is a modern management concept that has a significant impact on the success of businesses and organisations (Dikotla et al., 2014). One of the characteristics of a successful municipality is the extent to which the knowledge that its employees possess is made available to all members of the municipality (knowledge transfer), and is embedded in structural and other intellectual capital assets. Knowledge management is the focus of modern organisations because knowledge has been recognised to be more important for production rather than capital and labour. In the public sector, KT is as essential as no single employee holds the combination of skills, knowledge, and expertise to complete tasks without assistance from other employees (Dikotla et al., 2014). Noeth (2006) believes that an effective KM strategy could eradicate many of the problems confronting municipalities and therefore enhance the range, as well as the quality, of services available to the communities.

When preparing a municipality for KM initiatives, it means that the organisational culture to support, facilitate, encourage the utilisation, creation and sharing of knowledge must be adapted or changed (Madue & Ncume, 2012). An important step in knowledge management is the identification of factors that enable the transfer of knowledge within the municipality. Organisational factors such as organisational culture, leadership styles, organisational structure and knowledge preservation processes can either support or hinder the management of knowledge (Noeth, 2006).

This chapter provides a comprehensive discussion of the Socio-Technical Systems Theory, the theory that has been selected for this study. A brief overview of the local government in South Africa has been provided, focusing on the legislation behind the formation of the eight South African metropolitan municipalities. The description of the case, which is the Buffalo City Metropolitan Municipality, and its KM status will also be discussed in this chapter. The role of knowledge transfer and the socio-technical barriers that can challenge the implementation of KT in local government will also be discussed. The next section discusses the Socio-Technical Systems Theory.

3.2 Socio-Technical Systems Theory

New information technologies are regarded as important driving forces that address systematic and complex problems that our societies face (Fischer & Herrmann, 2011). Information technologies alone cannot improve the human behaviour and social structures in an organisation, therefore the design of socio-technical systems is essential. The socio-technical term was first produced and used in literature in 1951 by Trist and Bramforth to highlight the interrelationship between technological and social factors in understanding an organisation (Assegaff & Hussin, 2012; Lusa & Sensuse, 2012). The motivation behind examining information system problems making use of both the social and technical dimension is to describe organisational aspects that are a combination of social and technological sub-systems in the operational activities.

Since the socio-technical perspective offers a suitable framework against which to realise the manner in which the technology is implemented and utilised in organisations (Chai & Kim, 2012), this study will adopt Socio-Technical Systems (STS) Theory to investigate the extent to which information systems can be used to improve the knowledge transfer in local government.

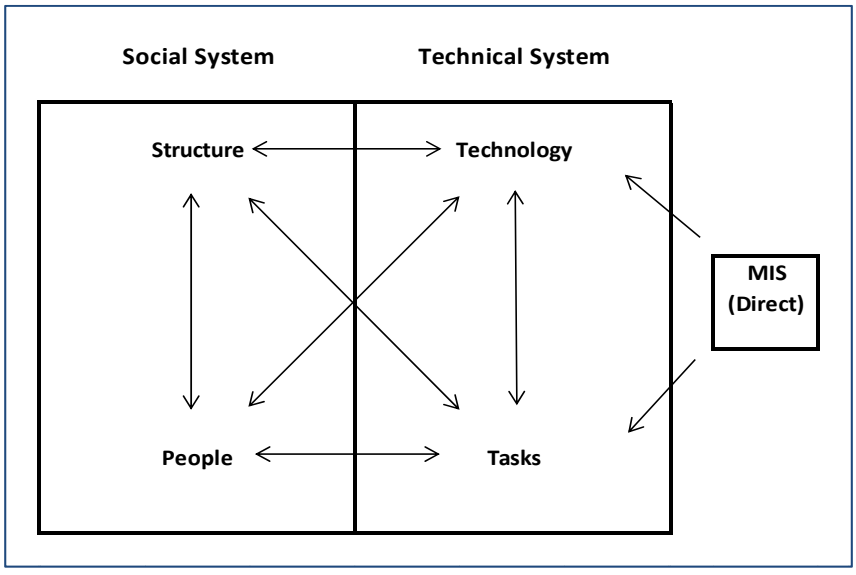


Figure 6: Socio-Technical Systems Theory (Cartelli, 2007)

Figure 6 above illustrates the Socio-Technical Systems Theory and its components. The theory emphasises two sub-systems which are the social and technical sub-systems. According

to Cartelli (2007), the technical sub-system is more than the sum of the equipment in local government organizations. This sub-system can be recognized with the processes that convert system inputs into system outputs. To achieve the system goals, the process of converting the systems must be controlled constantly. The social sub-system is much more than the technical control of responsibilities to be executed by local government employees (Cartelli, 2007). Individual jobs are merged with technical tasks and with duties assigned to groups.

In describing the social, technological and socio-technical perspectives of KM, Sajeva (2010) indicated that the technological approach focuses on technical and technological aspects of KM. The technological approach is centred on the collection, storage, categorisation, and use of knowledge by means of technical systems. Technical systems consist of several ICT, for instance, email, groupware, intranet, databases, and others (Sajeva, 2010). The technological approach is a system strategy with its prominence on the codification of knowledge within the KM processes. This strategy concentrates on the codification and storing of knowledge through IT, and attempts to share knowledge formally.

Although ICT are the key elements in KM, they are not the one and the only, and not the dominant aspect of KM. Effective KM is more than about the management of the technology (Sajeva, 2010). Effective KM embraces more than merely manipulating the data held on information systems; attention to the organisational, human and cultural aspects is also required. The social approach to KM acknowledges that knowledge is personal in nature. Knowledge predominantly exist in the heads of employees, and in the social interactions of these employees. In contrast to the technological approach to KM, social based KM stresses that knowledge can be attained and shared through socially interactive processes such as experts, reciprocal relationships and trust among employees to support KM activities.

Previous studies that have made use of the socio-technical theory include Chai and Kim's (2012) study which examined the factors that affect knowledge contribution behaviours of Social Networking Sites' (SNS) users by sharing through user-created contents with one another. Their findings indicated that by applying socio-technical systems, users' knowledge inputs in SNS are positively influenced by a sense of belonging to the SNS, ethical culture and social connections with one another. Oyefolahan and Dominic (2013) investigated how socio-technical factors are essential in organisational practices and how the use of a KMS lead to the emergence of autonomous motivation to use a KMS which in turn influences actual utilisation

and competency development as an impact of KMS utilisation. Their study found that the actual utilisation of a KMS was found to contribute significantly to competency development among knowledge workers.

Lusa and Sensuse (2012) investigated the significance of socio-technical characteristics in the design and implementation of a KMS. An interpretative approach was used by conducting document reviews, interviews and focus group discussions directly to end users. Their findings revealed that not only technical aspects but also the social aspects contribute to the success of KMS implementation. Strategically, the results indicate that the general planning, design, and implementation of a KMS depend on the organisational strategy that is aligned with the KM strategy. The socio-technical aspects of a municipality could influence the organisational strategies that systematically give some impact on the implementation phases of the KMS. By knowing and understanding these aspects well, a municipality can determine the implementation of KM strategies more precisely and can identify the factors that are required in KMSs (Lusa & Sensuse, 2012).

Municipalities are severely affected by technological innovations and need a flexible adapted change model that can be appropriate for the social system of the organisation into which technology is being implemented. Appelbaum (1997) examined the Socio-Technical Systems Theory by presenting the classic organizational theories of Trist, Burns and Stalker, Thompson, Woodward, and Perrow to develop organisational development intervention in terms of self-regulating work teams performing interrelated technological tasks. Appelbaum (1997) advised that effectiveness and humanism must be linked together in the design of work and work systems. The Socio-Technical Systems Theory as an intervention strategy has many strong points, but must be applied within a strategic change plan for organisational improvement, rather than an isolated strategy for organisational improvement.

3.3 Overview of local government in South Africa

Following the adoption of the South African Constitution in 1996, an all-inclusive policy was established to influence the new constitutional vision of local government. This led to the adoption of the Local Government White Paper by the Cabinet in March 1998 (SALGA, n.d.).

The South African Constitution affords for three categories of municipality. In South Africa there are 278 municipalities, which encompass eight metropolitan, 44 district and 226 local

municipalities. All municipalities are dedicated on developing local economies and providing service and infrastructure. A developing local government was defined as one dedicated to working with citizens and groups within the community to find sustainable ways to meet their material, economic and social needs and improve the quality of their lives (SALGA, n.d.). This concept became the foundation of this White Paper. The developmental mandate of local government is effected through metropolitan municipalities in the eight largest industrialised and urbanised centres in the country. These municipalities are charged with addressing the key challenges outlined in the White Paper on Local Government, namely, the legacy of urban apartheid by establishing a basis for inclusive and equitable metropolitan development and governance (SALGA, n.d.).

The Local Government: Municipal Structures Act of 1998 includes measures for determining when a particular region must have a category A municipality, which are 'metropolitan municipalities' and when municipalities fall into categories B, which are 'local municipalities' or C, which are 'district municipalities' (Sikhakhane & Reddy, 2009).

In the Act there is a resolution that category A municipalities can only be developed in urban areas. The councils of these urban municipalities have single budgets, service tariff systems and common property ratings, and single-employer bodies. South Africa's local government is currently made up of eight metropolitan municipalities, 44 district municipalities, and 226 local municipalities (Sikhakhane & Reddy, 2009). The eight metropolitan municipalities, illustrated on Table 4, are Buffalo City in East London, City of Cape Town, Ekurhuleni Metropolitan Municipality in East Rand, City of eThekwini in Durban, City of Johannesburg, Mangaung Municipality in Bloemfontein, Nelson Mandela Metropolitan Municipality in Port Elizabeth, and City of Tshwane in Pretoria.

Local municipalities are classified under category B. Category B covers areas that fall outside of the eight metropolitan municipal areas and are divided into local municipalities. There are a total of 231 of these local municipalities and each municipality is broken into wards. The residents in each ward are represented by a ward councillor (ETU, 2016). Under category C there are district municipalities which are made up of a number of local municipalities that fall in one district. In a district council, there are generally between four to six local municipalities (ETU, 2016).

Table 4: The Eight Metropolitan Municipalities of South Africa (Main, 2016)

3.4 Buffalo City Metropolitan Municipality

In 2000 Buffalo City Metropolitan Municipality (BCMM) was established as a local municipality. That was after the restructuring of municipal regions. BCMM was named after the Buffalo River, at whose mouth lies the only river port in South Africa. The BCMM was separated from the Amathole District Municipality on 18 May 2011 and was transformed into a metropolitan municipality. Two former municipalities, which are the Transitional Local Councils from King William's Town and East London combined into one metropolitan municipality. Other regions that were formerly not included in either of them are now part of BCMM. Figure 1 below illustrates the map of BCMM.

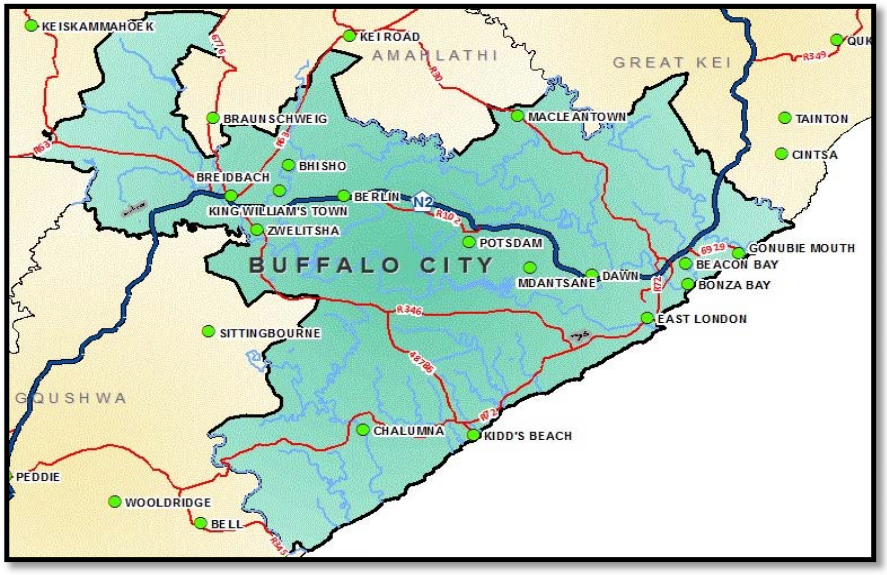


Figure 7: Buffalo City Metropolitan Municipality map (Buffalo City Metropolitan Municipality, 2016)

The BCMM, which covers an area of 2 536km², is located on the east coast of the Eastern Cape Province. It comprises the towns of Bhisho, East London and King William's Town, as well as the large townships of Zwelitsha and Mdantsane (Future Works, 2014). The BCMM falls across seven river catchments: the Gqunube, Kwelera, Nahoon, Gxulu, Buffalo, Keiskamma and Tylomnqa River Catchments. The entire municipal area falls within the Keiskamma to Mzimvubu Water Management Area as defined by the National Department of Water Affairs (Future Works, 2014). Table 4 below provides a summary of BCMM directorates and their purposes (Buffalo City Metropolitan Municipality, 2016).

Table 5: BCMM directorates and their departments (Buffalo City Metropolitan Municipality, 2016)

Directorate	Departments
Office of the City Manager	▪ Governance and Internal Auditing ▪ Chief Operating Office ▪ Legal Services and Municipal Court ▪ Enterprise Project Management ▪ Information, Knowledge Management, Research and Policy ▪ Information Technology ▪ Expanded Public Works Programme
Executive Support Services	▪ Sports Services and Special Programmes ▪ IDP, Budget Integration, GIS, Performance Management and IEMP and Sustainable Development ▪ Communication and Marketing, Internal and Intergovernmental Relations ▪ Political Office Administration ▪ Monitoring and Evaluation
Corporate Services	▪ Human Resources Management ▪ Human Resource Performance and Development ▪ Corporate Support Services
Development and Spatial Planning	▪ Development Planning ▪ Property Management ▪ Urban and Rural Regeneration ▪ Transport Planning and Operations
Infrastructure Services	▪ Water, Wastewater and Scientific Services ▪ Electrical and Energy Services ▪ Workshop, Plant and Fleet Services

	▪ Roads, PIU and Construction
Municipal Services	▪ Solid Waste Management ▪ Environmental, Amenities and Arts and Cultural Services ▪ IEMP and Sustainable Development
Municipal Health, Public Safety and Emergency Services	▪ Municipal Health Services ▪ Public Safety and Protection Services ▪ Emergency Services
Finance	▪ Strategy and Operations ▪ Revenue Management ▪ Financial Reporting ▪ Supply Chain Management ▪ Budget and Treasury ▪ Expenditure and Payments Management ▪ Corporate Asset Management
Human Settlements	▪ Housing Planning and Strategy ▪ Housing Delivery and Implementation ▪ Human Settlement Special Projects
Economic Development and Agencies	▪ Fresh Produce Market ▪ Trade, Industry and Rural Agrarian ▪ Tourism, Arts, Culture and Heritage

3.5 Knowledge management at Buffalo City Metropolitan Municipality

In 2005, the Knowledge Management Reference Group (KMRG) was formed to encourage a shared-learning partnership around KM in South African municipalities to support good governance (Kitchin et al., 2013). The aim of this initiative was to strengthen the competencies among the municipalities to identify the opportunities for recognizing and sharing knowledge in a way that would assist finding, harnessing and managing their knowledge assets. In 2007,

this formation was further strengthened by a strategic collaboration between the South African Cities Network (SACN) and the South African Local Government Association (SALGA). Therefore, the KMRG members are SALGA, SACN and its member cities, which include City of Cape Town, Buffalo City, Ekurhuleni, Johannesburg, eThekwini, Mangaung, Nelson Mandela, Msunduzi and Tshwane.

Kitchin et al. (2013) conducted an overview of the KM status in the nine KMRG members. The study indicated that Buffalo City Metropolitan Municipality (BCMM) conducted a knowledge audit in 2010 which revealed a lack of central data repository and data sharing. This, therefore, hampered the data capturing processes within the municipal directorates. Data collection efforts were duplicated and access to vital information was limited to certain individuals. The Information technology (IT) infrastructure was found not to be integrated, limiting the flow of information within the municipality. Kitchin et al. (2013) further revealed that document sharing was found to be limited and only the staff directly responsible for the documents knew about them. This led to poor document update and poor content management within the municipality.

3.6 Role of knowledge transfer in local government

The transfer of knowledge between expert personnel and the different departments within an organisation promotes the utilization of the needed knowledge in producing services and goods that necessitate a combination of many areas of specialised knowledge. According to García-Sánchez et al. (2015, p. 9), “the higher the number of knowledge transfers, from different qualified and prepared sources, the greater and more efficient the organisation’s use of knowledge will be.” Precise, rapid KT increases the organisation’s competency to use the knowledge resourcefully when there are business opportunities.

Sheng, Chang, Thompson and Yuh-Feng (2013) claim that KT is a strategic way for organisations to create and share their knowledge, which can improve competitive advantage. The purpose of KT in organisations is to improve the performance ability by increasing their fundamental values. The purpose of KT is the transfer of personal experience or knowledge through a range of transfer mechanisms extended to each employee in the organisation. The KT aims to enhance the capacity of employees to augment organisational performance, thereby increasing the municipality’s competitive advantage (Sheng et al., 2013).

The process of KT has a positive influence on the municipality and its employees. According to Kuras and Kuras (2015), employees perceive that when they attain new knowledge, they gain the possibility of solving problems which were not simple before. Problems can be solved faster and tasks better implemented with the newly acquired knowledge. Therefore, an increase in employees' self-esteem and motivation is positively influenced by KT. In turn, the employee transferring knowledge receives prestige and recognition amongst other employees in the municipality. Employees may also take pleasure in contributing to the development of this knowledge and expect to be given the financial or non-financial reward for undertaking activities connected with knowledge transfer (Kuras & Kuras, 2015).

3.7 Socio-technical barriers to knowledge transfer within South African local government

The local government employee's intentions to transfer knowledge can be influenced by several factors. Knowledge transfer in organisations depends on many factors such as organisational structure, people, organisational culture, information and communication technologies (ICT), and strategy to overcome knowledge barriers (Sheng et al., 2013). The following sections will discuss these factors using the four quadrants of the Socio-Technical Systems Theory discussed in section 3.2. These quadrants are the: people, structure, technology, and tasks.

3.7.1 People

According to the Socio-Technical Systems Theory, the people quadrant falls in the social sub-system. The social sub-system is more than the technical control of responsibilities that are performed by local government employees. In this sub-system, individual jobs are merged with technical tasks and with duties assigned to groups.

As knowledge is entrenched in employees minds, produced and developed by employees, sharing it is necessary for its creation, transfer, and use at all higher levels and cannot be transferred without involvement of the employees, which requires learning (Duan, Nie, & Coakes, 2010). For knowledge sharing to be effective, fundamental changes are required in the way municipalities run their business (Ismail & Yusof, 2010). This is important because the heart of any effective change in an organisation is the employees themselves. Employees'

knowledge is generated and extended through social interaction between employees and their creative activities. Changing people's behaviour seems to be the biggest obstacle especially when promoting knowledge transfer among employees (Ismail & Yusof, 2010).

Individual factors include physical objects, such as technologies and tools, to abstract concepts, such as providing incentives and motivation to inspire knowledge transfer. Other abstract concepts include self-identity, personal values, national culture, organisational trust, organisational resources such as space and time, altruism, awareness, personality, and access to knowledgeable people in an organisation (Alhalhouli, Hassan, & Der, 2014).

Several studies have identified the barriers that impede the transfer of knowledge in organizations. Zaher (2012) has grouped these barriers into human, organisational, political, technical and financial barriers. Human barriers such as staff retirement, cultural barriers, employee's opposition, time requirements and extra effort, failure in ownership and staff defection "lead to poor employee motivation, who subsequently fails to be committed to work and reduces their productivity and drive to achieve the objectives of the sector" (Zaher, 2012, p. 421). According to Ranjbarfard et al. (2014), many barriers exist along with the knowledge management processes. These barriers turn the transfer of knowledge into a very challenging activity. Ranjbarfard et al. (2014) identified the barriers in a more precise classification considering the barriers related to the organization, people, technology, environment and characteristics of the knowledge. Barriers related to people include basic psychological phenomena, which occur as the individuals perceive their environment, such as fear of disadvantages and lack of motivation. In the absence of effective information systems and information technologies (IS/IT) such as knowledge base, portals, business intelligence, data mining and customer management systems, effective knowledge management is impossible.

The sub-sections below will focus on the individual factors that influence the local government employee's intentions to share knowledge. These factors include motivation, self-efficacy, reciprocity, and trust.

3.7.1.1 Motivation

Organisations have both knowledge seekers and knowledge providers. Cho and Korte (2014) claim that in an established knowledge-based organisation, those who have knowledge should make it available to those who are seeking it at all times. Knowledge is an essential

source of competitive advantage, therefore it is crucial for municipalities to find the ways to motivate and manage employees to share knowledge.

Motivation is a requirement for KT. As knowledge exist within individuals, it cannot be shared successfully if those who possess it are not motivated (Amayah, 2013). Hence, it is essential to understand the factors that motivate employees to transfer knowledge. Amayah (2013) provides three classifications of motivating factors that influence the employee's willingness to transfer knowledge with other employees. These include personal benefits, normative considerations, and community-related considerations. Employees may be motivated to transfer or share their own knowledge because they anticipate that KT will be beneficial to them. Personal benefits from KT include emotional satisfaction, career advancement and status, intellectual benefits and a better professional reputation.

"Normative considerations refer to organisational norms which employees are expected to obey" (Amayah, 2013, p. 457). Employees are required to consider the cultural norms and values that encourage them to share their knowledge. Attitude, goals and behaviours are affected by values. Therefore, employees who share common vision and values likely to share knowledge (Amayah, 2013). Community-related considerations are the moral obligations where employees may feel that they need to benefit or advance others in their workplace. There are three community-related considerations that may influence one's motivation to share knowledge. They also share knowledge as a means to build a stronger community and share it to strengthen their position within an organization or community.

The conversion of knowledge into a format that can be shared is costly, it needs effort, and is also time consuming. therefore, those who are in apposition to provide knowledge are often not willing to share it unless they are rewarded for it directly (Cho & Korte, 2014). Possession of knowledge, especially in a municipality environment, such as problem solving, dealing with customers, and relating to political or sensitive issues, is often considered as a power which secures people's job position, and they are reluctant to share with others. This statement is supported by Dube and Ngulube (2012, p. 74) who indicate that:

> The idea of *'what is in for me'* is based on the social exchange theory which is predicated on the conviction that people are likely to help each other when there is a positive cost-benefit analysis in which the benefits are perceived to be greater than the costs. Therefore,

employees who share their knowledge should be recognised and rewarded with desirable rewards to reinforce anticipated behaviour.

3.7.1.2 Self-efficacy

Self-efficacy is an essential factor developed from social cognitive theory and represents an individual's judgment of his/her ability to perform a particular course of action or behaviour (T. Wang & Feng, 2015). Self-efficacy is about how employees judge their abilities to organize and execute courses of action. Self-efficacy is not about the skills one has, but it is about the judgments one can do with whatever skills one possesses (Okyere-Kwakye & Nor, 2011). Self-efficacy is "a judgment of one's ability to organize and execute given types of performance" (Tamjidyamcholo, Bin Baba, Tamjid, & Gholipour, 2013, p. 225). Self-efficacy is one's self-assessment, which plays an essential role in shaping the employee's planned behaviour.

A high level of self-efficacy in an employee will make the person much more self-confident about his/her skills and skills, and reinforce motivation. Therefore, such an employee will engage in actions and activities more enthusiastically and employ their cognitive resources to successfully perform a duty (Tamjidyamcholo et al., 2013). Self-efficacy has a significant impact on the employees' intentions to share knowledge (Shanshan, 2013). Perceived self-efficacy plays an important role in influencing individual behaviour to share knowledge with other employees. Self-efficacy increases one's efforts and actions, self-regulation, and the determination when facing barriers and challenges. Individuals with high self-efficacy are likely to be more perseverant in the face of obstacles and more active in knowledge acquisition and sharing (T. Wang & Feng, 2015).

3.7.1.3 Reciprocity

Reciprocity is the employee's beliefs that active contributions to the organisation and their kindness will be reciprocated. Employees improve their efforts at work to share knowledge when they expect that their work performance will be rewarded, and their success recognised (Liou, Chih, Yuan, & Lin, 2016). This is an indication that when organizations provide rewards that reach member expectations, these rewards influence member behaviour. Norm of reciprocity is a conversation, which is fair and mutual. Meaning that both employees involved in this relationship consider this knowledge exchange as fair and just. The norm of reciprocity

indicates “actions that are contingent on rewarding reactions from others, and that cease when these expected reactions are not forthcoming” (Tamjidyamcholo et al., 2013, p. 225).

From the KS perspective, Chai, Das and Rao (2011) describe reciprocity as a fair mutual knowledge sharing behaviour. A reciprocal relationship is the degree to which employees believe that they can improve mutual relationships with others through KS.

3.7.1.4 Trust

Trust is considered as the main factor affecting KT in organisations (Chai et al., 2011). Seba, Rowley and Lambert (2012) also indicate that trust has frequently been recognised as a precursor to KT. Okyere-Kwakye and Nor (2011) regard trust as the focal point of every relationship within an organization. If there is no trust in those who transfer knowledge, different kinds of knowledge, such as scientific and moral, cannot be properly acquired or distributed. The initial step that is needed for online users to contribute in a relationship via online transactions is to develop trust in both the technical aspects of the Internet and the human community (Chai et al., 2011).

Seba et al. (2012) have classified trust into two groups which are personal knowledge-based trust, and institution-based trust. Inter-personal trust improves on the basis of frequent social interactions among individuals, and its role in KT has often been studied by means of theoretical lens of social exchange theory or social cognition. Seba et al. (2012, p. 375) concluded that “the level of trust between employees influences employee attitudes towards knowledge sharing.” According to Okyere-Kwakye and Nor (2011), trust has been proven to be the most cost saving method that improves KT inside the organisation.

Trust also improves the act of KT amongst the employees of an organisation. Whenever there is trust amongst employees in an organisation there is a propensity to higher commitment and cooperation. According to Shanshan (2013, p. 70), employees “are more likely to exchange and more willing to share their resource if trust is founded, which the higher the degree of trust, the more individuals incline to share their knowledge with others.” Trust is a critical influencing factor to KS, for without trust, KS is of no meaning. Trust is also an essential promoter to the efficiency of KS, advancing the communication of knowledge.

3.7.2 Structure

The structure quadrant also falls under the social sub-system on the Socio-Technical Systems Theory. Organisational structures are widely recognised for their impact on inter-personal and inter-departmental communication opportunities. It has been recognised that organisational structures and cultures should not in themselves present a barrier to KT, but rather that the practices and application of KT should be adapted to suit specific organisational situations (Seba et al., 2012). This section will discuss how local government KMSs are structured. Organisational factors such as organisational culture, top management support and organisational structure will be discussed.

3.7.2.1 Organizational culture

Amongst the findings of the study conducted by Auernhammer and Hall (2016) was the new perception into how organizational culture influences practices of innovation and creativity as employees interact within the broader organisational context. Organisational culture plays an imperative role in managing the organisational changes within the municipality (Kathiravelu et al., 2013). Shanshan (2013, p. 69) defines organizational culture as "the spiritual model shared by a group of organization members that is related to beliefs, including norms, practices, management processes, assumptions, customs and organizational memory."

An effective organisational culture for KM entails practices and norms that inspire the transfer of information across department lines and between employees (Theriou et al., 2011). Within local government, organizational culture can perform four functions. Organisational culture provides employees with organisational identity; it encourages social system stability; facilitate collective commitment; and forms the behaviour by helping employees to make sense of their surroundings (Mannie, Van Niekerk, & Adendorff, 2013). A collaborative culture is a key aspect for KS among teams and employees since the process of transferring knowledge requires employees to come together to discuss, interact and share knowledge (Sedighi & Zand, 2012).

The culture of an organisation changes over time as organisations adjust to environmental opportunities. Every organisation has its own specific culture and its own exceptional practices. An effective knowledge management culture entails practices and norms that stimulate the transfer of knowledge across department lines and between employees (Theriou et al., 2011).

As the organisational culture embraces norms, values, expectations, and other evident behaviours, it is imperative for organisations to promote and modify their culture in order to affect the desired outcomes (Cho & Korte, 2014). Building an effective culture where people work in an organisation is an essential prerequisite for effective KT. Shanshan (2013) highlighted that it is impossible to transfer knowledge that is not entrenched in indigenous cultural practices and settings for reciprocity norms dominate successful KT. Therefore, organisational culture affects the attitude toward the sharing of knowledge.

Muzondo and Ondari-Okemwa (2015) examined the influence of organisational culture on internal knowledge creation and evaluated the challenges of producing knowledge at the Africa Institute of South Africa (AISA). They found that AISA had been confronted and would continue to be confronted by various challenges in generating knowledge. The challenges confronting AISA encompassed insufficient learning facilities; information illiteracy in the organisation; lack of KM policies; lack of support from top management; little understanding of the value of knowledge; lack of technology for KM; lack of knowledge producing skills; non-commitment; inadequate knowledge processing capability; an unfavourable environment for producing knowledge; and bureaucracy.

Cultural differences within an organisation have a negative impact on KS. A study by Dikotla, Mahlatji and Makgahlela (2014) provides a relevant example using the Limpopo Province individuals from different ethnic groups who are employed in the government sector. Employees find it impossible to share knowledge they possess due to cultural differences. Dikotla et al. (2014) also use a Northern Sotho expression *"kgomo ga e ntšhe boloko ka moka"* meaning, one should not or cannot share with others one's entire knowledge. This is related to what Mothamaha and Govender (2014) found among the City of Johannesburg employees. The city is still far away from reaching the culture of knowledge sharing since the older generation employees are still unwilling to share their knowledge, subscribing to the notion that *"knowledge is power."*

A study by Ondari-Okemwa and Smith (2009) revealed that a culture of sharing knowledge and information among local government employees is still lacking in Kenya. They argue that in Kenya and sub-Saharan Africa, traditional cultures discourage the information and knowledge sharing. The Stellenbosch Municipality was found by Gaffoor and Cloete (2010) to

have an organizational culture that demonstrates possibility for emerging into a successful culture that can withstand the application and running of knowledge sharing efforts.

3.7.2.2 Top management support

The transfer of knowledge is achieved through top management support for ICT, which is strategic in any organisation. Management and leadership have been recognised as key influencers of effective KT, particularly in research in the public sector (Seba et al., 2012). Municipal employees look to their managers and leaders to act as role models and to show commitment, explain what was expected of their team members, and offer support. Top management support increases organisational knowledge acquisition, promotes knowledge exchange which contributes to problem solving (García-Sánchez et al., 2015). This support promotes access to knowledge and its storage, retrieval, transfer, processing and use among the employees. Shanshan (2013) believes that if employees have top management support, their attitudes toward KT will be more positive and they will feel more confident to share knowledge. When employees have the support from top management, they will feel more confident to transfer knowledge. Top managers' support of KT makes the resource allocation to KM more possible, which will encourage employees' optimistic attitude toward KT.

Wang and Noe (2010) also found that for knowledge transfer to occur, top management support has been shown to be positively linked with employees' perceptions of a KS culture and preparedness to share knowledge. Support from top management affects both the quality and level of KT through influencing employee commitment to knowledge management. Perceived supervisor and co-workers' support and their inspiration of KT also increase employees' knowledge exchange and their perceptions of usefulness of the sharing of knowledge.

There are organisational barriers to KT that also link to individual barriers, they include lack of leadership and poor management support, insufficient planning, and poor organizational structures. There are also political barriers that comprise challenges that involve the creation of meritocracy of ideas and knowledge markets (Zaher, 2012). Gaffoor and Cloete (2010) found that in Stellenbosch Municipality, the ultimate challenge to KM was the approval of the idea by leadership made up of top management and council members.

Norushe (2013), in her presentation at KMRG Quarterly meeting at EThekwini, revealed some of the challenges at BCMM posed by the lack of management support. A large proportion of top managers do not attend basic KM training workshops. This poses challenges in terms of mainstreaming KM in the Municipality. This non-attendance also poses challenges in obtaining the buy-in of senior managers in order to correct the perception that KM is a non-integral add-on function at BCMM, rather than a core competency for all the Municipality employees, as knowledge workers, and to inform action in terms of the implementation of KM strategy and framework. Norushe (2013, p. 59), Director of the KM unit at BCMM, concluded by indicating that the senior management's lack of commitment towards the mainstreaming of KM, "and without adequate training in this regard, serious challenges are posed regarding cascading the knowledge and commitment required for KM to succeed as a vital key component of all BCMM operations."

3.7.2.3 Organizational structure

In organizational structures, administrative mechanisms and work roles are formally allocated to integrate and control work activities (Islam et al., 2015). Organizations may not realize the real benefits of knowledge if their organisational design does not correspond with the established rules of knowledge sharing. If an appropriate organizational structure is not in place, knowledge may not be used to its full potential (Islam et al., 2015).

Cho and Korte (2014, p. 316) define an organisational structure as ''the design of organisational work flow and processes,'' as well as ''the pattern of interrelationships among key components of the system'' while Islam, Jasimuddin and Hasan (2015, p. 71) define it as "the ways in which tasks are formally segregated, classified and coordinated; and formal allocation of work roles and administrative mechanism to control and integrate work activities." An organisational structure generally takes the form of organisational norms, communication methods, and corporate policies that affect employee behaviour within an organisation. Since the structure of an organisation can affect employee behaviour, it should be designed to support effective knowledge transfer and flow (Cho & Korte, 2014).

Cho and Korte (2014) agree with Islam et al. (2015), specifying that an organisational structure tries to share responsibilities between organisational employees and organise the coordination of their different assignments, and it is throughout this process where knowledge

is created, transferred and shared. The organisational structure should be strategically designed to support knowledge activities because unintended structural barriers exist that hinder knowledge creation and sharing.

The hierarchical structures in local government organisations have an impact on employees with whom each employee normally relates and from or to whom the employee is expected to transfer knowledge (Becerra-Fernandez & Sabherwal, 2010). Reporting connections encourage the flow of data and information and the nature of teams who make decisions together. As a result, the creation and sharing of knowledge may be positively or negatively affected. In more decentralized organisations with larger groups of employees, KS is more likely to occur (Becerra-Fernandez & Sabherwal, 2010). The flexibility of organisational structure inspires collaboration and sharing of knowledge within the organisation (Sedighi & Zand, 2012).

In describing the relationship between organisational structure and KS process, Sedighi and Zand (2012) argue that vertically integrated organisations are less focused to generate innovation than horizontally integrated ones. Horizontally integrated organisations are more open and fluid. The social aspect of organisations has been viewed as a social network which is assumed to be composed of hierarchy, density and connectivity that establishes contact and ease of accessibility between employees in exchanging knowledge. An organisational structure also governs interactions and communication patterns, which are based on the social networking theory. Formalization and centralization of organisational structures affect knowledge flow. Therefore, a combination of formal organisational structure and a non-hierarchical, self-organising organisational structure would develop knowledge creation and sharing skills (Sedighi & Zand, 2012).

Gaffoor and Cloete (2010) found that the Stellenbosch Municipality has a top-down, hierarchical organisational structure which is not favourable to knowledge management processes. The structure was branded as having a bureaucratic nature and not being reactive to changes being implemented. It was also found that the structure was restraining the flow of horizontal communication. Ramsey and Barkhuizen (2011) found the structure of a particular South African SSC to be preventing the exchange of tacit knowledge. Employees conveyed a high degree of frustration due to silos existing within the organisation. Employees indicated that they were unable to network outside their respective silos. Norushe (2013) indicated that the fact that the KM unit at BCMM is not at departmental level was concerning as such a unit

is strategic and needs to interact with directors and senior leadership regarding knowledge and knowledge policies of the Municipality.

Ranjbarfard et al. (2014) provided barriers that relate to the organisation. These barriers include lack of fitness between knowledge and significant organisational objectives, organisational culture, leadership styles, decentralization, unclear and strict job descriptions, strict rules and regulations where knowledge exchanges are hierarchical and formal, and lack of knowledge retention rates of highly skilled and experienced staff. Barriers related to the environment include success criteria, the market, and environmental changes. The barriers associated with the characteristics of knowledge include the abstract nature of learning and knowledge and characteristics of the knowledge itself.

3.7.3 Technology

Knowledge management and IT have common objectives of transforming local government organizations into more agile, innovative, efficient, effective and more responsive forms. The observation of Local Government Authorities (LGA) indicates that they lack integrated IT infrastructures which make them redundant and inconsistent in generating data, and to have inefficient knowledge transfer and poor service quality and delivery (Ozlen, 2013). Information systems are considered as valuable tools for KT, and technologies such as knowledge repositories, decision support systems, intranets, and social networking sites all afford opportunities for communication and transfer of knowledge (Seba et al., 2012). Kathiravelu et al. (2013) also agree, indicating that more organisations have been employing technological innovation to promote positive knowledge sharing culture among their employees. When organisations introduce technology, knowledge sharing is expected to increase among the employees.

Designing a system to share knowledge in municipalities requires that the combination of technology, people, information and processes be established (McNabb, 2007). Sedighi and Zand (2012) stress that easiness of technological interface, suitability to users' requirements, relevancy of knowledge content and regulation of knowledge are significant factors that should be considered in the improvement of a knowledge management system. In local government, KMSs enable organizations to develop and maintain the ability to organize and store every day an invaluable knowledge to be used for business purposes. KMSs support organizations in

identifying relevant information needed for business processes, and also assist in strengthening interagency collaborations (McNabb, 2007).

According to Ozlen (2013), there is a growing number of KMSs that are used in local government to facilitate knowledge sharing. KMS support local government knowledge management activities by providing knowledge sharing platforms, repositories and expert directories. In a study of eThekwini Municipality's intranet for enhancing KS, Averweg (2012) found that the intranet seems to be at a medium maturity level in this municipality. The study revealed that although knowledge is being shared in eThekwini Municipality, the intranet not effective as a KS structure. The results indicate that there seems to be an opportunity for the development of the content on the intranet. Averweg (2012) argues that intranet plays a key role in the municipality by supporting the effective creation, presentation and sharing of knowledge. Averweg (2012) further argues that intranet must be well managed to readily enhance KS in the organizational environment of municipalities in South Africa.

Barriers associated with technology include legacy systems, non-existence of relevant technology, useless technology and unrealistic expectations of technology (Ranjbarfard et al., 2014). According to Zaher (2012), there are technical barriers that embrace the poor organisational IT design and planning, lack of IT infrastructure and poor networking.

A study done by Gaffoor and Cloete (2010) on Stellenbosch Municipality investigated how municipalities were capable of successfully implementing KM processes as strategic tools used to realise operational goals and service delivery. The study assessed how KM enablers impact on the municipality's KM efforts. These enablers are information technology, human resources, organisational culture, organizational structure, strategy and leadership. These enablers are discussed in section 3.7.2.

The study revealed that the municipality has many IT systems in place, but employs several systems in different departments and there is no single system traversing the entire municipality. Due to lack of integration in the systems, information sharing was hindered and access to information resources was inadequate. The study recommended that for Stellenbosch Municipality to become a knowledge-based organization and realize organizational efficiency, they have to develop a clear KM strategy. The municipality needs to identify the main

characteristics of the enablers that must be established in order to make them more valuable to KM efforts (Gaffoor & Cloete, 2010).

Research done on IT development within South African municipalities indicates that over 80% of municipalities do not have Master System Plan (MSP) documents for IT (Kaselowski, von Solms & von Solms, 2010). The reasons for the lack of MSPs were attributed to a lack of knowledge and understanding of the IT sector and the lack of skilled human resources within municipalities' IT function. Therefore, the operation of IT function in municipalities seems to be very technically-orientated and focused on the day-to-day operations of networking, PC hardware, Internet and e-mail (Kaselowski et al., 2010).

In assessing the readiness for the application of KM in local governments, Gaffoor (2008) interviewed the ICT managers of Stellenbosch municipality. In terms of awareness and culture pertaining to KM in the ICT department, he discovered that senior managers were not familiar with the concept of knowledge management. Gaffoor (2008) also found that the ICT department had not grown in relation to the municipality's growth in general. Their ICT infrastructure was lagging behind in many areas, especially in terms of KM.

The Stellenbosch municipality ICT infrastructure was found not to be supporting knowledge sharing and management within the municipality. Although the municipality had various information systems in place, there was no single database which served as a central information repository (Gaffoor & Cloete, 2010; Gaffoor, 2008). The Stellenbosch municipality also did not use innovative information systems such as expert systems, Decision Support Systems (DSS) and Management Information Systems (MIS).

3.7.4 Tasks

Designing a KMS for local government organizations requires consideration of the major processes that constitute the knowledge management discipline (McNabb, 2007). The four major processes existing in knowledge management, as discussed in Chapter 2, are knowledge generation, knowledge storage, knowledge sharing and knowledge application (Becerra-Fernandez & Sabherwal, 2010; Chigada, 2014; Gaffoor, 2008).

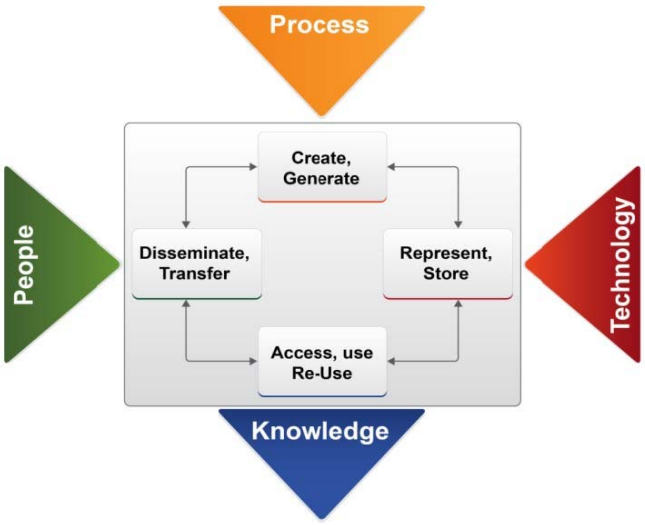


Figure 8: KM components and process (Al-Khouri, 2014)

Figure 8 illustrates the four components of KM which are people, process, technology and knowledge, together with the four steps of KM process. The following section will discuss the challenges experienced by municipalities under each component.

3.7.4.1 Systems that enable knowledge generation

The limited input of community knowledge has been a concern in municipalities. In Durban's eThekwini municipality, knowledge is fed directly to the city level by councillors (Baud et al., 2013). Knowledge input from poor communities in Durban is inadequate due to measures followed in public participation processes, excluding those without access to public media (Baud, Scott, Pfeffer, Sydenstricker-Neto, & Denis, 2015).

3.7.4.2 Systems that enable knowledge storage

Knowledge storage can be supported by data warehouses because they act as central repositories for storing the local government relevant information (Canzano & Grimaldi, 2012). Data warehouses can be accessed by employees through intranets. Document management systems (DMS) control store and control access to files in the repository. Content or index terms are used to search the files within DMS (Canzano & Grimaldi, 2012). Frost (2010) also supports the above statement by indicating that DMS are systems that enable organizations to store, publish, index and retrieve the documents.

For knowledge storage, South African municipalities make use of the following platforms provided in the toolkit (Kitchin et al., 2013):

- IT-based tools: Information technology provides tools and systems that enable knowledge management to fulfil its goals. These tools comprise of groupware systems, intranet, content and document management systems, and data warehousing and mining.
- Directories of experts help employees to find who has expertise or knowledge for a particular project or task. These directories also help employees to seek guidance from other employees in other organizations.

3.7.4.3 Systems that enable knowledge transfer

Baud et al. (2013) studied the spatial KM in urban local government; they were concerned about the absence of KS among the line departments in City of Cape Town and eThekwini municipalities. This has limited the opportunities of integrated mapping of urban matters and use of such mapping for more tactical forms of area planning. In Stellenbosch, Gaffoor (2008) found that the municipality has outsourced most of the functions to consultants that operate information systems independent of the municipality. This has affected knowledge sharing within the municipal departments as they have no access to the information or to tweak the system to their needs.

3.7.4.4 Systems that enable knowledge application

Municipal staffs have been found to lack the skill to analyse data, therefore municipalities had to look at the private sector for these skills. Baud et al. (2015) found that exchanges can be inadequate and challenged in the relationship with the private sector working as consultants to the municipalities. EThekwini municipality, for example, commissions influential Geographic Information System (GIS) consultants to analyse their spatial data (Baud et al., 2013). The private consultants afford the ability to use the knowledge to better advantage.

Knowledge ambiguity is the basic uncertainty regarding the nature of the causal connections between actions and results (Sheng et al., 2013). Ambiguity consists of tacitness, specificity and complexity. Tacitness is defined as the implicit and non-codifiable accumulation of skills

resulting from learning by doing. Knowledge ambiguity is negatively related to KT within the organisation.

3.8 Summary of the socio-technical challenges in SA municipalities

Literature reviewed in this chapter has revealed that there are knowledge transfer challenges within South African municipalities. These challenges are presented in Table 6 below, making use of the two sub-systems of the socio-technical approach. Socio-Technical Systems Theory defines an organisation as a duality of interrelated social and technological subsystems that function as a whole within its operating environment. This theory is used to emphasize the interrelationship between social factors and technological factors in understanding an organization. According to the socio-technical theory, KT as a strategy enables the formulation of knowledge and practices around operational environments and organizational cultures to improve competences and develop skills of employees. The challenges below were also found by Ncoyini and Cilliers (2016a, 2016b).

Table 6: Socio-technical summary of factors

Social System	**Technical System**
Structure	***Technology***
▪ inadequate learning facilities; ▪ absence of knowledge management policies; ▪ little support from top management; ▪ lack of commitment; ▪ limited knowledge processing capacity; ▪ bureaucracy or officialdom; ▪ lack of knowledge sharing due to cultural differences; ▪ traditional cultures discourage information and knowledge sharing; ▪ insufficient planning; ▪ poor organizational structures;	▪ lack of technology for knowledge management; ▪ many IT systems in place but they employ several systems in different departments; ▪ no single system traversing the entire municipality; ▪ legacy systems; ▪ lack of available technology; ▪ useless technology and unrealistic expectations of technology; ▪ technical barriers that embrace the poor municipality IT design and planning;

▪ senior management's lack of commitment towards the mainstreaming of KM; ▪ top-down, hierarchical organizational structures not favourable to KM efforts; ▪ structures characterised by bureaucratic nature and not responsive to changes being implemented; ▪ structures restraining the flow of horizontal communication; ▪ structures that prevent exchange of tacit knowledge; ▪ a high degree of employee frustration due to the existence of silos; ▪ employee inability to network outside respective silos	▪ lack of IT infrastructure and poor networking; ▪ no single database that serves as a central information repository; ▪ lack of innovative information systems such as expert systems, Decision Support Systems and Management Information Systems; ▪ ICT departments not grown in relation to the municipality's growth in general; ▪ ICT infrastructures lagged behind in many areas, especially in terms of KM; ▪ over 80% of municipalities do not have Master System Plan (MSP) documents for IT; ▪ lack of knowledge and understanding of the IT sector; ▪ lack of skilled human resources within municipalities' IT function; ▪ operation of IT function in municipalities seems to be very technically-orientated and focused on the day-to-day operations of networking, PC hardware, Internet and e-mail
People ▪ information illiteracy in the municipalities; ▪ lack of knowledge producing expertise;	***Tasks*** ▪ an unfavourable environment for producing knowledge; ▪ lack of a single database that serves as a central information repository;

▪ little understanding of the value of knowledge; ▪ older generation employees subscribe to the notion that *"knowledge is power;"* ▪ perception that KM is a non-integral add-on function of the municipality; ▪ reluctance to share knowledge due to job security; ▪ competition among employees reduces knowledge sharing intentions; ▪ acceptance of knowledge sharing concept by leadership; ▪ lack of commitment in sharing organizational knowledge; ▪ cultural differences among employees affect knowledge sharing	▪ limited knowledge processing capacity; ▪ lack of knowledge producing expertise; ▪ lack of IT infrastructure and poor networking; ▪ structures that prevent exchange of tacit knowledge; ▪ lack of commitment in sharing organizational knowledge;

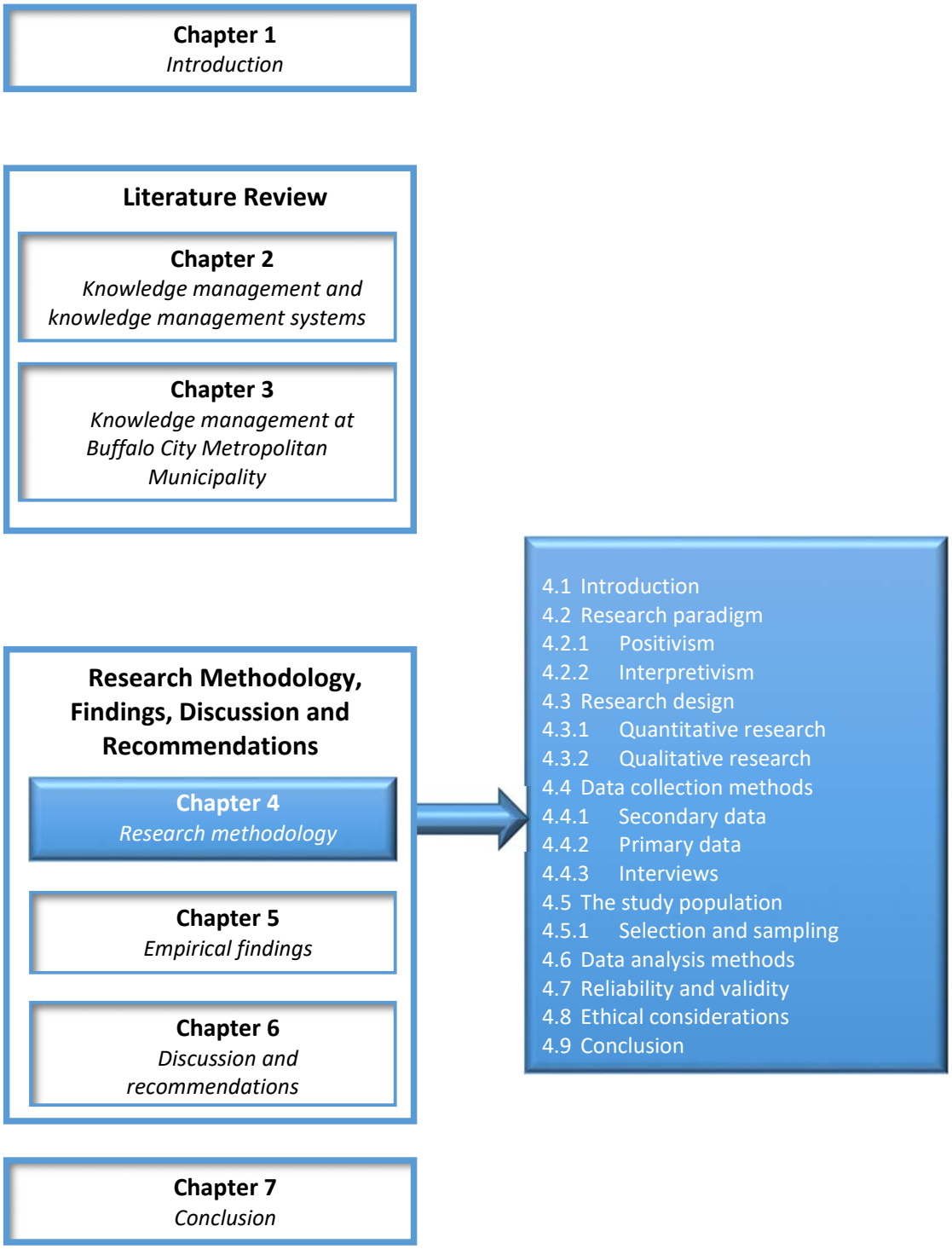
3.9 Conclusion

This chapter forms part of the theoretical foundation of this study. While Chapter 2 provided and overview of knowledge types, discussed knowledge management processed and provided a detailed account of knowledge management systems; this chapter introduced and discussed the theory that has been used in this study. The Socio-Technical Systems Theory has been used to investigate the extent to which information systems can be used to improve the knowledge transfer in local government. This theory emphasises two sub-systems which are the social and technical sub-systems. The socio-technical approach to knowledge management emphasises the interrelatedness of the functioning of the social and technological sub-systems of an organisation, and the relation of the organisation as a whole to the environment in which it operates.

In this chapter, an overview of the South African local government has been discussed. South Africa has three categories of municipalities. Metropolitan areas are classified under category A, while local municipalities are classified under B, and C covers all the areas that fall outside the metropolitan municipalities. Buffalo City Metropolitan Municipality falls under the eight category A municipalities. The BCMM structure has been reviewed during the 2015/16 financial year and has now ten directorates (see Table 5). Information, Knowledge Management, Research and Policy fall under the Directorate of the City Manager's Office.

A knowledge audit conducted at BCMM revealed the lack of a central data repository and data sharing, as a result data capturing processes were hampered within the municipal directorates. The non-integration of the IT infrastructure was found to be limiting the flow of information within the municipality.

Chapter 4: Research Methodology



4.1 Introduction

Research methodology and research methods are regarded as distinctive concepts (Wahyuni, 2012). A methodology can be seen as a map of research, while a method refers to a set of steps to travel between two places on the map. A methodology denotes a model to embark on research within the framework of a specific paradigm. It also encompasses the fundamental sets of views that guide a researcher to select one set of research methods over another (Wahyuni, 2012).

An orientation of this research project has been provided in Chapter One. This chapter will discuss the subject of the research design and methodology in this research study, as well as validate the selections made. The research design is applied in order to make certain that appropriate research methods are used to guarantee the realisation of the objectives and goals established out in Chapter One. Firstly, this is to provide the research strategy. Secondly, this should allow the researcher to anticipate the suitable research design, to guarantee the validity of the final results.

In order to provide direction to this study, the 'research onion' which illustrates the six research stages as identified by Saunders, Lewis and Thornhill (2012) was adopted (see figure 9). The research onion provides a summary of the main issues that need to be taken into consideration and reviewed before undertaking any research. The different layers of the onion serve as a basis from which to ponder the following: the philosophical orientation of the researcher; the research approach adopted; appropriate research strategies; the research time lines that are under review; and the data collection techniques employed by the researcher.

Therefore, this chapter follows the 'research onion layers', starting with an explanation of the research paradigms or philosophies including positivism and interpretivism that are found in literature. The research design and methodology, approach and strategy are discussed in the next section. This research project has followed an inductive logic approach, making use of the mono method strategy. The cross-sectional time horizon was used in this project. The data methods used in the research project included interviews and a literature review. The next section discusses the philosophical research paradigms.

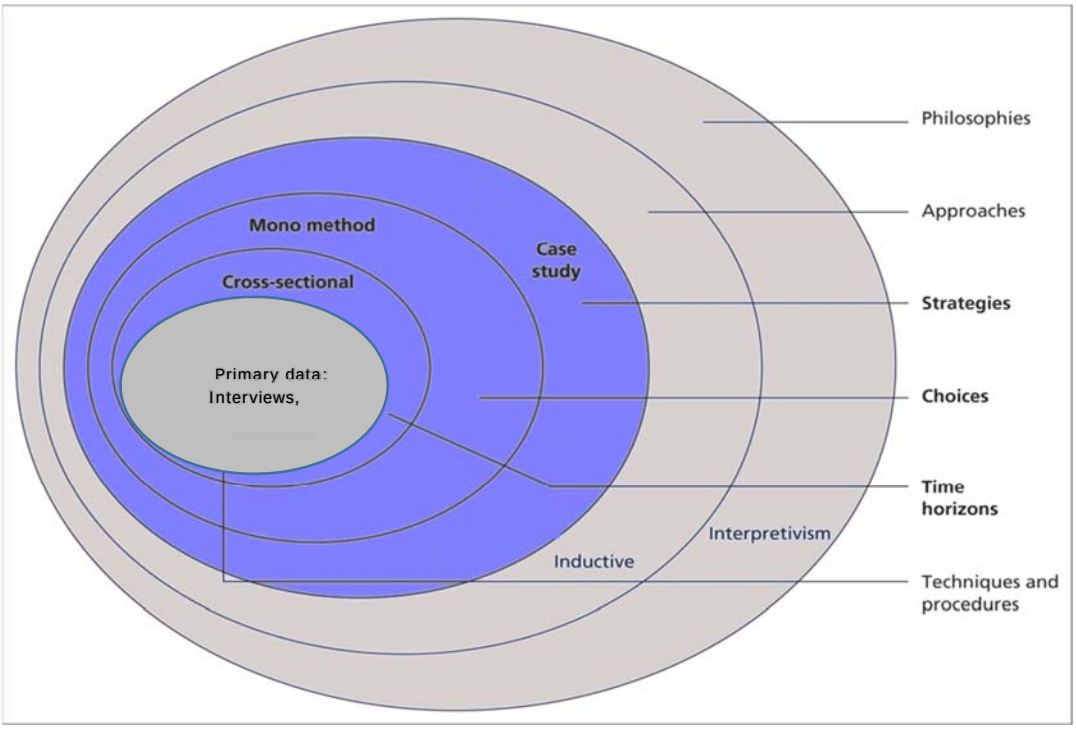


Figure 9: The Research Onion (Adapted from Saunders, Lewis, & Thornhill, 2012)

4.2 Research paradigm

The role of the research paradigm in any research project is to set the overarching context (O'Reilly & Kiyimba, 2015). According to Saunders, Lewis, and Thornhill (2012), research paradigms are used to study social phenomena from which certain understandings of these phenomena can be achieved and justifications attempted. The term paradigm originated from the work of Thomas Kuhn who described a paradigm as "a set of general philosophical assumptions about the nature of the world and how we can understand it, assumptions that tend to be shared by researchers working in a specific field" (Maxwell, 2005, p. 36). A paradigm in research is a basic set of assumptions or beliefs agreed upon by a scientific community which define the nature of the world and the place of individuals within it (O'Reilly & Kiyimba, 2015).

Paradigms include specific methodological strategies associated with philosophical assumptions, and classify individual studies that are seen as demonstrating these methods and assumptions (Maxwell, 2005). The roots of the quantitative and qualitative methods cover

different philosophical research paradigms, namely those of positivism and interpretivism, as illustrated in Figure 2 below (Collis & Hussey, 2009).

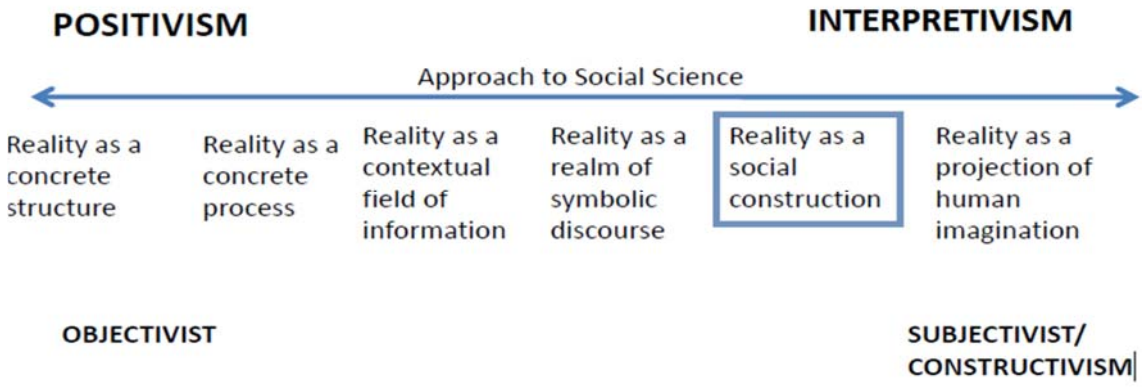


Figure 10: Continuum of core ontological assumptions (Collis & Hussey, 2009)

The continuum of core ontological assumptions, illustrated in Figure 10, indicates that this study falls into the *"Reality as a Social Construction"* stage. At this stage, which is the fifth stage of the continuum, Collis and Hussey (2009) state that individuals create the social world through language, actions and routines. For the purposes of this study, the researcher has used the interpretivism paradigm, making use of a case study involving interviews. Therefore, the interpretivist paradigm has been considered appropriate for the study as qualitative data were collected and used to inductively interpret the attitude towards and behaviour of employees at the BCMM towards knowledge management systems.

4.2.1 Positivism

Human beings are seen objectively, and as a result, social scientists observe different possibilities to study human society. Positivism promotes the belief that there is a direct relationship between the world and the researcher's view of it, claiming that there is a world that is accessible through research (O'Reilly & Kiyimba, 2015). Positivism can be drawn from Auguste Comte. Comte perceived human beings as a phenomenon that can be studied scientifically. Hence, positivism may be regarded as an method to social research that strives to apply the natural science model of research as the point of departure for investigations of social phenomena and justifications of the social world (Babbie, 2011).

The positivist view considers the world as objective and external to the researcher, and also considers people and things to be alike (Saunders et al., 2012). Further, the ontological assumption is that the research subjects and the researcher do not have direct contact. The epistemological assumption is that, knowledge can be measured with great accuracy and precision. The researcher should not interfere with the research respondent's opinions, perceptions and ideas (Saunders et al., 2012).

Oates (2006) criticises positivism for its association with the need for replication in research. Oates (2006) argues that it is also increasingly difficult in the social world for all the converging characteristics to be identical without manipulating the setting. Subsequently the quest for generalisation often ignores the unique qualities or the context of a social phenomenon. Positivism relies heavily on experimental and manipulative methods. It involves studies which test theories to understand the phenomenon and provide objective results. The positivist approach produces effective results that are easily generalisable, but fails to capture the social nature of humans (Rama, 2013). Therefore, this positivist philosophical stance is not suitable for this study which investigates how KMS can be used to improve the KT at Buffalo City Metropolitan Municipality.

4.2.2 Interpretivism

According to Saunders et al. (2012), interpretivism defines a manner in which individuals make sense of the world around them. People are in a continual process of interpreting the social world around them in that they interpret the actions of others with whom they interact; this interpretation leads to the modification of one's actions and meanings. The continuum of core ontological assumptions, illustrated in Figure 2, indicates that this study falls into the *"Reality as a Social Construction"* stage. At this stage, which is the fifth stage of the continuum, Collis and Hussey (2009) state that individuals create the social world through language, actions and routines.

Saunders and Tosey (2013, p. 58) recommend that "where the researcher is more concerned with gathering rich insights into subjective meanings than providing law-like generalisations, she or he is more likely to reflect the philosophy of interpretivism." Interpretivism relates to the study of social phenomena in their natural settings. It centres on conducting research

amongst people rather than upon objects, embracing an empathetic standpoint so as to understand their social world and the meaning they give to it from their point of view.

For the purposes of this study, the researcher will use the interpretivist paradigm, making use of a case study involving interviews. Therefore, the interpretivist paradigm is considered appropriate for the study as qualitative data will be collected that can be used to inductively interpret the attitude towards and behaviour of employees at the BCMM towards knowledge management systems. The next section will discuss the research design used in this study.

4.3 Research design

Research design is the process of focusing the research perspective for the purposes of a particular study (De Vos et al., 2011). The focus is on the end product and all the steps required to achieve the outcome anticipated. Yin (2014, p. 20) defines research design as "a logical plan for getting from here to there, where here may be defined as the initial set of questions to be answered, and there is some set of conclusions about the questions." A research design is the functional plan where procedures and certain research methods are connected together to attain a valid and reliable body of data for empirically grounded analyses, conclusions and theory formulation. Therefore, research design affords the researcher with a clear research framework; it guides the methods, decisions and sets the basis for interpretation. According to Yin (2014), research design is a functional plan where procedures and research methods are combined to gain a reliable and valid body of data for empirically grounded analyses, theory formulation and conclusions.

In this study the case study design has been used. The purpose was to produce CSFs that can improve KMSs and KT among employees at BCMM, which will ultimately improve service delivery. The case study thus focused on how KMSs can be used to improve knowledge transfer within the Municipality. Yin (2014) defines a case study as a first-hand investigation focusing on an existing phenomenon within its real-life environment, where the boundaries between the phenomenon and its environment are not evident. Case studies are thus suitable for studying complex social phenomena. This case study investigated the availability of knowledge management systems in the BCMM and how the employees make use of these systems to share and transfer knowledge. Case studies offer insights that might not be achieved with other approaches. For example, Rowley (2002) indicated that in contrast to surveys, the

number of units studied in a case study is less than in a survey, but the depth of detail provided for each case is greater.

According to Oates (2006) determining how the research is to be designed requires a conceptual framework for a researcher to make explicit how the research topic was investigated and the process followed. Therefore, the primary distinction between quantitative and qualitative research methods will be discussed.

4.3.1 Quantitative research

Quantitative research approach, according to Creswell (2014), follows the confirmatory scientific method. The quantitative research concentrates on theory testing and hypothesis testing. Researchers who use this approach consider it to be of primary importance to state one's hypotheses and then test those hypotheses with empirical data to see if they are supported (Creswell, 2014). Yilmaz (2013) defines quantitative research as research that explains phenomena according to numerical data. These data are analysed by means of mathematically-based methods, mostly statistics. Quantitative research is a method of empirical research into a social phenomenon, testing a theory involving variables which are measured with numbers and analysed with statistics in order to determine if the theory describes phenomena of interest (Yilmaz, 2013).

According to Bryman (2012), quantitative research can be interpreted as a research strategy that stresses quantification in the collection and analysis of data. It involves a deductive approach to the relationship between research and theory, in which the emphasis is placed on the testing of theories. Creswell (2014) indicates that researchers use a deductive reasoning approach when they deduce from their hypotheses the observable consequences that should occur with new empirical data if their hypotheses are true. Researchers also use deductive reasoning if they conclude that a theory is false. If they draw this conclusion, they will then move on to generate and test new ideas and new theories. Bryman (2012) further argues that quantitative research includes the practices and norms of a natural scientific model and of positivism in particular. This research approach expresses a view of social reality as an objective, external reality.

The methods used for data collection in quantitative research include questionnaires, surveys and systematic measurements that involve numbers. Advocates of this research

approach use mathematical models and statistics to analyse their data and report their findings in impersonal, third-person prose by using numbers (Yilmaz, 2013).

4.3.2 Qualitative research

According to Saunders et al. (2012), qualitative research examine human choice and behaviour as it happens naturally, in detail. Qualitative researchers usually contend that reality is socially constructed. Social behaviour follows socially constructed norms. This approach is characterised by the collection of descriptive data which is done by making use of interviews and open-ended questionnaires. An inductive approach which is in line with qualitative research was the research approach used. This approach is mainly concerned with the generation of new theories from the data collected (Punch, 2014). Bryman (2012) in agreement with Punch (2014), indicates that qualitative research emphasises an inductive approach to the relationship between theory and research, where the emphasis is placed on the generation of theories. Qualitative researchers use inductive reasoning when they search for patterns in their particular data, when they make generalizations, and when they make inferences as to the best explanation (Creswell, 2014).

Qualitative researchers conduct observations and in-depth interviews, and the data are usually in the form of words (Creswell, 2014). "Qualitative research is used to describe what is seen locally and sometimes to come up with or generate new hypotheses and theories. Qualitative research is used when little is known about a topic or phenomenon and when one wants to discover or learn more about it. It is commonly used to understand people's experiences and to express their perspectives (Creswell, 2014, p. 33)." The next section will discuss the data collection methods.

4.4 Data collection methods

According to Creswell (2014), data collection includes setting the boundaries for the study, collecting information through unstructured, structured or semi structured interviews and observations, visual materials and documents, as well as establishing procedures for recording information. Primary and secondary data was collected. Primary data is collected by the researcher for the first time, while secondary data includes data that has been collected and recorded by someone else and is readily available from other sources (Surbhi, 2016).

4.4.1 Secondary Data

In this study the secondary data was collected by means of conducting desktop research which involved the reviewing of literature from previous studies such as articles from academic journals, books in both print and electronic formats, conference proceedings, relevant websites, and theories relating to this study. Electronic databases such as *ACM Digital Library*, *Sage Online Journals*, *Science Direct*, *Springer Link* and *Sabinet Reference* were used to find relevant literature. Research study keywords such as 'knowledge management', 'knowledge sharing', 'knowledge management systems', and 'local government' ware used as search terms. The secondary data collected was used to publish two articles (see appendices) from the researcher's honours project and subsequently informed the questionnaire that was used to collect primary data.

4.4.2 Primary Data

The primary data was collected by means of interviews and expert reviews. In qualitative studies, interviews are generally semi-structured or open-ended (Yin, 2014). The use of semi-structured interviews allowed the participants to expand on responses and enabled further probing by the researcher when necessary.

4.4.3 Interviews

The interview is most often selected as the main method for collecting empirical data of the relevant practices. A semi-structured interview, also known as the non-standardised or qualitative interview was chosen to allow more clarifying, probing and cross-checking questions. A semi-structured interview is a hybrid type of interview which lies in between a structured interview and an in-depth interview (Saunders et al., 2012). According to Wahyuni (2012), a semi-structured interview offers the merit of using a list of predetermined themes and questions as in a structured interview, while keeping enough flexibility to enable the interviewee to talk freely about any topic raised during the interview. "The use of an in-depth qualitative interview is considered as the appropriate format for case study research because in-depth questions cannot be answered briefly. It is anticipated that the researcher would need to ask for examples or more explanation on the answer given in order to gain a deep understanding of the issues" (Saunders et al., 2012, p. 112).

4.4.3.1 The interview schedule

For the purposes of this study, the structured part of the interview was developed according to the research objective of this study, to produce critical success factors that will improve KMS and KT among employees at BCMM, which will ultimately improve service delivery. Relevant webpage publications and journal articles were explored to collect ideas about pertinent practices to be included in the interview questions.

Wahyuni (2012) provides a direction on how to develop the interview questions and procedures. He formed a model of an in-depth qualitative interviewing process, called 'responsive interviewing.' Responsive interviewing is heavily supported by the interpretive research philosophy. This method stresses the significance of keeping the research design and questioning adaptive and flexible in order to facilitate the emergence of new information or adaptation to an unexpected direction (Wahyuni, 2012).

For purposes of this research project, the interview questions are structured to include open-ended main questions, follow-up questions and probes. The different sections of the interview questionnaire were structured using the following themes from the literature reviewed:

- Organizational culture and knowledge transfer;
- Top management support and knowledge transfer;
- Role played by effective knowledge management;
- Motivation and knowledge transfer;
- Use of information technology infrastructure for knowledge transfer; and
- Barriers to effective knowledge management implementation.

The interview questionnaire was constructed from literature and questionnaires used in previous similar studies. The questions were piloted using the two library staff members. For the purposes of the pilot study, the questions were adapted to suit the academic library environment. The next section will discuss the study population.

4.5 The study population

Engel and Schutt (2013) define a sample as a subset of a population that is used to study the population as a whole. De Vos et al. (2011) indicated that the term 'sample' suggests the

simultaneous existence of a population or universe of which the sample is a smaller section, or a set of individuals selected from a population. A sample comprises a subset of the population considered for actual inclusion in the study. A sample can also be viewed as a subset of measurements drawn from a population in which researchers are interested. The advantages of sampling are feasibility and convenience (De Vos et al., 2011). The use of samples result in more accurate information than might have been obtained if one had studied the entire population.

There are different ways of sampling. Samples are based on a probability sampling method and on a non-probability sampling method. According to Engel and Schutt (2013), probability sampling methods rely on a random or chance selection procedure, which is in principle the same as flipping a coin to decide which of the two people wins and which one loses. The advantage of probability sampling is that it enables the researchers to indicate the probability with which the sample results. This type of sampling is most often used in positivistic research in order to promote the reliability and validity of the research results.

This study will make use of non-probability sampling methods. The odds of selecting a particular individual in non-probability sampling are not known because the researcher does not know the population size or the members of the population (De Vos et al., 2011). Non-probability sampling methods are often applied to experimental studies testing the effectiveness of intervention or treatment methods. They are also employed to evaluate programs in organizations. Convenience sampling, purposive sampling, quota sampling and snowball sampling are methods of non-probability sampling (Engel & Schutt, 2013).

This study employed convenience sampling. In the convenience sampling method, participants are usually those who are nearest and most easily available (De Vos et al., 2011). In this method, any case which happens to cross the researcher's path and has anything to do with the phenomenon is included in the sample until the desired number is obtained. According to Engel and Schutt (2013), convenience sampling is the most common method used in different aspects of evaluative research, such as evaluating the effectiveness of a program.

For the purpose of this study, the population identified included the employees of BCMM in East London. With regards to the sampling of participants, a convenience sampling technique was be used. In convenience sampling method, participants are usually those who

are easily available (De Vos et al., 2011). According to Engel and Schutt (2013), convenience sampling is the most common method used in evaluative research, such as evaluating the effectiveness of a program. Due to time and budget constraints, ten participants were sampled. These participants consisted of two ICT managers, two directors, two heads of departments, two middle managers, and two staff members from the KM unit. The snowball sampling technique was employed by asking members of the population to identify other participants who had a similar status or who were experts in the field. The next section discusses how the data was analysed.

4.6 Data analysis methods

The qualitative interviews were analysed by means of Thematic Analysis (TA). TA is defined by Crowe, Inder, and Porter (2015, p. 617) as "a process of interpretation of qualitative data in order to find patterns of meanings across the data" (p. 617). An interview was able to generate multiple pages of transcription. Ethical and practical issues related to managing the massive amounts of data needed to be considered. An electronic qualitative data management system called NVivo was also used to analyse the data. NVivo helped researchers to organise and manage data and further facilitate the identification of themes, analysis of data, gathering insight, and developing conclusions (Sotiriadou et al., 2014).

Informal member checks were done to establish credibility. After the interviews, the summarised notes were shared with participants to establish whether they were true reflections of what had been said during the interviews. Research results were also shared with the participants for comment (Mertens, 2005). A confirmability audit was conducted to minimize the influence of the researcher's judgment. Participants' views were fairly presented to ensure a balanced view of all perspectives, beliefs and values.

4.7 Reliability and validity

Reliability refers to the consistency of measures whereas validity concerns itself with the extent to which it reflects the social phenomena being observed. According to Wahyuni (2012, p. 77), "reliability and validity do not fit perfectly into the qualitative research landscape." Qualitative research works in a wholly different field with different agendas and missions. Some alternative terms have been used to sensitise reliability and validity to the specific nature

of qualitative research. Lincoln and Guba developed four criteria of research trustworthiness to evaluate the quality of qualitative research:

- *Credibility* equivalent to internal validity, which is the accuracy of the research study as regards to reflecting the social phenomena observed. This case study, which is the detailed account of knowledge sharing culture at BCMM, was carefully selected to meet the requirements of a local government organization in South Africa.
- *Transferability* similar to external validity, refers to the level of applicability in other situations or settings. This research study included a detailed explanation of the research site, which is BCMM, and the characteristics of the case study in order to enhance the transferability. The detailed account of the research site has been discussed in Chapter 3. Transferability in this study was achieved as the research model was able to be applied to other organisational settings with similar characteristics.
- *Dependability* equivalent to reliability, refers to the ability to produce the same result if the study were replicated. Dependability was established based on both the work of recognised authors found in literature and also the contributions from citizens in the field of study in the form of the user review. The use of established theory, the socio-technical systems, that has been tested in numerous research projects contributed to the dependability of this research project.
- *Confirmability* similar to objectivity, refers to "the extent to which others can confirm the findings in order to ensure that the results reflect the understandings and experiences from observed participants, rather than the researcher's own preferences" (Wahyuni, 2012, p. 77). It is the ability of the research study to be tested by experiment or observation in order to be either verified or falsified. A qualitative data collection method was used in this research project in order to produce the artefact. A literature review, observations from the building of the prototype and semi-structured interviews were used to build and evaluate the model. The next section discusses the ethical considerations.

4.8 Ethical considerations

This study collected the primary data by means of interviews. Therefore, ethical approval was sought from the University Research Ethics Committee (UREC) and it was approved with

the certificate reference number CIL021SNCO01 (see Appendix 1). Ethics with regards to participant's confidentiality, privacy and willingness to take part in the study were considered.

Participants of the study were presented with the following rights, as identified by Oates, (2006), during data collection:

- **Wilful participation**: Participants were not forced to participate in this research study but encouraged to do so.
- **Informed consent**: Before data was collected, the participants were informed of how the data would be used and of any thrid parties who would have access to it.
- **Withdrawal**: Participants were allowed to withdraw from the study should they have felt that their rights were being infringed upon.
- **Anonimity**: The identity and location of the participants was withheld and protected unless the participant gave explicit permission to disclose it.

4.9 Conclusion

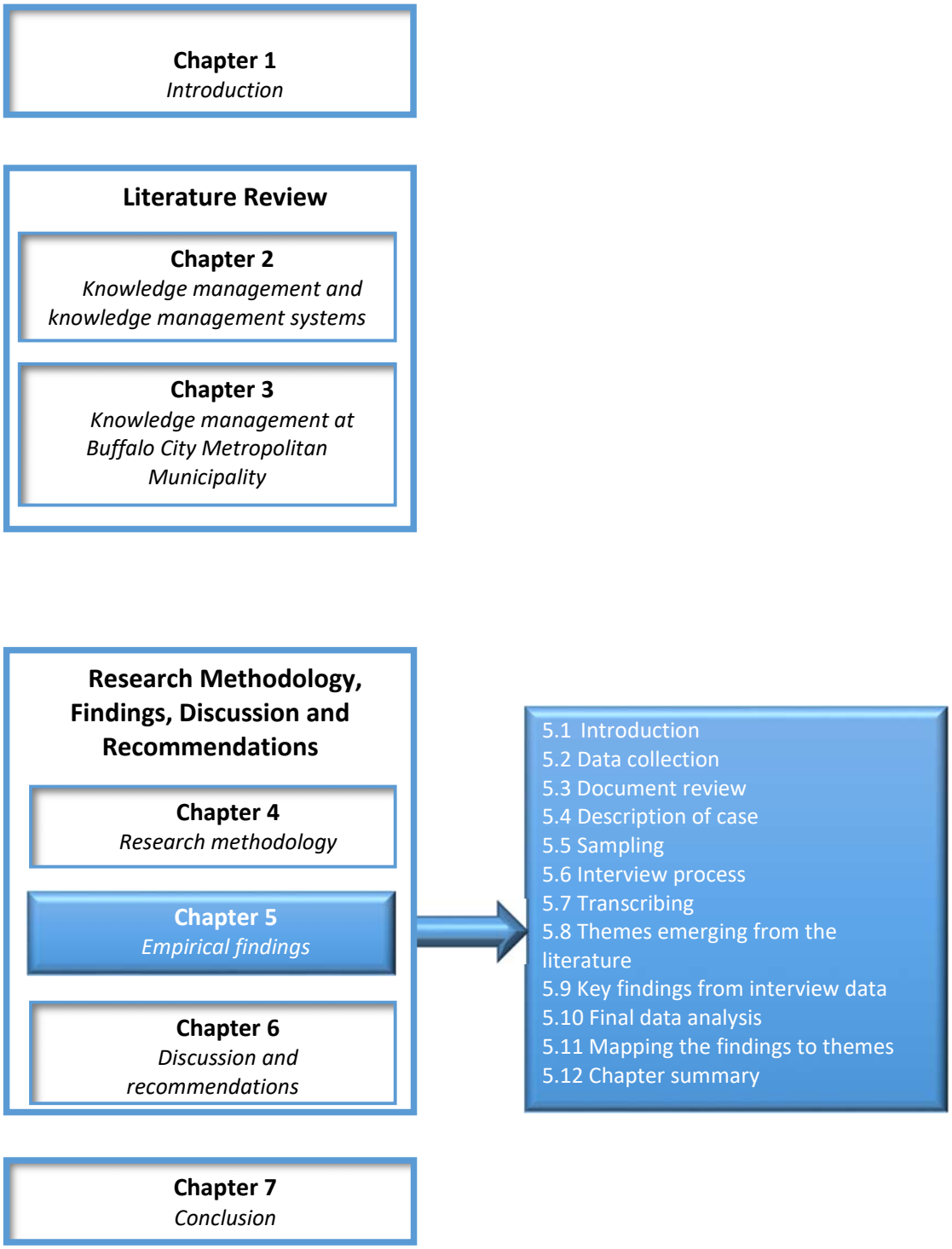
The 'research onion' which illustrates the six research stages was adopted to provide direction to this study. It provided a summary of the important issues that needed to be taken into consideration and reviewed before undertaking any research. The interpretivist paradigm was considered appropriate for the study as qualitative data were collected and used to inductively interpret the attitude towards and behaviour of employees at the BCMM towards knowledge management systems.

This study employed a case study design. This case study investigated the availability of knowledge management systems in the BCMM and how the employees made use of these systems to share and transfer knowledge. This case study offered insights that might not have been achieved with other approaches. A qualitative research approach was applied, characterised by the collection of descriptive data, transcribed from interviews and open-ended questionnaires. An inductive approach which is in line with qualitative research was the research approach used.

Both primary data and secondary data collection methods were used throughout the study to collect the evidence required to answer the research questions. A semi-structured interview, also known as the non-standardised or qualitative interview, was chosen to allow more

clarifying, probing and cross-checking questions. With regards to the sampling of participants, a convenience sampling technique was used. Thematic Analysis was used to analyse the qualitative interviews. The data was analysed using NVivo. The integrity was assured by the trustworthiness, confirmability, credibility, dependability and transferability of the study. The next chapter will present the empirical findings.

Chapter 5: Empirical Findings



5.1 Introduction

This chapter presents the research data collected from Buffalo City Metropolitan Municipality. The objective of this chapter is to describe and analyse the results that were obtained during the data collection process. The contextualisation and discussion of the results will be done in Chapter 6. The data collected in this study was analysed in order to draw meaning from it. By comparing, evaluating and identifying trends from the primary data collected together with the secondary data, illustrations were made that are used to meet the objective of this study. The objective of this study is to produce critical success factors that will improve KMS and KT among employees at BCMM.

In the process of analysing the data collected, careful consideration was given to identifying questions from the primary data collections (interviews and expert reviews) that would make the most/least contribution in meeting the objective of this study. This ensured that the findings and recommendations made were based on the most relevant data collected. The structure of this chapter is based on internationally accepted themes that are used to test the level of knowledge transfer in an organisation.

5.2 Data collection

Semi-structured interviews were conducted with five participants spread across the BCMM directorates. The participants interviewed were from the departments of Information, Knowledge Management, Research and Policy, and Information Technology. Although the aim of this study was to interview eight participants from the Municipality, appointments were made with participants from the departments of Human Resources and Supply Chain Management.

5.3 Document review

Existing related Municipal documents were reviewed with the intention of collecting independently verifiable data and information. The purpose of this document review was to supplement the findings of the interviews. This document review alone could not be used to make conclusions, but it was used to support the findings from the interviews. Documents that were assessed include *BCMM Knowledge Management Policy*, *BCMM 2015/16 Annual Report*, and management *Performance Appraisals.* These documents were obtained from the

Municipal website and from senior managers within the Municipality. Two themes similar to those from the interviews emerged from the document analysis, which relate to organisational structure and top management support. The findings of the document review are discussed together with the interview and literature findings on Chapter 6.

5.4 Description of case

The BCMM is a Category A municipality located on the east coast of the Eastern Cape Province, South Africa (discussed under 3.4 on Chapter 3). The Municipality's administration is headed by the city manager, who is supported by the heads of directorates who in turn work with officials to execute the resolutions of the Council as well as programmes and activities of the organisation. During 2015/2016 the Municipality has underwent organisational restructuring. The aim was to align the organisational structure to strategic planning, the operational and budgetary planning processes.

The departments under the Directorate: Office of the City Manager include Governance and Internal Auditing; Chief Operating Office; Information Technology; Legal Services and Municipal Court; Enterprise Project Management; Information, Knowledge Management, Research and Policy; and Expanded Public Works Programme.

Information, Knowledge Management, Research and Policy (IKM, Research and Policy) department reports directly to the City Manager. The department or unit is responsible for co-ordinating and facilitating the Municipality's four core functions that are information management, knowledge management, research and policy. The management job roles in the department are:

- Head: IKM, Research and Policy,
- Manager: Research and Policy
- Manager: Knowledge Management and Innovation (during the interviews this position was vacant and Research and Policy Manager was acting as the head of the Department)

5.5 Sampling

Sampling is covered extensively in Chapter Four, but a brief summary is presented here. This study employed convenience sampling in order to select participants who were nearest

and most easily available. The population identified included the employees of BCMM in East London. With regards to the sampling of participants, ten participants were sampled. These participants were made up of two ICT managers, two directors, two heads of departments, two middle managers and two staff members from the KM unit. A snowball sampling method was employed by asking members of the population to identify other participants who might have knowledge pertinent to this issue or be experts in the field.

5.5.1 Demographic information

The five participants interviewed were aged between 30 and 50 years. Two participants had recently joined the Municipality as they had worked less than a year in the department. One participant had worked between three and five years, while another had worked between five and ten years. There was one participant who had worked for the Municipality for more than ten years.

Table 7 below categorises the research interview participants. The table indicates the directorates and departments represented. It also shows the participants' job titles during the time of the interviews.

Table 7: Participants Profiles

Interviewee	Directorate	Department	Job title
1	Office of the City Manager	IKM, Research and Policy	Acting Manager: IKM
2			Practitioner: IKM
3		Information Technology	Head: ICT
4			Software Development Coordinator
5			IT Change Practitioner

5.6 Interview process

Semi-structured interviews were used as a method of data collection (refer to Appendix 1: Interview Schedule). During the interviews, participants were informed that they were not being forced to take part in the study and the choice whether to participate or not was theirs alone. However, they were encouraged to share their thoughts with the researcher. Participants

were informed that if they chose not to take part in answering these questions, they would not be prejudiced in any way. The researcher assured the participants that confidentiality would be observed. Participants names were not recorded anywhere on the questionnaire and they could not be linked to the answers they gave. With the consent from the participants, the interviews were recorded and notes were also taken by the researcher during the interview.

5.7 Transcribing

This study was conducted according to the International Declaration of Helsinki for research on human subjects. Therefore, the interviewees were given the ethics research confidentiality and informed consent form to read and sign, giving permission to the researcher (refer to Appendix 5). The interviewer also explained the consent form to the interviewees with the purpose of making them understand that they were not forced to take part in the study. Participants were ensured that their names would not be recorded in the interviews and no one would be able to link them to the answers they had given. Departmental and position names were mentioned during the interviews, but during the transcription those names were omitted in order to adhere to ethical principles and maintain the confidentiality of the interviewees.

5.8 Themes emerging from the literature

The qualitative data collected during the interviews was analysed by means of thematic analysis. To better organise and manage data and further facilitate the identification of themes, analysis of data, gathering insight, and developing conclusions; an electronic qualitative data management system called NVivo was used to analyse the data. The different sections in the interview questionnaire were based on the critical knowledge sharing factors that were identified during the literature review. It was found that knowledge sharing processes and systems can be challenged by individual, organizational, social, technical and political inter-organizational factors. Therefore, the determination of the critical factors that impact employees attitudes and intentions to share the organisational knowledge could help to improve organisational adoption of knowledge management systems (Al-Busaidi, 2013).

Table 8: Emerging themes from the literature

Key phrases/themes from literature	Supporting Authors
Knowledge transfer improves organisational efficiency	▪ (García-Sánchez et al., 2015) ▪ (Sheng et al., 2013) ▪ (Kuras & Kuras, 2015)
Knowledge cannot be shared effectively if employees are not motivated to share it	▪ (Amayah, 2013) ▪ (Cho & Korte, 2014) ▪ (Dube & Ngulube, 2012) ▪ (Shanshan, 2013) ▪ (Theriou et al., 2011)
Employees are more likely to share their knowledge if there is trust	▪ (Chai et al., 2011) ▪ (Kathiravelu et al., 2013) ▪ (Dube & Ngulube, 2012) ▪ (Okyere-Kwakye & Nor, 2011) ▪ (Seba et al., 2012) ▪ (Shanshan, 2013) ▪ (Tamjidyamcholo et al., 2013) ▪ (Theriou et al., 2011)
Norm of reciprocity increases knowledge sharing behaviour	▪ (Chai et al., 2011) ▪ (Liou et al., 2016) ▪ (Okyere-Kwakye & Nor, 2011) ▪ (Tamjidyamcholo et al., 2013) ▪ (Theriou et al., 2011)
Organizational culture affects the employees' attitude to share knowledge	▪ (Cho & Korte, 2014) ▪ (Dube & Ngulube, 2012) ▪ (Kathiravelu et al., 2013) ▪ (Breese, 2012) ▪ (Shanshan, 2013) ▪ (Theriou et al., 2011)

	▪ (Dikotla et al., 2014) ▪ (Syed-Ikhsan & Rowland, 2004) ▪ (S. Wang & Noe, 2010)
Top management support significantly affects knowledge sharing attitude	▪ (Shanshan, 2013) ▪ (Theriou et al., 2011) ▪ (S. Wang & Noe, 2010)
Flexible organizational structures encourage the sharing of knowledge and collaboration	▪ (Cho & Korte, 2014) ▪ (Islam et al., 2015) ▪ (Sedighi & Zand, 2012) ▪ (Syed-Ikhsan & Rowland, 2004) ▪ (S. Wang & Noe, 2010)
Information technology plays a positive role in knowledge transfer	▪ (Canzano & Grimaldi, 2012) ▪ (Cho & Korte, 2014) ▪ (Dube & Ngulube, 2012) ▪ (Kathiravelu et al., 2013) ▪ (Sedighi & Zand, 2012) ▪ (Shanshan, 2013) ▪ (Syed-Ikhsan & Rowland, 2004) ▪ (Theriou et al., 2011)

5.9 Key findings from interview data

The data analysis process started after interviews were transcribed. The data collected through interviews with municipality managers and practitioners were analysed in a three-stage procedure suggested by Creswell (2014): preparing the data for analysis by transcribing, reducing the data into themes through a process of coding and representing the data.

The interview data was analysed using a NVivo qualitative data analysis computer software package. The first step was to create a new project using NVivo 11. Interview transcripts which were stored as MS Word documents were imported individually into the project. The data sets were systematically condensed into smaller units in order to analyse them through the creation

of categories and concepts derived from the data. The coding process was guided by different sections of the interview questionnaire which was structured using the following themes from the literature reviewed.

5.10 Final data analysis

Upon the completion of data analysis process above, the result was a Word document which provided common themes found according to the responses to the interview questions and the number of interviewees who were explicit and implicit to the respective questions. Exceptions to the identified themes were also highlighted. The interview question number refers to the interview question used during data collection, and findings are the emerging statements from the interviews. The explicit findings on Table 11 represent the number of interviewees who explicitly had a specific view. The implied findings on Table 12 represent the number of interviewees who implied a specific view. The exceptional views on Table 13 represent the number of interviewees who had an opposite view compared to the general view shared by a large number of interviewees.

The results are presented in tables 11, 12 and 13 respectively, and data is sorted to display the findings in the order of strongest to weakest, determined by the number of interviewees who agreed with a specific finding. The statement number in the first column of each table is used to link topics that are discussed in Chapter Six with specific findings in tables 11, 12 and 13 respectively.

Table 9: Explicit findings (summarised)

Statement number	Interview question number	Findings	Number of interviewees who were explicit
11.1	7	The Municipality has policies and procedures that encourage the transfer of knowledge and they can be accessible on the intranet.	5

11.2	14	Municipality operations and projects have been improved by knowledge management, and we have seen advantages and new opportunities.	5
11.3	25	At the moment, sharing of knowledge does not contribute to positive performance appraisals. It is not included in the key performance areas, but it should be there. We have been calling for that to be part of the appraisals.	5
11.4	29	The implementation of SharePoint is still in progress. At the moment Internet is available where documents, such as finance policies, are shared with the public.	5
11.5	5	The sharing of knowledge still mainly falls under the KM department. Employees think that it should mainly reside in the KM employees rather than the entire Municipality.	4
11.6	8	Although there has been a struggle, top management finally provided support.	4
11.7	11	Departmental location has added some value to KM. The department is now under the Office of the City Manager. Now top management knows what KM is, there is much support now compared to when it was under a line function. The restructuring has helped a great deal. For	4

		many years the KM department has been trying.	
11.8	23	Knowledge is highly valued by top management because it plays a big role in the vision and direction of the organisation. The top management should be the champions when it comes to building a culture of knowledge transfer.	4
11.9	1	The culture of knowledge sharing has improved a great deal over the years and especially now that the Knowledge Management unit falls under the Office of the City Manager. KM is getting the recognition it deserves and employees are beginning to comply.	3
11.10	3	Staff are encouraged to pursue their studies which are fully paid for by the Municipality.	3
11.11	33	There is a lack of user uptake due to insufficient communication. But the reasons go beyond lack of communication, to lack of training and championing of the relevant programmes.	3
11.12	6	There is a structure in place that recognises knowledge as part of the organization.	2

11.13	30	When it comes to skills needed to use knowledge sharing technologies, interviews were conducted with the staff to ascertain their perceptions with regards to the use of EDMS. Employees were found not knowing how to use the technology although training had been offered to them.	2
11.14	32	Systems for knowledge sharing are not really complicated, but the platform that was created was a matter of costing licensing. The Municipality had an EDMS tool for documenting that was deployed, but only for 200 users. It was too expensive as it was costing plus minus 2 million and we are now deploying SharePoint which is open for everyone and we are not going to have licensing issues.	2

The table above has presented the number of interviewees who explicitly had a specific view about knowledge transfer at BCMM. The implied findings on Table 12 below represent the number of interviewees who implied a specific view.

Table 10: Implied findings (summarised)

Statement number	Interview question number	Findings	Number of interviewees who implied a view
12.1	12	Knowledge transfer can improve service delivery. The Municipality is in the	5

		process of implementing applications that will increase communication with its community. A call centre has been running for a while and has been paying dividends for the Municipality.	
12.2	13	Cost reduction can be a by-product of knowledge transfer in that it can help the community to help themselves instead of utilising municipal services for every little problem they encounter.	4
12.3	16	Knowledge transfer improves the Municipality's competitive advantage. Knowledge management can improve competitive advantage through enhanced skills and the ability to solve problems quickly and as they arise.	4
12.4	17	Knowledge transfer creates new opportunities for the Municipality. New opportunities can arise from knowledge management by employees sharing innovative ideas to solve the problems of communities.	4
12.5	10	Employees did not understood what knowledge management is basically. In the past they thought of it as something nice to have, but not essential for the organisation, but now it is getting there.	3

12.6	29	For the purposes of knowledge management, the corporate website is not interactive and has not been fully utilised.	3
12.7	3	The culture is not too bad now, it is getting there.	2
12.8	4	Employees think that knowledge transfer is the job of the KM department only. The department has for many years been emphasizing that the transfer of knowledge is everybody's job, but it is still not the case.	2
12.9	5	There has been that notion up until a few years ago, but now there has been some understanding with a few people sharing the knowledge.	2
12.10	6	Although interviewees agree that there is some recognition, they ask if they are capacitated enough to carry this function of knowledge transfer.	2
12.11	29	The KM portal on the intranet is not user-friendly, it is very difficult to access and utilise. Hopefully with the implementation of SharePoint being done by IT department, things will be better.	2

The exceptional views on Table 13 below represent the number of interviewees who had an opposite view compared to the general view shared by a large number of interviewees presented on Tables 11 and 12.

Table 11: Exceptions to the explicit and implied findings (summarised)

Statement number	Interview question number	Findings	Interviewees identifier
13.1	2	Official documents, such as policies, are managed and controlled by the KM department. A SharePoint portal is being created for storage and access to the Municipality information.	2
13.2	4	Knowledge is largely hoarded at the higher levels of the organisational hierarchy.	2
13.3	1	Although the Municipality formed the knowledge management section and has invested in systems for knowledge transfer, on a human resources level information is not seamlessly transferred between managers and their subordinates. There seems to be a culture of knowledge hoarding in an attempt to augment personal importance or worth.	1
13.4	3	The culture is not supportive as the hierarchical and bureaucratic management stifles any attempts at	1

		openness and support in the organisational culture.	
13.5	6	The Municipality does not recognise knowledge as part of their asset base because there is no transfer of knowledge during succession or proper handover. It is likely that a new employee starts on a clean slate which is detrimental to the employee's job learning curve.	1
13.6	33	The lack of communication can be blamed of some project drivers or project managers who fail to communicate their initiatives and face challenges when the technology needs to be used by employees.	1
13.7	2	The Municipality strategic vision insists on knowledge sharing and this has been supported by the investment in KM systems and the formation of the KM unit.	1
13.8	4	There was a programme at some stage to appoint KM champions from each department in an attempt to fully implement knowledge management. The top management also attempted to add KM as a key performance indicator (KPI) for directors.	1

13.9	4	Every piece of work someone does, especially projects, is documented. Work is documented so that projects can be reviewed to see what transpired earlier to avoid repeating mistakes (lessons-learned).	1
13.10	18	Knowledge is not shared to the extent that the organisation can deliver quality services. Departments largely work in silos with no real knowledge transfer.	1
13.11	1	The Municipality's endeavours to implement knowledge management and tools to assist in knowledge transfer are at the initial stages.	1
13.12	2	There are values such as fairness and equity, good governance, recognition of human capital and service excellence.	1
13.13	6	Knowledge is recognised, but at a very low maturity stage.	1
13.14	8	Knowledge is mostly shared as a result of portals such as the intranet and service desk email.	1
13.15	11	In a political environment, knowledge transfer can be seen as a danger to power, therefore top management will be reluctant to share knowledge.	1

13.16	38	There is a knowledge management department which is doing very little to promote the benefits of KM.	1

5.11 Mapping the findings to themes

Table 14 below presents a mapping of the findings and the corresponding statement numbers to the themes. The themes will be discussed in more detail in Chapter Six.

Table 12: Mapping findings to corresponding themes

Statement number (from table 11, 12 and 13)	**Findings**	**Corresponding theme**
12.1; 12.2; 12.3; 12.4; 13.6	Knowledge transfer can improve service delivery. The Municipality is in the process of implementing applications that will increase communication with its community. A call centre has been running for a while and has been paying dividends for the Municipality. Cost reduction can be a by-product of knowledge transfer in that it can help the community to help themselves instead of them utilising municipal services for every little problem they encounter. Knowledge transfer improves the Municipality's competitive advantage. Knowledge management can improve competitive advantage through enhanced skills and the ability to solve problems quickly and as they arise.	Knowledge transfer improves **organisational efficiency**

	Knowledge transfer creates new opportunities for the Municipality. New opportunities can arise from knowledge management by employees sharing innovative ideas to solve the problems of communities. The lack of communication can be blamed on some project drivers or project managers who fail to communicate their initiatives and face challenges when the technology needs to be used by employees.	
11.3; 11.10	At the moment, sharing of knowledge does not contribute to positive performance appraisals. It is not included in the key performance areas, but it should be there. We have been calling for that to be part of the appraisals. Staff are encouraged to pursue their studies which are fully paid by the Municipality.	Knowledge cannot be transferred effectively if employees are not **motivated** to share it
13.2; 13.3; 13.15	Knowledge is largely ***hoarded at the higher levels*** of the organisational hierarchy. On a human resources level, information is not seamlessly transferred between managers and their subordinates. There seems to be a culture of ***knowledge hoarding*** in an attempt to augment personal importance or worth. In a political environment, ***knowledge transfer can be seen as a danger to power***, therefore top management will be reluctant to share knowledge.	Employees are more likely to share their knowledge if there is **trust**

12.10; 13.3	Although interviewees agree that there is some recognition, they ask if they are capacitated enough to carry this function of knowledge transfer. Although the Municipality formed the knowledge management section and has invested in systems for knowledge transfer, on a human resources level ***information is not seamlessly transferred between managers and their subordinates***. There seems to be a culture of knowledge hoarding in an attempt to augment personal importance or worth.	Norm of **reciprocity** increases knowledge sharing behaviour
11.9; 12.7; 13.4	The ***culture of knowledge sharing has improved*** a great deal over the years and especially now that the Knowledge Management unit falls under the Office of the City Manager. KM is getting the recognition it deserves and employees are beginning to comply. The ***culture is not too bad now***, it is getting there. The ***culture is not supportive*** as the hierarchical and bureaucratic management stifles any attempts at openness and support in the organisational culture.	**Organisational culture** affects the employees' attitude to share knowledge
11.1; 11.6 11.8; 12.5; 12.8; 13.5; 13.8; 13.15	The Municipality has policies and procedures that encourage the transfer of knowledge and they can be accessible on the intranet. Although there has been a struggle, ***top management finally provided support***. Knowledge is ***highly valued by top management*** because it plays a big role in the vision and direction of the organisation. The top management should be	**Top management** support significantly affect knowledge sharing attitude

	the champions when it comes to building a culture of knowledge transfer. Employees did not understood what knowledge management is basically. In the past they thought of it as something nice to have, but not essential for the organisation but now it is getting there. Employees think that knowledge transfer is the job of the KM department only. The department has for many years been emphasizing that the transfer of knowledge is everybody's job, but it is still not the case. The Municipality does not recognise knowledge as part of their asset base because there is no transfer of knowledge during succession or proper handover. It is likely that a new employee starts on a clean slate which is detrimental to the employee's job learning curve. There was a programme at some stage to appoint KM champions from each department in an attempt to fully implement knowledge management. ***The top management also attempted to add KM as a key performance indicator*** (KPI) for directors. In a political environment, knowledge transfer can be seen as a danger to power, therefore ***top management will be reluctant to share knowledge***.	
11.5; 11.7; 11.12; 13.10	The sharing of knowledge still mainly falls under the KM department. Employees think that it should mainly reside in the KM employees rather than the entire Municipality.	Flexible **organizational structures** encourage the

	Departmental location has added some value to KM. The department is now under the Office of the City Manager. Now top management knows what KM is, there is much support now compared to when it was under a line function. ***The restructuring has helped a great deal.*** For many years the KM department has been trying. There is a ***structure in place that recognises knowledge as part of the organization.*** Knowledge is not shared to the extent that the organisation can deliver quality services. ***Departments largely work in silos*** with no real knowledge transfer.	sharing of knowledge and collaboration
11.4; 11.13; 12.6; 12.11; 13.1	The ***implementation of SharePoint*** is still in progress. At the moment Internet is available where documents, such as finance policies, are shared with the public. When it comes to ***skills needed to use knowledge sharing technologies***, interviews were conducted with the staff to ascertain their perceptions with regards to the use of EDMS. Employees were found ***not knowing how to use the technology*** although training had been offered to them. For the purposes of knowledge management, ***the corporate website is not interactive*** and has not been fully utilised. The ***KM portal on the intranet is not user-friendly***, it is very difficult to access and utilise. Hopefully	**Information technology** plays a positive role in knowledge transfer

	with the implementation of SharePoint being done by IT department, things will be better. Official documents, such as policies, are managed and controlled by the KM department. A ***SharePoint portal is being created for storage and access*** to the Municipality information.	

5.12 Chapter summary

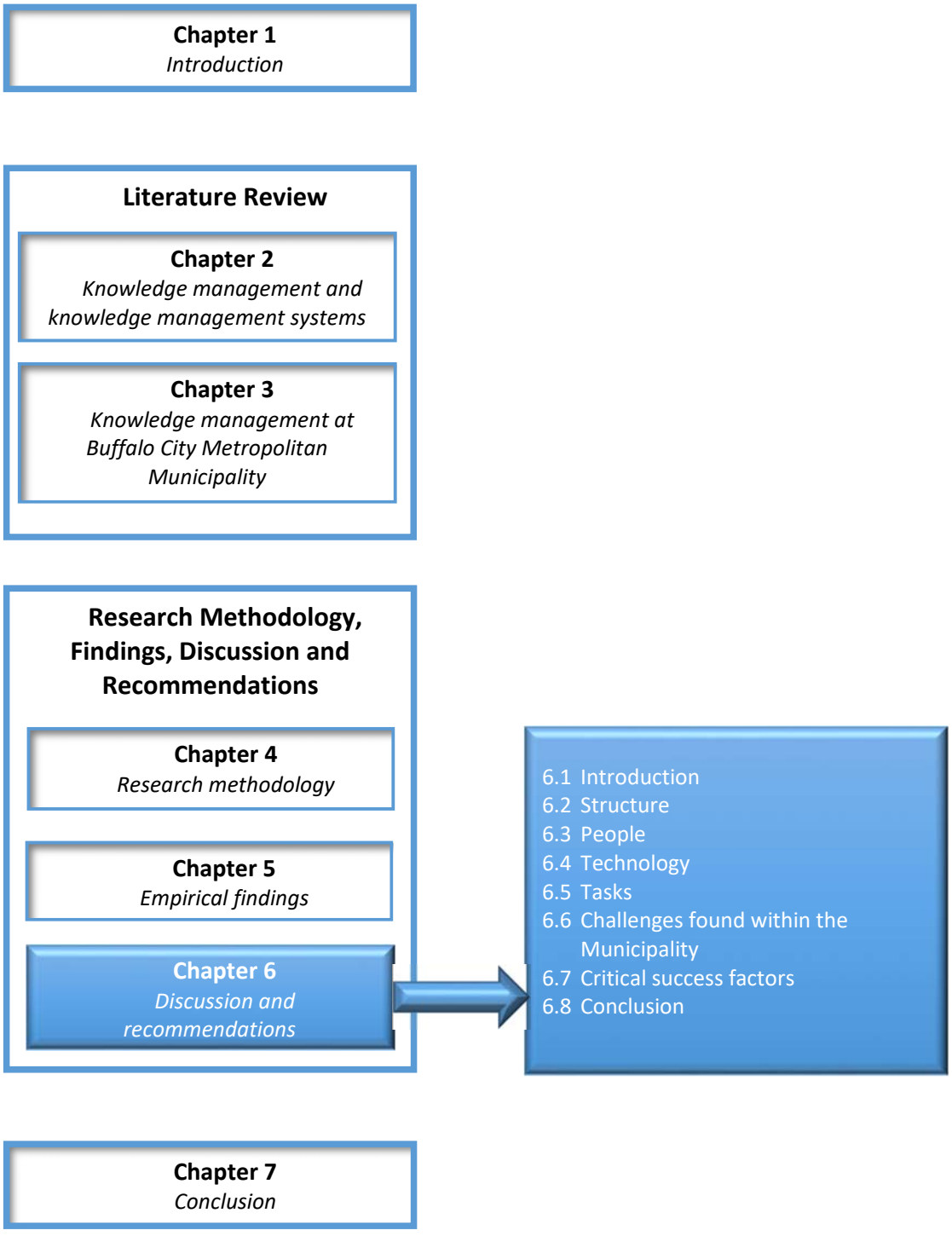
This chapter has presented the research data collected through semi-structured interviews at Buffalo City Metropolitan Municipality. Documents relevant to the study to be reviewed have been described. Insight was also given into the selected case, focusing on the directorates where the participants were currently working. The interview process was described, highlighting that during the interview, participants were informed that they were not being forced to take part in this study and the choice whether to participate or not was theirs alone. With the consent from the participants, the interviews were recorded and notes were also taken by the researcher during the interview.

Although the departmental and position names were mentioned during the interviews, during the data transcription those names were omitted in order to adhere to ethical principles and maintain the confidentiality of the interviewees. The qualitative data collected during the interviews was analysed by means of thematic analysis. To better organise and manage data and further facilitate the identification of themes, analysis of data, the gathering of insights, and the development of conclusions, an electronic qualitative data management system called NVivo was used to analyse the data.

During data analysis, the data sets were systematically condensed into smaller units in order to analyse them through the creation of categories and concepts derived from the data. The coding process was guided by different sections of the interview questionnaire which were structured using the themes derived from the literature reviewed. Upon the completion of data analysis process above, the result was a Word document which provided common themes found according to the responses to the interview questions and the number of interviewees

who were explicit and implicit to the respective questions. Exceptions to the identified themes were also highlighted. The findings were mapped to corresponding themes found during the literature review and these themes will be discussed in detail in Chapter Six.

Chapter 6: Discussion and Recommendations



6.1 Introduction

This chapter discusses findings in relation to the themes discussed in Chapter Five and the theoretical framework used in this study. The main purpose of this study was to investigate how knowledge management systems could be used to improve the knowledge transfer at Buffalo City Metropolitan Municipality. The study adopted Socio-Technical Systems Theory which highlights the interrelationship between technological and social factors in understanding an organisation. The motivation behind examining information system problems making use of both the social and technical dimensions was to describe organisational aspects that are a combination of social and technological sub-systems in the operational activities.

Eight themes were found during the literature review. Each theme will be discussed under the corresponding quadrant of the Socio-Technical Systems Theory, as indicated in Table 15 below.

Table 13: Mapping themes to Socio-Technical Systems Theory

SYSTEM	QUADRANT	THEME	
Social	*Structure*	1	Organisational culture affects the employees' attitudes towards sharing knowledge
		2	Top management support significantly affects knowledge sharing attitude
		3	Flexible organizational structures encourage the sharing of knowledge and collaboration
	People	4	Knowledge cannot be transferred effectively if employees are not motivated to share it
		5	Employees are more likely to share their knowledge if there is trust
		6	Norm of reciprocity increases knowledge sharing behaviour
Technical	*Technology*	7	Information technology plays a positive role in knowledge transfer
	Tasks	8	Knowledge transfer improves organisational efficiency

In the following sections, the eight themes on Table 15 will be discussed under their respective quadrants of the Socio-Technical Systems Theory. The problems that are found to be challenging the Municipality in knowledge transfer will be discussed under each theme and later be mapped under Section 6.6. To counter-act the problems found, critical success factors will be produced for the Buffalo City Metropolitan Municipality. Recommendations will also be made on how the Municipality can improve their knowledge management systems and knowledge transfer among their employees, which will ultimately improve service delivery, competitive advantage, and better their decision-making.

6.2 Structure

The structure quadrant falls under the social sub-system of the Socio-Technical Systems Theory. As the social approach to knowledge management embraces the management of processes and employees, organisational culture and behaviour need to be changed (Sajeva, 2010). In this quadrant, the concern is on the culture, the structure, nature of learning at BCMM and the harnessing of the tacit forms of knowledge as a Municipal resource. Three themes, as indicated in Table 15, are discussed under this theme,

6.2.1 Theme 1: Organisational culture affects the employees' attitudes to share knowledge

The issue of organisational culture has been raised in Chapter 3 under section 3.7.2. Theriou et al. (2011) highlighted that an effective organisational culture for knowledge management entails practices and norms that inspire the transfer of information across department lines and between employees. Mannie et al. (2013) also stress that organisational culture provides employees with an organisational identity; it encourages social system stability; facilitates collective commitment; and forms the behaviour by helping employees to make sense of their surroundings.

Since organisational culture defines the core beliefs, values, norms and social customs that govern the way individuals behave in an organisation, five key questions were asked under this enabler. The first question asked if the knowledge transfer is part of the Municipality philosophy and culture. The second question asked if the Municipality's basic values and

purpose emphasize the sharing of knowledge. The third question asked if the Municipality's culture is encouraging, open and supportive. The fourth question asked if knowledge transfer is viewed as each and everybody's job in order for everybody to have the best of knowledge. The fifth question asked if they agree with the statement that the prevailing notion is that the knowledge management is the task of a few designated ones and there is no need for knowledge sharing.

Participants were of the view that, as indicated in statements 11.9 and 12.7, the culture of knowledge sharing had improved a great deal over the years and especially since the Knowledge Management unit had been placed under the Office of the City Manager. KM was getting the recognition it deserved and employees were beginning to comply. This meant that the structural position of the knowledge management department in an organisation was crucial for knowledge transfer. During document review, a presentation by Norushe (2013) titled *'Basic knowledge training for councillors and officials'* indicated that in order to institutionalise knowledge management in BCMM, culture driving tools needed to be implemented. These tools included the implementation of a reward system for knowledge sharing; rewarding of lesson-learning, capturing and documentation activities; knowledge sharing sessions to be made compulsory for at least once a month; knowledge management days to be set and recognised; and KM leadership to be recognised. This was supported by one participant who indicated that the Knowledge Management director had championed KM very well, trying by all means to instil the culture to the Municipality and therefore, the knowledge transfer culture was gradually getting there. The participant also indicated that the newly reviewed organisational structure had also had an impact on the recognition of KM.

One participant who was in contrast with other participants, statement 13.4, indicated that the culture was not supportive as the hierarchical and bureaucratic management supressed any attempts at openness and support in the organisational culture. This statement was similar to the findings of Gaffoor and Cloete (2010) in Stellenbosch that the Municipality had a top-down, hierarchical structure which was not most favourable to knowledge management efforts. The structure was characterised by bureaucratic nature and was not responsive to changes being implemented.

Two participants partly agreed and partly disagreed, indicating that the Municipality had a Knowledge Management department and its endeavours to implement KM were at their initial

stages and in the process of implementing the tools to assist. The actual people, namely, the Municipality employees, were not used to the knowledge sharing culture. The participants indicated that on the implementation of systems aimed at knowledge transfer, BCMM had made considerable investment by forming the Knowledge Management department and by implementing knowledge management systems. However, at the human resources level, information was not seamlessly transferred between managers and their subordinates. There seemed to be a culture of knowledge hoarding in attempts to augment personal importance or worth.

The participants were asked to share their thoughts on whether BCMM basic values and purpose emphasize the sharing of knowledge. All the five participants agreed that the purpose and values of the Municipality supported knowledge sharing. One participant indicated that organisational formal documents such as policies and memos were managed and controlled within the KM department. The processing of by-laws and other related documents was also managed by the KM department. The KM department ensured that policies were tabled to top management and the Council for approval. One participant highlighted fairness and equity, good governance, recognition of human capital and service excellence as values that emphasised the sharing of knowledge within the Municipality. One participant indicated that the vision of the Municipality insisted on knowledge sharing and this had been backed up or supported by investing in systems and the existence of the Knowledge Management department.

Participants were asked if they believed that the Municipality's culture was supportive, open and encouraging. One participant responded by saying that the culture was not too bad at the moment, it was getting there. Another participant indicated that the culture was encouraging, giving an example where employees were given opportunities to further their studies and those who had completed were given training opportunities. One participant indicated that the bureaucratic organisational structure hampered any attempts to knowledge sharing.

In an organisation where all employees know each other's responsibilities and roles and have the chance to build relationships with almost all their colleagues, knowledge transfer occurs naturally. Participants were asked if they thought that knowledge transfer at the Municipality was viewed as each and everybody's job in order for all employees to have the

best of knowledge to perform their job responsibilities. Two participants felt that in the current environment not all employees had that view. They indicated that employees thought that it was the job of the IKM unit only.

One participant, who wanted to speak about the current situation in his department, indicated that every piece of work performed by an employee was being documented. He further stated that any change being implemented was documented as lessons-learned for future projects or reviews.

Another participant also agreed indicating that she was once involved in the appointment of knowledge management champions from each department for the implementation of knowledge management in the Municipality. She stated that there was an attempt to add knowledge management as a key performance area for the Municipal directors. But, she further stated that the attempt had not been implemented. Another participant totally disagreed with the statement that KT was viewed as each and everybody's job. The participant indicated that knowledge was largely hoarded at the higher levels of organisational hierarchy.

The biggest organisational challenge is to change the employees from knowledge hoarding to knowledge sharing. In organisations it is uncommon to find all employees taking responsibility for knowledge management, and the "prevailing notion is that KM is a task for a designated few people, which might be a problem if people have negative view towards KM" (Twum-Darko & Raboshakga, 2015, p. 4). The participants were asked if they agreed with this common belief that KM was a task of a few designated ones and that there was no need for knowledge sharing. Four participants agreed with this statement indicating that there had been that notion within the Municipality up until a few years before. They indicated that there had been some understanding where some employees had been seen sharing knowledge. But, mainly the participants emphasised that most of the Municipality employees still believed that KM fell under the Knowledge Management unit and should mainly reside in people working in the unit. Therefore, the four participants agreed that this notion still prevailed within the Municipality. One participant disagreed, indicating that knowledge management was very important for managers.

6.2.2 Theme 2: Top management support significantly affects knowledge sharing attitude

Shanshan (2013) believes that if employees have top management support, their attitudes toward knowledge transfer will be more positive and they will feel more confident to share knowledge. Top manager's support to KM makes the resources allocation to KT more possible, which will encourage employees' optimistic attitudes towards transfer of knowledge. Wang and Noe (2010) also found that for knowledge to be transferred, top management support has been shown to be positively associated with employees' perceptions of a knowledge sharing culture and willingness to share knowledge. Top management support affects both the level and quality of knowledge transfer through influencing employee commitment to KM.

This section aimed to assess the BCMM top management support on knowledge transfer. The aim of the six questions under this section were to assess, firstly, whether the Municipality recognized knowledge as part of their asset base. Secondly, whether there were policies and procedures in place that encouraged the transfer of knowledge by the Municipality employees. Thirdly, if the Municipality's top management saw the importance of knowledge transfer and provided their full support. Fourthly, if top management saw the importance of knowledge transfer but hardly supported it. Fifthly, if top management saw knowledge transfer as a waste of time and resources and hardly bothered. Lastly, if top management was supportive during the implementation of knowledge management but have since then lost interest.

In statement 11.1 it was indicated that the Municipality has policies and procedures in place that support the transfer of knowledge, and these documents are accessible via the corporate intranet. The BCMM knowledge management policy encouraged the sharing of knowledge, as it stipulates that its strategic objectives are to have every knowledge worker in the Municipality collaborating and sharing knowledge on an electronic KM platform and in other forms, enabling knowledge optimization and delivery in the organisation. The policy also specifies that its objective is to create a knowledge sharing culture by changing personal and organisational behaviour to successfully implement and entrench knowledge management in the Municipality (Buffalo City Metropolitan Municipality, 2008).

Statements 11.6 and 11.8 indicated that participants agreed that their top management value and support knowledge transfer. There had been a struggle in the past, which indicated that the

KM department took time to get top management buy-in. This was also supported by statement 12.5, which indicated that employees did not understood what KM was basically. They thought of KM as something nice to have, but not essential for the organisation. Omotayo (2015) corroborated this statement by arguing that there was an initial notion that KM was just another management fashion and fad that directors were excited to add to their collection of boardroom vocabulary to impress colleagues and that with time, it would fade away.

Omotayo (2015) indicates that knowledge management represents a potentially very important subject area which not only opens up new ways of theorizing about the nature of organisations, but also has the potential to be highly relevant to the interests of the business world in improving business performance. This supports statement 11.8 which indicates that knowledge is highly valued by top management because it plays an important role in the vision and direction of the Municipality, therefore, top management should be the champions when it comes to building a culture of knowledge transfer.

Awang, Kareem and Ismai (2014) indicate that knowledge in organisations can be seen as an intangible asset, which is unique, dependant, casually ambiguous and hard to substitute or imitate. Knowledge grows and multiplies in organisations when it is shared, and the above characteristics make it a potential source of competitive advantage and consequently, the target of top management attention. Statement 13.5 reveals that this is not the case at BCMM. The participant indicated that:

> *"The Municipality does not recognise knowledge as part of their asset base because there is no transfer of knowledge during succession or proper handover. It is likely that a new employee starts on a clean slate which is detrimental to the employee's job learning curve."*

The statement above also corroborates with the finding on management performance appraisals during the document review. The Municipality top management performance appraisals reviewed were Chief Financial Officer; Chief Operating Officer; Directors of Community Services, Corporate Services, Development Planning and Economic Development Services, Engineering Services, Executive Support Services, Health and Public Safety; and the City Manager. The Core Managerial Competencies (CMC) were either indicated as essential

or compulsory, but the "Knowledge Management" CMC were among those who were left blank in all the senior managers' performance appraisals, as shown in Table 16 below.

Table 14: Adapted from BCMM Management Performance Appraisals

CORE COMPETENCY REQUIREMENTS FOR EMPLOYEES (20% of Total)		
CORE MANAGERIAL COMPETENCIES (CMC)	✓ (Indicate choice)	WEIGHT
Strategic Capability and leadership	essential	10
Programme and Project Management	essential	5
Financial Management	compulsory	20
Change Management		
Knowledge Management		
Service Delivery Innovation		
Problem Solving and Analytical Thinking	essential	10
People Management and Empowerment	compulsory	5
Client Orientation and Customer Focus	compulsory	10
Communication	essential	5
Honesty and Integrity		

Statement 13.8 indicated that at some point the Municipality initiated a programme to appoint KM champions from each department with the aim of fully implementing knowledge management. The top management also attempted to add KM as a key performance indicator for directors. Figure 11 above indicates that KM was eventually added as CMC, although it was not weighted and indicated as essential or compulsory.

Although some participants indicated that top management valued and supported knowledge transfer, the revelation that KM was still not recognised as an asset base, not indicated as compulsory or essential, and not weighted on performance appraisals, indicate that KM was not fully recognised by the Municipality.

6.2.3 Theme 3: Flexible organisational structures encourage the sharing of knowledge and collaboration

An organisational structure attempts to divide tasks among organisational employees and arrange the coordination of their different task activities, and it is during this process that knowledge is created, transferred and shared (Cho & Korte, 2014). Therefore, an organisational structure should be strategically designed to support knowledge activities because unintended structural barriers that might hinder knowledge creation and sharing, may exist within the organisation.

Statement 13.10 indicated that participants felt that knowledge was not shared to an extent that it might assist or improve the delivery of quality services by the Municipality.

> *"Knowledge is not shared to the extent that the organisation can deliver quality services. Departments largely work in silos with no real knowledge transfer."*

This finding by this participant that the Municipal departments work in silos, supported the findings of Ramsey and Barkhuizen (2011), discussed in sub-section 3.7.2.3, in one of the South African SSCs that the organisational structure prevents the exchange of tacit knowledge. Ramsey and Barkhuizen (2011) state that employees conveyed a high degree of frustration due to the existence of silos within that particular organisation. Employees indicated that they were unable to network outside their respective silos.

Participants indicated that there was a mentality among the employees that knowledge sharing should mainly reside with KM department employees, rather than the entire Municipality (statement 11.5). Participants also revealed that there had been re-structuring within the Municipality. The relocation of the KM department had added value to the practice of knowledge transfer.

> *"Departmental location has made some value to KM. The department is now under the Office of the City Manager. Now top management know what KM is, there is much support now compared to when it was under a line function. The restructuring has helped a lot. For many years the KM department has been trying."*

The BCMM head of the IKM, Research and Policy Department once indicated that the fact that the department was not at the required level was concerning as such a department was strategic and needed to interact with various directors and senior leadership regarding knowledge and knowledge policies of the Municipality (Norushe, 2013). During the document review, the Buffalo City Metropolitan Municipality annual report 2015/16 was reviewed. The organogram on Figure 11 shows that the Information, Knowledge Management, Research and Policy Department had since then fallen under the Office of the City Manager.

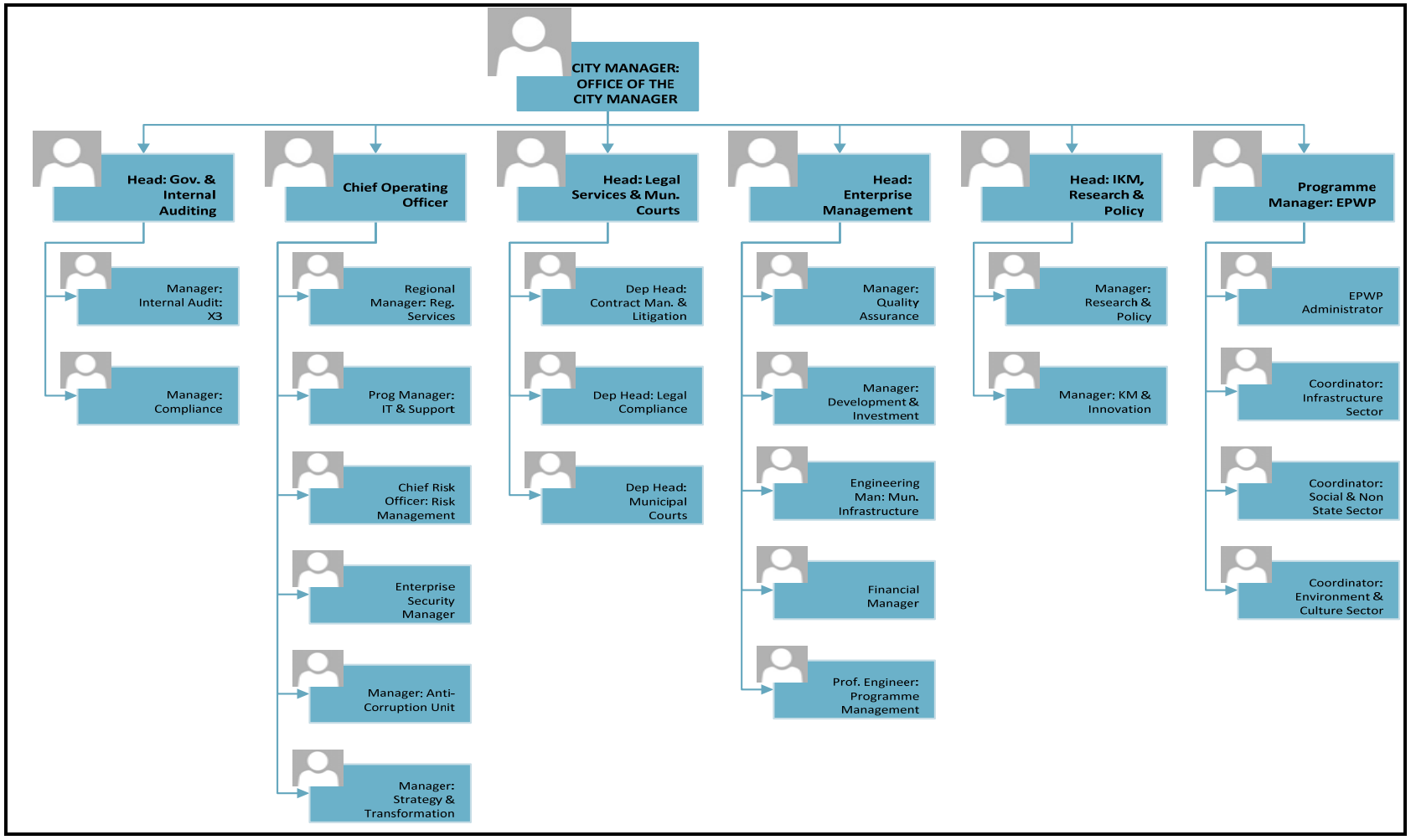


Figure 11: Office of the City Manager Organogram

6.3 People

'People' is one of the four quadrants of the Socio-Technical Systems Theory, discussed in section 3.7.1. This quadrant falls under the social sub-system. The social sub-system is much more that the technical control of responsibilities that are performed by BCMM employees. In this sub-system, individual jobs are merged with technical tasks and with duties assigned to groups. According to Ismail and Yusof (2010), there are fundamental changes that are required in the way BCMM runs their business, that will ultimately make knowledge transfer effective. Employees have to be motivated, there must be trust among the employees and the norm of reciprocity needs to be respected and practised. There are three themes that are discussed under this quadrant.

6.3.1 Theme 4: Knowledge cannot be transferred effectively if employees are not motivated to share it

Knowledge has become an essential source of competitive advantage. It is critical, therefore, for municipalities to find the ways to manage and motivate employees to share their knowledge. Organisations have both knowledge seekers and knowledge providers. In sub-section 3.7.1.1, Cho and Korte (2014) claim that in an established knowledge-based organisation, knowledge providers should make knowledge accessible to knowledge seekers whenever they need it.

The Municipality is encouraging its employees to pursue their studies through the provision of study bursaries. In statement 11.3, participants indicated that the sharing of knowledge in the Municipality did not contribute to positive performance appraisals. Participants claimed that KS should be included in their key performance areas and be rewarded.

> *"At the moment sharing of knowledge does not contribute to positive performance appraisals. It is not included in the key performance areas but it should be there. We have been calling for that to be part of the appraisals."*

6.3.2 Theme 5: Employees are more likely to share their knowledge if there is trust

In sub-section 3.7.1.4, trust has been considered as the main factor that contributes towards knowledge transfer (Chai et al., 2011); has frequently been recognised as a precursor to knowledge transfer (Seba et al., 2012); and regarded as the focal point of every relationship

within an organisation (Okyere-Kwakye & Nor, 2011). Seba et al. (2012, p. 375) have also alluded to the fact that "the level of trust between employees influences employee attitudes towards knowledge sharing." Trust is a critical influencing factor to KS, for without trust, KS is of no meaning. Trust is also an essential promoter towards the efficiency of KS, advancing the communication of knowledge (Shanshan, 2013).

Participant's responses on statements 13.2, 13.3 and 13.15 revealed that there was a lack of trust within the Municipality. Participants blamed top managers for hoarding important information.

"Knowledge is largely hoarded at the higher levels of the organisational hierarchy."

"On a human resources level information is not seamlessly transferred between managers and their subordinates. There seems to be a culture of knowledge hoarding in an attempt to augment personal importance or worth."

"In a political environment knowledge transfer can be seen as a danger to power, therefore top management will be reluctant to share knowledge."

6.3.3 Theme 6: Norm of reciprocity increases knowledge sharing behaviour

In sub-section 3.7.1.3, Liou et al. (2016) have indicated that employees improve their efforts at work to share knowledge when they expect that their work performance will be rewarded, and their success recognised. In statement 13.3, participants acknowledged the fact that the Municipality had formed a Knowledge Management department and invested its financial resources in knowledge management systems, but they had found employees hoarding their knowledge. This is an indication that sharing of knowledge is not rewarded; that the norm of reciprocity is absent.

"Although the Municipality formed the knowledge management section and has invested in systems for knowledge transfer, on a human resources level information is not seamlessly transferred between managers and their subordinates. There seems to be a culture of knowledge hoarding in an attempt to augment personal importance or worth."

Two participants indicated that their efforts in knowledge transfer were being recognised by the Municipality, but in statement 12.10 they questioned the support being provided to carry this function.

"There is some recognition, but are we capacitated enough to carry this function of knowledge transfer?"

6.4 Technology

This quadrant of the Socio-Technical Systems Theory has been discussed in section 3.7.3. Designing a system to share knowledge in a municipality requires that the combination of people, technology, processes and information be established (McNabb, 2007). Sedighi and Zand (2012) stress that simplicity of technological interface, ease of use, suitability to users' desires, relevancy of knowledge content and standardization of knowledge are significant factors that should be considered in the development of a KM technological system. One theme has been found and discussed under this quadrant.

6.4.1 Theme 7: Information technology plays a positive role in knowledge transfer

In section 3.7.3, it was indicated that information systems are beneficial tools in knowledge transfer, and technologies such as knowledge repositories, decision support systems, intranets, and social networking sites all afford opportunities for communication and transfer of knowledge (Seba et al., 2012). Kathiravelu et al. (2013) also agree, indicating that more organisations have been employing technological innovation to promote positive knowledge sharing culture among their employees than before. When organisations introduce technology, knowledge sharing is expected to increase among the employees.

The Municipality was at a stage of implementing SharePoint as their knowledge management portal. An Electronic Document Management System (EDMS) had previously been used by the Municipality and it was now being replaced by SharePoint. The EDMS was described in section 2.4.3. Issues mentioned by participants which led to the cancellation of the EDMS were the user uptake, due to lack of IT skills, and cost.

"Systems for knowledge sharing are not really complicated, but the platform that was created was a matter of costing licensing. The Municipality had an EDMS tool for documenting that was deployed, but only for 200 users. It was too expensive as it was costing plus minus 2 million and we are now deploying SharePoint which is open for everyone and we are not going to have licensing issues" (Statement 11.14).

Statement 11.13 indicated that interviews had been conducted with the staff to ascertain their perceptions with regards to the skills needed to use knowledge sharing technologies, specifically, the EDMS. Employees were found not knowing how to use the technology although training had been offered to them.

6.5 Tasks

'Tasks' is the fourth quadrant of the Socio-Technical Systems Theory and has been discussed in section 3.7.4. One theme, which indicates that the transfer of knowledge improves organisational efficiency, is discussed under this quadrant.

6.5.1 Theme 8: Knowledge transfer improves organisational efficiency

Kuras and Kuras (2015) as cited in section 2.3.1, have indicated that good KM in an organisation increases the efficiency in business operations by increasing the effectiveness of good decision-making, appropriate planning, increasing performance and optimizing the operation time. To ascertain whether BCMM employees understood the benefits of knowledge transfer, they were asked if they agreed that it improves service delivery; reduces costs; improves customer focus; develop employees; improves competitive advantage, creates new opportunities for the Municipality; improves quality; improves decision-making; improves response time to key business issues; and improves work process in the Municipality. The following statements were gathered from their responses.

Knowledge transfer can improve service delivery. The Municipality is in the process of implementing applications that will increase communication with its community. A call centre has been running for a while and has been paying dividends for the Municipality (Statement 12.1).

Cost reduction can be a by-product of knowledge transfer in that it can help the community to help themselves instead of utilising municipal services for every little problem they encounter (Statement 12.2).

Knowledge transfer improves the Municipality's competitive advantage. Knowledge management can improve competitive advantage through enhanced skills and the ability to solve problems quickly and as they arise (Statement 12.3).

Knowledge transfer creates new opportunities for the Municipality. New opportunities can arise from knowledge management by employees sharing innovative ideas to solve the problems of communities (Statement 12.4).

The lack of communication can be blamed on some project drivers or project managers who fail to communicate their initiatives and face challenges when the technology needs to be used by employees (Statement 13.6).

The statements above indicate that the BCMM employees understand the important role played by knowledge transfer in an organisation. They understand that through knowledge transfer, innovative ideas can be shared to solve problems experienced by the served communities and that KT can improve service delivery.

6.6 Challenges found within the Municipality

This section highlights the challenges the Municipality has with knowledge transfer and maps it to the different themes that were discussed in the previous sections.

Table 15: Knowledge transfer challenges at BCMM

Challenges	Theme 1	Theme 2	Theme 3	Theme 4	Theme 5	Theme 6	Theme 7	Theme 8
1. The culture is not supportive as the hierarchical and bureaucratic management supresses any attempts at openness and support in the organisational culture.	X	X	X					
2. At the human resources level, information is not seamlessly transferred between managers and their subordinates. There seems to be a culture of knowledge hoarding in attempts to augment personal importance or worth.	X	X			X	X		
3. The bureaucratic organisational structure hampers any attempts at knowledge sharing.			X					
4. Most of the Municipal employees still believe that KM falls under the Knowledge Management unit and should mainly reside in people working in that unit.								X

5. Knowledge is largely hoarded at the higher levels of organisational hierarchy.		X			X			X
6. KM department took time to get top management buy-in, and employees did not understand what KM is basically. They thought of KM as something nice to have, but not essential for the organisation.	X	X		X				
7. The Municipality does not recognise knowledge as part of their asset base because there is no transfer of knowledge during succession or proper handover. It is likely that a new employee starts on a clean slate which is detrimental to the employee's job learning curve.		X						X
8. Core Managerial Competencies (CMCs) on performance appraisals are either indicated as essential or compulsory, but the "Knowledge		X		X				X

Management" CMC is among those that are left blank by all the senior managers.								
9. Knowledge is not shared to the extent that the organisation can deliver quality services. Departments largely work in silos with no real knowledge transfer.			X					X
10. EDMS was cancelled due to poor user uptake, due to lack of IT skills, and cost.							X	

6.7 Critical success factors for the improvement of KT at BCMM

A review of literature in the previous sections showed that there are a number of CSFs that influence the success of knowledge transfer initiatives within BCMM. The practices and activities of BCMM are the CSFs that should be address for successful implementation of knowledge management. If these practices already exist within the Municipality, they would need to be nurtured. If they are not in place, they would need to be developed (Crnjar & Dlacic, 2014). The CSFs discussed below are critical in ensuring that the environment and culture within the said Municipality supports the transfer of knowledge.

CSF 1: Develop a culture to promote knowledge transfer

A collaborative culture is an essential condition for KT to occur between individuals and groups. This is due to the fact that KT requires employees to come together to interact, exchange ideas and share knowledge with one another (Wong, 2005). BCMM needs to foster an innovative culture in which employees are continually stimulated to generate new ideas, solutions and knowledge. In addition to SharePoint that is being implemented, KMSs that support collaboration, such as Intranet and Groupware Systems, should be promoted. Intranet infrastructures offer the basic functionality for communication, exchange, storage, search, as well as retrieval of data and documents. Groupware systems enhance collaboration by supporting discussions, time management, meetings and creative workshops.

CSF 2: Support and promotion of knowledge transfer by top management

Top management support is one of the critical factors for the implementation of knowledge transfer. Top management in BCMM can play an important role by ensuring that KT is successfully implemented. Managers should demonstrate a willingness to offer and freely share their knowledge with other employees, search for and learn new knowledge and ideas (Wong, 2005). Therefore, it is the responsibility of municipal top managers to support KT activities and projects by ensuring that sufficient resources are allocated in terms of money to acquire IT infrastructure, skilled labour and time for using KT platforms (Ansari et al., 2012).

CSF 3: Alignment of knowledge management with organizational strategy

The Buffalo City Metropolitan Municipality knowledge transfer activities are exposed to many challenges. These activities need to be directed toward real efforts that are based on clear organizational strategies (Ansari et al., 2012). Hence, for BCMM to succeed in their

knowledge transfer efforts, they need to form official KM strategies throughout the Municipality. KM activities must be aligned with organizational strategy such that the top management members make and share a vision on KT and continually plan on realising the agreed upon KT objectives.

CSF 4: Ensure flexible and informal organizational structures to facilitate KT

BCMM organizational structure must be flexible enough to increase distribution of knowledge and cooperation from traditional borders of the organization towards knowledge creative borders (Ansari et al., 2012). BCMM top managers must recognize the shortcomings of bureaucratic structures and acknowledge that they slow the processes and limit the information flow. The reporting procedures in current structures consume excessive amounts of time in order for knowledge to filter through every level of the Municipality. Knowledge transfer succeeds with structures that support ease of information flow, with fewer boundaries between divisions.

CSF 5: Motivate employees to contribute knowledge

Motivation is one of the factors that affect employees' intentions to share knowledge. BCMM's most valuable intellectual resources are entrenched in the minds of the employees; KT can be achieved only through passion that stimulates the deepest parts of the employees' minds (Egbu, Wood, & Egbu, 2010). Therefore, if the municipal employees are not motivated to share their knowledge, there is no amount of investment, infrastructure and technological intervention that can make KT effective.

CSF 6: Ensure availability of an effective information technology infrastructure

Buffalo City Metropolitan Municipality should invest in a comprehensive technological infrastructure such as communication systems and information technology for the purpose of KT. Technologies such as chat rooms, telephone, and video conference can be used to transfer tacit knowledge (Sedighi & Zand, 2012). Factors such as ease of use, simplicity of technology, connection with knowledge content and standardization of a knowledge structure, and adaptability to the needs of users, have to be considered when municipalities develop KMSs (Margilaj & Bello, 2015). The key for BCMM is to understand how technology is developed and how is it aligned to organizational strategy and knowledge processes. This can play a critical role in managing and supporting the Municipality's KT activities.

CSF 7: Provision of training for all employees

Training is critical for effective KT among the Municipality employees. Through training, employees will have a better understanding of the concept of KT. BCMM employees need to be educated in using a KMS and any other technological tool that can be useful in sharing of knowledge. This will be crucial in ensuring that employees use the full potential and capabilities offered by KMSs (Wong, 2005). Employees should be trained to understand their roles in performing knowledge-related responsibilities. Training will equip employees with skills that foster innovation, creativity and transfer of knowledge. Table 18 analyses the critical success factors, showing the link between them and the four quadrants of the Socio-Technical Systems Theory.

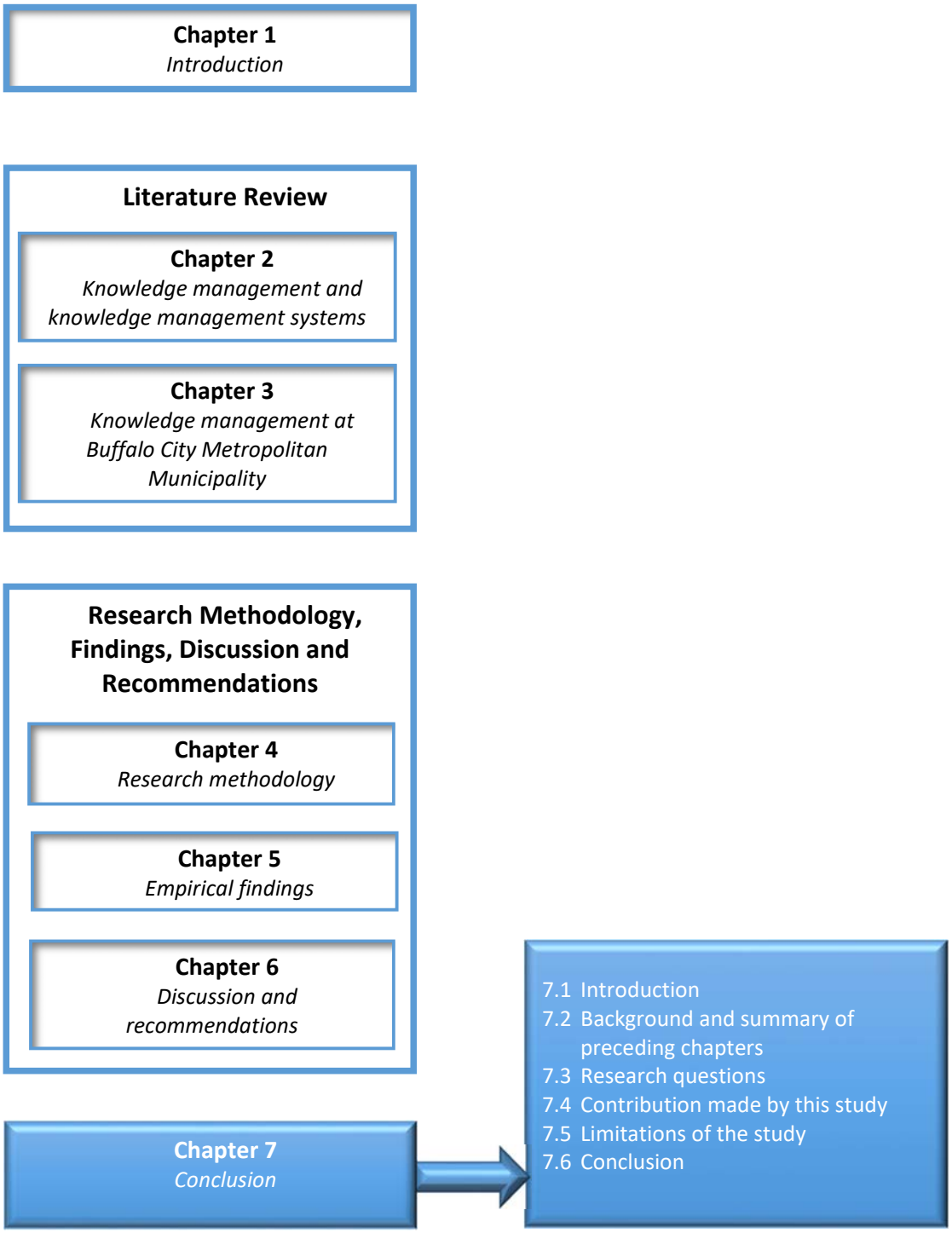
Table 16: Critical Success Factor Analysis

Critical Success Factors	Socio-Technical Systems Theory's Four Quadrants			
	Structure	People	Technology	Tasks
CSF 1	X	X		
CSF 2		X		
CSF 3	X	X		X
CSF 4	X			X
CSF 5		X		
CSF 6			X	X
CSF 7		X	X	

6.8 Conclusion

This chapter has discussed the eight themes that were identified, linking them to their respective quadrants of the Socio-Technical Systems Theory. The problems that were found to be challenging the Municipality in knowledge transfer were also found and mapped with their respective themes. Critical success factors were suggested to counter-act the knowledge transfer problems found at Buffalo City Metropolitan Municipality. Recommendations were been made on how the Municipality could improve their knowledge management systems and knowledge transfer among their employees, which would ultimately improve service delivery, competitive advantage, and improve their decision-making.

Chapter 7: Conclusion



7.1 Introduction

The purpose and outcome of this research study is summarised in this chapter. The previous chapter discussed the findings and recommendations of the study and provided seven critical success factors that could influence the success of knowledge transfer initiatives at Buffalo City Metropolitan Municipality.

This chapter provides summative conclusion to the study. It will begin by providing a brief background to the study, thereafter, the contribution made by this research will be presented. An evaluation of the research outcomes will follow, providing a summary of how the three research sub-questions were answered through primary and secondary data. Then directions for future research are made and finally some concluding remarks are offered. The next section provides a summary of the preceding chapters in this study.

7.2 Background and summary of preceding chapters

A knowledge audit process conducted at Buffalo City Metropolitan Municipality in 2010 revealed a lack of a central data repository and data sharing which hampered the data capturing processes within the municipal directorates (Kitchin et al., 2013). Data collection efforts were duplicated and access to vital information was limited to certain individuals. The information technology infrastructure was found not to be integrated, limiting the flow of information within the Municipality. The audit further revealed that document sharing was found to be limited and only the staff directly responsible for the documents knew about them. This led to poor updating of documents and poor content management. The research problem is that while there is evidence of a KMS being introduced and implemented to improve knowledge transfer in the Buffalo City Metropolitan Municipality, there is, however, no tangible evidence thereof.

Information technologies alone cannot improve the human behaviour and social structures in an organisation, therefore the design of socio-technical systems is essential. Since the socio-technical perspective offers a suitable framework in helping to realise the manner in which the technology is implemented and utilised in organisations (Chai & Kim, 2012), this study adopted Socio-Technical Systems (STS) Theory to investigate the extent to which information systems could be used to improve the knowledge transfer at BCMM.

Chapter 2 reviewed literature in an attempt to unpacked concepts of knowledge, knowledge management, knowledge transfer, and knowledge management systems. When KM occurs in organisations, it does not only provide benefits to the organisation, but also to the employees who are part of the organisation. Some of the advantages perceived by employees are an increase in proficiency, experience in working together and shared knowledge. The chapter also discussed the different types of knowledge management systems.

In Chapter 3, which also formed part of the theoretical foundation of this study, an overview of the South African local government was discussed. South Africa has three categories of municipalities. Metropolitan areas are classified under category A, while local municipalities are classified under B, and C covers all the areas that fall outside the metropolitan municipalities. Buffalo City Metropolitan Municipality falls under the eight category A municipality. The BCMM structure was reviewed during the 2015/16 financial year and now has ten directorates. Information, Knowledge Management, Research and Policy falls under the Directorate of the City Manager's Office.

Chapter 4 explained the research methodology, adopting the 'research onion' which illustrated the six research stages that provide direction to this study. It provided a summary of the important issues that needed to be taken into consideration and reviewed before undertaking any research. The interpretivist paradigm was considered appropriate for the study as qualitative data were collected and used to inductively interpret the attitude towards and behaviour of employees at the BCMM towards knowledge management systems. This study employed a case study design. Both primary and secondary data collection methods were used throughout the study to collect the evidence required to answer the research questions. Semi-structured interviews were chosen to allow more clarifying, probing and cross-checking questions.

In Chapter 5, the research data collected through semi-structured interviews at Buffalo City Metropolitan Municipality was presented. Documents relevant to the study were described and reviewed. Insight was also given into the selected case, focusing on the directorates where the participants were currently working. The qualitative data collected during the interviews was analysed by means of thematic analysis. To better organise and manage data and further facilitate the identification of themes, analysis of data, gathering insight, and developing

conclusions, an electronic qualitative data management system called NVivo was used to analyse the data.

Chapter 6 discussed the findings in relation to the themes discussed in Chapter Five and the theoretical framework used in this study. The eight themes that were found during the literature review were each discussed under the corresponding quadrant of the Socio-Technical Systems Theory. The problems challenging the Municipality in knowledge transfer were mapped with corresponding themes. To counter-act the problems found, critical success factors were identified for the Buffalo City Metropolitan Municipality. Recommendations were also made on how the Municipality could improve their knowledge management systems and knowledge transfer among their employees, which would ultimately improve service delivery, competitive advantage, and better their decision-making. The results obtained in this research study were analysed in the context of the following research questions.

7.3 Research questions

At the outset, the main research question and its three sub-questions were provided as stated in Chapter 1. These questions have remained the guiding focus for every step of this research study. In order to evaluate the success of this research study, an assessment of each of these questions was undertaken. As each of these questions was answered, then the research study fulfilled its original intentions as these three questions addressed the problem statement of this study.

The main research question for this study which was established in Chapter 1 was: ***What factors will impact on knowledge management systems to improve knowledge transfer in Buffalo City Metropolitan Municipality?*** This section therefore, fully addressed this main research question under the following three research sub-questions.

How well are knowledge management systems embedded in the Buffalo City Metropolitan Municipality to enable it to improve institutional capacity?

The objective of this sub-question was to address the extent to which the BCMM has leveraged on KM to enhance its capacity to function intelligently. The sub-question also attempted to find out if there were any failures in the Municipality so far and what the causes thereof could be. The secondary data collection in Section 3.5 revealed that BCMM is a

member of the Knowledge Management Reference Group, which was formed in 2005 to encourage a shared-learning partnership around KM in South African municipalities. The aim was to support good governance. An overview of the knowledge management status among the KRMG members was conducted by Kitchin et al., (2013). This overview revealed that BCMM conducted a knowledge audit in 2010. This BCMM 2010 audit revealed that there was a lack of a central data repository and data sharing, which hampered the data capturing processes within the Municipal directorates. This was confirmed by the participants during the interviews which revealed that departments largely work in silos with no real knowledge transfer (discussed in Section 6.2.3). If there was a central data repository, knowledge would have been captured and shared among the employees.

The BCMM 2010 audit also revealed that the data collection efforts were duplicated and access to vital information was limited to certain individuals. In Section 6.3.2, participants blamed their top managers of hoarding important information. They indicated that knowledge was largely hoarded at the higher levels of the organisational hierarchy. This meant that what was found during the 2010 audit was still the case within the Municipality. When employees needed vital information or knowledge to make informed decisions, they could access knowledge.

To recap, this sub-question asks how well the KMS in the Municipality were embedded to enable it to improve institutional capacity. The 2010 KM audit also revealed that the Municipality's IT infrastructure was found not to be integrated, thus limiting the flow of information within the Municipality. This was similar to what had been found in the Stellenbosch Municipality by Gaffoor and Cloete (2010). They found the Municipality to have many IT/IS systems in different departments which were not integrated (discussed in Section 3.7.3). In Section 6.4.1, participants indicated that BCMM was at a stage of implementing SharePoint as their knowledge management portal. An Electronic Document Management System previously used by the Municipality was then being replaced by SharePoint.

Which knowledge management systems can be employed to improve the knowledge transfer at BCMM?

The aim of this sub-question was to identify knowledge management systems that could be used by the Municipality to improve the knowledge sharing culture. In Section 6.4, different

knowledge management systems were discussed. In Table 3, KMSs that were found to be enablers of knowledge transfer were Decision Support Systems, Document Management Systems, Knowledge Portal Systems, and Virtual Human Resource Management Systems.

The Municipality had previously employed an EDMS, but changed the system due to a lack of user uptake which was caused by poor or lacking ICT skills, and the system being expensive. The system was also found to be accommodating a limited number of users.

Which factors affect Buffalo City Metropolitan Municipality employees' attitudes toward and intention to use knowledge management systems?

This sub-question helped the researcher to understand better and assess the influence of the factors affecting the application of KMS and knowledge transfer among employees of BCMM. This sub-question also assisted in further developing successful decision-making skills using the Municipality's knowledge assets. In Section 3.7, factors that affected employees' intentions to share and use knowledge related systems were discussed. It was indicated that transfer of knowledge at BCMM can depend on factors such as organizational structure and culture, top management support, motivation, self-efficacy, reciprocity, trust, and technology.

A hierarchical structure in a municipality has an impact on employees with whom each individual normally interacts and from or to whom the individual is likely to transfer knowledge. Interview participants from BCMM revealed several challenges that affected their intentions to transfer knowledge. As discussed in Section 6.6, participants indicated that the Municipality's bureaucratic organisational structure hampered any attempts at knowledge sharing. Participants also revealed that information was not seamlessly transferred between managers and their subordinates. There seemed to be a culture of knowledge hoarding in attempts to augment personal importance or worth.

For knowledge management, organisational culture entails practices and norms that inspire the transfer of information across department lines and between employees. Secondary data revealed that organisational culture could provide BCMM employees with organisational identity; it could encourage the social system stability; could provide collective commitment; and form the employees' behaviour by helping them to make sense of their surroundings. In Section 6.2, participants indicated that the culture of knowledge sharing had improved a great deal over the years and especially since the Knowledge Management unit fell under the Office

of the City Manager. They emphasized that KM was getting the recognition it deserved and employees were beginning to comply. This demonstrated that the structural position of the knowledge management department in an organisation was crucial for knowledge transfer.

Table 17: Mapping questions to chapters and sections where they were addressed

Question Number	Research Question	Chapter in which addressed	Output Section
Main research question	*What factors will impact on knowledge management systems to improve knowledge transfer in Buffalo City Metropolitan Municipality?*	Chapters 2, 3, 6	Sections 2.4, 3.5, 3.7, 6.2, 6.3, 6.4, 6.6, 6.7
Sub-question 1	*How well are knowledge management systems embedded in the Buffalo City Metropolitan Municipality to enable it to improve institutional capacity?*	Chapter 3 Chapter 6	Section 3.5 Section 3.7 Section 6.2 Section 6.3 Section 6.4
Sub-question 2	*Which knowledge management systems can be employed to improve the knowledge transfer at BCMM?*	Chapter 2 Chapter 6	Section 2.4 Section 6.4
Sub-question 3	*Which factors affect Buffalo City Metropolitan Municipality employees' attitudes toward and*	Chapter 3 Chapter 6	Section 3.7 Section 6.2 Section 6.3 Section 6.4 Section 6.6

	intention to use knowledge management systems?		Section 6.7

Having concluded this section, the next section will highlight the contributions made by this research study.

7.4 Contribution made by this study

This section will highlight the research study's contribution to the existing body of knowledge. Critical success factors have been used in this research study to solve the research problem. The success of knowledge transfer initiatives can be influenced by CSFs. Critical success factors are the practices and activities that BCMM must address to ensure that KT is successfully implemented. If these practices already exist within the Municipality, they would need to be nurtured. If they are not in place, they would need to be developed. Therefore, to solve the research problem, knowledge transfer challenges experienced by BCMM were identified from the primary data and highlighted in Table 17. These problems were organized making use of the two sub-systems of the socio-technical approach. From these challenges, CSFs were identified and discussed in Section 6.7.

The CSFs provided solutions to the identified challenges, advising how existing KT practices can be supported and how new initiatives can be developed. The study has advised that a culture that promotes KT within BCMM should be developed. Employees should be encouraged to collaborate. Additional KM systems, such as Intranets and Groupware systems that will ensure that this collaboration is realized, were suggested.

The study, through CSFs, has further advised that BCMM must ensure that KT practices and initiatives are fully supported and promoted by top management. This will ensure that sufficient resources to support KT are allocated. To solve the KT problems, KM must be aligned with organizational strategy. Official KM strategies must be developed and aligned to organizational strategies to ensure that top management make and share a vision on KT and continually plan on realising the agreed upon KT objectives. Municipalities must ensure that their organizational structures are flexible so that distribution of knowledge and cooperation can be increased. The next section will highlight the limitations of this research study.

7.5 Limitations and future research

The study was confined to collecting data from senior and middle managers in the Buffalo City Metropolitan Municipality. The researcher held the view that these staff members would be sufficiently representative of the entire Municipality. It, therefore, is proposed that this assumption should be tested by extending the study to all the directorates and to all employee levels. This would ensure a more comprehensive assessment of the views and perceptions towards knowledge transfer practices at BCMM.

Other limitations of this study include the sample size (n = 5) which may not be enough to generalise the results to the general population. The original sample size target was eight participants. Future research must increase the sample size in order to make sure that the results will be able to provide adequate information regarding technology use among health care workers.

7.6 Summary

The study found that the Municipality's bureaucratic organisational structure hampers any attempts at knowledge sharing. It has also been found that information is not seamlessly transferred between managers and their subordinates. The Municipality has a culture of knowledge hoarding in attempts to augment personal importance or worth. The study has also found that the culture of knowledge sharing has improved a great deal over the years and especially since the Knowledge Management unit was placed under the Office of the City Manager. KM is getting the recognition it deserves and employees are beginning to comply. This means that the structural position of the knowledge management department in an organisation is crucial for knowledge transfer.

The study therefore recommends that BCMM must ensure that KT practices and initiatives are fully supported and promoted by top management. This will ensure that sufficient resources to support KT are allocated. To solve the KT problems, knowledge management must be aligned with organizational strategy. Official KM strategies must be developed and aligned to the organizational strategy to ensure that top management make and share a vision on KT and continually plan on realising the agreed upon KT objectives. The Municipality must ensure that

the organizational structure is flexible so that distribution of knowledge and cooperation can be increased.

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Appendices

Appendix 1: Ethical Clearance Certificate

Appendix 2: Request for permission to conduct research letter

Appendix 3: Supervisor letter to BCMM

Appendix 4: Approval letter from BCMM

Appendix 5: Ethics Research Confidentiality and Informed Consent Form

Appendix 6: Interview guide

Appendix 1: Ethical Clearance Certificate

University of Fort Hare
Together in Excellence

ETHICAL CLEARANCE CERTIFICATE
REC-270710-028-RA Level 01

Certificate Reference Number:	CIL021SNCO01
Project title:	**Factors that influence knowledge management systems to improve knowledge transfer in local government: A case study of Buffalo City Metropolitan Municipality.**
Nature of Project:	Masters
Principal Researcher:	Samuel Ncoyini
Supervisor:	Dr L Cilliers
Co-supervisor:	N/A

On behalf of the University of Fort Hare's Research Ethics Committee (UREC) I hereby give ethical approval in respect of the undertakings contained in the above-mentioned project and research instrument(s). Should any other instruments be used, these require separate authorization. The Researcher may therefore commence with the research as from the date of this certificate, using the reference number indicated above.

Please note that the UREC must be informed immediately of

- Any material change in the conditions or undertakings mentioned in the document
- Any material breaches of ethical undertakings or events that impact upon the ethical conduct of the research

The Principal Researcher must report to the UREC in the prescribed format, where applicable, annually, and at the end of the project, in respect of ethical compliance.

Special conditions: Research that includes children as per the official regulations of the act must take the following into account:

Note: The UREC is aware of the provisions of s71 of the National Health Act 61 of 2003 and that matters pertaining to obtaining the Minister's consent are under discussion and remain unresolved. Nonetheless, as was decided at a meeting between the National Health Research Ethics Committee and stakeholders on 6 June 2013, university ethics committees may continue to grant ethical clearance for research involving children without the Minister's consent, provided that the prescripts of the previous rules have been met. This certificate is granted in terms of this agreement.

The UREC retains the right to

- Withdraw or amend this Ethical Clearance Certificate if
  - Any unethical principal or practices are revealed or suspected
  - Relevant information has been withheld or misrepresented
  - Regulatory changes of whatsoever nature so require
  - The conditions contained in the Certificate have not been adhered to
- Request access to any information or data at any time during the course or after completion of the project.
- In addition to the need to comply with the highest level of ethical conduct principle investigators must report back annually as an evaluation and monitoring mechanism on the progress being made by the research. Such a report must be sent to the Dean of Research's office

The Ethics Committee wished you well in your research.

Yours sincerely

Professor Wilson Akpan
Acting Dean of Research

05 August 2016

Appendix 2: Request for permission to conduct research letter

4 Tait Place
4 Maggs Street
Amalinda
5247

Date: 25 October 2016

THE ACTING CITY MANAGER
BUFFALO CITY METROPOLITAN MUNICIPALITY
PO BOX 134
EAST LONDON
5200

Dear Sir,

RE: REQUEST FOR PERMISSION BY STUDENTS TO CONDUCT RESEARCH STUDY AT BCMM

I am a student at **University of Fort Hare,** completing **Master of Commerce in Information Systems**. I am sure you are aware that any post graduate study involves completion of a Dissertation. It is for this reason that I request your personal and professional permission to partake in my research in directorates and departments within BCMM.

The title of my research Dissertation is FACTORS THAT INFLUENCE KNOWLEDGE MANAGEMENT SYSTEMS TO IMPROVE KNOWLEDGE TRANSFER IN LOCAL GOVERNMENT: A CASE STUDY OF BUFFALO CITY METROPOLITAN MUNICIPALITY, and is being undertaken under the Supervision of **Dr Liezel Cilliers**.

The objective of this research is to produce best practices in the form of Critical Success Factors for the improvement of knowledge transfer at BCMM, which will promote a knowledge sharing culture that will improve service delivery. The research study shall make use of interviews with key selected potential participants or respondents, chosen according to a convenience sampling technique. The potential participants or respondents would thus include two ICT managers, two directors, two heads of departments, two middle managers, and two staff members from the KM unit. The study will be benefitial to BCMM because knowledge

management systems (KMS) effectiveness will help Municipalityto become more competitive and have the ability to serve the needs of Buffalo City residents. With KMS in place, the right information will get to the right employees at the right time for effective decision-making. The management of knowledge will empower and motivate the Municipality staff and will also support innovation, learning and improve service delivery.

The ethical research principles will be strictly adhered to thoughout the research process so as to maintain a high standard of work and a high quality of the research study. The infomation obtained will be used only for purposes of this study, and will ensure anonymity and confidentiality of potential research participants or respondents A copy of the full research report, once approved by the University will be handed to BCMM.

I thus request granting of permission to collect the necessary data from relevant officials at BCMM for the purposes of completion of my Dissertation.

Your kind assistance in granting me permission will be highy appreciated and thank you for taking the time in allowing your staff to be part of this research study as I am sure it will not only be of benefit to me but to them as well..

Yours faithfully,

Samuel Ncoyini
E-mail address: sncoyini@ufh.ac.za
Cellphone: +27 73 146 9696

ACTING CITY MANAGER

Approved	Not Approved

Appendix 3: Supervisor letter to BCMM

University of Fort Hare

DEPARTMENT OF INFORMATION SYSTEMS

East London Campus:
P.O. Box 7426, East London, 5200, South Africa
50 Church Street, East London, 5201, South Africa
Tel: +27 (0) 43 704 7073 • Fax: +27 (0) 43 704 7070
Email: Infosys@ufh.ac.za

Information Systems Department

University of Fort Hare

South Africa

26/10/2016

RE: REQUEST FOR PERMISSION BY MR S NCOYINI TO CONDUCT RESEARCH STUDY AT BCMM

This is to confirm that Mr Samuel Ncoyini (201411212) is currently a student in the Information Systems Department at the University of Fort Hare. He is registered for a MCom (Information Systems) degree and is currently in his first year of study. I am his sole supervisor, Dr Liezel Cilliers.

The title of Mr Ncoyini's research dissertation is FACTORS THAT INFLUENCE KNOWLEDGE MANAGEMENT SYSTEMS TO IMPROVE KNOWLEDGE TRANSFER IN LOCAL GOVERNMENT: A CASE STUDY OF BUFFALO CITY METROPOLITAN MUNICIPALITY. The objective of this research is to produce best practices in the form of Critical Success Factors for the improvement of knowledge transfer at BCMM, which will promote a knowledge sharing culture that will improve service delivery.

Mr Ncoyini has received ethical approval from the University of Fort Hare's Ethical committee (CIL021SNC001). He will need to interview 10 employees from the BCMM. The outcome of the study will be benefitial to BCMM because knowledge management systems effectiveness will help the Municipality to become more competitive and have the ability to serve the needs of Buffalo City residents.

Thank you for your consideration in this matter.

Regards,

Dr Liezel Cilliers

Cell: 0835184009

Office number: 0437047067

E-mail: lcilliers@ufh.ac.za
School of Business and Enterprise
Faculty of Management and Commerce: Tel: +27 (0) 43 704 7196

Appendix 4: Approval letter from BCMM

BUFFALO CITY METROPOLITAN MUNICIPALITY

MEMORANDUM

Date: **30 NOVEMBER 2016**

From: **HEAD:INFORMATION KNOWLEDGE MANAGEMENT, RESEARCH AND POLICY**

To: **MR S. NCOYINI**

Our ref:	Please ask for	Your ref:
	MR J.FINE	
	(043) 705 9742	

RE: REQUEST FOR PERMISSION TO CONDUCT RESEARCH IN BCMM: MR SAMUEL NCOYINI

It is hereby acknowledged that **Mr. Ncoyini,** a student at **University of Fort Hare** completing a **Masters of Commerce (Information Systems)** has met the prerequisites for conducting research at Buffalo City Metropolitan Municipality (BCMM) for partial fulfillment of his degree. He has provided us with all the necessary documentation as per the BCMM Policy on External Students conducting research at the institution. With reference to the letter to the Acting City Manager received on 10 November 2016, permission was requested to conduct research at BCMM for his Research Report, entitled **"Factors that Influence Knowledge Management Systems to Improve Knowledge Transfer in Local Government: A Case Study of Buffalo City Metropolitan Municipality"** This request was acknowledged by the Office of the Acting City Manager, and forwarded to the Information & Knowledge Management, Research & Policy Unit for further assistance. Mr. Ncoyini was asked to provide the Unit with the necessary documentation, which he subsequently did.

The relevant Officials to assist in the research were identified and duly informed about the research, and the fact that Mr. Ncoyini has met all the prerequisites. Their contact details have also been provided to Mr. Ncoyini and he was informed to contact them directly for assistance.

We wish you good luck in your studies.

DR T F NORUSHE

HEAD: INFORMATION, KNOWLEDGE MANAGEMENT, RESEARCH AND POLICY

Appendix 5: Ethics Research Confidentiality and Informed Consent Form

NAME OF APPLICANT | Ethics Human 2015

<< Samuel S. Ncoyini >>

OFFICE USE ONLY	
Ref	Date

University of Fort Hare
Together in Excellence

Ethics Research Confidentiality and Informed Consent Form

The University of Fort Hare / Information Systems Department is asking 10 employees from your organization to answer some questions, which we hope will benefit your community and possibly other communities in the future.

The University of Fort Hare / Information Systems Department is conducting research regarding *Factors that influence knowledge management systems to improve knowledge transfer in local government: A case study of Buffalo City Metropolitan Municipality*. We are interested in finding out more about how Knowledge Management Systems can be used to improve the Knowledge Transfers at Buffalo City Metropolitan Municipality. We are carrying out this research to help in producing best practices in the form of Critical Success Factors for the improvement of knowledge transfer at BCMM, which will promote a knowledge sharing culture that will improve service delivery.

The study will be conducted according to the International Declaration of Helsinki for research on human subjects. The University Research Ethics Committee has approved this research project and the Ethical Clearance number is **CIL021SNCO01**. The Committee reserves the right to inspect the research records collected during this research project in order to ensure that the project is being conducted ethically.

Please understand that you are not being forced to take part in this study and the choice whether to participate or not is yours alone. However, we would really appreciate it if you do share your thoughts with us. If you choose not take part in answering these questions, you will not be affected in any way. If you agree to participate, you may stop me at any time and tell me that you don't want to go on with the interview. If you do this there will also be no penalties and you will NOT be prejudiced in ANY way. Confidentiality will be observed professionally.

I will not be recording your name anywhere on the questionnaire and no one will be able to link you to the answers you give. Only the researchers will have access to the unlinked information. The information will remain confidential and there will be no "come-backs" from the answers you give.

The interview will last around 60 minutes *(this is to be tested through a pilot)*. I will be asking you questions and ask that you are as open and honest as possible in answering these questions. Some questions may be of a personal and/or sensitive nature. I will be asking some questions that you may not have thought about before, and which also involve thinking about the past or the future. We know that you cannot be absolutely certain about the answers to these questions but we ask that you try to think about these questions. When it comes to answering questions there are no right and wrong answers. When we ask questions about the future we are not interested in what you think the best thing would be to do, but what you think would actually happen.

Document approved by UREC: 27 July 2015, V01

If possible, our organization would like to come back to this organization once we have completed our study to inform you and the organization of what the results are and discuss our findings and proposals around the research and what this means for the employees of the organization.

You can contact me or my supervisor if you have any further questions:

Mr Samuel Ncoyini
Library
University of Fort Hare
Telephone number: 0437047303
E-mail: sncoyini@ufh.ac.za

Dr. Liezel Cilliers
Information Systems Department
University of Fort Hare
Telephone number: 0437047067
E-mail: lcilliers@ufh.ac.za

If you have any further queries regarding the ethical clearance process please contact the Dean of Research.

Prof G de Wet
GMRDC
University of Fort Hare
Telephone number: 0437042319
E-mail: GdeWet@ufh.ac.za

INFORMED CONSENT

I hereby agree to participate in research regarding *Factors that influence knowledge management systems to improve knowledge transfer in local government: A case study of Buffalo City Metropolitan Municipality*. I understand that I am participating freely and without being forced in any way to do so. I also understand that I can stop this interview at any point should I not want to continue and that this decision will not in any way affect me negatively.

I understand that this is a research project whose purpose is not necessarily to benefit me personally.

I have received the telephone number of a person to contact should I need to speak about any issues which may arise in this interview.

I understand that this consent form will not be linked to the questionnaire, and that my answers will remain confidential.

I understand that if at all possible, feedback will be given to my community on the results of the completed research.

……..
Signature of participant **Date:**……..

I hereby agree to the tape recording of my participation in the study

……..
Signature of participant **Date:**……..

Document approved by UREC: 27 July 2015, V01

Appendix 6: Interview Guide

Dear Participant,

I am conducting research for my M Com: Information Systems from University of Fort Hare. I am asking people from your organization to answer some questions, which I hope will benefit your community and possibly other communities in the future.

I am conducting research regarding ***Factors that influence knowledge management systems to improve knowledge transfer in local government: A case study of Buffalo City Metropolitan Municipality.*** I am interested in finding out more about how Knowledge Management Systems can be used to improve the knowledge transfer at Buffalo City Metropolitan Municipality. I am carrying out this research to help produce best practices for the improvement of knowledge transfer at BCMM, which will promote a knowledge sharing culture that will improve service delivery.

Please understand that you are not being forced to take part in this study and the choice whether to participate or not is yours alone. However, I would really appreciate it if you do share your thoughts with me. If you choose not take part in answering these questions, you will not be affected in any way. If you do this, there will also be no penalties and you will NOT be prejudiced in ANY way. Confidentiality will be observed professionally.

I will not be recording your name anywhere on the questionnaire and no one will be able to link you to the answers you give. Only the researchers will have access to the unlinked information. The information will remain confidential and there will be no "come-backs" from the answers you give.

The interview will last around an hour. I will be asking you questions and ask that you are as open and honest as possible in answering these questions. Some questions may be of a personal and/or sensitive nature. I will be asking some questions that you may not have thought about before, and which also involve thinking about the past or the future. I know that you cannot be absolutely certain about the answers to these questions, but I ask that you try to think about these questions. When it comes to answering questions, there are no right and wrong answers. When I ask questions about the future, I am not interested in what you think the best thing would be to do, but what you think would actually happen.

If possible, I would like to come back to your organization once I have completed my study to inform you and your community of what the results are and discuss my findings and proposals around the research and what this means for people in this area.

Thank you.
Samuel Ncoyini

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

Demographic Information

Please mark with an X

1. What is your gender?

Male	
Female	

2. What is your age group?

< 21		41 - 50	
21 - 30		51 - 60	
31 - 40		> 61	

3. What position do you hold at BCMM?

4. Which department do you work for?

Directorate	Department	
Office of the City Manager	Governance and Internal Auditing	
	Chief Operating Office	
	Information Technology	
	Legal Services and Municipal Court	
	Enterprise Project Management	
	Expanded Public Works Programme	
	IKM, Research and Policy	
	Monitoring and Evaluation	
Executive Support Services	Sports Services and Special Programmes	

	IDP, Budget Integration, GIS, Performance Management and IEMP and Sustainable Development	
	Communication and Marketing, Internal and Intergovernmental Relations	
	Political Office Administration	
Corporate Services	Human Resources Management	
	Human Resource Performance & Development	
	Corporate Support Services	
Development and Spatial Planning	Development Planning	
	Property Management	
	Urban and Rural Regeneration	
	Transport Planning and Operations	
Infrastructure Services	Water, Wastewater and Scientific Services	
	Electrical and Energy Services	
	Workshop, Plant and Fleet Services	
	Roads, PIU and Construction	
Municipal Services	Solid Waste Management	
	Environmental, Amenities and Arts and Cultural Services	
	IEMP and Sustainable Development	
Municipal Health, Public Safety and Emergency Services	Municipal Health Services	
	Public Safety and Protection Services	
	Emergency Services	
Finance	Strategy and Operations	
	Revenue Management	
	Financial Reporting	
	Supply Chain Management	
	Budget and Treasury	
	Expenditure and Payments Management	
	Corporate Asset Management	
Human Settlements	Housing Planning and Strategy	
	Housing Delivery and Implementation	
	Human Settlement Special Projects	
	Fresh Produce Market	

Economic Development and Agencies	Trade, Industry and Rural Agrarian	
	Tourism, Arts, Culture and Heritage	

5. How long have you worked for BCMM?

Less than a year	
1 to 3 years	
3 to 5 years	
5 to 10 years	
More than 10 years	

Please indicate to what extent you agree or disagree with the following statements by ticking the relevant option.

Organizational Culture and Knowledge Transfer
6. Do you think that Knowledge transfer is part of BCMM philosophy and culture? Provide reasons for your answer
7. Do you think that the BCMM basic values and purpose emphasize the sharing of knowledge? Provide reasons for your answer
8. Do you believe that the BCMM has an encouraging, open and supportive culture? Provide reasons for your answer
9. Do you think that Knowledge transfer is viewed as each and everybody's job in order for everybody to have the best of knowledge? Provide reasons for your answer
10. The prevailing notion is that knowledge management is the task of a few designated ones and there is no need for knowledge sharing. Do you agree with this statement?

Top Management Support and Knowledge Transfer
Do you agree with these statements? Please provide reasons for your answers.
11. BCMM recognizes knowledge as part of their asset base.
12. There are policies and procedures that encourage knowledge transfer.
13. Top management sees knowledge transfer as very important and provides full support.
14. Top management sees knowledge transfer as very important but hardly supports it.
15. Top management sees knowledge transfer as a waste and hardly bothers.
16. Top management was very supportive in the beginning but now lost interest.
Role Played by Effective Knowledge Management

Which of the following do you think play a role in effective knowledge management? In your opinion, has BCMM implemented any of these actions since 2010 to improve knowledge management?
Improves service delivery.
Cost reduction.
Improves customer focus.
Employee development.
Improves competitive advantage.
Creates new opportunities for the organization.
Improves quality.
Better decision making.
Faster response to key business issues.
Intellectual property rights management
Improves work processes in the organization.

Motivation and Knowledge Transfer
Which of the following do you think play a role in knowledge transfer? In your opinion, have BCMM implement any of these actions since 2010 to improve knowledge transfer?
Sharing knowledge is highly valued by top management.
Employees who share knowledge are regarded as experts.
Sharing of knowledge contributes to positive performance appraisals.
I share knowledge to support management strategic objectives.
I share knowledge to satisfy my self-fulfilment
I share knowledge to enhance my career.

Which of the following technologies have been implemented at BCMM for knowledge Management?

a. Internet		f. Data management system	
b. Intranet		g. Web-based databases	
c. Groupware		h. Repositories	
d. Data warehousing		i. Lessons learned systems	
e. Decision support system		j. Web portals	

Use of Information Technology Infrastructure for Knowledge Transfer
Do you agree with these statements? Please provide reasons for your answers.
Employees have the skills needed to use knowledge sharing technologies.
Technology assists in the retrieval and use of knowledge.
Systems for knowledge sharing are too complicated.
Lack of user uptake due to insufficient communication.
Unsuccessful due to technical problems.
Lack of identifying the proper information technology tool.
Lack of training.
Lack of time to learn.

Barriers to Effective Knowledge Management Implementation
In your opinion, which of these are barriers to the implementation of knowledge transfer in BCMM?
Changing people's behaviour from knowledge hoarding to knowledge sharing.
Lack of understanding of knowledge management and its benefits.
Lack of top management commitment to knowledge management.
Determining what kind of knowledge to be managed and making it available.
Overcoming technological limitations.
Justifying the use of scarce resources for knowledge management.
Attracting and retaining talented employees.

FURTHER COMMENT

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THANK YOU VERY MUCH FOR YOUR TIME.

Samuel Ncoyini