Understanding innovation drivers and barriers in local government: A City of Tshwane Innovation Unit perspective

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ABSTRACT

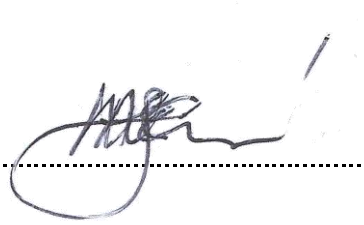
Although the concept of innovation drivers and barriers has recently garnered much interest from both practitioners and researchers, very little is known about the nature and dynamics of the factors that influence the success of innovation in local government in the Global South. To manage their impact, a better understanding is required however, a comprehensive systematic review of innovation drivers and barriers is still lacking. The purpose of this study was to conduct research to gain deeper understanding of the factors that drive or hinder innovation in City of Tshwane (CoT). A qualitative research methodology was used to collect and analyse data. Purposive sampling technique was used to select participants. Semi-structured interviews were conducted supplemented by secondary data review.

The study found that four issues are critical for successful innovation in CoT, namely: innovation strategic intent, culture of innovation, innovation drivers and barriers and collaboration. Innovation strategic intent is closely linked to leadership and culture of innovation. Drivers and barriers are complex, interdependent and context-specific factors that are imbedded in their environment. It is difficult to provide a list of innovation drivers or barriers because they are bi-directional and the role a particular factor plays can change as a function of context. What in some instances could be a driver of innovation might in others act as a barrier. Drivers and barriers may be categorised into macro, organisational and micro factors. Organisational factors are the most important and direct factors that CoT should focus their interventions to make innovation successful. Leadership commitment and management support is one of the important innovation drivers or barriers, as leadership influences all other factors. A holistic approach is required to address innovation challenges because innovation drivers and barriers are intertwined and context-specific.

KEY WORDS: Innovation drivers and barriers, local government, service delivery.

DECLARATION

I, Aluoneswi Elvis Mafunzwaini, declare that this dissertation is my own unaided work except as indicated in the references and acknowledgements. It is submitted in partial fulfilment of the requirements for the degree of Master of Management in the field of Innovation Studies at the Wits Business School in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other University.

Signature: 

On this ..... day of 31 March 2019

Aluoneswi Elvis Mafunzwaini

DEDICATION

This research work is dedicated in memory of my late parents, Mrs Phophi Nyadzanga Neswiswi Mafunzwaini and Mr Simon Mafunzwaini, for their unconditional love and upbringing. May their souls rest in peace.

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Deep appreciation is again expressed to my family, my beautiful spouse Mashudu Mafunzwaini and children Trevor, Phophi, Aluoneswi and Mpho for their understanding, encouragement, moral and emotional support.

Finally, and above everything else I would like to thank God Almighty for His grace and mercy for blessing me and my family with a healthy body and mind through which this study work was made possible.

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LIST OF ABBREVIATIONS

CPSI	Centre for Public Service Innovation
CoT	City of Tshwane
DST	Department of Science and Technology
GIKES	Gauteng Innovation and Knowledge Economy Strategy
ICT	Information and Communication Technology
IDP	Integrated Development Plan
IERI	Institute for Economic Research on Innovation
LIS	Local Innovation System
MEC	Member of Executive Council
NDP	National Development Plan
NSI	National System of Innovation
PESTEL	Political, Economic, Social, Technology, Ecology & Legal
PSI	Public Service Innovation
PSO	Public Sector Organisation
OECD	Organisation of Economic Cooperation and Development
R&D	Research and Development
Salga	South African Local Government Association
SDG	Sustainable Development Goals
STI	Science Technology and Innovation
TUT	Tshwane Technology of Technology
UNMP	United Nations Millennium Project
WBS	Wits Business School

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CHAPTER 1 : INTRODUCTION

This chapter outlines background to the study, problem statement, purpose, and the research methodology followed to conduct the study. The study sought to gain deeper insights and understanding of the innovation drivers and barriers in local government with a view to contribute to the emerging body of literature on the matter and also to highlight those important aspects that should be considered when formulating and implementing innovation in local government. This study was conducted in Tshwane, Gauteng Province, South Africa.

1.1 PURPOSE OF THE STUDY

The research purpose is the stated reason for conducting of a study. It has to be concise and specific (Gray *et al.*, 2017). Although the concept of innovation drivers and barriers in local government is mentioned frequently, it is seldom properly analysed and consequently; it is poorly understood or misunderstood. The purpose of this study was to obtain deeper insights and understanding of the innovation drivers and barriers in local government. The study sought to contribute to the emerging body of academic literature on the concept of innovation drivers and barriers in local government. Moreover, the study intended to highlight those important aspects that should be considered when formulating and implementing innovation in local government.

Specifically, the following research objectives have been framed to guide and focus the study:

- To examine current trends, issues and themes around innovation in public services and local government in particular;
- To conduct primary research to gain deeper insights and understanding of innovation drivers and barriers in local government;
- To compare innovation drivers and barriers in local government with those in the literature to determine similarities and differences;
- To contribute towards the body of literature on what factors drives or hinders innovation in local government; and

- To make recommendations regarding important innovation drivers and barriers that should be considered when embarking on the innovation journey in local government.

1.2 CONTEXT OF THE STUDY

Until lately, the public sector was perceived as far from innovative. The main role of the state was to provide the necessary legal and institutional stability to stimulate innovation in the private sector. Things have now changed: the word “innovation” is nowadays at the heart of almost every Public Sector Organisation (PSO) agenda, and there are many initiatives and pieces of research that are contributing to a better understanding of this complex phenomenon (Emery *et al*., 2016; Kay & Goldspink, 2016; Gieske *et al*., 2016; Boukamel & Emery, 2017). Literature on Public Sector Innovation (PSI) is sparse and is characterised by an over-reliance on literature derived from private sector (Strand *et al*., 2015). There is, however, emerging evidence that innovation by public sector entities is a topic of growing interest among policy makers and governments (Ramoroka *et al*., 2017). Sebina (2016) argues that although innovation was generally associated with private sector business, there is an increasing recognition of the importance of innovation in the public sector.

On the contrary, some authors (e.g. Savory, 2009) argued that public-sector organisations have a long history of involvement in technological innovation such as UK important technologies like radar, liquid crystal displays and micro ovens, all having being initially developed within public-sector research establishments (PSRE). The paucity of research on innovation in the public sector is often attributed to its relative lack of innovation, that it is inherently less innovative than the private sector. Contrary, to this prevailing myth, the history of the public sector is rich in innovation (Albury, 2005). To illustrate this point (Albury, 2005) uses two examples amongst many others, wherein (1) the United Kingdom (UK) government was instrumental in establishing “The Open University” in the 1960s, which is today UK’s largest provider of higher education and a leader in distance education and (2) the SureStart programme designed to foster “bottom-up” innovation through provision of comprehensive support to children from disadvantaged backgrounds. The two examples fundamentally transformed the manner in which services were organised

and delivered. Furthermore, Albury (2005) argues that while diffusion of innovation across the public sector is arguably slower or more difficult than in the private sector and the transformation of services and service delivery takes longer, public sector is far from lacking in innovation.

The nature and dynamics of PSI remain widely misunderstood (Arundel *et al*., 2015; Arundel & Huber, 2013; Bloch & Bugge 2013; De Vries *et al*., 2014; Djellal *et al*., 2013; Ramoroka *et al*., 2017). Ramoroka *et al*., (2017) argues that despite the rapid growth of innovation studies over the last couple of decades, the topic of PSI has reportedly been neglected in the mainstream innovation literature. PSI is emerging as an activity distinguishable from private sector innovation and it requires important new research to clarify its particular drivers, barriers, experiences, and outcomes. This study, therefore, aims to contribute to the better understanding of the factors contributing or hindering innovation in the local government space.

1.3 RESEARCH PROBLEM STATEMENT

The concept public sector innovation and in particular, innovation drivers and barriers has recently garnered much interest from both practitioners and researchers. Moussa, *et al*. (2018) argues that public sector organisations around the globe consider the development of new ideas and innovation paramount and inevitable. It is conventional to begin any account of public innovation be declaiming its poor innovation performance vis-à-vis the market sector, as in most government and consultancy reports (e.g., Moran, 2010; Potts and Kastelle, 2010), or retorting that the innovative performance of the public sector is widely misunderstood and is actually more innovative than commonly credited (e.g., Mulgan, 2007; Potts and Kastelle, 2010).

While many scholars and researchers have attempted to define the concept of public sector innovation and its determinant factors, (Moussa, et al., 2018) argued that there has been no consensus on what innovation is in the public sector and that factors that influence or hinder a culture of innovation in the public sector remain ambiguous. The basic problem in research on public sector innovation is that we still don't know really much about what does and does not work in fostering public sector innovation (Potts and Kastelle, 2010). Glor (2017) argues that very little is known about the factors implicated in the success or failure of innovation. Innovation is a key but poorly

understood concept in management, economics, sociology and public policy (Lee, 2015). Fuglsang (2010) argues that PSI literature is steadily growing, but it remains pretty much in a development phase.

Innovation in local government sphere of public sector is quite complex and success cannot always be guaranteed. It is critical to understand key determinants of innovation in local government both as an institution and an actor in the regional system of innovation. Local governments' abilities to determine and manage innovation drivers and barriers affect the quality and efficiency of innovation outcomes and service delivery. While there seems to be consensus on the importance of innovation in local government service delivery trajectory, there seems to be very little empirical evidence of what drives or obstructs innovation in local government, particularly in the Global South.

A question can be raised as to how much is currently known about the underlying processes of local government innovation as articulated in the innovation literature. Do we really know what drives or obstructs innovation in local government? In addressing this area of study, one embedded the research questions in the open innovation debate that stresses the content, course and outcome of the innovation process because of complex interactions between intra-organisational antecedents, resources and actors and environmental antecedents. This interaction presupposes quite open boundaries between an organisation and the environmental context in which it operates and can be understood in terms of drivers and barriers (De Vries *et al*., 2015). Innovation in local government is now considered one of the key elements to improve access and quality of service to the people. The purpose of this study was to seek deeper insights and understanding of the innovation drivers and barriers in the local government space and thus contribute to the growing body of literature on the public sector innovation by illustrating the relationships between the key concepts and their contribution to improved delivery of public service.

1.4 SIGNIFICANCE OF THE STUDY

Many academics and practitioners are becoming more interested in innovation in the public sector (Osborne & Brown, 2011; Walker, 2014; De Vries *et al*., 2015). Most of

them welcome the view that innovation may contribute to the improvement of the quality of public services and can enhance the problem-solving capacity of governmental organisations, which are facing difficult and complex societal challenges (De Vries *et al*., 2015). In the private sector, innovation is an established field of study that tries to explain why and how innovation takes place (Fagerberg *et al*., 2005; De Vries *et al*., 2015). While innovation is considered essential to the improvements of public services (Albury, 2005), other authors (e.g., De Vries *et al*., 2015) ask the questions, "What is known about innovation in the public sector? What topics have been addressed in the innovation literature to date? While there is some evidence of increasing public service and local government innovation research, a comprehensive systematic overview of public sector innovation is nevertheless still lacking (De Vries *et al*., 2015).

Most literature supports the view that innovation plays an important role in the private sector resulting in improved productivity, new products, technologies or markets, and overall competitiveness. Innovation is considered a key driver of economic progress. Recently, innovation has gained traction in the public sector, particularly in local government sphere as one of the critical factors for improved access and quality of service delivery to community members. Many public service organisations, including municipalities, are questioning traditional service delivery models and are adopting innovation as an important vehicle to improve quality service delivery.

Although understanding the innovation drivers and barriers has many benefits, it is not without complexities. There is neither universal list of key innovation drivers nor barriers. Each driver or barrier is context specific and its role may change depending on the circumstances or the stage of innovation process. This study attempted to gain deeper insights and understanding of the innovation drivers and barriers in local government, particularly from the perspective of the CoT Innovation Unit personnel and other selected operating units' personnel and experts.

1.5 DELIMITATION OF THE STUDY

The study included participants from the Innovation Unit of CoT and selected operating units including Agriculture and Rural Development, Waste Management and Support

Services Unit and external expert participants from the Department of Science and Technology (DST), Centre for Public Service Innovation (CPSI), South African Local Government Association (Salga), Institute for Economic Research on Innovation (IERI) of Tshwane University of Technology (TUT), and the Innovation Hub. Owing to time constraints, the study neither sought perceptions of other personnel beyond those mentioned above nor investigate specific innovative projects in the municipality.

1.6 ASSUMPTIONS

It was assumed that a reasonable number of respondents would be available for face-to-face semi-structured interviews in order for the study to be successful. It was also taken for granted that once interviews are scheduled, both the researcher and the participants would be in good health to carry out the study. It was also assumed that the participants will be open and honest about the information they convey.

1.7 DEFINITION OF KEY TERMS

1.7.1 Innovation

“In its traditional sense, innovation can be defined as the ability of an organisation to create additional value and add newness to its businesses, customers, processes, services, products and/or procedures” (Groenewegen & De Langen, 2012).

1.7.2 Innovation barriers

“Factors that inhabits innovation to take off and become successful in public service such as size and complexity of public service, silo culture, resistance to change, innovation fatigue, lack of resources including funding and shortage of relevant skills” (CPSI, 2014)

1.7.3 Innovation drivers

“Those factors that facilitate firms and organisations to innovate” (Mudaly, 2016)

1.7.4 Innovation Unit

This refers to the Research and Innovation Unit of CoT in charge with managing and driving innovation across the City (CoT Innovation Strategy, 2014).

1.7.5 Local government

This is the local sphere of government or public service, constitutionally charged with ensuring basic service delivery to the people (Republic of South Africa, 1996).

1.7.6 Public service

This refers to public service sector as opposed to private sector

1.7.7 Service delivery

This refers to delivery of service to the people in line with the Bill of Rights as enshrined in the Constitution of Republic of South Africa of 1996 (Republic of South Africa, 1996).

1.8 RESEARCH QUESTIONS

A research question is the fundamental core of the research study. It focuses the study, determines the methodology and guides all stages of inquiry, analysis and reporting. In view of the burgeoning literature on the concept of innovation in public service sector, it can be inferred that academics and practitioners see the value in further developing this concept as worthwhile for both academic and application purposes. Given that the conceptual basis of innovation drivers and barriers in local government is still developing, exploratory research that sought to identify insights to properly define and develop a better understanding of the concept, was deemed useful.

In an attempt to deeply explore the factors that drives and hinders innovation in local government sphere of public sector and thus, add to the definitional certainty, this study sought to understand what drives and hinders innovation in local government.

The researcher asserts that insights in this area will add to the overall clarity around innovation drivers and barriers in local government. In addressing the following questions, the researcher sought to understand the drivers and barriers of innovation in local government. Accordingly, the following research questions (schedule) are framed to solicit deeper understanding of the innovation drivers and barriers in local government:

1.8.1 Research Question 1

How aware are stakeholders of the CoT innovation strategic intent (innovation strategy)?

1.8.2 Research Question 2

What are stakeholder's perception about the culture of innovation in CoT municipality?

1.8.3 Research Question 3

What are stakeholder's perception about the key innovation drivers and barriers in CoT?

1.8.4 Research Question 4

What are stakeholder's perception about the importance of collaboration in innovation?

1.9 OUTLINE AND STRUCTURE OF THE REPORT

The study consists of six chapters. This section provides a brief description of each chapter covered in this report.

Chapter 1: Introduction

This chapter provides an overview of the study. It covers purpose and context of the study, research problem statement, significance of study, research question, and limitations of the study.

Chapter 2: Literature Review

This chapter presents the summary of the research studies about the topic. It reviews the current academic literature pertaining to key concepts, theories and frameworks to establish what is already in the public domain and to identify gaps that still need answers.

Chapter 3: Research Methodology

This chapter presents the systematic processes and specific procedures the researcher followed to identify, select, collect, process, and analyse data about a topic and make findings. The methodology section enables the reader to critically evaluate the study's overall validity and reliability.

Chapter 4: Presentation of Data and Findings

This chapter presents the summary of the data collected (results) from the interviews held with the participants at CoT Innovation Unit, Agriculture and Rural Development and Waste Management Divisions, Support Services Unit and Expert Participants from DST, Salga, CPSI, IERI, and the Innovation Hub as well as documentary review.

Chapter 5: Analysis of Research Findings

This chapter presents the analysis of the research findings and discussion. It includes interpretation of the findings and what it means from the researcher's perspective.

Chapter 6: Conclusions and Recommendations

This chapter covers key conclusions and recommendations for deeper understanding of innovation drivers and barriers in local. Potential opportunities for future research are also identified.

1.10 CONCLUSION

Most municipalities and public service sector in general are turning to innovation to improve both their service delivery and financial performance. However, very little is known about what drives or hinders innovation in local government in the literature as compared to what is known about what drives or obstructs innovation in the private sector and global north countries. This study aims to contribute to the deeper understanding of the concept of innovation drivers and barriers in local government in the Global South. This study specifically focuses on four key themes:

- Importance of innovation strategic intent (innovation strategy)
- Importance of innovation culture
- Innovation drivers and barriers
- Collaboration and linkages.

CHAPTER 2 : LITERATURE REVIEW

Literature review is about locating and summarising the state of knowledge about a topic. Often, these are research studies and may include conceptual articles or opinion pieces that provide framework about a phenomenon (Creswell, 2014). According to Gray *et al.,* (2017), literature review is an interpretive, organised and written presentation of what the study's author has read. This chapter critically reviews the peer-reviewed literature on innovation in PSOs and explain PSI concept and its drivers and barriers in local government as viewed by different authors. Innovation drivers and barriers will be discussed at length in this chapter by providing some theoretical background to concept of PSI and description of the relationships between some key innovation drivers and barriers as important contributing factors to innovation in local government in the Global South countries.

Four main themes emerged from the literature review as critical for successful innovation in the local government for improved service delivery and public value. These themes resonate well throughout the study and they are:

- Importance of innovation strategic intent (innovation strategy)
- Importance of culture of innovation
- Innovation drivers and barriers
- Collaboration and linkages.

2.1 INTRODUCTION

Innovation in the public sector is high on the political agenda worldwide (Agolla and Van Lill, 2013). However, Strand *et al*., (2015) argue that public sector is a big, broad and highly complex sector, which makes it very difficult to generalise from one sub-sector to another. Roste (2012) points out that this is one of the reasons why it's so difficult for researchers to develop innovation theories which fits all institutions and organisations within this sector. This study focuses mainly on innovation in local government sphere of the public sector.

Overtime, innovation theories have changed from an imposed policy-driven change to an interest in internal problem- solving capabilities. Fuglsang (2010) argues that academic literature on PSI lacks coherence and consistency. Hartely (2005) points out that literature on innovation in the public sector is still sparse and is relied mainly on literature derived from the private sector. Although there are some similarities in innovation processes and outcomes from which it is important to learn, there also distinctive and important differences between innovation in private firms and in public service organisations. Systematic overviews of the processes and experiences of PSI have been thin on the ground.

According to Hartely (2005), literature on private sector innovation focuses mainly on technological innovation, especially new product development, but experience is beginning to show that there are limitations in applying concepts about product innovation to service and organisational innovation. Evidence seems to suggest that the transfer of theory and empirical findings from private firms to public services is far from straightforward. Innovation is now a recurring issue in public administration and to an extent, it is considered as a 'magic concept' used to frame the necessary transformation of the public sector in order to improve not only its effectiveness and efficiency but also its legitimacy (Bekkers *et al*., 2013). Accordingly, there is a need for a robust theory and evidence derived directly from the public sector (Hartely, 2005).

Innovation by public sector entities is a topic of growing interest amongst policy makers and governments. The public sector broadly refers to government agencies, departments and entities operating across local, provincial and national spheres, whose activities include public administration, the enforcement of rules and regulations, and also the provision of social and economic services or public goods for improved basic public service delivery and quality of life (Raboroka, *et al*., 2017). The prevailing understanding of public sector innovation as evident in the literature, is concerned with enhancing the efficiency and effectiveness of the public sector in order to ensure quality public services (Block and Bugge, 2013). This concept is underscored by the Schumpeterian understanding that innovations should comprise "new or improved ideas, behaviours or practices" to enhance government efficiency (De Vries, *et al*., 2014). According to Fagerberg (2013) the basic premise of the Schumpeterian approach is that innovation is the main driving factor for long-term

economic growth which is facilitated by the emergence and continuous implementation of innovations centred on new and more viable solutions than the “old ways of doing things. Innovation is at the centre of competitiveness and efficiency of both the firm and public sector as a system. But, more that sheer efficiency, (Moore and Hartley, 2008) argues that public sector innovation’s main purpose is to create public value, and should be able to meet the actual wishes of citizens, thereby improving its legitimacy (Newman and Clack, 2009).

The representation below (Figure 2.1) attempts to reflect the relationship between innovation drivers and barriers on one hand with improved quality services on the other.

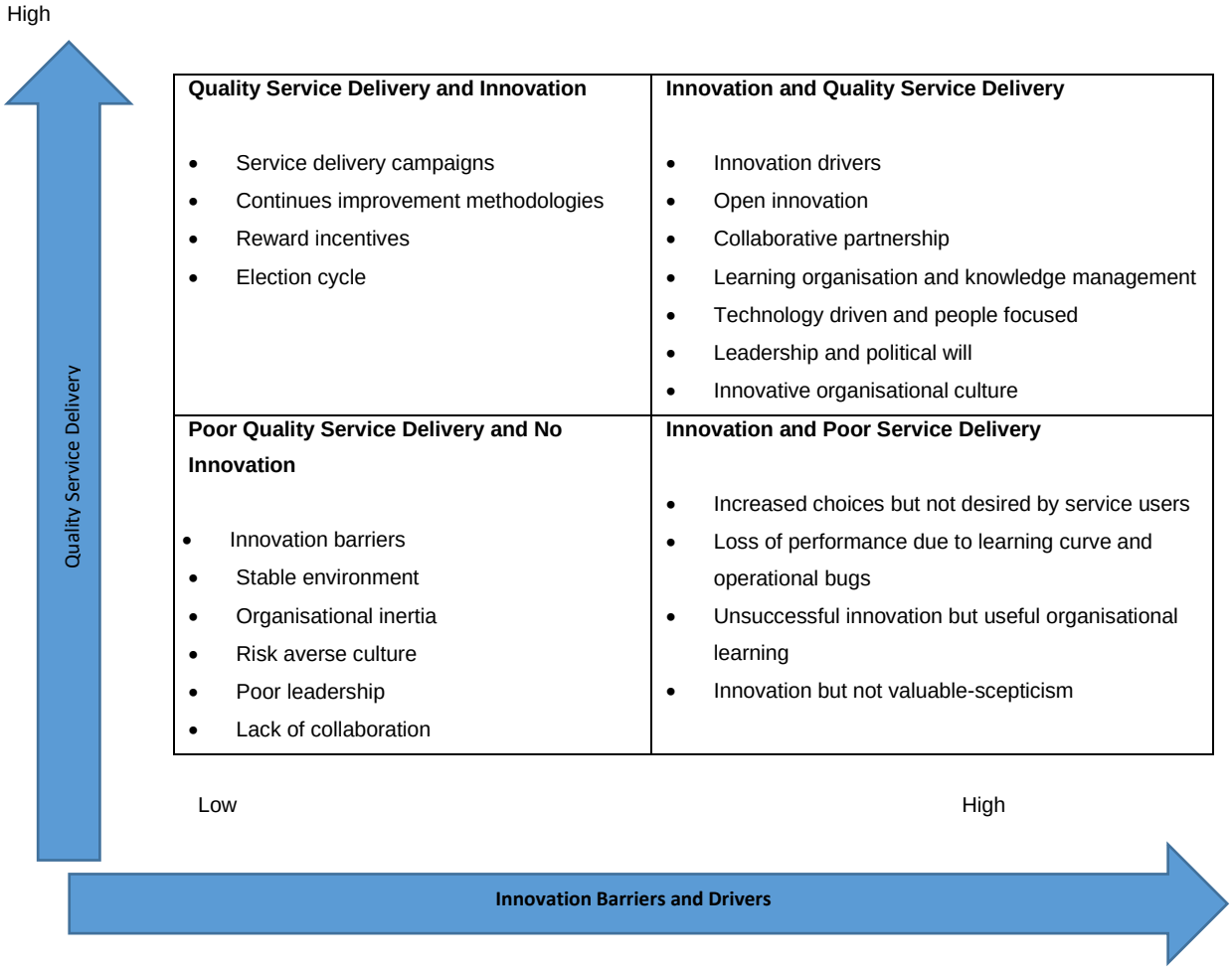


Figure 2.1: Innovation drivers and quality service delivery representation adapted from Jean Hartley (2005) Innovation and Improvement Representation.

Hartley (2005) argues that relationships between innovation and improvement need to be mapped so that there is a better understanding of the barriers and facilitators of innovation. Research is needed to illuminate and explain the processes which support or undermine innovation in public service organisations, viewing innovation as a journey rather than a linear process.

2.2 DEFINING INNOVATION IN PUBLIC SECTOR

2.2.1 **Defining innovation**

The extensive literature on innovation suggests several definitions of what constitutes innovation (Savory, 2009). According to Rogers (2003) as quoted by Savory (2009) some definitions of innovation relate to the final outcome such as 'an idea, practice, or object that is perceived as new to an individual or another unit of adoption while others relate to the process that creates it. Innovation is generally a fragile and unpredictable process with a high rate of failure, particularly in the public sector (Hartley, 2005; Lekhi, 2007). In some ways this is inevitable because if all innovations could be predicted in advance the term would lose all meaning. But the lack of clarity in studies of innovation is also a consequence of a lack of agreement on what actually defines and constitutes innovation (Greenhalgh, et al., 2004; Lekhi, 2007). It is therefore important define innovation and appreciate the complexities of attempting to define such a complex phenomenon.

The term 'innovation', like the terms 'movement' and 'change', describes both a process and a result or product of the same the process (Lekhi, 2007). Although innovation can be defined and interpreted differently by scholars, their common starting point is Schumpeter. Schumpeter (2008) argues that the engine of capitalism is production for the mass market and this engine is kept in motion by creative destruction, i.e., the continuous process of generating new products, processes, markets and organisational forms that make existing ones obsolete (Lee, 2015). Thus, for Joseph Schumpeter, the founding father of modern innovation theory, innovation is a process of creative destruction in which new combinations of existing resources

are achieved (De Vries *et al*., 2015). Creating new ways of production, as well as new products, is an important driver of economic growth (Lee, 2015).

More recently the Organisation of Economic Cooperation and Development (OECD) has defined the term innovation:

"As the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations (OECD, 2005)".

The OECD definition mirrors that of Schumpeter but also stresses that the 'newness' of the product or process is generally taken as at the level of the firm, rather than to the industrial sector or the world. It takes a pluralist view of what constitutes an innovation including changes to products, processes, marketing methods and organisational methods (Savory, 2009). This definition provides a useful framework for analysing innovation often manifest itself as a combination of product, process and organisational structure. There is an emphasis on the implementation of the novel ideas, which implies that an invention may not be classified as an innovation until it has been successfully implemented. Some innovation studies, however, recognises an invention that is yet to be implemented as a nascent innovation and that nascent innovation may be recognised as "failed innovation". Failed innovations are, however, still instructive about the innovation process and the actors that play a part in that process (Savory, 2009).

Various process models of innovation have been developed (Savory, 2009) and several authors have linked these to generation of model (Hobday, 2005; Marinnova and Philliore, 2003). According Savory (2009) early generations have been concerned with innovation as a black box (Rosenberg, 1982); linear technology push, market pull and interactive models (Howells, 1999; Lundvall, 1992; Freeman, 1995); and evolutionary models (Metcalfe, 1995; Metcalfe, et al., 2005). While linear models have generally been discredited as lacking sophistication, they however, continued to guide public policy, principally because they lend themselves to easy statistical measurement (Savory, 2009). The most appropriate models of innovation to producer-user innovation process are the interactive and systems models of innovation.

2.2.2 **Defining Public Sector Innovation**

The OECD (2012) defines PSI "as the *implementation by a PSO of new or significantly improved operations or products, covering both the content of the services and products, and the instruments used to deliver them."*

Years later (OECD, 2017) defines public sector innovation as finding new and better means to achieve public ends. Innovation, especially breakthrough innovation, is complex and challenging for governments. Yet, the scale and nature of the challenges that governments face today require responses that go beyond incremental improvements, as public sector context changed from low levels of productivity and servicing homogeneous social groups to an ever-increasing demand and expectations of quality and accessible public service.

This study leans more on the definition by Albury (2005), who described PSI as:

"The creation and implementation of new processes, products, services, and methods of delivery which result in significant improvements in outcomes efficiency, effectiveness or quality (Albury, 2005)*."*

Hartley (2005) argues innovation may include reinvention or adoption to another context, location or time period, including diffusion of innovations of good or promising practices to other organisations, localities and jurisdictions. This is particularly important for the public sector. This highlights some important differences between public and private sector innovation. Innovation in the latter is driven primarily by competitive advantage, which tends to restrict the sharing of good practice with strategic partners. By contrast, the drivers in the public sector are to achieve widespread improvements in governance and service performance, including efficiencies, in order to increase public value (Hartley, 2005). Such public good goals may be strengthened through collaborative and partnership platforms to form, share, diffuse, adapt, and embed good practice.

2.3 INNOVATION TYPES

Different authors have defined and categorised types of innovation differently. According to Lekhi (2007) innovation can broadly be divided into four broad types or range: products innovations; service innovations; process innovations and organisational or procedural innovations. This categorisation is supported by De Vries *et al*., in their description of the types of innovation below.

De Vries *et al*. (2015) argue that past research suggests that distinguishing types of innovation is necessary for understanding organisations' innovative behaviour and that innovation literature have classified PSI into four innovation types or dimensions as per table below:

Table 2.1: Types of PSI adopted from De Vries *et al*., (2015)

"Type	**Focus or description**	**Public sector example**
1. "Process"	"New or improved organisational processes, systems, structures and procedures"	"Administrative reorganisation"
• "Administrative processes"	"Introduction or creation of new organisational forms and or new management methods or techniques"	"Creation of a 'one-stop shop' by a municipality where citizens can access various services at a single location"
• "Technological processes"	"Creation or use of new technologies, introduced in an organisation to render services to users and citizens"	"Digital assessment of taxes"
2. "Product or service"	"Creation of new public services or products"	"Creation of youth disability benefits"
3. "Governance"	"Development of new forms and processes to address specific societal problems (new forms of citizen engagement and democratic institutions)"	"Governance practice that attempts to enhance the self-regulating and self-organising capacities of policy networks, local forums"

4. "Conceptual or strategic innovation"	"Introduction of new concepts, values or frames of reference or new paradigms that help to reframe the nature of specific problems as well as their possible solutions"	"Introduction of the paradigm that, when assessing a person's work disability, insurance physicians no longer analyse what people cannot do, but instead analyse what they can still do, hence focusing on potential work ability for community policing"

De Vries *et al*. (2015) further argue that although they are four key types of innovation, we recognise that, in reality, these categories are often intertwined, interconnected and create hybrid forms. Nevertheless, this distinction serves as a useful analytical tool to focus on the various types of innovation. By far the biggest category consists of administrative process innovations, a subset of process innovations (De Vries *et al*., 2015) and is most common for local government sphere.

Hartely (2005) expands these categories with three more types of innovation: position innovations; strategic innovations and rhetorical innovations. Cross-comparison across different innovations reveals that the different types of innovations represent seven "dimensions" of innovation. It is worth noting that pursuing one type of innovation (e.g. new product) may lead to or require other innovations (e.g. position, strategic and rhetorical) in order to be successful. Although there is general agreement about the benefits of innovation, little work has been done on what types of innovation have the most significant impact, and in what contexts.

2.4 INNOVATION PROCESS

Innovation is widely seen as a key to economic growth and improved well-being of society (Lee, 2015). According to Castells (2009) and Bekkers *et al*., (2013), innovation process is an embedded process and is embedded in a specific 'milieu' or environment. In order to understand innovation as a learning process, one has to understand the nature of this learning process as well as the conditions under which this learning process can take place. Usually, these conditions are related to the macro, organisational and micro-environment to innovation.

Cited in Martin (2001), Bingham's (1976) research on the adoption of technological innovations in local government in the United States provides important information on the innovation process. Bingham identifies three variables contributing to the adoption of innovation by local government, namely, external environment, organisational environment and micro-environment. External environment affects innovation adoption significantly, but only indirectly. Fundamentally, what is happening in the broader environment is the driving force for change within local government organisations because organisations are forced to respond or die a natural death. On the contrary, the organisational environment and by extension the micro-environment are the major direct determinants of innovation adoption and therefore, offer the policy makers the best theory is for intervention.

While PSI needs to be associated with considerations of improvement, it should not be shackled to it. According to Hartley (2005), it may be instructive to learn about and understand innovations, which fail as well as those which succeed. The failures may help us to understand the innovation process and the barriers and facilitators of innovation rather than assuming that innovation leads inexorably to improvement. While there is more to learn from product and service development in the private sector, policy-makers, managers and researchers in the public sector need to recognise their own contexts more explicitly.

If we start from the assumption that most if not all organisations need to innovate because the wider world is dynamic, then we need to understand more about how innovation is fostered, supported, sustained, and implemented. Increasingly, innovation is as much a 'bottom-up' and 'sideways-in' process as a 'top-down process (Hartley, 2005). Bottom-up innovations occur more frequently in the public sector than received wisdom would have us believe.

It is also important to make a distinction between the process of innovation and the diffusion and adoption of innovations even though both processes are closely intertwined Bekkers, *et al*., (2013). The adoption process is often a process of re-innovation taking place in order to adjust the innovation to the specific context in which it is implemented (Salge & Vera, 2012). By using a more ecological perspective on

innovation, it is possible to make a distinction between factors (innovation drivers and barriers) that relate more to the innovation process itself and factors that relate to specific characteristics of the (institutional and inter-organisational network) environment in which the innovation and adoption process is embedded (Bekkers, *et al*., 2013). These factors will later be organised in sub-section 2.6.3 into a conceptual framework (underpinned by key elements of the emerging regional innovation system) which can help us better understand, which factors stimulate or frustrate innovation in local government sphere of the public sector.

2.5 INNOVATION IN LOCAL GOVERNMENT

Public sector services constitute an important although often misunderstood and under-acknowledged arena for innovation (Vickers *et al*., 2017; De Vries *et al*., 2015; Osborne & Brown, 2013; Windrum & Koch, 2008). In most economies, more so in Global South countries, the public sector represents a significant proportion of GDP and is at the centre of resolving many difficult and complex social and environmental challenges. Donahue (2005) points out the obvious, but perhaps overlooked the fact that, since public organisations affect the lives of many people and are often entrusted with socially important tasks, innovation in this sector is crucial. Since such innovation enables new and old needs to be met more effectively, it can result in far greater value than the gains achieved in analogous improvements in corporate environments. In the last 20 years, policy makers had a growing realisation that the public sector should learn how to innovate, if it were to respond adequately to a rapidly changing environment and citizen's and business's expectations.

The extensive reforms in local government that have taken place over the past decade or more have introduced a wide range of new structures and practices aimed at improving efficiency and performance (Bartlett and Dibben, 2010). Much of this reform has been based upon what is generally viewed as a move towards managerialism and the new public management (NPM), however there has been much criticism directed towards this model of public management (e.g. Rhodes, 1996; Smith, 1998). Interest in innovation processes in the public sector has grown substantially in recent years. Under conditions of increased fiscal pressure, it is necessary not only to maximise efficiency in the provision of services, but also to innovate and discover new ways of

doing things in order to ‘achieve more, with less’ (Osborne, 1998a; Borins, 2001a and Bartlett and Dibben, 2010).

As the level of government is mandated with the responsibility of ensuring basic local services are provided and maintained, local government’s ability to reform and change is central to long-term community success. By their very nature, local governments have a direct and immediate impact on the communities they serve and as such, local government organisations innovation determines economic progress and community development on the ground (Martin, 2001).

In the American system, Ihrke (2003) argues that municipal governments have been elevated to a new status owing to the devolution of federal and state responsibilities to the local level and the widespread recognition that they are the governments most capable of innovative behaviour. According to Savory (2009) public-sector organisations have a long history of involvement in technological innovation. In the UK, important technologies such as radar, liquid crystal displays and microwave ovens have all been developed initially within public-sector research establishments. In South Africa, the Constitution places local government right in the centre of an ambitious programme aimed at eradicating developmental backlogs, reducing and ultimately doing away with poverty, implementing sustainable development and providing safe and secure environments (Mogale, 2003; Buhlungu & Atkinson, 2007; Scheepers, 2015).

Local government is an important component of the developmental state in South Africa and it can be argued that the success or failure of the system of local government and individual municipalities will impact on the success or failure of the South African developmental state (Scheepers, 2015). Salga (2017) argues that both the global Sustainable Development Goals (SDGs) and the Paris Accord on Climate Change (both adopted by United Nations in 2015) and South African National Development Plan (NDP) put local government in the centre stage of the fight against poverty, inequality and global warming. The centrality of cities and localities in shaping the future of humanity puts a huge responsibility on local government. As such, there is a greater need to adopt approaches to governance, service delivery and technologies.

Notwithstanding the constitutional and developmental intentions, there seems to be widespread dissatisfaction with the quality and quantity of service delivery in many municipalities (Scheepers, 2015). Van der Waldt (2014) cited in Lues (2016) indicates that South Africa is experiencing inadequate levels of municipal service provision resulting in several violent citizen-protest actions. These protests are an indication that municipal service provision does not meet the expectations of communities. Municipalities struggle with capacity shortages such as lack of professional and experienced staff, financial shortages and the volume and complexity of local government legislation. Koma (2010) cited in Scheepers (2015) seems to support the view of Lues and contends that performance of numerous municipalities across the country has therefore far clearly demonstrated huge deficiencies in as far the fulfilment of both their constitutional and legislative obligations is concerned.

In fact, Salga (2018) postulates that the challenges facing municipalities today are enormous and there are no magic bullets to resolve them. What is needed is a new mind-set to enable the municipalities to serve more people with less money, less time and better quality. This is likely only if municipalities innovate and avoid being out of touch with their constituency. Martin (2001) contends that the constitutional and complex developmental role demands a high level of innovation if local government organisations are to be effective in their work. The OECD (2012) acknowledges that innovation can makes a difference in addressing urgent developmental challenges such as providing access to drinking water, eradicating neglected diseases or reducing hunger. There is, however, little actual research on the nature of innovation in local government and this point holds to date.

Hartely (2005) asserts that public value of innovation can be enhanced through collaborative arrangements to create, share, transfer, adapt, and embed good practice through pilots and demonstration projects. To this end, Kock and Haukenes (2005) argue that they consider learning and innovation to be intertwined phenomenon. It is not just the private sector that needs to make meaningful changes. Governments must learn to innovate and collaborate but organisations find it hard to change and government tends to resist change (West *et al*., 2012). Of all spheres of government

in South Africa, municipalities have a direct and immediate impact on the people they serve because of their close proximity to the communities.

Hartley (2005) indicates that in the private sector, successful innovation is often seen to be a virtue in itself as a means to ensure competitiveness in new markets. In public services, however, innovation is justifiable only where it increases public value in the quality, efficiency or fitness for purpose of governance or services. In the public sector at least, innovation and improvement need to be seen as conceptually distinct and not blurred into one policy phrase. West *et al.,* (2012) argue that public sector needs new approaches to service delivery, transparency, participation, and collaboration. However, Martin (2001) says that there is a lack of specific research into contemporary approaches to innovation in local government. While innovation provides potentially the best promise to meet ever-changing community demands, Martin (2001) argues that there has been much less interest in how innovation and creativity in local government organisations works to facilitate reform and change in communities. This study aims to contribute to the developing body of literature on the matter. The next item will consider the theoretical framework of the study.

2.6 THEORETICAL OVERVIEW

The purpose of this study is to reflect on the theoretical underpinnings of innovation and to critically review the literature focusing on innovation in public sector. As such this systematic literature review and analysis is done to gain a better understanding of the dynamics of innovation in public sector organisations and to identify factors that enhance (drivers) or inhabits (barriers) innovation in the public sector.

It is almost universally accepted that technological change and other kinds of innovations are the most important sources of growth to productivity and increased material welfare (Edquist, 1996). For decades, there has been a growing consensus on the necessity to deepen our understanding of the innovation process and its link with the STI governance. Freeman (1987) coined the first theoretical definition of the innovation system as:

"*The network of institutions in the public and private sectors whose activities and interactions initiate, import and diffuse new technologies*".

Afterwards, Lundvall (1992) and Nelson (1993) set the theoretical background of the innovation system concept by emphasising the system's efficiency as opposed to firm's productivity because innovation process is not only influenced by firm's research and development (R&D) activities but also by cultural and political environment. Their views set the theoretical background of what we call today "the innovation system theory", focusing on the determinants of innovation rather than on its effect on the economic performances (Maghe & Cincera, 2013). According to Edquist (1996), a more general definition of innovation system should include:

"*All important economic, social, political, organisational, institutional and other factors that influence the development, diffusion and use of innovations*".

A more systematic institutional approach which put emphasis on the institutions and networks of interactions is key in shaping the direction and the rate of learning and innovation (Maghe & Cincera, 2013). Edquist (1996) suggests that innovation systems are a new approach for the study of innovations in the economy that has emerged during the last decade. Edquist (1996) further indicates that several innovation theorists have convincingly argued that the model of the isolated profit-maximising firm is an inappropriate tool for interpreting certain important aspects of the processes involved in generating and diffusing innovations. Differences in innovation performances may be explained by differences in institutional settings and knowledge flow structure, implying an ideal set-up for promotion of innovation and learning as a better understanding of the institutional structure of the system leads to better decisions at the innovation actors and government levels. Innovation systems are used to analyse the creation, diffusion and flow of knowledge, and these systems may be within a national, regional, local, sectoral, or technological grouping.

De La Mothe and Paquet (1994b) argues that focusing either on the firm or on the national economy would appear to be misguided because under the microscope too much is idiosyncratic while under the macroscope much of the innovation going on is likely to be missed. This view is in line with the Schumpeterian/Dahmenian's meso-

perspective that identifies the regional development blocks, technology districts and sub-national forums as the most appropriate levels where learning really occurs. Some authors argue for a 'regional' and 'sectoral' approach and question the usefulness of examining national systems of innovation. Lundvall (1992) also expresses arguments against studying systems of innovation from a national perspective. Edquist (1996) argues that systems of innovation other than national ones can be, should be, and are being identified and studied.

In support of regional innovation system, Acs *et al*., (1995) argues that the innovation process depends much on the features of a selection environment or milieu and the innovation network is more likely to blossom in a restricted localised milieu where all the socio-cultural characteristics of a dynamic milieu are likely to be found. If one is to identify dynamic milieu as likely systems on which one might work to stimulate innovation, they are likely to be local or regional systems of innovation. Some geo-technical forces would appear to generate meso-level units where learning proceeds faster and better. Subnational areas have proved to be better loci for "conversations" likely to foster fast learning.

Edquist (1996) concludes that systems of innovation may be supranational, national or subnational (regional or local). However, Lundvall (1992) suggests that the boundaries of a national system of innovation cannot be sharply determined and it might be impossible task to do so in detail. There are many potential permutations. All the approaches may be fruitful depending on the purpose of the study. Sometimes a national approach to systems of innovation is most appropriate and sometimes a sectoral or regional/local one is more useful. The approaches complement rather than exclude each other. On the balance of evidence provided on this matter, one is persuaded to lean towards a regional or local approach to systems of innovation.

On the contrary, Gault (2018) argues that innovation systems are not necessarily an innovation theory but other authors consider innovation systems as one of the earlier and common theoretical frameworks within innovation literature. A presumption put forward very cautiously and tentatively by a few scholars a few years ago suggested that the most effective way to analyse the innovation system and to intervene strategically is to tackle the problem at the "national" level. Yet, much work has raised

serious questions about this hypothesis in favour of a regional innovation system theory or approach. In fact most work on innovation systems suggests that the region is a key level at which innovative capacity is shaped and economic processes coordinated and governed (Carlsson, 2004; Chaminade and Vang, 2006; Chaminade and Vang, 2008). The following sub-section focuses on the RIS as useful framework in understanding the dynamics of its key components in fostering innovation in the local government sphere of the public sector.

2.6.1 Regional innovation systems (RIS) in developing countries: inter-organisational interaction and interactive learning

This section deals with regional innovation systems (RIS) theory and it's particularities in developing countries and the how a system of innovation may emerge or evolve from non-existence or weak system into a well-functioning RIS. A well-functioning RISs are characterised by the intensity of the interactions between the different building blocks of the system. The extent to which SMEs can learn through the interaction with the local environment is a function of their absorptive capacity (Cohen and Levinthal, 1990). Absorptive capacity refers to the ability of an organisation to assimilate and use information and knowledge that is acquired through the interaction with users, competitors, suppliers and knowledge producers and providers ((Chaminade and Vang, 2008). Whether an innovation system is weak or well-functioning is a function of the intensity of the interactions between the organisations located in the RIS (Chaminade and Vang, 2008). The nature of those interactions in particular, the user-producer interactions is important in defining the system. Activities at the higher end of the product range involve a high degree of innovation, interactive and interaction with customers, other firms and organisations (Chaminade and Vang, 2008). Individual and isolated efforts by firms and organisations alone tend to fail in the long-run.

Regional innovation systems can be seen as a "constellation of industrial clusters surrounded by innovation supporting organisations" (Asheim and Coenen, 2005). The extent of the functionality of the regional innovation systems boils down to the interactions and relationship between the two main actors. The fist type of actors are

companies in a region's main industrial clusters, including their customers and suppliers. The industrial cluster represent the production component of the regional innovation system (Chaminade and Vang, 2008). In the RIS approach, industrial clusters are defined as the geographic concentration of firms in the same or related industries (Pietrobelli and Rabellotti, 2004). The second type of actors, backing up the innovative performance of the first type, include research and higher education institutes (universities, technical colleges, and R&D institutes), technology transfer agencies, vocational training organisations, business associations, finance institutions, etc. (Asheim and Coenen, 2005; Chaminade and Vang, 2008).

The knowledge creating and diffusing organisations provide the resources and services (knowledge, capital, etc.) to support innovation among the local firms. In a well-functioning RIS, proximity facilitates the circulation of knowledge and information needed for innovation. Contrary to more traditional approaches to innovation and upgrading, an RIS approach stresses that supporting SMEs in their innovation oriented upgrading process is a matter of not only facilitating the access to technology, but supporting interactive learning (Chaminade and Vang, 2008). Innovation is the result of an interactive learning process stretching across firm borders (Lundvall, 1992). Interactive learning is defined as the acquisition of knowledge and competences through interactive collaboration with firms and knowledge providers. It is considered a function of the soft infrastructure (increased qualifications of human resources, organisational capital and inclusive social capital) (Chaminade and Vang, 2006a, 2006b; Lundvall, *et al*., 2006). In contrast to other approaches using these same variables, the RIS approach puts the emphasis on the systemic dimension of the innovation process, as the dynamic interaction between the different nodes in the system and the impact of the system's week nodes on the dynamic efficiency of the system as a whole.

Literature argues that the interaction best takes place with other firms and organisations co-located in the same regional area (Lundvall and Borras, 1999). In developing countries, RIS have recently started to be conceptualised as specialised hubs in global innovation and production networks (Chaminade and Vang, 2006a), characterised by local firms (and small medium enterprizes – SME) participating at the lowest added-value activities where competition is primarily based on exploring low-

cost factor endowments (Chaminade and Vang, 2008). Participating at the lowest added-value activities based on low-cost factors is a characteristics of a weak RIS, particularly when is accompanied by poor interactive learning and lack of absorptive capacity. While most of the RIS in developing countries can be classified as weak, there is, however, a few emerging regional innovation systems that are beginning to challenge this scenario by rapidly moving up the global value chain (traditional upgrading) and/or using the competences built in the initial phases of development for shifting into related industries - functional upgrading. (Chaminade and Vang, 2008). There is, however, still only a poorly developed understanding of the systemic propensities of the transition process (Lundvall *et al*., 2006). How the regional system of innovation emerges and evolves (from "weak or non-existent RIS" to "emerging RIS" and to even "well-functioning RIS") to support the local firms transition process and what the role of regional innovation policy is in building the regional conditions that supports indigenous SMEs in the transition process is a subject of further studies.

Well-functioning RISs based on intense interactive learning are typically found in developed countries but seldom in the developing world. Despite a high degree of heterogeneity in the RIS of developing countries they nevertheless tend to be characterised by a low degree of institutional thickness and thus weak interactive learning (D'Costa, 2006). Industrial clusters in developing countries are often simply local agglomerations of firms within the same industry without localised interactive learning (UNIDO, 2001), with occasional horizontal linkages, limited cooperation and weak local institutions (Guerrieri and Pietrobelli, 2006), which in turn implies weak interactive learning (Chaminade and Vang, 2008) and therefore weak regional innovation system.

The lack of local knowledge resources in the RIS in developing countries additionally forces indigenous firms to rely much more on Transnational Corporations (TNCs) as providers of knowledge and capital (Pietrobelli and Rabellotti, 2007). Good educational and research institutions are scare, have limited administrative capacity, meagre competences and problematic governance which negatively affects the quality of knowledge provision to the SMEs needed to move them from low-end to high-end providers of goods and services (Chaminade and Vang, 2008). Given that an RIS exists only when all its systemic aspects are in place, it is almost impossible to identify

and trace any RIS in developing countries. Rather, the RIS in developing countries is better conceptualised in an evolutionary perspective and it should be understood as emerging where some of its building blocks are in place but where the interactions among its elements are still in formation and thus appear fragmented (Chaminade and Vang, 2008).

According to Galli and Teubal (1997) we may expect that in the emergent RIS, market transactions would dominate the interactions between the various actors (building blocks) of the system (firms, universities and other knowledge and finance providers and users), the weak inter-sectoral links, the absence of interface units and universities specialised mainly in the supply of manpower, which are broadly speaking paradigmatic of the RIS in developing countries. In emergent RISs firms and other building blocks of the system are accumulating the competences and capabilities that are needed to engage in different forms of interactive learning. The emergent RIS might gradually evolve into a mature well-functioning RIS where the interactions between the building blocks take place through market and non-market mechanisms such as informational links, interactions and other kinds of formal and informal networks (Chaminade and Vang, 2008).

Firms and other organisations in the mature well-functioning have developed their absorptive capacity and are engaged in continuous interactive learning with other firms, users, universities and other organisations in the system. It follows that the university-industry linkages are strong and involve various forms of knowledge transfer (Galli and Teubal, 1997). Considering that innovation is based on interactive learning and that this takes place in mature RISs, the firms' transition from pure cost-based competition to competing on the basis of knowledge provision needs to co-evolve with the move from an emerging RIS to a mature RIS (Chaminade and Vang, 2008).

This study attempts to assess how the "regional innovation systems" in Tshwane region in Gauteng Province compares with some of the developing countries emerging RIS like the Bangalore's software innovation system in terms of extent of interaction amongst the two key types of actors in the system. Bangalore has emerged as one of the largest and fastest-growing software clusters outside the US (Parthasarthy, 2004a). It also houses several high-tech clusters such as defence and aeronautics

and considered to be the scientific and engineering centre of India (Chaminade and Vang, 2008). While the most dominant industrial cluster (production component) in Bangalore is IT software development and programming, the most dominant industrial cluster in City of Tshwane region is the automotive manufacturing. Both regions seem to be well-endowed with the second type of actors that back the innovative performance of the first type, which includes research and higher education institutions such universities, colleges, R&D councils, technology transfer and incubation agencies, vocational training organisations, business associations and funding or finance institutions.

Many authors have acknowledged (e.g. Athreye, 2005), the early development of Bangalore as a specialised hub in the software industry could be partly explained by the fact some of the best educational institutions in India, such as the world renowned Indian Institute of Information Technology, the Indian Institute of Science, Raman Research Institute, National Institute of Mental Health and Neuro-Sciences, Central Food Technological Research Institute, Indian Space Research Organisation were located there. The high concentration of knowledge providers in the region resulted in a critical mass of highly qualified which could explain the initial interest of the US firms in locating their outsourcing activities in the region (Chaminade and Vang, 2008).

Notwithstanding that the interaction between the local firms, knowledge providers and the TNCs has changed significantly over time, the extent of interaction is still mainly at transaction level. A closer look at the interaction between SMEs and TNCs documents that only a small group of firms has benefitted from the interaction with the TNCs (Chaminade and Vang, 2008). Undoubtedly, the co-location of a great number of educational and research institutions and high-tech clusters sets the ground for the emergence of the RIS. However, if one eliminates the handful of world-class technical institutions, the picture is one of shortages of high quality staff (Arora and Gambardella, 2006), and under-investment in research facilities (Chaminade and Vang, 2008). With few exceptions universities are almost exclusively devoted to the provision of (qualified) manpower to the local firms and provision of basic research. As a consequence, universities do not play a significant role in supporting innovation and generating research results for local firms. This could explain why TNCs have increasingly started to build their own training centres in Bangalore. Interactive

learning with universities is thus weak (D'Costa, 2006) although there have been some valuable results from the collaboration between universities and industry. The analysis of the emerging Bangalore RIS shows that none of the systemic aspects of the RIS is strong in the system yet. Interactive learning with other firms, with the final user or with the universities, is far from sufficiently developed (Chaminade and Vang, 2008).

However, in order to move from an emerging RIS to a mature RIS that can support the transition of some firms from competing through low costs to competing through the provision of knowledge might require a much active role of the regional government (Edquist and Chaminade, 2006). The regional government could pursue different initiatives to stimulate the development of systemic propensities in Bangalore's RIS, focusing specifically on the weak links in the system. A natural starting point would be policies aiming at stimulating vertical and horizontal collaborations among SMEs by playing a coordinating role actively, providing financial support (e.g. via R&D subsides) to consortia of SMEs and research institutions or by supporting the creation of organisations that bring together local producers, researchers, service providers and even government with the objective of collectively solving a problem that is affecting the system (Chaminade and Vang, 2008).

Furthermore, government could play an important role by using public procurement as an instrument to stimulate experimentation and innovation in the local firms (i.e. the government as a lead customer) (Arora and Gambardella, 2005), central state should ensure sound macroeconomic policies and possibly selective measure protecting infant industries and focus on the supply side to reduce the transaction costs for TNCs (Chaminade and Vang, 2008), to encourage foreign direct investments.

On other hand City of Tshwane is not only the third-largest urban city in the world in terms of land area, after New York and Tokyo or an administrative seat of government with one of the highest number of foreign embassies and educational institutions, it also has the highest number schooling population aged 20 years and older CoT, IDP, 2018/19), which potentially present the necessary ingredients for creativity and innovation. The City of Tshwane has proven to be a leader on the African continent in providing affordable industrial sites for various industries, office space, education and research facilities. An estimated 90% of all research and development in South Africa

is conducted in Tshwane by institutions such as Amscor, Medical Research Council (MRC), Centre for Scientific and Industrial Research (CSIR), Human Sciences Research Council (HSRC), National Research Forum (NRF), Agricultural Research Council (ARC), Water Research Commission (WRC), Centre for Public Service Innovation (CPSI), the Innovation Hub, Technology Innovation Agency (TIA), Nuclear Energy Corporation of South Africa (NECSA) and Council for Geoscience. Tshwane being South Africa Capital City with the largest concentration of higher education institutions in the country, boosts the highest percentage of the 20 years and older population with post-matric qualifications (about 23% in 2015) in comparison with the national average (about 12%), Gauteng (about 18%), Joburg (about 19%) and Ekurhuleni (about 18%) (CoT IDP, 2018/19). The educational institutions located in Tshwane includes University of South Africa (UNISA), University of Pretoria (UP), Tshwane University of Technology (TUT), Sefako Makgatlo Health Sciences University, Technical and Vocational Colleges and other privately-run universities.

City of Tshwane has emerged as one of the key players in the automotive sector in the country. Tshwane automotive sector accounts for over 40%of automotive exports for South Africa and 10% of total export of the country (African News Agency, May 2016). In November 2019, the itweb.co.za reported the “President Ramaphosa unveils R3.6 billion Automotive Hub in Tshwane” at the Ford Motor Company in Pretoria. The Automotive Hub forms part of the Tshwane Automotive Special Economic Zone (SEZ) which is developed through a joint partnership with Ford, the Department of Trade and Industry (the Dti), the Gauteng Provincial Government and the City of Tshwane. The Hub is based in Silverton in Pretoria and is expected to help the country attract new automotive component manufacturer while also strengthening Tshwane’s positioning as an Automotive City (the itweb.co.za, 2019).

While City of Tshwane is undoubtedly well endowed with many tertiary educational and R&D institutions and is emerging as an important production cluster in sectors such as Automotives and Component Sector, Aerospace and Defence Technologies and Agro-processing and Agriculture (Tshwane Economic Development Agency, 2019), there is little or no evidence demonstrate the existence of regional innovation system (Notwithstanding both the national and provincial governments commitments and efforts to accelerate innovation interventions to contribute to the attainment of the

strategic objectives such employment creation, economic growth and social development at national, provincial and local levels, establishment of regional and local innovation systems has been slow to implement as they are still at a conceptual stage (Netshiluvhi and Galanda, 2012).

Although City of Tshwane has all the basic elements (actors or building blocks) of the regional innovation systems such as the production clusters and knowledge producers, collectively referred to as economically useful knowledge or technology, the RIS is Tshwane may be deemed weak or non-existence as argued by Netshiluvhi and Galanda (2012) and (Chaminade and Vang, 2008) in terms of key tenants and systemic aspects of RIS. According to Chaminade and Vang (2008) the functionality of an innovation system is a function of the intensity of the interactions between the organisations located in the RIS. The nature of those interactions, particularly, the user-producer interactions is critical in defining the system. However, according to Netshiluvhi and Galanda (2012), despite noble South African government efforts to promote innovation as key contributor for economic growth and social development, regional innovation systems do not seem functional and that the establishment of RIS has been very slow because they are still at a conceptual stage. This observation is in line with Chaminade and Vang (2008)' earlier view that RIS can exists only when all its systemic aspects are in place and it is almost impossible to identify and find any RIS in developing countries. The table below summarises that comparison between Bangalore RIS and Tshwane RIS.

Table 2: RIS comparison between Bangalore and Tshwane

Region	RIS Elements or Systemic Aspects					
	Industry or Production Clusters	Knowledge Producers or Cluster	Presence of Transnational Corporations	Inter-organisational interaction (particularly user-producer interaction)	Interactive Learning	RIS level of maturity or functionality or existence
Bangalore	Software industry	Large number of knowledge producers financiers and business associations	Present	Weak (basic market transaction)	Emerging	Emerging
Tshwane	Automotive and component manufacturer sector	Large number of knowledge producers, financiers and business associations	Present (Ford Motor Company, BMW, Nissan, etc)	Poor interaction mainly basic market transaction	Weak	Weak or almost unrecognisable or non-existent

Overall the RIS level of maturity oy functionality for Bangalore may be classified at emergent while RIS is Tshwane may be classified either as weak or non-existent at all. However, what emanates from the analysis of RIS above are the key issues (the extent of inter-organisational interactions, levels of interactive learning and ultimately the levels of the RIS) that require further attention and which form the basis of the conceptual framework to help us better understand the dynamics of the drivers and barriers of innovation in public sector innovation, particularly in the local government sphere.

2.6.2 Emerging public sector innovation theory

At the onset, it must be acknowledged that public sector innovation is under-researched, particularly in the context of developing countries. The extant body of research on harnessing innovation for delivering public social services is fragmented with a relatively poor theoretical and empirical grounding (de Vries *et al*,. 2014). The mainstream innovation scholars observed that approaches to public sector innovation, particularly those coming from developed countries tends to borrow extensively from the private sector innovation knowledge base and generally neglect the “public good”

characteristic of innovation (Ramoroka *et al*., 2017). Hartely (2005) states that there is a "need to develop an understanding of innovation which is not over-reliant on the private sector manufacturing literature but reflects the distinctive contexts and purposes of the public sector.

Innovation by public sector entities is a topic of growing interest amongst policy makers and governments. Although public sector innovation can be considered as the creation and implementation of new processes, services or methods of delivery to improve organisational efficiency and the quality of public services (Mulgan and Albury, 2003), the nature and dynamics of public sector innovation remains widely misunderstood (Arundel *et al*., 2015). Ramoroka *et al*., (2017) argues that the topic of public sector innovation has reportedly been neglected in the mainstream innovation literature despite the rapid growth of innovation studies over the last couple of decades. Furthermore, Ramoroka *et al*., (2017) contends that there is a dearth of research on public sector innovation in developing countries although the neglect is slowly giving way to more attention to the role of public sector in STI. For example, the White Pater on Science and Technology (Republic of South Africa, 1996) emphasises that research, technology and innovation should not only be directed at scientific breakthroughs which are commercially viable, but also at addressing the basic needs of communities.

The prevailing understanding of public sector innovation, as evident in the literature, is concerned with enhancing the efficiency and effectiveness of the public sector in order to ensure quality public services (Bloch and Bugge, 2013). This concept is underscored by the Schumpeterian understanding that innovations should comprise "new or improved ideas, behaviours or practices" to enhance government efficiency (de Vries et al., 2014). The basic premise of the Schumpeterian approach is that innovation is a main driving factor for long-term economic growth which is facilitated by the emergence and continuous implementation centred on new and more viable solutions than the "old ways of doing things (Fagerberg, 2013). Schumpeter (1942) viewed innovation as the basic dynamic mechanism of market economy growth and development in a process he called 'creative destruction' (Potts and Kastelle, 2010). Innovation is the predominant form of competition in a modern global economy as a competitive strategy to create new profit opportunities by developing new ways to

create value for consumers. This highlights a salient point for public sector innovation research, in that the standard Schumpeterian definition of innovation is squarely focused on a context of market competition. Yet the competitive incentive is a very weak force in the context of public sector innovation (Potts and Kastelle, 2010). The public sector is by definition not a market context but an institutionalised monopoly that 'sells' to government and government only 'buys' from the public sector. Public sector organisations do not compete through innovation because they do not compete in a context fighting for market share. To the extent that competition does shape public sector innovation outcomes, it is largely internal competition for signalling, advancement or power by individuals or coalitions (Potts and Kastelle, 2010). The naturally occurring incentives to innovation in public sector organisations are those of internal career politics and upward mobility in management within an extant hierarchy. As an organisational domain, public sector is guided by economic principles of efficiency that seek to minimise waste and maximise deliverables from a finite budget and it has a strong managerial accountability and due process concerns (Potts, 2009).

In the private sector firms compete by innovation, but in the public sector innovation is at best weakly incentivised and commonly faces negative incentives. The incentive structures between the private sector and public sector innovation are fundamentally different. The incentive currency for private sector innovation is straight forward in the form of monetary rewards while for public sector innovation is reputation with the pay-off in career advancement within the sector. In public sector innovation, risk-taking is rewarded by career advancement, which is very different to the incentive structure and reward pay-offs in the private sector, which is principally monetary (Potts and Kastelle, 2010.

It is thus unsurprising to observe weaker public sector innovation performance. However, public sector is not all moribund in innovation performance, some parts of public sector are highly innovative (Mulgan, 2007). But we lack not just a theory, but even a reliable analysis of this distribution (Borins, 2001). For most part, writings on public sector innovation have a consultancy report flavour, offering key lessons or pathways to better innovation performance. While there is nothing wrong with this approach, it should not be mistaken for a theory of public sector innovation (Potts and Kastelle, 2010). The basic problem in research on public sector innovation is that we

still don't really know much about what does and does not work in fostering public sector innovation (Potts and Kastelle, 2010).

Innovation is a recurring issue in public administration and is considered as a "magic concept" (Pollitt and Hupe, 2011) that is been used to frame the necessary transformation of the public sector in order to improve not only its effectiveness and efficiency but also its legitimacy (Bekkers *et al*., 2011). Innovation is a concept that inspires people and policy makers because it offers the promise of radical change resulting in public sector's desire to innovate, which at times is linked to reform programs aimed at meeting budget cutbacks, new management and governance ideologies (like New Public Management, Open Government or Networked Governance) or new information and technologies like e-government (Bekkers *et al*., 2013).

The concept of public sector innovation appears to be paradoxical (Djellal *et al*., 2013), in the sense that public sector provides non-market services which are not connected to profit motives and competitiveness in the market environment (Bloch and Bugge, 2013). Djellal *et al*., (2013) argues that public services are usually monopolies which operates free from competition. According to Schumpeter (1942) the absence of market competition explains to some extent the limited innovation within the public sector (Sorensen and Torfing, 2011). However, there are suggestions that there are other drivers and mechanisms that may create competition-like elements which gives the public sector a specific kind of complexity and dynamism that explains why public sector innovate (Pollitt, 2011), such as:

- Size of public sector: In most OECD nations, the public sector ranges between 20-50% of GDP as a significant component of the macro-economy. The basic logic of economic growth is that productivity growth manifests as reduced costs of inputs, better organisation or increased value of outputs. Public sector innovation potentially affects all three, making a large part of the economy more valuable (Potts and Kastelle, 2010).
- An evolving economy with technological and institutional change must continually adapt polict simply to keep up (Potts and Kestelle, 2010). Challenges related to

the environment of public administration such as globalisation, individualisation, fragmentation and computerisation (Osborne and Brown, 2005),

- Multi-rationality of public administration, which generates a 'competition' between different rationalities and values that have to be reconciled (Moore, 1995). The emerging tensions can create a dialectical process in which compromises between these values are reached on a higher level, thereby creating new combinations of problem definitions and problem-solving strategies (Hartley, 2005),
- Increasing 'competition' with the private sector: due to the privatisation and liberalisation of specific service domains, public services have to increasingly compete with private services providers for services such provision of education, health, social, waste, housing services. Public procurement programmes stimulated this and citizens are increasingly perceived as individual customers with choice and a voice (Windrum and Koch, 2008) Benchmarking and increased 'competition' between regions and cities also serve as an incentive for public sector organisations to innovate in order to attract best skills and become more competitive than other regions and cities.
- Political 'competition': The desire to improve the quality of public services and the desire to cut red tape has increasingly become a political issue and is an incentive for the public sector to innovate (Bekkers *et al*., 2013).

New economic growth theories, based on neo-classical notions of economic growth, hold that knowledge, innovation and technological change foster welfare creation in nations (Fagerberg, 2013; de Vries *et al.,* 2014; Ramoroka *et al*., 2017). This paradigm is inspired by Schumpeterian thinking, which links innovation to long-term economic growth. Innovation enhances the competitiveness of firms, sectors, cities, regions, and nations (Antonioli *et al*., 2014; Fagerberg, 2013; Ramoroka *et al*., 2017). According to OECD (1996), innovation is concerned with the creation of knowledge through the application of intellectual capital and creativity. To create knowledge, continuous learning by firms or organisations is required to acquire skills and enhance competencies. Learning involves both tacit knowledge and formal education. Learning is regarded as central for enhancing capabilities, building absorptive capacity and creating a critical mass for fostering innovation (Cohen & Levinthal, 1990; Lundvall, 1992). Developing a highly skilled human resources capable of pursuing innovation is

dependent on the ability to learn, unlearn and relearn. Fagerburg *et al.,* (2010) argue that organisations that do not put considerable effort into learning and developing technological capabilities will not prosper. The way in which organisations organise their learning processes and mechanisms is critical to realising the benefits of capability building (Sekwele, 2015).

In the context of PSI, learning should accordingly be understood as a continual rather than a linear path-creating process for innovation (Bland *et al*., 2010; De Vries *et al.,* 2014). Learning takes place in both organised settings such as groups, organisations and networks characterised by the interaction and often systematic interdependence of agents or actors that take part in and play various roles in an innovation process (Antonelli, 2009; Lundvall, 2009; Block & Bugge, 2013; Fagerberg, 2013) and tacitly through collaboration and networking between individuals. The theoretical work on the systematic characteristics of innovation, which is of particular relevance for PSI, includes the concept of networked governance, which emphasises collaboration between government departments, other government agencies and external actors to enhance learning, knowledge transfer and innovation (Ansell & Torfing, 2014; Arundel *et al*., 2015; Bloch & Bugge, 2013). Innovation does not occur in isolation but depends on the interplay between different actors that take part in and play various roles in an innovation process (Bloch and Bugge, 2013).

Since the late 1980s, innovation scholars such as Chris Freeman, Richard Nelson and Bengt-Ake Lundvall conceptualised the 'learning economy' concept based on the earlier learning society idea (Lundvall, 1992; 2009). The learning economy is vital for appreciating the importance of interactive learning and the systematic characteristics of innovation process. It is argued that collaboration allows actors to reduce risk, specialise and take advantage of knowledge that is internal and external to their own organisation (Bienkowska *et al.,* 2010; Ramoroka *et al.,* 2017). However, most PSOs and government departments are not considered to be particularly innovative owing to bureaucracy and management styles associated with outdated methods of traditional public administration. The importance of 'networked' type organisations as replacements for hierarchical models based on command and control approaches in business and government is emphasised (Ramoroka *et al*., 2017). The implication is

that organisations need to be ‘transformed and redesigned’ in order to facilitate learning, since the focus of learning was not part of their original design.

Public sector innovation is complex and is embedded in society. It produces not only benefits and obligations for individuals but also provides public goods and services, establish collective efficiency, and create collective rules and purposes. As such, analysis of innovation needs to consider not just the immediate improvements in service quality and fitness for purpose, but wider issues of public value. The varied relationships between innovation and improvement need to be mapped so that there is a better understanding of the innovation barriers and drivers in local government sphere of the public sector. Research is needed to illuminate and explain the processes that support or undermine innovation in public service organisations, viewing innovation as a journey rather than a linear process (Hartely, 2005).

Against the background outlined above, this study contrasted regional innovation systems theory with the public sector innovation theory to identify key elements that may form the basis of the conceptual framework that could be used to better understand the dynamism of the innovation drivers and barriers in public sector organisations. The key elements emanating from the RIS theory are:

- Sources of production and knowledge clusters or actors;
- Interactive learning;
- Inter-organisational interactions;
- Economical useful knowledge but lacks public value; and
- Weak or non-existent RIS in Tshwane

The key elements emanating from the Public Sector Innovation Theory are:

- Market competition and institutionalised monopolies;
- Poor PSI theoretical framework
- Networked governance and collaboration to facilitate interaction and learning;
- Negative incentive structure;
- Poor understanding of factors that drives or hinders innovation in PSI; and

The identified key elements above will form the building blocks of the conceptual framework that will be discussed under item 2.6.4.

2.6.3 Secondary Data Review: CoT Innovation Strategic Documents

The CoT innovation strategy is aligned to the provincial and national innovation strategies. The provincial government developed and approved the Gauteng Innovation and Knowledge Economy Strategy (GIKES) in 2012 to improve economic growth, service delivery and quality of life (GIKES, 2012). The national government is currently reviewing the White Paper on Science, Technology and Innovation with a view to address concerns raised by recent reviews. The latter identified main factors constraining the NSI such as inadequate and non-collaborative STI, incoherent policy and poor coordination, weak partnerships with business and civil society, lack of skills, inadequate monitoring and evaluation, underfunding as well as poor local innovation ecosystems (Republic of South Africa, 2018).

The Research and Innovation Unit was established in 2012. An important milestone for the CoT with the development, approval and implementation of the Innovation Strategy was made in 2014. The municipality crafted the innovation statement as follows:

> *"To embed the culture of innovation and to facilitate implementation of innovative solutions for efficient and effective delivery of basic services and enhance democracy."*

Based on the innovation statement mentioned above, the CoT defines innovation as: *"a process by which incremental and radical ideas with measurable value are implemented to improve the quality of service delivery of the City"* (CoT Innovation Strategy, 2014).

The CoT Innovation Strategy aims to drive and stimulate innovation by establishing new products, services and value chains through targeted programmes, collaborative platforms and enhanced institutional capacity. The strategy identified four focus areas, namely: business innovation and competitiveness, organisational efficiency and

effectiveness, social innovation and impact and knowledge-based collaboration. Moreover, the corresponding innovation objectives are to make the city a preferred destination for innovative businesses, improve innovation capability and service delivery, identify and scale-up community-based innovation and build foundation for future knowledge and innovation society" (CoT Innovation Strategy, 2014).

Furthermore, the CoT Innovation Strategy is based on four pillars:

- "Strategic intent: Defining a common vision, building collective leadership and necessary institutional support and financial resources".
- "Organisational capabilities: Improve internal systems, processes and structures (innovation champions) to drive city and broader innovation impact in the region".
- "Stakeholder engagement: Strengthen collaboration drive with actors including government departments, business, academic institutions and communities".
- "Innovation sustainability: Maintain momentum around innovation initiatives and ensure long-term adoption and sustainability in and outside the municipality" (CoT Innovation Strategy, 2014).

Figure 2.2 below depicts CoT innovation model that also inform rationale for the implementation of the strategy with various actors in the innovation system. The innovation model identifies areas that the municipality could and is required and equipped to lead or support aligned with its innovation objectives.

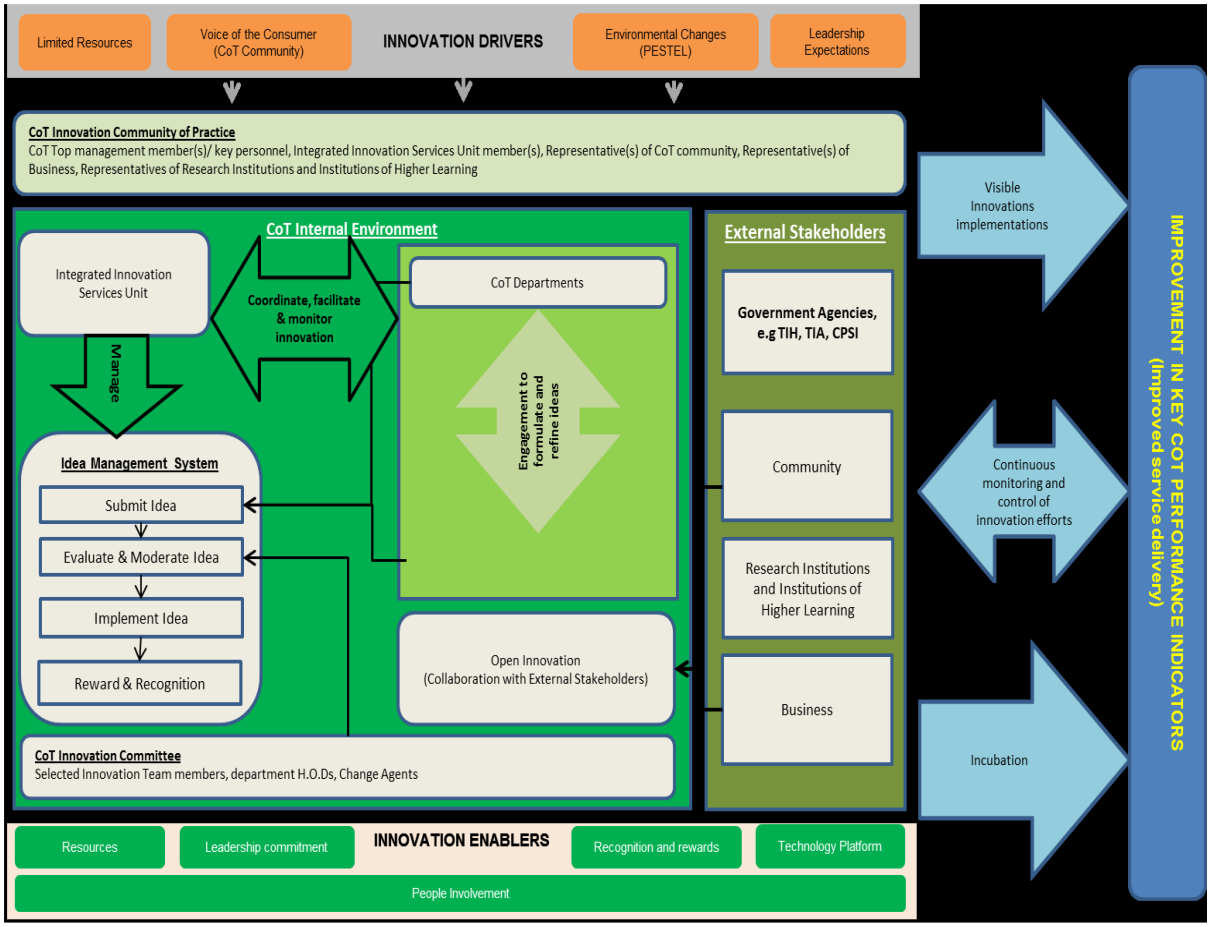


Figure 2.2: Existing CoT Innovation Model (Source: CoT Innovation Strategy, 2014)

There is some evidence such as the development of the innovation strategy and the implementation of innovation awareness that demonstrate that some interventions were indeed implemented. However, there has been poor implementation of other interventions such as building mechanisms to support the creating and implementation of ideas within the organisation, engaging strategic partners to support and source innovation, and establishing innovation centres across the city as well as review and development of the Innovation Reward Policy, Open Innovation Policy and Innovation Measurement Plan. The current Innovation Strategy was under review at the time of the study and it was anticipated that much will come out of the reviewed document and implementation will be reinforced.

It should, however be noted that despite some short-comings with regards to poor implementation of some of the interventions, CoT is by far way ahead of many Metropolitan and District municipalities in terms of prioritising innovation as an

important tool to improve service delivery and community collaboration. Very few municipalities have a dedicated innovation unit and a clear innovation strategy. In this regard, the CoT is considered a leader in local government innovation as espoused by majority of external expert participants, albeit with declining momentum. The declining momentum may be attributed to the repositioning of the Innovation Unit from a “Department” to a “Division” and frequent leadership changes.

Innovation Capability Index: Since 2014, the CoT has conducted three Innovation Capability Index reviews to assess the internal organisational capabilities, innovation readiness and benchmark against other institutions. The index measured CoT’s capabilities and readiness on four pillars: leadership and ambition, organisation and collaboration, implementation and measurement and people and culture. The results of the CoT Innovation Capability Assessment indicated that the overall index in 2018 was at 50.5%, an improvement of 6% compared to the first assessment in 2014 (44.3%). However, the 2018 index was unfortunately 0.6% lower than the 2016 index of 50.9%. The index was lower than the global benchmark of 60.1% (CoT Innovation Capability Assessment, 2018).

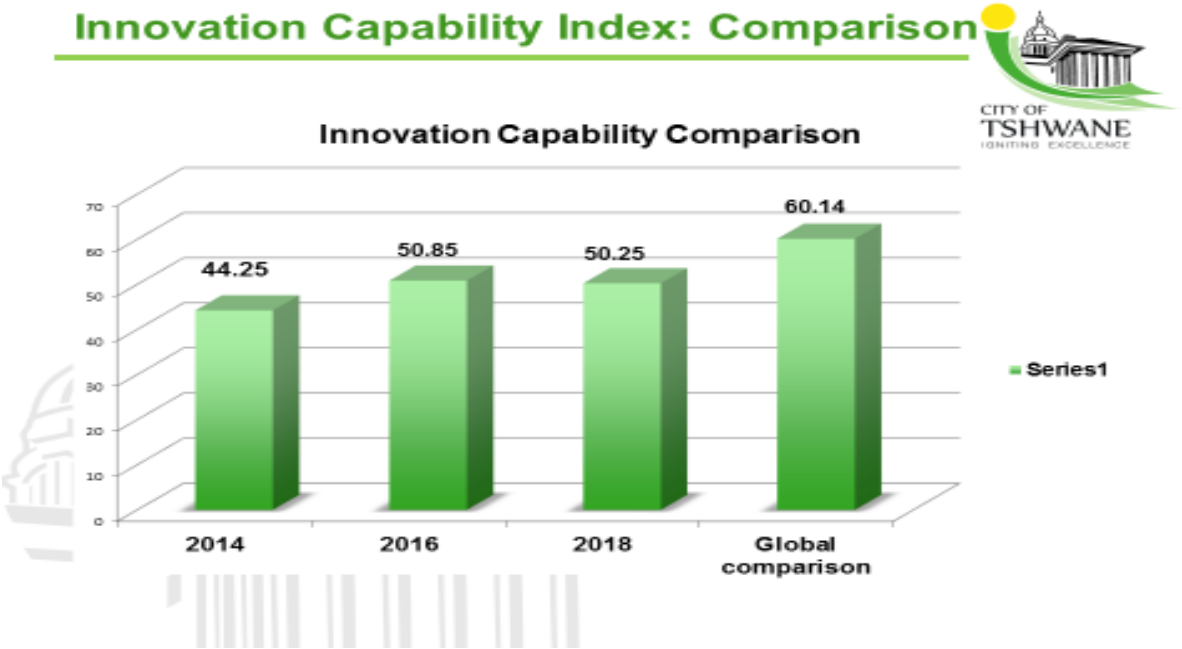


Figure 2.3: Innovation Capability Index (Source: CoT Innovation Capability Assessment, 2018)

In 2014, the index indicated that the city was stronger on leadership and ambition at 59% and weakest on people and culture at 31%. The 2018 index showed an improvement of 4% on leadership and ambition when compared to 2016 result. Although it looks favourable, it is worth noting that the score is lower than in 2014. Regarding people and culture score, the 2018 results (48.5%) showed a significant improvement since 2014, but a slight decline when compared to 2016 score (51.4%).

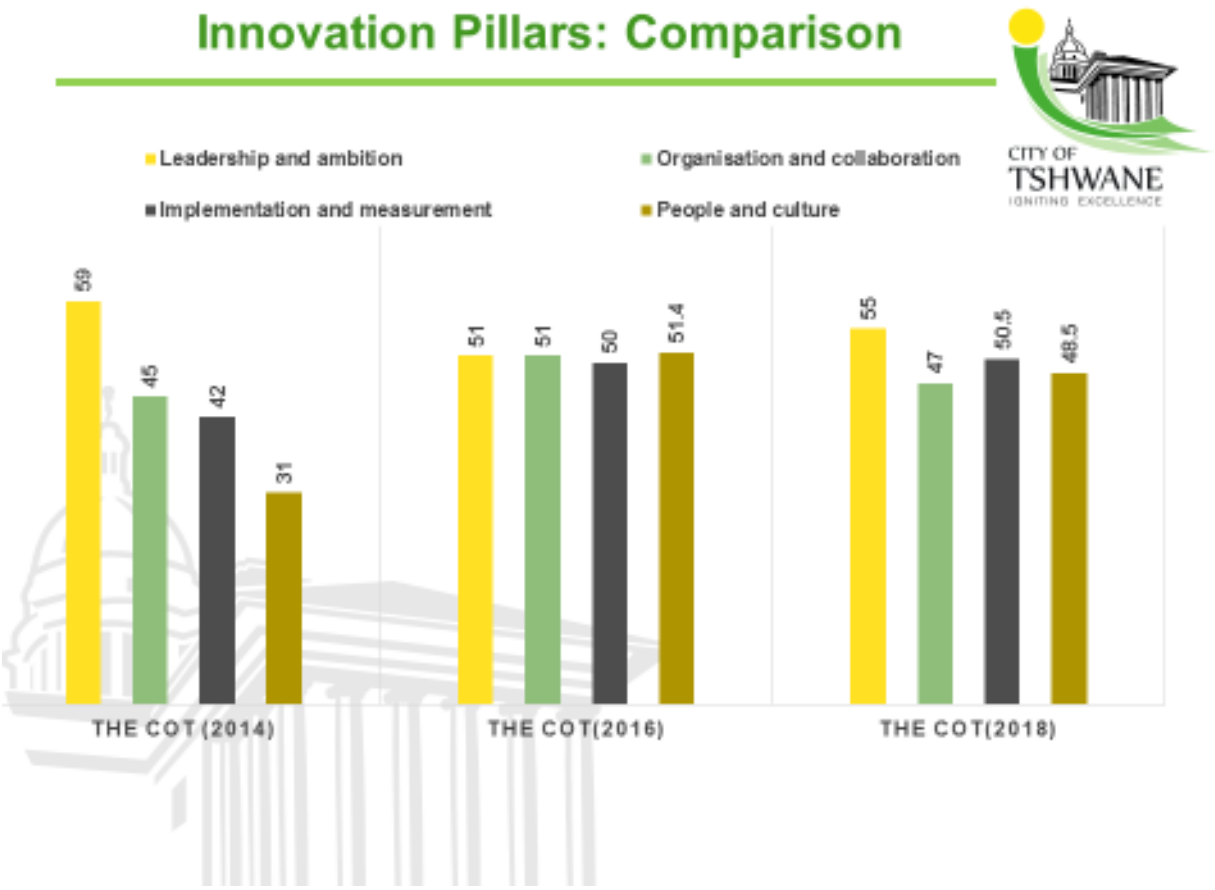


Figure 2.4: Innovation pillars comparison (Source: CoT Innovation Capability Assessment, 2018)

With regards to organisation and collaboration pillar, the result in 2018 (47%) indicated the decline of 4% when compared with 2016 score (51%), but still little better to 2014 score of 45%. Regarding the implementation and measurement pillar, the 2018 index indicated a significant improvement (8.5%) from the first survey but with a marginal growth of 0.5% since 2016. Overall the CoT innovation capability assessments identified strategic intent, leadership and ambition, people and culture and organisation and collaboration pillars as critical for successful innovation. This

observation is in line with some of the key elements identified above in the RIS and PSI theoretical framework.

2.6.4 Conceptual Framework

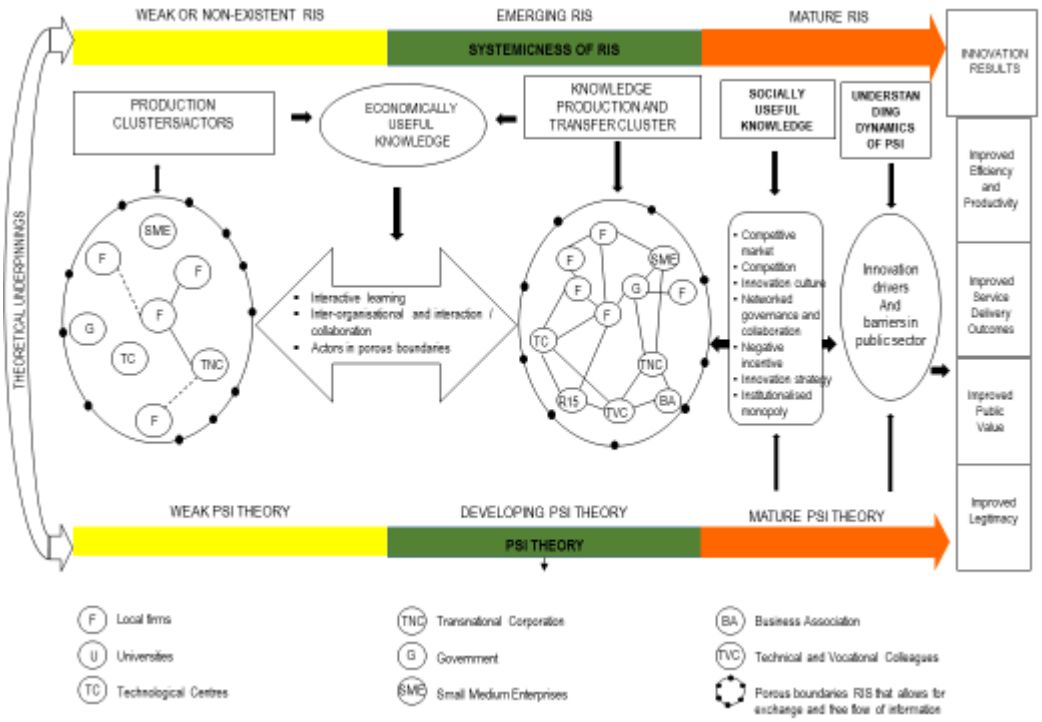
The conceptual framework outlined in Figure 2.5 below is based on the combination of some of the key concepts and elements derived from the two theoretical frameworks discussed above, namely the regional innovation systems and the public sector innovation theories. The conceptual framework attempts to depict the relationships and interactions between key elements and actors that determines innovation outcomes in the public sector innovation space in order to better understand the factors that drives and or hinders innovation in the local government sphere of the public sector for improved efficiency and public value.

The conceptual framework for better understanding of the dynamics of innovation drivers and barriers in public sector is broadly founded on two theoretical frameworks: regional innovation systems and public sector innovation theories. In this section, the author attempts to organise key elements into a conceptual framework which can help us to better understand which factors stimulate or frustrate the possible processes of innovation in the public sector. The nine elements are:

- Sources of production and knowledge clusters or actors
- Inter-organisational interactions
- Interactive learning
- Market competition and institutionalised monopolies
- Networked government and collaboration
- Negative incentive structure
- Innovation strategic intent
- Innovation culture
- Understanding dynamics of innovation drivers and barriers in public sector

The following item discusses and analyses these elements and building blocks of the conceptual framework.

Figure 2.5 Conceptual framework adopted from Cristina and Jang, 2008



Sources of production and knowledge clusters or actors: The regional innovation systems theory identifies two main categories of actors. The first category of actors are the firms in a region's main production (industrial) clusters which includes their customers and suppliers. In the case of Tshwane RIS, the production cluster consists of the Transnational Corporations, local firms, SMEs such the automotive and component sector (Ford Motor Company, BMW, Nissan, etc), aerospace and defence technologies, agro-processing and agriculture and various stakeholders, customers and suppliers who participate in the value chain. The second category of actors is the group of knowledge production and transfer organisations that support innovative performance of the first category and they include R&D institutions, universities and other higher education institutions, innovation and technology transfer agencies, business associations and finance institutions. Tshwane has many of such institutions. The presence of these main actors in a region is one of the catalysts of innovation. The knowledge creating and diffusing organisations provide the resources and services (knowledge, capital, etc.) to support innovation among the local firms (Cristina and Jang, 2008).

Inter-organisational interactions: Well-functioning RISs are characterised by the intensity of the interactions between the different building blocks of the system (Cristina and Jang, 2008). Innovation is a function of the extent of the interaction that occurs amongst and between these actors, particularly between the user and producer sub-categories. Innovation systems research has long emphasized the importance of user-producer interaction for upgrading and innovation (Castellacci, 2006), and recently, the focus the focus has shifted towards lead users because of their ability to perceive needs well ahead the mass market and they often have developed their own adaptive solutions (Jeppesen and Frederisen, 2006). In Tshwane, like in other developing countries inter-organisational interaction is generally weak and could in the main defined as transaction based relationship founded on low cost considerations as opposed to knowledge-base relationship. The weak interaction is demonstrated by disjointed and isolated actors in the production cluster and weak linkages with knowledge cluster, which is common in developing countries. The mature or well-functioning RIS is demonstrated by the close connection and networked actors as demonstrated in the knowledge cluster category of actors, which is commonly found in developed countries. Both categories of actors are encircled by porous boundary to demonstrate the need to interaction and collaboration across and beyond the physical boarders of the RIS.

Interactive learning: Innovation is the result of an interactive learning process stretching across boarders (Lundvall, 1992). The RIS approach stresses that supporting SMEs in their innovation-oriented upgrading process is a matter of not only facilitating is placed on the systemic dimension of the innovation process, which is demonstrated by the dynamic interaction and interactive learning between the different nodes in the system and the impact of the system's weak nodes on the dynamic efficiency of the system as a whole (Cristina and Jang, 2008). The extent to which to which SMEs and local firms can learn through the interaction with the local environment is a function of their absorptive capacity (the ability of the firms to utilise the information and knowledge that comes from the interaction with users, other firms and knowledge producers like R&D institutions). Central to absorptive capacity is the accumulation of human capital and other forms of knowledge as firms need to identify, acquire and transform the internal and external knowledge required for developing innovations (Cristina and Jang, 2008). In this conceptual framework, the interactive

learning element is considered weak due to poor absorptive capacity, transaction based interaction and lack of trust amongst actors. As such Tshwane RIS functionality may be classified as between weak and emerging which is also backed by literature above. The stronger the interaction and interactive learning occurs between key actors the more mature the RIS become. Three levels of RIS functionality are identified: weak, emerging and mature systems. The interaction and learning between production and knowledge actors result in economically useful knowledge or technology which is critical for successful innovation. One of the criticism of the RIS is that it focuses on market competition almost to the exclusion of public value.

Market competition and institutionalised monopolies: The second theory analysed above is the public sector innovation, which most scholars consider weak or non-existent. This is a developing area of research which still lack theoretical basis as much of the work in public sector innovation is consultancy based as opposed to academic enquiry. Most of the theoretical underpinnings are derived from private sector innovation research but recently there is a realisation that applying private sector innovation theory in the public sector settings may not be the most appropriate and effective approach due to fundamental differences between the two sectors. Amongst many differences, for purposes of this study two (market competition and incentive structure) fundamental differences will be analysed.

As argued above, the starting point of the Schumpeterian approach is that innovation is the basic driving force of long-term economic growth through the process called “creative destruction” and is the predominant form of competition in a modern global economy as a competitive strategy (Potts and Kastelle, 2010). Market competition and profit making are at the centre of the Schumpeterian definition of innovation, yet in public sector innovation market competition and profit making are almost irrelevant. Potts and Kastelle, (2010) indicated that competitive incentive is a very weak force in the context of public sector innovation.

The public sector is by definition not a market context but an institutionalised monopoly that ‘sells’ to government and government only ‘buys’ from the public sector. Public sector organisations do not compete through innovation for the market share as private sector organisations do. As an organisational domain, public sector is guided

by economic principles of efficiency that seek to minimise waste and maximise deliverables from a finite budget and it has a strong managerial accountability and due process concerns (Potts, 2009). In the main, instutitionalised monopolies which are common in the public sector serve public good services as opposed to competitive markets which provide service for profit. It is important to understand and acknowledge the fundamental difference between competitive market and instutitionalised monopoly and they inherent objectives of pursuing bottom-line and public value respectively. Djellal *et al*., (2013) argues that public services are usually monopolies which operates free from competition. Public sector provides non-market services which are not connected to profit motives and competitiveness in the market environment (Bloch and Bugge, 2013).Public sector do not tend to exist within competitive markets. Compared to businesses, they usually exist within a more complex social system, with goals and values that are more ambiguous and difficult to quantify (Denis et al., 2002). According to Schumpeter (1942) the absence of market competition explains to some extent the limited innovation within the public sector (Sorensen and Torfing, 2011).

Negative incentive structure: In the private sector firms compete by innovation, but in the public sector innovation is at best weakly incentivised and commonly faces negative incentives. The incentive structures between the private sector and public sector innovation are fundamentally different. The incentive currency for private sector innovation is straight forward in the form of monetary rewards while for public sector innovation is reputation with the pay-off in career advancement within the sector. In public sector innovation, risk-taking is rewarded by career advancement, which is very different to the incentive structure and reward pay-offs in the private sector, which is principally monetary (Potts and Kastelle, 2010). To the extent that competition does shape public sector innovation outcomes, it is largely internal competition for signalling, advancement or power by individuals or coalitions. The naturally occurring incentives to innovation in public sector organisations are those of internal career politics and upward mobility in management within an extant hierarchy. (Potts and Kastelle, 2010). For many public sector leaders, the rewards on offer from successful innovation are low, even if the innovation could create huge gains for the public sector and citizens as a whole, while the impact of failure can be significantly higher (OECD, 2017). The native incentive structure of innovation in the public sector that rewards

conventional knowledge and conventional extensions but utterly punishes unconventional failure and barely tolerates unconventional success (Potts and Kastelle, 2010). All in all, in the public sector, the incentives to innovate are lower, and risks often higher, than in the private sector. Public sector innovation may therefore come to be considered, at least in some cases, as an 'optional extra or an added burden' (Mulgan and Albury, 2003).

Networked government and collaboration: Innovation in the public sector is dependent on the discretion that public sector organisations have to explore and implement new ideas, to get involved in a process of "trial and error". It can be argued that the state and governance traditions in a country influence the degree in which these organisations have the willingness, the capacity and capabilities to embark on an innovation journey (Bekkers *et al*., 2013). Most public sector organisations and government departments are not considered to be particularly innovate due to bureaucracy and management styles associated with outdated methods of traditional public administration, During the 1970s, Schon emphasized the importance of "network" type organisations as replacements for hierarchical models based on command and control approaches in business, as well as government organisations.

The implication is that organisations need to be "redesigned" in order to facilitate learning, since a focus on learning was not part of their original design (Ramoroka *et al*., 2017). The dominant design for innovation has shifted from the "centre –periphery model" to complex networks, in both business and government contexts (Ramoroka *et al*., 2017). Likewise, Parsons (2006) stresses the importance of public sector innovation being "facilitated" by government instead of simply "implemented" by government, which is indicative of learning of learning primarily taking place at the centre rather than on the periphery. Therefore, the public policy focus should be on designing "self-transforming networks", patterns of social learning, and public sector organisations as learning organisations or systems.

It is important to consider networked governance for conceptualising and enhancing innovation by government organisations in a developing country context. Furthermore, it is important to interrogate the paradigms of governance and public management which include traditional public administration, New Public Management (NPM) and

networked governance (Hartely, 2005). The emergence of the NPM was part of a wave which took place during the 1980s to redefine the role public sector. There has accordingly been a move away from traditional hierarchical or bureaucratic tools associated with public administration (Howlett *et al.,* 2015). NPM emphasises a wider set of actors which includes civil society, enterprises and networks in the provision of public services, with a focus on co-production. NPM implies that the government agencies adopt an 'entrepreneurial role' and focus on awarding competitive contracts to service providers to ensure cost-effectiveness, productivity and customer satisfaction (Howlett *et al.,* 2015). NPM approach emphasises a more inclusive participation and social coordination forms of governance (Hoppe, 2010). In fact, a number of recent research contributions on innovation by government agencies support the NPM approach with its emphasis on 'governance' networks' which foster an enabling learning environment for innovation (Ramoroka *et al*., 2017). Indeed, Rashman and Radnor (2005) argue that the emphasis has shifted from local government learning 'from within' to councils sharing acquired knowledge and accessing externally through networks in order to build absorptive capacity and capabilities for innovation. The emphasis is on collaboration, co-production and networks to enhance governance (Ramoroka *et al*., 2017). In this regard, Bland et al., (2010) argue that:

> *"The successful completion of innovation process hinges on the management of knowledge and information through shaping the experiences and interactions of individuals, groups and the organisations that contain it. Public managers are responsible for creating an environment where different combinations of knowledge and interaction come together, win acceptance and mobilize the necessary resources to implement ideas. A growing body of research now supports the notion that the network form of governance provides an optimal environment for this to take place"*

Therefore, it is suggested that networked governance is a more nuanced approach for incorporating innovation into the activities of the public sector in light of the complexities observed within public administration, the challenges faced by the public sector and interdependencies between actors in the public sector space. Equally, the recent work of several authors supports open and networked governance approaches

as a conceptual framework for innovation in the public sector, since it brings together notions of learning, networking, collaboration, open innovation and user innovation with a focus on co-creation whilst retaining a focus on ensuring good governance (Klijn and Koppenjan, 2016). In this respect, learning organisations have porous boundaries which allow new ideas and technologies to flow into or out of them and ensure that the transfer of knowledge will foster innovation on a system or network level (Gaulet, 2010). This is a stark departure from the traditional, bureaucratic and closed systems which characterise many government agencies (Ramoroka *et al*., 2017).

Government could pursue different initiatives to stimulate the development of systemic propensities of RIS, focusing specifically on the weak links in the system through developing policies aiming at stimulating vertical and horizontal collaborations among local firms, giving financial supports (e.g. via R&D subsidies) to consortia of SMEs and research organisations or by supporting the creation of organisations that bring together local producers, researchers, service providers and government with the objective of collectively solving a problem that is affecting the system (Cristina and Jang, 2008). Government could play a coordinating role and stimulate collaboration between universities and local firms. Government could play an important role by using public procurement as an instrument to stimulate experimentation and innovation in the local firms (i.e. the government as a lead customer) (Arora and Gambardella, 2005). National and regional government can play a significant role in supporting the emergence of high quality educational and research institutions in the region.

Innovation drivers and barriers: A deeper understanding of factors that drives or hinders innovation is necessary if innovation is to be successful in the public sector space. Mulgan (2014) emphasises critical building blocks for enhancing public sector innovation. He suggests that the focus should be on effective leadership; sufficient financial resources; enhancing the learning capabilities (interactive learning) of people (human resources); fostering an innovation-focusses organisational culture; ensuring good governance; employing technologies to improve the delivery of public services; and understanding that innovation is part of a broader system. Leadership and accountability are critical for innovation (de Vries *et al*., 2014). Leadership is closely linked to ‘governance’, ‘culture’ and ‘people’ which constitute the quality of local institutions (Ramoroka *et al*., 2017).

Despite the established need for the public sector to innovate, as stressed in the literature, the perception that the public sector is usually not particularly innovative persists. The reasons put forward for this include the absence of investment models for innovation; a lack of dedicated budgets, teams, processes and skills; unsatisfactory reward and incentive systems; departments that work in silos and block the sharing of information; and a lack of mature risk management methods geared toward experimentation (Mulgan, 2014). Koch and Hauknes (2005) identified the size and complexity as one of the barriers for innovation. Mulgan and Albury (2003) identified a culture of risk aversion as a major barrier. Many people involved with public sector organisations see PSO as stabilising forces in society and/or are unwilling to take risks where the welfare of vulnerable service users may be involved. Other barriers includes administrative burden, lack of incentives and clear reward system in public sector, lack of budget and monopolistic nature of government organisations (Lekhi, 2007).

Furthermore, Lekhi (2007) identified five main factors driving innovation: focus on greater efficiency, pressure from central government to innovate, examples of successful innovation from elsewhere, local political pressure and expectations of local communities. The capacity of any organisation to innovate successfully is dependent upon strong leadership and project management, a commitment to partnership working and the ongoing involvement of members and users. The single most important factor for the success of local authority innovation identified is the leadership of senior management and in particular, the willingness of chief executives to lend their support in the intiatives's early stages. They play a critical role in selling ideas both within the council and to external partners and stakeholders (Lekhi, 2007).

Ultimately, the innovation outcomes that any public sector organisation is pursuing include improved efficiency, cost effectiveness, improved service delivery and increased public value. Although liberalization and marketization has also been introduced in public sector environments as ways to ensure efficiency based forms of innovation, the main driver for public innovation is to create public value, which is more than sheer efficiency (Moore and Hartely, 2008). Public sector innovations deal with several values, which may conflict or reinforce each other and thus have to be balanced in any assessment (Bason, 2010). As such, an innovation that is able to

meet the actual wishes of citizens and companies may contribute to the 'publicness' of the public sector, thereby improving its legitimacy (Newman and Clark, 2009).

The basic question in research on public sector innovation is that we still don't know much about what works and does not work in fostering public sector innovation (Potts and Kastelle, 2010). Making innovation work requires that certain factors that promote or hinder innovation should be identified, studied and understood individually and in their complex relationships. When all things being equal when there is a deeper understanding of the innovation drivers and barriers in the local government setting, successful innovation is very much more likely to occur. This study intends to contribute substantially towards resolving the basic analytical question about what factors matter in driving or hindering innovation through deeper understanding of the dynamics, nature and causes of public sector innovation. The next section considers some of the main themes that emerged from the literature review, namely, innovation strategic intent, innovation culture, innovation drivers and barriers (leadership, interactive learning, etc) and collaboration (inter-organisational interactions and networked governance).

2.7 OVERVIEW ON THE EMERGING THEMES

2.7.1 Innovation strategic intent

According to Goffin & Mitchell (2017) developing an innovation strategy based on assessment of market trends and identified threats and opportunities is the first step for any organisation. Innovation strategy is part of the overall business strategy and it determines when and where innovation is required in the organisation. Of the five elements of the Pentathlon Framework, innovation strategy is the most important it guides idea generation, project selection, implementation and training and recruitment including organisational culture. Innovation strategy must take a long-term view.

Oke (2002) cited in Agolla & Lill (2013) argues that the first step in formulating an innovation strategy is to define what innovation means to the organisation and specify the focus area for innovation. Furthermore, Oke (2007) states that innovation strategy

provides a clear direction and focuses the effort of the entire organisation on a common innovation goal. However, several authors Agolla & Lill (2013); Marr (2009); Martins & Terblance (2003) argue that despite the fact that strategy is an important driver of innovation in PSOs, research indicates that it can nevertheless pose as one of the greatest barriers to successful innovation if it is communicated to organisational members in an ambiguous or half-hearted manner, with the hope that employees will understand how it all fits together.

2.7.2 Culture of innovation

Goffin & Mitchell (2017) argue that although processes such as new product development makes innovation possible, it is people, teams and organisational culture that make it happen. Creating a culture of innovation in which employees are motivated to be constantly innovative is fundamental and senior executives should take an active role in couching innovation teams. For example, an innovation culture would allow employees to experiment and tolerate failure as necessary part of learning and adaptation. However, government has an obligation to ensure continuity of public services in the most effective and efficient way possible. This creates a desire for stability and control. Innovation may provide the opposite, in that it brings uncertainty and risk of failure However, its bureaucratic nature can function as a barrier to innovation as it creates a risk-averse environment (De Vries *et al*., 2014; OECD, 2017).

2.7.3 Innovation drivers and barriers in local government

According to Lues (2016), it is critical for local governments to identify any barrier in advance in order to either limit its impact or plan around the impact. Similarly, local governments should identify innovation drivers in order to create conducive environment for successful innovation. To understand what drives innovation, it may be useful to also look at what hinders innovation in local government. Identifying and understanding these innovation drivers and barriers is critical for policy making because policies can be designed and implemented to foster those factors that nourish

an environment conducive for innovation or mitigate those factors that hinder the genesis and diffusion of innovations.

Akenroye (2012) argues that there are divergent views in literature on the drivers and barriers of innovation. Innovation drivers and barriers may be at variance across organisations and sectors. OECD (2009) argues that it is difficult to provide a definitive list of key drivers or barriers, as the role a particular factor plays in the innovation process can change as a function of context, and what in some circumstances could be a driver of innovation might in others act as a barrier. Innovation drivers and barriers are context-specific and they play different roles at different stages of the innovation process, hence, each system must develop its own successful "recipe" to guarantee adequate response to the needs and barriers it faces. OECD (2009) further argues that it is difficult to isolate particular factors as driving or hindering any systemic innovation, as drivers and barriers act within a dynamic and closely interconnected context. The process of innovation involves many stages and so barriers and drivers at one stage (*e.g.* development) may or may not play the same role at another stage of the process (*e.g.* implementation or evaluation). Innovation drivers and barriers are therefore not one-dimensional but rather bi-directional in that they may encourage or discourage innovation depending on the circumstances or stage of innovation in an organisation. To further complicate matters, systemic innovations tend to be complex process aiming at solving more than one problem at a time. As such, any analysis aimed at understanding the role of drivers and barriers in systemic innovation must therefore consider these complexities. Despite these complexities, meaningful analysis can be done on the types, roles and functions of drivers and barriers within any given context.

The rate of failure of innovation and their organisations in the public sector is not known; neither is why PSIs succeed. Glor (2017) asserts that there are specific antecedents or factors that facilitate creation, successful implementation and survival or mortality of innovations. According to Walker (2008) cited in Bernier *et al*. (2015), some antecedents of PSI have been identified but Glor (2017) indicates that we know very little about the factors implicated in the innovation success or failure.

For the purpose of this study innovation drivers and barriers will be divided into three categories: macro, organisational and micro factors. The macro factors refer to innovation drivers and barriers related to external environment while organisational factors refer to innovation drivers and barriers related to meso or "internal" organisational environment. Micro factors refer to drivers and barriers related to innovation process or characteristics.

Drivers and barriers related to external innovation environment

Martin (2001) argues that the external pressure is a major driver for reform and change in Australian local government. While some organisations seek to innovate simply to improve service delivery, the deregulation of economy meant that the public sector has had to reform its work practices in line with the reforms occurring in the non-government sector. Innovation and innovative organisations do not operate in a vacuum but operate within an external, industry and operating environment. Agolla and Van Lill (2013) argue that organisations influence the external environment through innovation and conversely, the external environment influences organisations. The external environment is critical because it presents opportunities and threats as well as constraints for the organisation to innovate. Pearce and Robinson (2003) argues that external environment comprises factors beyond and irrespective of any single organisation's operating situation, namely: political, economic, social, technological, ecological, and legal (PESTEL). Most scholars seem to agree that the classical PESTEL macro factors represent drivers and barriers related to the external innovation environment (Strand *et al*., 2015; Agolla & Van Lill, 2013).

Political environment: Innovation is also driven by the desire to keep up with public needs and expectations such as the provision of welfare services, efficiency, cost cutting in the service provisions and accountability to the general public and government (Marr, 2009; Agolla & Van Lill, 2013). Strategic change in the public sector frequently requires a strong, top down enforcement of political will coupled with the political recognition that change requires the allocation of substantial resources (Koch & Hauknes, 2005). According to Strand *et al*. (2015), all over Europe, there is a political

pressure in order to enhance efficiency in public sector. Bekkers *et al*. (2013) argue that desire to improve the quality of public services, in combination with the desire to cut red tape, has increasingly become a political issue and is an incentive for the public sector to innovate.

Economic environment: Globalisation, innovation and the resulting changes in economic conditions are generally considered to comprise a main driver of innovation (OECD, 2009). The recession and economic stagnation, where the growth in public income is expected to drop is the most dominant economic factor (Strand et al., 2014). Given the significant cutbacks in funding to local government organisations, innovation is no longer seen as a luxury item in the toolbox of policy choices, but a necessity to enable organisations to safely navigate through the adverse economic conditions. Economists have long recognised the critical importance of innovation and capital accumulation for growth. Focusing on accumulating capital is not sufficient to ensure long-term growth rates that can reduce poverty and help achieve other goals. Countries needed to transform from over reliance on the exploitation of natural resources to technological innovation as the basis for development (UNMP, 2005; Agolla & Van Lill, 2013).

Social environment: Social factors such as demand for provision basic services like water and electricity, have been known to exert enormous pressure particularly on the service provisions in developed and developing economies. As such, in order to respond to these challenges, governments are forced to look for innovative means through effective and efficient public sector interventions to address such demands from the general public (Agolla & Van Lill, 2013).

Technological environment: Technological advances such as automation provide a fertile ground for innovative activities that result in new or improved goods and services (Marr, 2009; Agolla & Van Lill, 2013). With an ever-increasing rate of technological changes, the public sector is hard pressed to keep up in using technology, but also in regulating and adapting to technological use in society (industry, citizen service requirements, etc.). It is clear that technological innovation can be a strong determinant or driver for subsequent innovation such as automation and online

services (Agolla & Van Lill, 2013). Other macro factors includes ecological and legal environment. An example of ecological macro factor is the 2030 Agenda for Sustainable Development adopted by the United Nations (UN) (UN, 2015a) and the Paris Agreement on Climate Change (UN, 2015b) which has put issues of ecological and environmental sustainability on the top of global agenda.

Drivers and barriers related to organisational environment

Public sector innovators do not innovate in a vacuum, but in a structured organisational environment. Initial research has pointed to organisational factors, which have played a role in encouraging innovation whereas others may work against it. Asking public employees to innovate may not go very far if the organisational environment is not conducive to supporting innovation. Looking at how organisational attributes (structures, rules and processes, technologies, culture, etc.) impact innovation is a central element of the PSI research agenda for the OECD (OECD, 2014). PSI does not happen by itself: problems need to be identified and ideas translated into projects that can be piloted on a small scale and then implemented and diffused. This requires PSOs to identify the processes and structures that can support and accelerate the innovation activity at each stage of its lifecycle. While there is a growing body of evidence on innovation practices in the public sector, there is still limited knowledge of what policy tools government can use to overcome innovation barriers and strengthen organisation's capacity to innovate (OECD, 2017) by promoting innovation drivers.

There are a number of organisational drivers and barriers that are critical for the success or failure of innovation in a local government space. The organisational drivers and barriers are strategic leadership, organisation strategy (Agolla & Van Lill, 2013), delivery pressures and administrative burdens. They also include a culture of risk aversion or culture of innovation, rewards and incentives, human and financial resources, organisational structure, risk and change management. Staff and end-user resistance or acceptance to change, accountability and experimentation, innovation fatigue, capacity for organisational learning, reluctance to close down failing programmes, short-term budgets and planning horizons, technology and social media,

procurement are some of the drivers (Mulgan & Albury, 2003; Strand *et al*., 2015). Lastly, capability, motivation and opportunity to innovate, communication and innovation fatigue are some of the drivers and barriers. The following section discusses various drivers and barriers related to organisational environment and the extent to which drivers and barriers converse their roles depending on the context and the stage of innovation process.

Leadership commitment and management support: The literature on PSI and change management stresses the importance of leadership (Hartley, 2005; Bason, 2010; Osborne, 2011; Kuipers et al., 2013; Bekkers et al., 2013). Furthermore, Howard (2012) and O'donnell (2013) note that the international literature highlight the importance for local government leaders to provide visionary leadership to enable them to 'have the opportunity to identify substantial productivity and performance gains and transform the way the councils deliver services to create value for their communities. Politicians and senior management can create an organisational climate that will either stifle or support innovation (Bekkers et al., 2013). Strategic and organisational leadership create a climate in which people operate and interact. Raipa and Giedraityte (2014) underscore that leaders and top management must demonstrate and reinforce a sense of management buy-in, commitment and support in order to ensure successful innovation. While effective, decisive and supportive leadership is critical for successful innovation, the opposite also holds. Ineffective and unsupportive leadership may serve as the barrier of PSI, so is frequent change of institution's heads.

Developing an innovation strategy is the first step for any organisation to demonstrate its strategic intent pertaining to innovation (Goffin and Mitchell, 2017), and is a function of leadership. Oke (2007) asserts that innovation strategy provides a clear direction and focuses the effort of the entire organisation on a common innovation goal. However, other authors (Agolla & Van Lill, 2013; Marr, 2009; Martins & Terblance, 2003) argue that despite the fact that strategy is an important driver of innovation in PSOs, research also indicates that it can nevertheless pose as one of the greatest barriers to successful innovation if it is communicated to organisational members in an ambiguous or half-hearted manner.

Service Delivery Pressures and Administrative Burdens: Public expectations of what the government should provide are rising in all countries, with people looking to the state for solutions even where they do not consider it responsible for the problem (Lekhi, 2007). The public has a very high service delivery expectations and demands that are difficult for most administrations to meet within budgetary and capacity constraints. Generally, within the public sector the majority of service managers and professionals have little time to dedicate to thinking about doing things differently or innovations in delivery of service that might be more time and cost effective. Rather, the overwhelming proportion of their time is spent responding to the day-to-day pressures of running their organisations, delivering services and reporting to senior management and authorities (Matthews et al., 2009). Lekhi (2007) argues that public sector employees are already working under pressure to perform (performance management and audit exercises) and administrative burdens. Many are already operating under very tight budgets and heavy workloads.

Governments have a significant vested interest in the performance of the public sector and are under strong popular pressure to deliver improvements in services. While this can stimulate innovations, it can also lead to a "fragility" in innovations, in which they are never fully backed by core staff who perceive them as the latest in a line and no more likely to receive long term backing from sponsors than previous (now-discredited) initiatives (Lekhi, 2007).

Short-term budgets and planning horizons: Lekhi (2007) argues that public service is seen as a stabilizing force and not as experimental "laboratories" in which to try out a new service, system or policy, and this combined with short-termism (adhocism) lead to some innovations conceived and implemented in haste, resulting in them failing drastically. Sometimes the inability to think outside of day-to-day pressures on how things could be improved is exacerbated by short-term budgets and planning horizons. The five-year political terms also seem to be detrimental to the long-term planning and development imperatives. Short-term budgets and planning horizons stand against long-term investment and commitment which is required to really embed a culture of innovation into local government organisations.

Poor reward and recognition (negative incentive structure)

According to Lekhi (2007) most public sector organisations lack any kind of formal or even informal reward system for innovators. Few employees are employed with a direct mandate (in a job description, for example) to innovate. Reward and recognition systems can be used to signal the importance of innovation. Financial reward is not the only motivating factor. In many ways, recognition can be a stronger mechanism for promoting innovation than reward (Goffin & Mitchell, 2017).

Matthews *et al*. (2009) indicate that although governments across the world have sought to strengthen incentives in the private sector for innovativeness, e.g. through trademark protection, employee share option schemes and corporate tax regime including R&D tax credits, an active incentives drive for innovation has yet to be established in the public sector. Rather, the tradition of higher penalties for failed innovations than rewards for successful ones remains within the civil service. OECD (2017) submits that ideas that fuel innovation can either be generated from the bottom-up by civil servants in the frontline or be initiated by executive leadership. Supporting the creation of ideas often involves providing the right level of incentives and rewards, creating opportunities to share experiences and ensuring public servant's mobility to support a broad understanding of issues and the tools to respond to them.

For many public sector leaders, the rewards on offer from successful innovation are low, even if the innovation could create huge gains for the public sector while the impact of failure can be significantly higher. Public sector staff may be scared of possible consequences and are not inclined to act innovatively (Raipa & Giedraityte, 2014). Organisations should develop management practices that direct, evaluate and reward critical behaviour and performance that influence innovation (Mumford & Licuana, 2004; Sekwele, 2015). However, Tidd and Bessant (2009) argue that many organisations have reward systems that reflect performance of repeated tasks rather than encourage the development of new ideas. These authors further indicate that such organisations measure progress based on how things are done by the book rather than challenging and changing the status quo. Shalley and Gilson (2004) assert that organisations should place systems in place to track innovation so as to be able to appraise and reward appropriately.

Resources (human and financial resources): Human and financial resources may serve either as a driver or as barrier for innovation. OECD (2017) indicates that people are at the centre of innovation and their commitment and determination drives every stage of the innovation process. Research shows that innovations are born from ideas that come from staff at all levels of an organisation. Recognising that human factors are core to innovation raises questions about human resources policies and practices and their role in supporting innovation. For example, training and development programmes can develop creative thinking as a professional competency while performance evaluation and management could either encourage or discourage innovative thinking and actions by focusing on desired outcomes rather than compliance with processes. Individual employees do not innovate in a vacuum, but instead within an organisational culture which may support or hinder innovation.

Innovative projects need financial resources. Inflexible funding in public governance is a major problem. Traditionally, the public sector has funded innovation by using budgetary slack or cost savings owing to enhanced efficiency. The difficulty with these sources of funding is that they are uncertain (Borins, 2006; Raipa & Giedraityte, 2014). While detailed financial rules and controls may impede the investments needed to bring a project to scale, budgeting can also stimulate innovation through financial incentives, promoting greater flexibility and collaborative approaches to resolve common challenges (OECD, 2017). Furthermore, Borins (2006) and Raipa and Giedraityte (2014) propose financial management reform to strengthen internal financial support for innovation such as creating innovation fund.

O'Donnel (2013) asserts that international literature highlights that there are significant cutbacks in funding to local government organisations and innovation is no longer a luxury item in the toolbox of policy choices, but a necessity to enable organisations to safely navigate through these adverse economic conditions. Howard (2012) echoes that view saying that the tough economic climate requires that government services have to deliver significantly better performance at significantly lower cost. This requires a commitment to fundamental change in the way services are planned, organised and delivered. According to Shifrin (2008), the challenge of delivering more with less can only be achieved "if we are very innovative".

Organisational structure (bureaucratic institutionalised monopolies): Bureaucracy and red type including internal regulations and procedures are often seen as the main barriers to innovation, particularly in the public sector. Bureaucracy is defined as a system of values as much as a system of rules and procedures and it involves wider bureaucratic context of risk aversion, silos, and hierarchical organisations, Lack of diversity can inhabit innovation rather than laws and procedures in the narrowest sense. There is a perception that rules have no other purpose than to preserve the status quo (De Vries et al., 2014; Osborn & Brown, 2013; OECD, 2017). Structures within the public sector tend to be monopolistic and boundaries are tightly drawn hence there is reduced motivation to innovate when no competitors exist (Lekhi, 2007).

According to Luthans (2011), organisations that support learning have designed horizontal structures and set up cross-functional teams that encourage employees to assume authority and make decisions directly related to their activities. Typically, these organisations have structures that have a flat hierarchy so as to allow a free flow of information as opposed to a top-down flow, which is associated with PSOs. Tidd and Bessant (2009) argue that there is no single best structure but that successful organisations tend to be those that develop the most suitable “fit” between structure and operating contingencies. In addition, Sekwele (2015) contends that companies may succeed at or impede their efforts at learning and capability building because of the way the functioning of their processes are organised. Lekhi (2007) argues in favour of greater organisational “slack”, ability of the organisation to move financial and human resources around within the organisation itself to address issues as they deem fit.

Risk and change management: Innovation is a risky process, characterised by trial and era or experimentation while outcome is usually unknown. However, in the public sector, risk taking is not favoured and there is a negative attitude towards risk and risk taking (Osborne & Brown, 2011; Bekkers et al., 2013). Understanding the nature and characteristics of a problem is a first step towards triggering innovative ideas to respond to it. PSOs often lack the capacity to identify risks and opportunities coming from their environment and to effectively capture and interpret demand from the users (OECD, 2017). There is a space for PSOs to improve their environmental scanning

capability in order to exploit challenges and opportunities more effectively. However, the interest of media, opposition parties and the public in exposing public sector failures forms a prevailing inhibition to innovation (Borins, 2002).

Resistance to change and embracing change: Powell and Grodal (2005) argue that actors who know each other quite well are not surprised by each other's ideas and insights while actors who do not know each other very well, often represent new insights, ideas and perspectives. Bekkers *et al*. (2013) express the same view that new innovative ideas come from actors who are not at the centre of a network. Furthermore, Bekkers *et al*. (2013) reveal that PSI research shows that new insights stem from considering the ideas, insights and experiences of groups of end-users which voices are often 'weakly institutionalised voices. End-users must be seen as a source of knowledge, experiences and ideas that can be exploited in the co-design and co-production processes.

However, to date, many innovations such as new policies are not readily accepted by end-users, including public professionals who need to implement these innovations. When end-users feel that their views are not being considered or when they feel that the innovation has no substantial value, they will most often be resisting the innovation. Many end-users resist change because they feel that their autonomy is diminished or when they feel that an innovation does not match their specific circumstance (Bekkers *et al*., 2013). PSIs also get high public attention because of their profound impact on the provision of essential services and society, resulting in increased public doubts about effectiveness of programmes, opposition and scepticism are identified as some of the barriers to innovation (Raipa & Giedraityte, 2014).

The challenge of change resistance is not only by employees but also by other stakeholders such as end-users, suppliers, management and shareholders. Raipa and Giedraityte (2014) argue that public sector staff may be scared of possible consequences and therefore not inclined to act innovatively. There is an old saying that *"change or innovate if you must but please, not in my back yard or not on my watch or in my work!"* According to Robbins (2006), there are three types of resistance: open (staff reacts immediately, expresses the grievances), hidden (loss of loyalty and

willingness to work) and delayed (real reaction becomes apparent after a certain period). Hidden and delayed resistance are hard to recognise and as such difficult to manage. Staff and other stakeholder resistance in innovation could be overcome by better communication and participation.

Capacity for organisational learning (interactive learning): Innovation is largely a result of interaction, learning and unlearning among actors in the market and larger environment. Innovation is concerned with the creation of new knowledge through the application of intellectual capital and creativity. In order to create knowledge, continuous learning by firms or organisations is required to acquire skills and enhance competencies (Ramoroka et al., 2017). Learning takes place in organised settings such as groups, organisations and networks; and is characterised by the interaction and often systemic interdependence of agents or actors. Theoretical work on systemic characteristics of innovation, most relevant for PSI, includes the concept of networked governance, which emphasises collaboration between government departments, other government agencies and external actors to enhance learning, knowledge transfer and innovation (Aurndel et al., 2015; Ramoroka et al., 2017). Ramoroka et al., (2017) argue that the notions of learning capabilities and networked learning are central to enhancing the capability of local councils to innovate. Key considerations include an emphasis on networking to create an enabling environment for learning, fostering an open organisational culture, enhancing local governance, bringing together the skills and resources of network partners, and stimulating collaboration and innovation.

Sharing ideas and experiences are a constituent part of the innovation process and allow successful approaches to be replicated in different contexts. Understanding what went wrong is a powerful source of learning. However, the level of risk, political and media scrutiny inherent in innovative projects make the tolerance for failure to be very low. Cumulatively, these factors may create the perception that the public sector is averse to risk, but internal learning can reduce risk and uncertainty by pooling experience and results (OECD, 2017).

Experimentation and accountability: Proof of concepts, idea testing and trials are important steps towards translating ideas into workable projects with potential for

implementation. Therefore, space must be created for PSOs to experiment and to try new things. Indeed, innovation by its very nature entails novelty and requires organisations to accept a certain level of uncertainty and transform it into manageable risk. However, the very nature of PSOs role, with its statutory and moral responsibilities to ensure the basic safety and welfare of its citizens and be accountable for the use of public funds, means that any practice that can pose risks to meeting these responsibilities must be viewed with caution (OECD, 2017).

Greater levels of accountability restrict the level and nature of permissible risk in the system. In highly accountable system such as local government municipality, very little room exists for risk-taking because the possibility of failure is too high (OECD, 2009). Borins (2002) argues that the drive to minimise corruption and ensure due process also serve as barriers to innovation. Gow (2014) argues that innovation requires failure but even the smallest mistake in the public sector can be magnified into a major embarrassment or even a sensational scandal. To successfully navigate this delicate balance requires developing tools and guidelines that may minimise risks and create conducive environment for experimentation. Furthermore, evaluation systems are not designed to support innovation. Traditional monitoring, inspections and audits of performance which are meant to drive improvement often have opposite effect and suffocate innovation while there is also a narrow focus on financial measures of value neglecting social value (NESTA, 2009b).

Technology platforms and social media: Bekkers *et al*. (2013) argue that ICT and social media are important source of innovation given the fact that technology in general is an important source of innovation because technological innovations very often give birth to all kinds of innovations. ICT and social media are important drivers for innovation. They become even more important if we acknowledge that information and communication are vital resources in rendering specific services, in developing and implementing policy programmes as well as in monitoring and enforcing the outcomes of these programmes. More importantly, ICT and social media have tremendous ability to process large amount of data (big data) in a more sophisticated way, ability to access information across functional and geographic boundaries and ability to facilitate interactions across all sorts of traditional barriers.

In the public sector, many ICT driven innovations are closely related to the creation of electronic government, emergence of new policies and new service delivery processes (e-procurement, e-filling), new organisational and governance practices, which have the potential to fundamentally change the course and contents of processes. However, technology may also act as a barrier if there is no alignment between the new technology and the organisation's culture, systems, management methods, and processes. Within the PSI is often impeded or thwarted because there is resistance or failure to embed innovation within the organisational fabric (Matthews *et al*., 2009), a common occurrence in some countries in the Global South.

Reluctance to close down failing programmes: Although success is the aim of every team, many projects do fail, even those from famous and successful companies. Few organisations are good at terminating projects simply because they do not have termination criteria. Delayed termination of unsuccessful projects leads to wasted resources and significant demotivation. Termination of unsuccessful projects should be done as soon as possible and team members be reassigned quickly to boost their motivation. Lessons learned should be used as building blocks on the subsequent projects (Goffin & Mitchell, 2017). Although private sector companies typically need to innovate in order to survive, it is extremely unlikely PSOs will cease to exist because of not being innovative. Paradoxically, within public services higher standards are set for new programmes than for old ones and historically established failing functions are rarely closed down (Matthews et al., 2009).

Procurement: *The procurement of innovative products and services has a role to play both in terms of reducing costs and in driving up the quality of effectiveness of public services (Lekhi, 2007). NESTA (2009b) suggests that procurement objectives must include innovation and that innovation should be seen as an overarching principle behind public procurement decisions. Otherwise, procurement will continue to be seen as a barrier for successful innovation owing to the tendency to opt for low-risk solutions and mature technologies. However, most PSOs are beginning to infuse innovative, sustainable, green, open, and transparent principles in their procurement systems. In this regard, in delivering her 2019 Budget Speech, the Gauteng MEC for Finance,*

Barbra Greecy indicated that 82% of provincial procurement in 2017/18 was done through the open tender system (Gauteng Province Budget Speech, 2019).

Regulatory and compliance requirements: Many public organisations are faced with regulatory requirements and unnecessary bureaucratic procedures and red tape which disturb or even stop innovations (Raipa & Giedraityte, 2014). Public servants often perceive rules, procedures and regulations to be constraining their capacity to innovate. Yet there is limited evidence that rules and procedures are actually blocking innovation. For example, Australian Government found out that it was not necessarily the internal regulations blocking innovation but rather a poor understanding of those rules by public servants (OECD, 2017). It is important to understand what dynamics are at between innovation, rules and regulations and public servants' views and insights in order to improve a common understanding of what behaviour is permissible and desirable.

Capability, motivation and opportunity to innovate: What may be useful is to consider how and where innovation may originate as well as different institutional or organisational structures it must go through before it is implemented. The relevant unit of analysis will include individual staff members, teams, units, organisations, and the whole public administration for which they work. Each of these units can be more or less innovative both by generating new ideas (initiating innovation) and by creating an environment that supports or hinders innovation (OECD, 2017). Three factors shape whether the public sector innovates or not: 1) capability; 2) motivation; and 3) opportunity to innovate. Capability to innovate is shaped by resources, skills, knowledge, and space to innovate; motivation to innovate is shaped by incentives, values, leadership and behaviour; and opportunity is shaped by creativity, autonomy and collaboration (OECD, 2017). Opportunity to innovate is critical because without it there cannot be any innovation.

Communication: Communication is critical for any organisation and situation by ensuring that everybody is informed and can feel engaged and being part of the whole. Holbeche (2002) argues that lack of communication in the workplace leads to suspicion from staff, demoralisation and loss of key personnel and business. This results in a high turnover of staff members owing to the perception that their future

progress within the organisation is uncertain. More importantly, Armstrong (2006) asserts that a good channel of communication between the employer and employees is required to ensure that management keeps employees regularly informed regarding the policies and plans that affect them.

Drivers and barriers related to micro-environment

Innovation design and implementation is one of the essential conditions for the modernisation of public governance. However, the innovation process in public sector is a quite risky and success is not always guaranteed. Therefore, it is important to identify and prevent innovation barriers. PSOs' abilities to identify the innovation barriers and drivers and to develop their management instruments, determine the quality and efficiency of innovation processes and outcomes (Raipa & Giedraityte, 2014). Innovation drivers and barriers related to micro-environment have to do with the organisational characteristics or innovation process itself. The main micro factors are complexity of innovation, uncertainty and long-term nature of innovation and the innovation champion or individual innovator.

Complexity of innovation: Unlike private sector businesses, public services do not tend to exist within competitive markets but exists within a more complex social system, with more ambiguous and difficult goals and values to quantify (Lekhi, 2007). Innovation is important for effective public service management in a dynamic society (Hartely, 2005), characterised by a combination of linear, exponential, discontinuous and chaotic change also referred to as 'hyperchange' (Lekhi, 2007). Innovation is an elusive term and there is no universally agreed definition. It means different things to different people, depending on who and where they are. The term 'innovation' describes both the process and a product and therefore add to complexities of the defining the concept. Innovation works at too many levels and may be too complex to be pinned down in one way or the other (Lekhi, 2007).

Hartley (2005) argues that innovations in governance and services are more ambiguous because the service offering is usually not a physical artefact but a positive change brought about because of the interactions between the service provided and end users. Generally, PSOs face the difficulty of being required to meet multiple,

competing and sometimes incompatible social and political objectives. Mudaly (2016) argues that complexity in innovating emerged as a major inhibitor to innovation because it is considered too difficult to implement successfully.

Uncertainty and long-term nature of innovation: Despite many studies to date, innovation generally remains a fragile and unpredictable process, with a high rate of failure, particularly in the public sector (Hartley, 2005). On one hand, this is inevitable, if all innovations could be predicted in advance the term would lose all meaning. However, the absence of greater clarity in studies about innovation is a result of the lack of consensus on what constitutes innovation (Lekhi, 2007). While it is important to try to manage innovation in an organisation, it should be noted that innovation might emerge in spite of management strategies, not because of them. Managers should be wary of the temptations to micro-manage the conditions that give raise to innovative initiatives. According to Mudaly (2016), a long time lead was identified as a barrier because innovation may take many years to develop into meaningful products, services or processes and this applicable to both public and private sector innovation.

Innovation champion: Potts and Kastelle (2010) highlights the importance of organisational embedded innovation champion, which underscores attention to the incentive structures in public sector innovation and the role of entrepreneurial leadership in overcoming these incentives barriers. Barlett and Dibben (2010) argue that there are two types of champions, namely ‘champions’ and their ‘sponsors’. The role of champion is adopted by senior managers while the role of sponsors is adopted by politician. Ultimately, innovation is largely driven by internal motivation as opposed to external motivation. An individual innovation champion is critical to drive innovation process in any organisation or section.

2.7.4 Collaboration (intra-organisational interaction, networked governance)

Research corroborates that innovation no longer depends only on how public sector, universities, research institutions or government regulators perform on an individual basis, but on how they work in unison (Goh, 2005; Bloch *et al*., 2010; OECD, 2010; Agolla & Van Lill, 2013). Hence, Goh (2005) argues that institutional, organisational

and societal rigidities that stifle innovation systems must be eradicated and obstacles that prevent co-operation and networking have to be removed while promoting collaboration and partnerships. Collaboration may lead to an atmosphere where innovation thrives because it allows for potential free flow of information, sharing of ideas, dispels the fear of failure, and breaks cultural, institutional and geographical barriers. Agolla and Van Lill (2013) contend that innovation rarely occurs in isolation; it is a highly interactive process of collaboration across a growing and diverse network of stakeholders, institutions and users.

Bommert (2010) argues that the principal reason why collaborative innovation is more suitable to solving persistent and emergent problems is because it opens the innovation cycle to a variety of actors and taps into innovation resources across borders, over-comes cultural restrictions and creates broad-political support for public innovation. Because of these effects, collaborative innovation has the potential to improve idea generation, selection, implementation, and diffusion. Some argue that collaborative innovation is the highest form of innovation, also referred to as open innovation.

Cankar and Petkovsek (2013) indicates that collaborative innovation brings together the relevant public innovation assets in terms of knowledge, imagination, creativity, courage, resources, transformative, and political authority. That is what market competition fails to do because competitors usually do not exchange resources and ideas, and do not share risks and benefits from innovation. Collaborations among organisations should be considered as an important catalyst for innovations that in-house development alone cannot make possible or indeed make difficult to achieve.
Lekhi (2007) argues that successful innovative projects frequently make use of partnerships, particularly in those projects aiming to deliver new services to users. Partnerships take a variety of forms including collaboration with outside organisations and joining forces with other authorities to develop shared services. Partnerships are beneficial to authorities because they offer flexibility in the management of complex, cross-cutting issues.

2.8 STATEMENT OF PROPOSITION

That innovation plays a critical role in the private business sector success or failure is well established and documented. Innovation is also emerging as an important strategic tool for public service sector including municipalities in local government sphere to improve both service delivery and financial performance. But what really drives or obstructs innovation in local government? There has, however, been little study on the drivers and barriers of innovation in the local government, particularly in the Global South. Accordingly, this study aims to contribute to a better and deeper understanding of what drives or obstructs innovation in the local government sphere. The insights gained will add to the overall clarity on innovation drivers and barriers in local government. Four suggested statements of propositions are:

- Innovation strategic intent have a positive effect on innovation at the local government sphere of the public sector
- Culture of innovation have a positive effect on innovation at the local government sphere of the public sector
- Understanding the dynamics of innovation drivers and barriers have a positive effect on innovation at the local government sphere of the public sector
- Collaboration (intra-organisational interaction, networked governance) have a positive effect on innovation at the local government sphere of the public sector

2.9 SUMMARY

The literature review confirms that innovation in PSOs and local government in particular is now a separate and distinguishable area for academic enquiry albeit still at development level. There is need for further systemic study on innovation to better understand the drivers and barriers in local government in view of glaring gaps in the academic literature. The literature review identifies a number of key main themes that warrant further studies and analysis for deeper understanding of innovation in the public sector innovation such as weak or non-existent theoretical frameworks: regional innovation systems and public sector innovation theories, sources of production and knowledge clusters, inter-organisational interaction, interactive learning, market completion and institutionalised monopoly, collaboration (networked governance), negative incentive structure, innovation strategic intent, culture of innovation and

innovation drivers and barriers. For purposes of this study, the following themes has been identified: innovation strategic intent (innovation strategy), culture of innovation, innovation drivers and barriers (interactive learning, leadership, negative incentive system, organisational structure, etc) and collaboration (networked governance). The identified themes are critical for successful development, implementation and adoption of innovation in local government. The Pentathlon Framework indicated that innovation strategy is the most important element because it guides idea generation, project selection, implementation and training, recruitment and the organisational culture. However, innovation culture is critical for creating an enabling environment to innovate.

Innovation drivers and barriers are key determinants of innovation and some may mainly relate to external environment, others may be related to organisational environment, while others may be related to the micro-environment. It is difficult to isolate particular factors as driving or hindering any systemic innovation because drivers may become barriers and barriers may become drivers depending on the context or stage of innovation process. Innovation drivers and barriers act within a dynamic and closely interconnected context. Collaboration (including networked governance, intra-organisational interaction and interactive learning) on the other hand could be the most efficient and cost-effective form to innovate as it is able to transcend resource and cultural barriers.

CHAPTER 3 : RESEARCH STRATEGY AND METHODOLOGY

3.1 INTRODUCTION

This chapter deals with the research methodology used by the author to collect and analyse the data that informed the study. It explains the rationale for the chosen method and provides an outline of the research design, population, unit of analysis, sample, data collection and analysis, limitations of the study, and ethical considerations.

3.2 RESEARCH DESIGN AND STRATEGY

Research design refers to the overall strategy that one selects to integrate the different components of the study in a coherent and logical way to ensure that the research problem is effectively addressed. It constitutes the blueprint for the collection, analysis and interpretation of data. A qualitative, inductive and interpretivist approach was used for this study in an effort to develop a deeper understanding of the innovation drivers and barriers in a local government sphere. It was envisaged that the study would contribute to the emerging literature and towards the development of theory around innovation in local government.

According to De Vos *et al*. (2016), unlike the quantitative paradigm, the qualitative paradigm requires the design of the research to be more than a set of “worked-out formulas”. The qualitative researcher is concerned with understanding rather than explanation, with naturalistic observation rather than controlled measurement, and with the subjective exploration of reality from the perspective of an insider as opposed to that of an outsider which is predominant in the quantitative paradigm. The researcher was not interested in a study towards generalisation but was interested in getting insight into CoT specifically because it would be useful insight and a new case study. The qualitative research methodology also helps researcher to have an in-depth understanding of a situation (Cooper & Schindler, 2011).

Although there may be certain aspects of deductive reasoning that may arise, given that the research aim is to explore factors that drives and obstructs innovation in local government, as well as to compare with those of the countries of the global north as per literature review, an inductive approach was adopted for this study.

This study followed an interpretivist paradigm that allows the researcher to explore the concept, discover new insights, gain in-depths insights, and establish general patterns. Interpretivists prefer humanistic qualitative methods as opposed to the positivist approach, which focuses scientific quantitative methods. Reeves and Hedberg (2003) note that “interpretivist” paradigm stresses the need to put analysis in context of the individuals’ subjective experiences. The researcher was interested in participants’ understanding of the innovation drivers and barriers in CoT.

The interview protocol of the study was designed for a face-to-face, semi-structured in-depth interview format guided by the interview schedule (see Annexure A) containing questions that related to the various themes of the research question. A semi-structured interview is considered as a gold standard of qualitative research because it provides an opportunity for an in-depth exchange between the researcher and the respondent (Barbour, 2008; Mudaly, 2016). The semi-structured approach provided the author with the flexibility to steer the discussion towards the key issues that were identified as central to the research, which is a design supported by Jankowics (2005), but also provided respondents with the opportunity to openly share their views as well as their understanding of the innovation drivers and barriers in CoT.

For this study, the CoT Innovation Unit was selected as a case study. The CoT Innovation Unit was chosen as a unit of analysis because it would allow for the collection, investigation and analysis of data as well as offer insights from respondents’ experiences, and contribute to the general understanding of the nature of innovation drivers and barriers in the local government sphere. The relevant authorities at the CoT Innovation Unit granted approval to conduct this research (see Annexure B). To further enrich and strengthen the study for triangulation purposes, additional operating units and external expert participants were included in the study. The additional operating units from CoT were:

- the Waste Management Division

- Agriculture and Rural Development Division and
- the Support Services Unit.

The expert participants were sought from:

- the DST
- Salga
- CPSI
- IERI of TUT and
- the Innovation Hub, which organisations are some of the key actors in the system of innovation in the region.

3.3 SELECTION OF PARTICIPANTS

In qualitative research, data are often derived from one or two cases. It is thus unlikely that these cases are selected randomly. The aim of selecting relevant participants in qualitative research is to collect the richest data (De Vos *et al*., 2016).

3.3.1 Population

The population is a complete set of members from which the sample is taken (Saunders & Lewis, 2012). The population for this study is 60 staff members comprising of 12 from CoT Innovation Unit and 48 from three other operating units. This population was chosen because it is relevant to the subject matter and for its ability to offer insightful views on innovation drivers and barriers in a municipal setting. Although, the analysis of the research questions do not require statistical significance, the representativeness of the selected participants is reasonably fair.

3.3.2 Selection

The qualitative nature of the study lends itself towards an information-rich sample that provided valuable insights to better understand the research questions. Consequently, a non-probability, a purposive sampling technique was used in line with literature best practice (Patton, 2002). This approach allowed the researcher to use his judgement

to choose an appropriate sample that would add value to the research questions (Saunders & Lewis, 2012). De Vos *et al*. (2016) argue that in purposive sampling, participants and sites are selected because they can purposefully inform an understanding of the research problem of the study.

A total of 31 participants (see Annexure E) were interviewed, 25 were from CoT and the other six were external expert participants. The 25 participants from CoT were broken down as follows:

- 8 were from the Innovation Unit
- 8 were from Agriculture and Rural Development Division
- 5 were from Waste Management Division and
- 4 were from Support Services Unit.

The six external expert participants were broken down as follows:

- 2 were from DST
- 1 was from Salga
- 1 was from CPSI
- 1 was from IERI and
- 1 was from the Innovation Hub.

The selection of the participants from the COT Innovation Unit was based on the role that they play in coordinating innovation in and across the CoT. The eight interviews represent almost all technical staff compliment of the unit.

The researcher conducted and completed all 31 interviews covering all the main themes in the interview protocol, which was also guided by literature review. The researcher was assisted by the scribe to take notes of the most of the 25 interviews within CoT. The interview scheduling was dependent on the timing and availability of participants.

3.4 DATA COLLECTION

3.4.1 Data collection process

Four sources of data were used in the collection of data, namely: 1) interviews with eight participants from the Innovation Unit, 2) interviews with selected 17 participants from three operating units, 3) interviews with selected six expert participants from five external organisations and 4) review of CoT Innovation strategic documents.

For the first source of data, a series of interviews was conducted with participants from the Innovation Unit responsible for coordination of innovation in the municipality to gain perspectives on the phenomena. The interviews were conducted at the respondents' offices at Tshwane House. This was convenient option for the respondents hence they felt more at ease because they were familiar with the location. After individual respondents gave consent and signed the consent form (see Annexure D), interviews were conducted and written notes were taken to record the respondents' responses. Participants were be briefed about the anonymity of the interviews prior to the actual interviews. A scribe supported the researcher to write down responses. For purposes of confidentiality and ethical reasons, the original interview scripts will be kept strictly private, safe and only used for academic purposes.

For the second source of data, a series of interviews was conducted with operating units (Agriculture and Rural Development Division, Waste Management Division and Support Services Unit) managers and staff as potential end-users, initiators, implementers of innovation in their respective units to gain perspectives on the phenomena. The same process was followed as on the first source of data as explained above.

For the third source of data, a series of interviews was conducted with external expert participants from government, government agencies and academic institutions that are key actors in the innovation system in the region to gain their perspectives on the phenomenon. The external expert participants were chosen based on being considered experts on innovation. The interviews were conducted at the respondents' offices except for one interview which happened at nearby restaurant. This was a

convenient option for the respondents; hence, they felt more at ease because they were familiar with the location. After each respondent gave consent and signed the consent form, interviews were conducted and written notes were taken to record the respondents' responses. For purposes of confidentiality and ethical reasons, the original interview scripts shall be kept strictly private, safe and only used for academic purposes.

The forth source of data was based on a review of CoT Innovation Strategic Documents to identify the strategic focus and emerging themes.

Data were collected through the following two methods: semi-structured interviews and secondary data review.

3.4.2 Primary Data: Semi-Structured Interviews

Interviews are defined as a process by which a researcher and participants engage in a conversation focused on questions related to a research study (De Marrais, 2004; Sekwele, 2015). According to Merriam (2009), conducting interviews is necessary to assess behaviour, feelings and how people interpret the world around them. The primary data collection method used for this study was semi-structured in-depth interviews with an interview schedule to gain insights into drivers and barriers of innovation in CoT. The choice of this data collection approach was informed by the fact that this approach would prompt a rich discussion that provided participants with an opportunity to clarify statements, build on their responses and increase the depth of their insights and opinions (Bloomberg & Volpe, 2012; Mudaly, 2016).

Merriam (2009) argues that a semi-structured interview consists of questions that are flexibly worded with a mixture of more or less structured questions. A list of questions or issues to be explored guided the semi-structured, face-to-face in-depth interviews. This approach allowed researcher to respond to the situation at hand, to the emerging worldview of the respondent and to new ideas on the topic. The reason for conducting in-depth semi-structured interviews was to find out the views, interpretations, understanding, and motivations of respondents pertaining the subject matter under study in order to elicit the necessary information to answer the research questions.

Sanders *et al.* (2009) assert that a semi-structured interview is believed to yield knowledge that is high quality and more systematic than haphazard, more objective than partial and comprehensive instead of selective as well as standardised and methodical. Complimentary data will be generated through other data generating and collecting techniques such as participant observation and literature review.

3.4.3 Research instrument: Interview schedule

On average, the interviews took approximately 54 minutes each. Standard interview schedule was used as a template and a guide for each respondent, the questions had similar wording and were asked in the same order for consistency reasons. The researcher recorded the proceedings (what he heard, observed, experienced and thought) through notes taking, followed up and probed more deeply into issues to be able to draw (Merriam, 2009). The researcher was assisted with notes taking by a scriber. It should be noted that the above-mentioned techniques overlaps and complement each other in many ways.

The interview schedule consists of demographic and technical questions. The technical questions were categorised into specific themes to enable the researcher to interrogate and find answers to the research questions. The objective of the in-depth interview process was to collect data by eliciting the perceptions, opinions and understanding of the participants on the following issues:

- How aware are stakeholders of the CoT innovation strategic intent (innovation strategy)?
- What are stakeholder's perception about the culture of innovation in CoT municipality?
- What are stakeholder's perception about the key innovation drivers and barriers in CoT?
- What are stakeholder's perception about the importance of collaboration in innovation?

The researcher conducted all interviews in person and was supported by a scriber for interviews at COT. Interviews with external experts were done at participants places of work. No tape recording was done in order to try and make the conversations as natural as possible.

3.4.4 Secondary Data: Policy document review

According to Saunders *et al.* (2009), secondary data includes both qualitative and quantitative data and they are used principally in both descriptive and explanatory research. In this study, the CoT Innovation Strategy, IDP and Innovation Capability Index documents were secondary data sources. According to Merriam (2009), documents are a ready-made source of data that existed prior to the research at hand and are accessible and resourceful to the investigator. Saunders *et al.* (2009) assert that secondary data collection can be used to help the researcher to triangulate findings based on other data, such as written documents and primary data collected through observation, interviews or questionnaires. This method supported the researcher in reviewing data that already existed and relevant in addressing the research question. Therefore, documentary analysis was used to improve the rigour of the study.

3.5 DATA CODING AND ANALYSIS

This section discusses the techniques and approach that were used to analyse data. The qualitative approach used in this study is an iterative process that required analysis prior, during and post the interview process (Miles & Huberman, 1994). This approach demands meticulous arrangement of the various aspects of the data collection, coding and analysis. Interviews were recorded by means of notes taking by the researcher and the scribe during the interviews and then codified and analysed. Copies of the notes were duplicated as a backup for safe keeping reasons.

When analysing the data, the researcher was cognisant of the fact that while dissecting the data was a meaningful exercise, caution had to be exercised to ensure that the relationship of the various parts of the data remained intact (Miles &

Huberman, 1994). Data coding may require continuous enhancement and refinement of the emerging themes and to ensure that such emerging themes that may not have been part of the initial thinking are not left out of the findings (Mudaly, 2016). According to Patton (2002) and De Vos *et al*. (2016), qualitative data analysis transforms data into findings. It involves reducing the volume of raw information, sifting significance from trivia, identifying significant patterns, and constructing a framework for communicating the essence of what the data reveal. Data analysis is the process of bringing order, structure and meaning to the mass of collected data. “Broadly conceived this is the activity of making sense of, interpreting and theorising data” (Schwandt, 2007). The method of analysis for this study is the qualitative approach of thematic analysis.

3.5.1 Thematic analysis of interview data

According to Jugder (2016), thematic analysis is the most widely used qualitative approach to analysing interviews. The conceptual framework of the thematic analysis is built upon the theoretical positions of Braun and Clarke (2006). Accordingly, thematic analysis is a method used to “identify, analyse and report patterns or themes out of collated data. It is one of a cluster of methods that focus on identifying patterned meaning across a dataset. It emphasises pinpointing, examining and recording patterns or themes within data. Themes are patterns across datasets that are important to the description of a phenomenon and are associated to a specific research question.

The reason why thematic analysis approach was used as an analysis tool is because it is rigorous and can produce insightful analysis that answers particular research questions (Braun & Clarke, 2006). According to Ibrahim (2012), good qualitative research needs to be able to draw interpretations and be consistent with the data collected. Thematic analysis is therefore capable to detect and identify factors or variables that influence any issue generated by the participants.

Data extracted from interviews was analysed to determine patterns based on the number of times specific issues were mentioned from acquired data. Themes were analysed to identify commonalities and the relationships between them. Individual

responses were analysed for similarities and differences to develop an understanding and explanation of data.

3.5.2 Documentary analysis

Secondary data was obtained from the CoT Innovation Unit and subsequently reviewed. The purpose of analysing the documents was to learn more about the CoT innovation processes. Furthermore, the documents were used for cross-analysis to search for common patterns across them (Sekwele, 2015). Data found in documents were used to verify data collected from in-depth interviews and thereby generate an understanding of, as well as providing explanations beyond the individual contexts. All data were treated as confidential.

3.6 LIMITATION OF THE STUDY

There are a number of potential limitations for any study. However, understanding such potential limitations may assist in reducing their effects on the research findings and interpretation. Most limitations are methodological in nature and researcher biasness will be discussed in the next item.

3.6.1 Researcher biasness

The researcher's current position at CoT as Divisional Head of Environmental Management and Parks may negatively or positively influence interactions with CoT participants. It was for this reason that none of the participants reports directly to the researcher. Only the views of CoT Innovation Unit, three operating units and five external organisations were considered in this study. Using a qualitative design may lead to the interpretation of the results being influenced by the researcher's bias and prior expectations. Such bias should be considered when assessing the usefulness of the study (De Vos *et al*., 2016). This limitation was mitigated by employing different techniques of data collection and analysis such as literature review, participant-observation, semi-structured interviews, and document analysis.

3.7 ETHICAL CONSIDERATIONS

Research ethics refers to the appropriateness of the researchers' behaviour in relation to the rights of those who become the subject of a research project or who are affected by it (Saunders *et al*., 2009). In this study, the researcher thrived to maintain ethical standards as per the Wits Business School (WBS)'s code of ethics. Prior to starting with this study, the researcher applied for ethical clearance and was granted by WBS Ethics Committee. The researcher's ethical clearance number is: WBS/IS1973648/349.

Once ethical clearance was obtained, participants were contacted and requested to participate in the study prior to conducting interviews. Participants were fully informed of the voluntary nature and anonymity of the study. Furthermore, participants were encouraged to raise any concern they may have prior or during the interviews. Participants were informed about their rights to refuse or withdraw their participation at any stage of the study. More importantly, all participants signed consent forms.

Throughout the study, the researcher maintained a high level of rigour, integrity, sensitivity, and confidentiality of information. This is in line with the view of Merriam (2009) that the researcher should ensure that careful attention is paid to the way in which data are collected, analysed and interpreted including the way in which the findings are presented. The researcher adhered to the research procedures faithfully to ensure that trustworthy findings are presented. Permission to conduct interviews was granted by CoT Innovation Unit and respective external organisations. The research findings were only discussed with the researcher's supervisor.

Given that qualitative research involves some degree of subjectivity on the part of the researcher, the information gathered through the interview process would be dependent largely on the researcher's own experience in gathering relevant data. This may affect the research findings.

3.8 RELIABILITY AND VALIDITY

The quality and the ability of the research to stand up to outside scrutiny and the extent to which the research can be relied upon is largely dependent on the reliability and validity of the research (Merriam, 2009).

3.8.1 Reliability

Reliability refers to the extent to which data collection techniques yield the consistent findings made by other researchers (Sanders *et al*., 2009). Merriam (2009) supports this point when stating that reliability is the extent to which research findings can be replicated. This means that if the study was to be repeated by a different researcher conducting the same research, the research should yield the same results or very similar ones (Sekwele, 2015). For any study to make a meaningful contribution to academic literature, consideration should be given to the quality of the research design and approach at all stages of the research. Saunders and Lewis (2012) cited by Mudaly (2016) explain that reliability can be assured where the data can be replicated with consistent findings in accordance with the data collection methods employed. However, in qualitative research, exact replication of results is rather improbable, given the complexity of the topic and the particular contexts within which the interviews are conducted. To ensure acceptable levels of reliability during the research process, the researcher conducted all the interviews in person. The researcher sought to maintain consistency by generating a standard interview schedule and asking the same interview questions across the board.

3.8.2 Validity

Validity relates to the ability of the study to get an understanding of participant's knowledge and opinion on the topic (Mudaly, 2016). Semi-structured interviews have the potential to attain high levels of validity because they allow for clarifying questions and a deeper exploration of the topic with the participant (Saunders & Lewis, 2012; Mudaly, 2016). The researcher thrived to increase validity by being aware of sources of biasness and by using more than one technique to collect and analyse data. To enhance internal validity and ensure that the findings of the research are as close to reality as possible, the researcher applied the concept of triangulation.

3.8.3 Triangulation

Triangulation is defined as the use of different data collection techniques within one study in order to help ensure that the data tell you what you think it should be telling you (Saunders *et al*., 2009). According to Yin (1994), the main rationale for using multiple sources of data is to achieve data triangulation. Findings in a case study are likely to be more convincing and accurate if it is based on several different sources of data. Saunders et al., (2009) also share this view when arguing that the triangulation technique provides the researcher with an opportunity to observe and analyse a phenomenon that few individuals have considered before. In this study, as part of the triangulation strategy, interviews were conducted not only with eight CoT Innovation Unit participants but also with 17 participants from three other CoT operating units and six experts from five external organisations as well as documents review. The study sought to validate and crosscheck data collected through interviews with different CoT participants, external experts and review of secondary data. This technique improved validation and clarify many assumptions. Furthermore, this technique increased the credibility of the study's findings. The data collected using semi-structured interviews and secondary data was a valuable approach of triangulating qualitative data collected.

3.9 SUMMARY

This chapter outlined the research methodology that was employed in this study. A qualitative research methodology was used and reasons for selecting this approach were highlighted. The primary data sources in the study were participants from CoT Innovation Unit, three other operating units and external experts. Data were gathered primarily through the semi-structured interview, supported by other techniques such as secondary data analysis and participant observation. A purposive and not random sampling was used to identify primary data source. The research design considered the quality, depth, validity, and reliability of the data. Attempts were made to minimise potential methodological limitations of the study. Ethical considerations were prioritised in this study and all aspects of ethics were adhered to accordingly. Participants were informed of their rights and the voluntary nature of the study.

CHAPTER 4 : PRESENTATION OF DATA AND FINDINGS

This chapter presents the research data gathered through in-depth semi-structured interviews with staff from CoT Innovation Unit, three other operating units, external expert participants, and secondary data review. The focus was on trying to understand the participants' views on innovation drivers and barriers in local government, particularly CoT Metropolitan Municipality. This chapter also presents the relevant findings and the themes that emerged during this process.

4.1 CITY OF TSHWANE OVERVIEW

"The City of Tshwane is classified as a Category A municipality by the Municipal Demarcation Board in terms of Section 4 of the Local Government Municipal Structures Act, 1998 (Act 117 of 1998). The municipality was established in 2000 by integrating municipalities and councils that previously served Greater Pretoria Region and surrounding areas. The boundary of the city was further amended in 2008 through a proclamation in the Government Gazette that incorporated the former Metshweding District Municipality into the borders of the City of Tshwane (see Figure 4.1). This made CoT the third-largest urban city in the world in terms of land area, after New York and Tokyo" (CoT IDP, 2018/19).

Not only is the city an administrative seat of government, it also hosts to a high number of foreign embassies, tertiary and research institutions. This puts the city in an opportune situation to only to exploit huge procurement but also to play a critical role in the innovation system in the region.

According to 2018/19 CoT IDP (2018), "the total population in Gauteng for 2017 is estimated at 13,7 million according to the HIS regional explorer database, which is approximately 24% of South Africa's population (56,5 million). This makes Gauteng the most populous province in the country. The Cities of Johannesburg and Ekurhuleni accommodate the largest proportion of Gauteng's population, accounting for approximately 37% and 26% respectively. Tshwane makes up more than three million of the total Gauteng population, accounting for approximately 24% of the province's

population. Given high density of tertiary and research institutions located in the CoT area, it was not surprising that in 2017 approximately 59% of Tshwane's population was younger than 35. The CoT is also the second largest in Gauteng in terms of gross value added (GVA) by region, with an estimated GVA-R (constant prices) of R281 billion in 2017. CoT contributed 29% to the provincial economy and 10% of South Africa's economic output in 2017. Key economic activities includes automotive and components sector, aerospace and defence technologies, agro-processing and agriculture and R&D sector. However, the CoT is facing high levels of unemployment, worsening inequality and abject poverty".

The new Tshwane Vision 2030 is:

"A prosperous capital city through fairness, freedom and opportunity"

The strategic development pillars are:

- "A City that facilitates economic growth and job creation"
- "A City that cares for residents and promotes inclusivity"
- "A City that delivers excellent services and protects the environment"
- "A City that keeps residents safe"
- "A City that is open, honest and responsive" (CoT IDP, 2018)

The mandate of local government is derived from Section 152 (1) of the Constitution of the Republic of South Africa, 1996 and is stated as follows:

- "To provide democratic and accountable government for local communities";
- "To ensure the provision of services to communities in a sustainable manner";
- "To promote social and economic development";
- "To promote a safe and healthy environment"; and
- "To encourage the involvement of communities and community organisations in the matters of local government" (Republic of South Africa, 1996).

Municipalities are established in terms of the Local Government Structures Act No 56 of 1998 and are governed by Local Government Systems Act No 67 of 1998 and the Municipal Finance Management Act No 78 of 1998 among many legislations.

The following figure represents City of Tshwane in context.

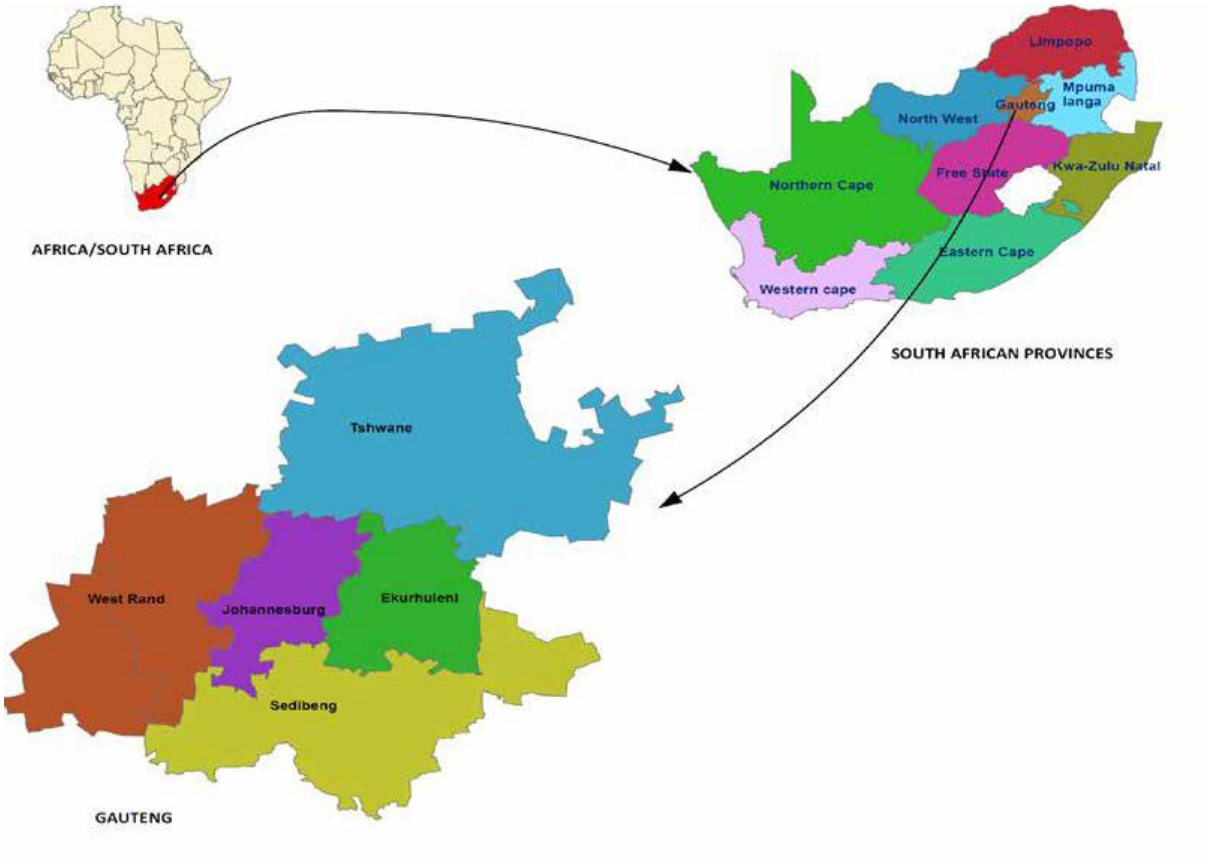


Figure 4.1: City of Tshwane in context (Source: CoT IDP, 2018)

4.1.1 Brief Introduction of CoT Innovation Unit

According to the CoT website www.tshwane.gov.za, “the City of Tshwane aims to transition to a knowledge-based economy that leverages innovation in its diverse forms to improve the quality of life of its citizens and support democratic processes. To achieve this transition and in acknowledging that innovation is a core competency of the 21st century for competitiveness and sustainability in a global economy, in 2012 the CoT established the Research and Innovation (R&I) Department with a specific mandate” – as expressed in the vision and mission statement below:

Vision

"To be a catalyst for collaborative research and innovation aimed at enhancing service delivery and socio-economic development, making the City of Tshwane a world-class knowledge capital"

Mission

"To provide platforms for collaboration, facilitation and coordination in research, innovation, quality and knowledge management initiatives and ensuring that services are delivered in an efficient and effective manner; thus ensuring that citizens of Tshwane enjoy a high quality of life"

The CoT Innovation Unit's strategic objectives are:

- "To improve the efficiency and effectiveness of service delivery through the Quality Management System";
- "To strategically redesign and optimise end-to-end value chain processes to improve service delivery to customers, suppliers and citizens";
- "To drive and stimulate innovation through using targeted innovation programmes to establish new value chains, products and services";
- "To advance research and development through collaborative research partnerships to support long-term planning processes"; and
- "To institutionalise knowledge management practices and enhance innovation capacity"

"The Innovation Unit (Department) consisted of two divisions: Integrated Innovation Services and Integrated Research Services and had staff compliment of 12 people headed by a Strategic Executive Director or Head of Department. Currently, the Innovation Unit is restructured and reduced to a division which is headed by a Divisional Head with a staff compliment of 12 people including four support staff".

4.1.2 Brief profile of participants and process followed

This section presents the brief profile of the participants who were selected for the study. Face-to-face semi-structured interviews were conducted with participants, all of whom are somehow involved in PSI. After signing the consent form, participants were given an opportunity to provide information on their general profile such as years of work experience in general and in the innovation related experience in particular, qualifications and their current position.

A total of 31 face-to-face semi-structured interviews were conducted with participants grouped into three categories or sources of data, namely:

- Interviews with 8 participants from the Innovation Unit;
- Interviews with selected 17 participants from three other operating units (Agriculture and Rural Development Division, Waste Management Division and Support Services Unit; and
- Interviews with selected six expert participants from five external organisations (DST, Salga, CPSI, IERI of TUT and The Innovation Hub).

Almost all participants were highly qualified and have many years of experience. Therefore, the insights and views the participants shared were not only relevant but also insightful to the topic. This led to the collection of rich data.

Prior the start of the interviews, participants confirmed their willingness to voluntarily participate and they also signed the consent form. All proceedings were recorded by means of notes taking and interviews took an average of 54 minutes per interview. All interviews but one was conducted at participant's offices for convenience reasons.

4.2 PRESENTATION OF RESEARCH FINDINGS

This section presents both secondary data review and the findings of the face-to-face interviews conducted with staff members of CoT Innovation Unit, select staff members of three other operating units and external experts. The semi-structured interviews were guided by the interview schedule. Each interview covered the themes that were being investigated and the findings were therefore organised per theme. For each research question, a description of the finding is presented followed by an illustration with a bar chart.

4.2.1 Primary Data Research Findings: Innovation strategic intent

The research question sought to uncover the views of the participants on the importance of a clear strategic intent on innovation. Participants were asked to describe their understanding of CoT Innovation Strategy and its pillars or focus areas. All participants from the CoT Innovation Unit are well versed with the CoT Innovation Strategy and its pillars. They all value the importance of clear strategic intent and bold leadership in setting the tone for innovation in the municipality. They also indicated that the strategy is currently under review after it had run its five-year term.

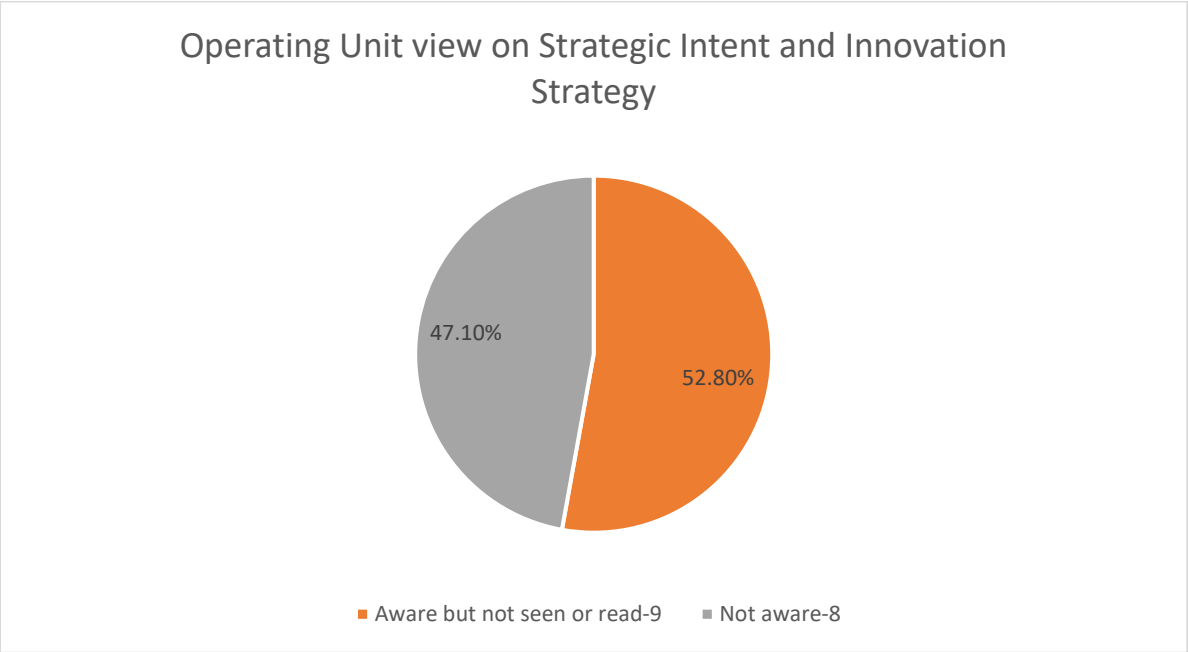


Figure 4.1: Operating Unit view on innovation strategy

Interestingly, all participants from the operating units are not well versed with the innovation strategy. 47% of participants are unaware of the strategy while 53% are at least aware but have neither seen nor read the CoT Innovation Strategy. At the same time, 83% of expert participants commended the CoT for driving innovation through establishing structures and platforms for innovation. However, most of the expert participants are of the view that the CoT municipality has lost its “leading status” on pioneering innovation in local government in the recent past. One expert participant said that “CoT used to be a leader in local government innovation but lately it seems to be lagging behind other metros such as Cape Town and eThekwini”.

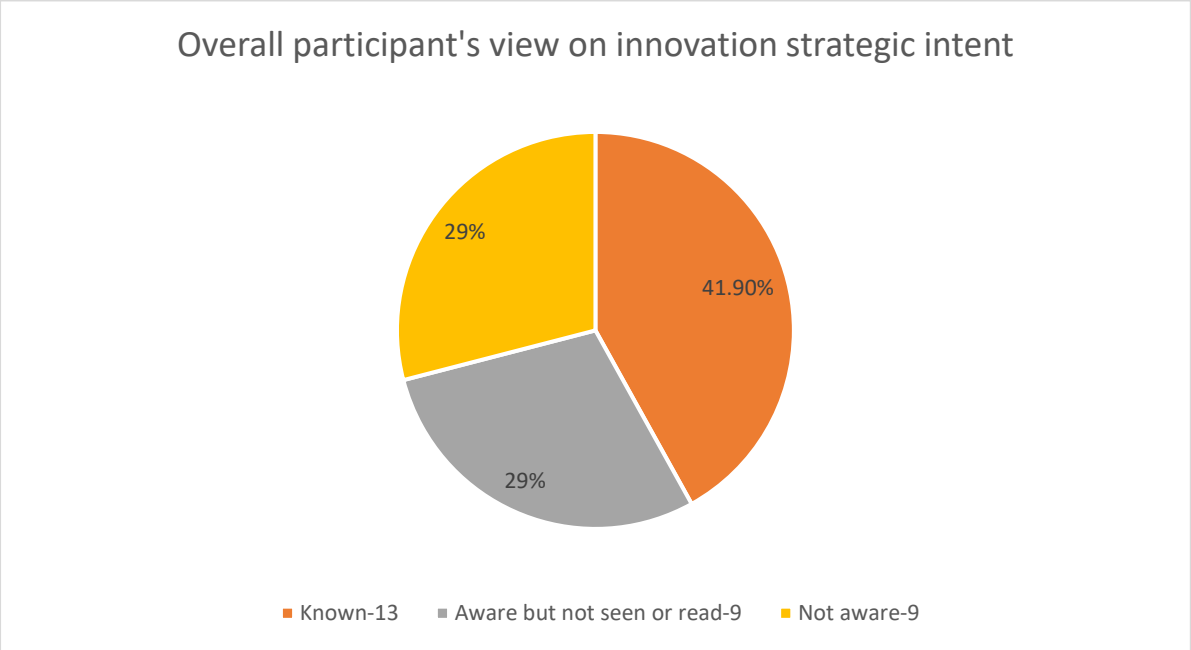


Figure 4.2: Overall participant’s view on innovation strategic intent

Overall, 71% of participants were well versed or at least aware of the CoT Innovation Strategy while 29% of participants were not aware of the CoT Innovation Strategy. All participants from the CoT Innovation Unit and the external expert participants are well versed with the CoT Innovation Strategy and its pillars. 47% of participants from the operating units are not aware of the innovation strategy at all and that 53% is aware but have seen or read the strategy.

4.2.2 Culture of innovation

Participants were asked to describe their understanding of the culture of innovation in the CoT municipality. The most common expressions used to describe culture of innovation were “that it is non-existent” or “poor culture” and “infancy stage”.

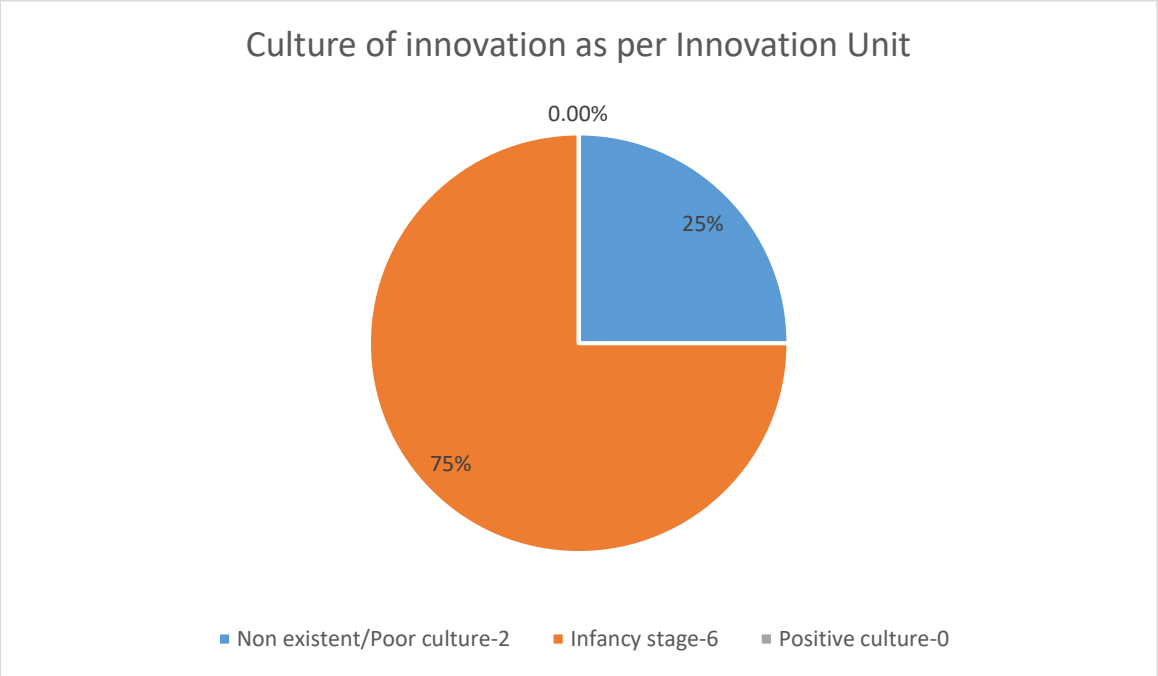


Figure 4.3: Innovation Unit views on culture of innovation

The findings indicated that 25% of the participants from the Innovation Unit believe that the culture of innovation is non-existent or poor. Conversely, 75% of the participants believe that the culture of innovation is at its infancy stage and 0% of the participants classified it as positive culture.

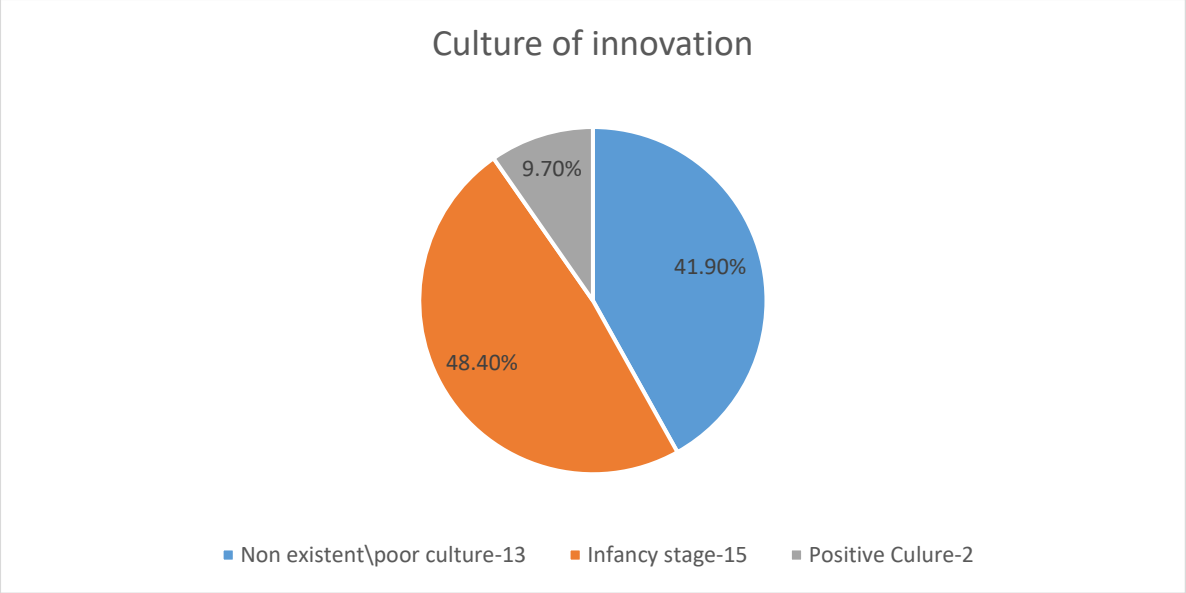


Figure 4.4: Overall participants view on culture of innovation

The findings indicated 42% of participants are of the view that the culture of innovation is non-existent or poor and 48% of participants believe that the culture of innovation is at its infancy stage with only 10% indicating that the culture of innovation is positive. Overall, 90% of participants describe innovation culture at CoT municipality as non-existent or poor or infancy stage. This finding is consistent with the findings of the repeated Innovation Capability Index in 2014, which identified innovation culture and people as the weakest aspect in the municipality although it improved a bit in the 2016 and again regressed in the 2018 index.

One participant indicated that *"Innovation culture in the city as not yet there. There is no culture of innovation. It is lacking and as yet to be mainstreamed across the city"*. Another participant reported that *"Innovation culture as not visible"* while another participant indicated that *"the culture of innovation is that of working in silos characterised by lack of communication".* However, one participant indicated that *"The culture of innovation is improving although there is a room for improvement."*

4.2.3 Innovation drivers and barriers in CoT

This section deals with the participants' understanding of the key drivers and barriers of innovation in CoT. Participants were asked their perception about the key innovation

drivers and barriers in CoT including the perception of their stakeholders on the same issue. The tally is based on the frequency a particular driver and or barrier is mentioned by participants. All participants responded to the same questions.

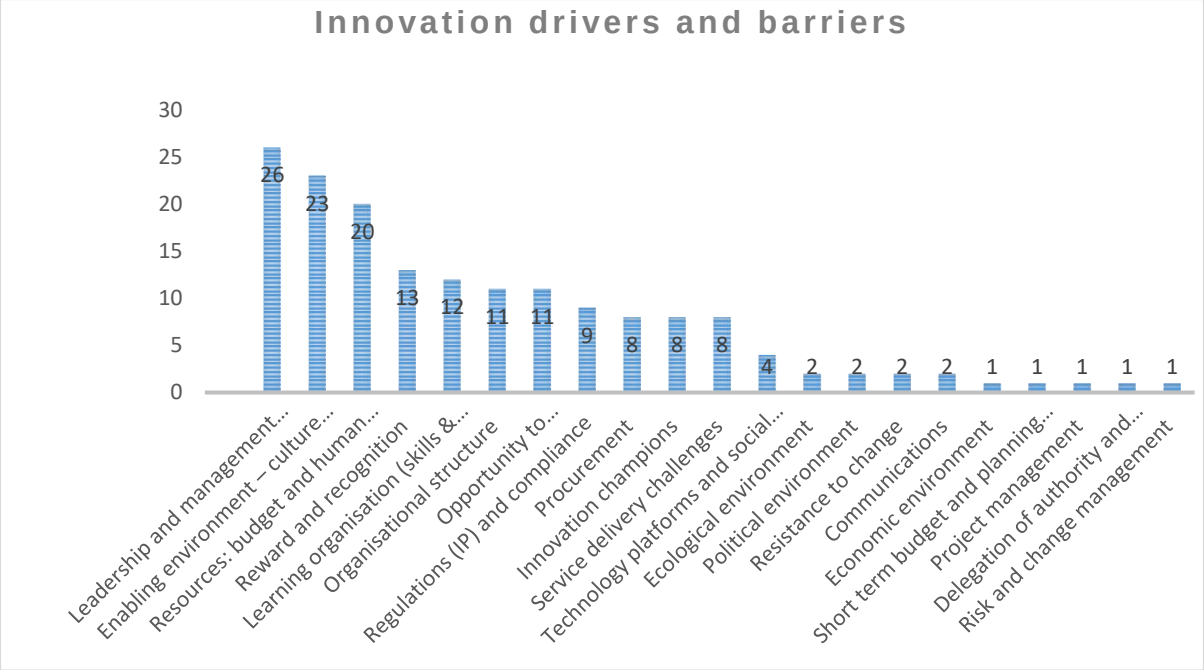


Figure 4.5: Innovation drivers and barriers

Leadership commitment and management support

The findings indicated that the most important innovation driver and barrier is leadership commitment and management commitment support. The findings showed that 84% of participants mentioned leadership commitment and management support as the most critical drivers or barriers for innovation. Leadership is considered the most important innovation driver in CoT. This finding is consistent with most of the literature on the matter wherein leadership and management commitment and support are identified as critical for success or failure of innovation. All participants from the Innovation Unit and external experts identified leadership and management commitment and support as absolutely important determinant of innovation.

Most participants seemed to agree that "*leadership and top management support and buy-in are critical for successful implementation of innovation*".

Culture of innovation

The findings indicated that the second most common factor is culture of innovation. 74% of participants mentioned poor culture of innovation (risk averse culture) as one of the most critical barrier for innovation.

Resources: Budget and human capital

The findings indicated that the third most important factor is lack of resources, both budget and human capital. 65% of participants mentioned that the resources, both budget and human capital resources is critical for success or failure of innovation. This finding is also in line with most of the literature which identified availability or non-availability of resources both budget and human resources as critical for success or failure of innovation. Most participants from the Innovation Unit and external experts indicated that both lack and presence of resources are absolutely important determinants of successful or failed innovation.

Reward and recognition (negative incentive structure)

The findings indicated that the forth most common factor is poor reward and recognition or negative incentive structure. The findings indicated that 42% of participants mentioned poor reward and recognition as of the key barriers for innovation. This finding is also consistent with most of the literature where negative incentives or poor reward system was identified as important failed innovation in public sector innovation. Some participants from the Innovation Unit and external experts identified reward and recognition as important determinants of innovation.

Learning organisations (interactive learning)

The findings indicated that ability to learn is an important innovation driver for any organisation. The findings indicated that 39% of participants identified ability to learn as an organisation as an important driver for innovation. This finding is consistent with the literature on the matter wherein learning organisations are more likely to succeed

in their innovation journey and learn from their mistakes or failed projects. Some participants from the Innovation Unit and external experts identified capability to learn, unlearn and relearn as an important factor for successful or failure of innovation.

Organisational structure (bureaucratic and institutionalised monopolies)

The findings indicated that the organisational structure is an important innovation barrier. 36% of participants mentioned that the way an organisation is structured influence how it innovates. CoT like most public sector organisations has bureaucratic structure less suitable for innovation. Again, this finding is consistent with what the literature review showed that organisational structure is crucial for success or failure of innovation.

Opportunity to innovate and experiment

The findings indicated that an opportunity to innovate and experiment is an important innovation driver for innovation in local government. The findings indicated that 36% of participants mentioned opportunity to innovate and experiment as an important factor for driving innovation.

Regulation and compliance requirements

The findings indicated that regulation and compliance requirements as an innovation barriers. 29% per cent of participants mentioned regulation and compliance requirements as one of the barriers for innovation. This finding is consistent with most of the literature on the matter wherein regulation and compliance requirements as critical for success or failure of innovation.

Procurement, innovation champion and services delivery challenges

The findings indicated that procurement, innovation champion and delivery challenges are an important innovation drivers and barriers. 26% of participants identified procurement as barrier while innovation champion and service delivery challenges as innovation drivers. This finding is consistent with literature review that also identified

procurement, innovation champion and delivery challenges as drivers and barriers of innovation in local government.

Technology platforms and social media

The findings indicated that technology platforms and social media are important innovation drivers. 13% of participants mentioned technology platforms and social media as some of the critical drivers for innovation. This finding is also consistent with literature review that also identified technology platforms and social media as important drivers of innovation.

4.2.4 Interventions

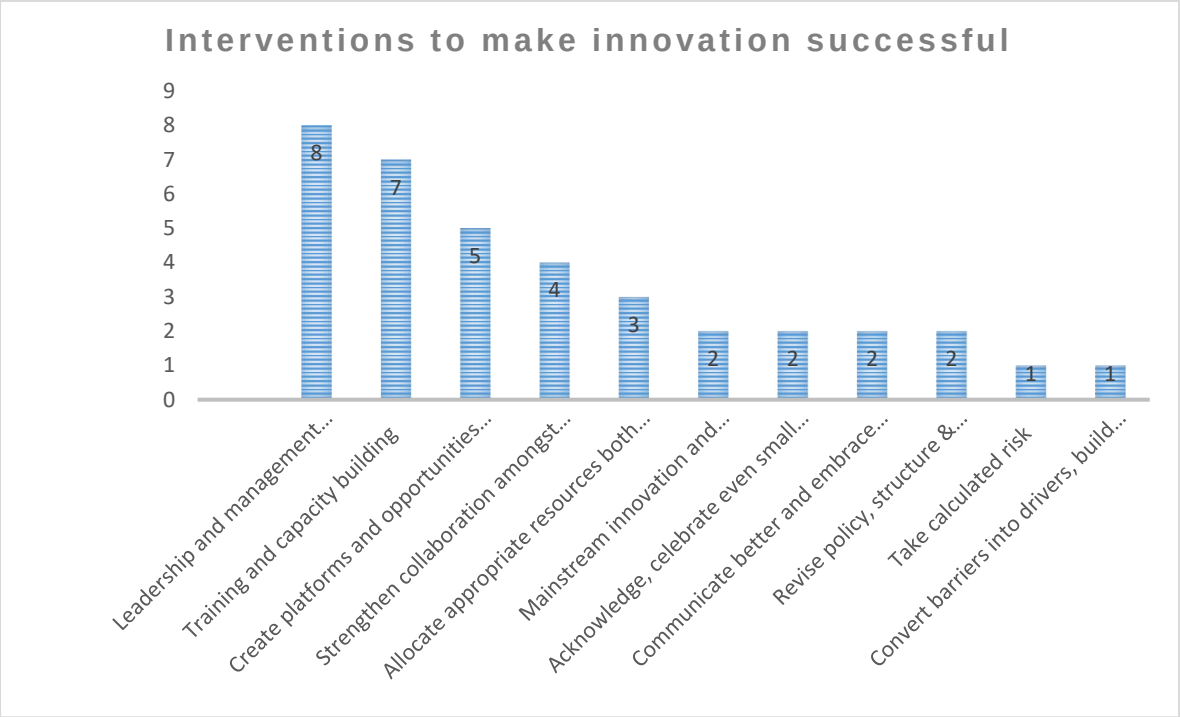


Figure 4.6: Interventions to make innovation successful

When asked what can be done to improve innovation success, overall participants identified 11 interventions deemed necessary for innovation success. Of the 11 interventions identified, 5 had more than three participants indicating that they are important to make innovation successful. The 5 interventions are leadership commitment and management support, training and capacity building, creating

platforms and opportunity to innovate, strengthening collaboration and allocation of appropriate resources. Other interventions mentioned include to mainstream innovation, acknowledging small victories, better communication, revising strategies, taking calculated risks and converting barriers into drivers.

Most participants suggest that “the first point of intervention is at the leadership level, which should lead innovation in the city and ensure top management buy-in and support, resource allocation and cultivate a culture of innovation”.

4.2.5 Collaboration and linkages

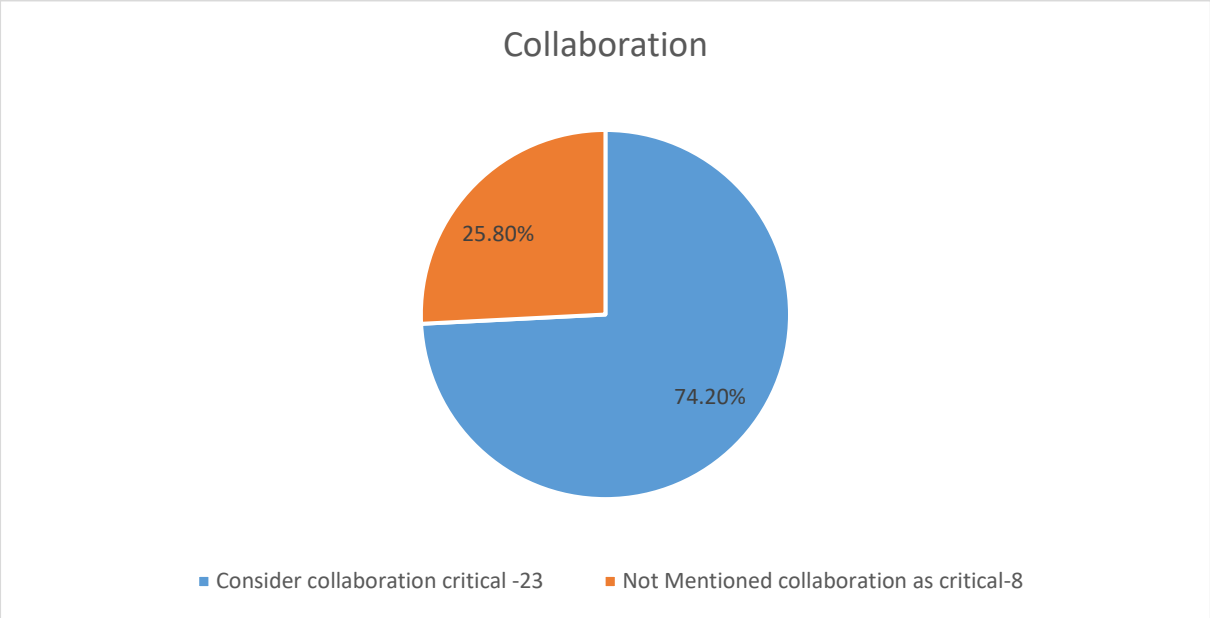


Figure 4.7: Collaboration

The findings indicated that the most of participants consider collaboration as an important factor for successful innovation. 74% of participants believed that collaboration is important for innovation. This finding is consistent with most of the literature that have identified collaboration as critical for success or failure of innovation. All expert participants consider collaboration critical for successful innovation. One expert participant indicated that *“innovation happens through networks” and puts premium value on effective collaboration”*.

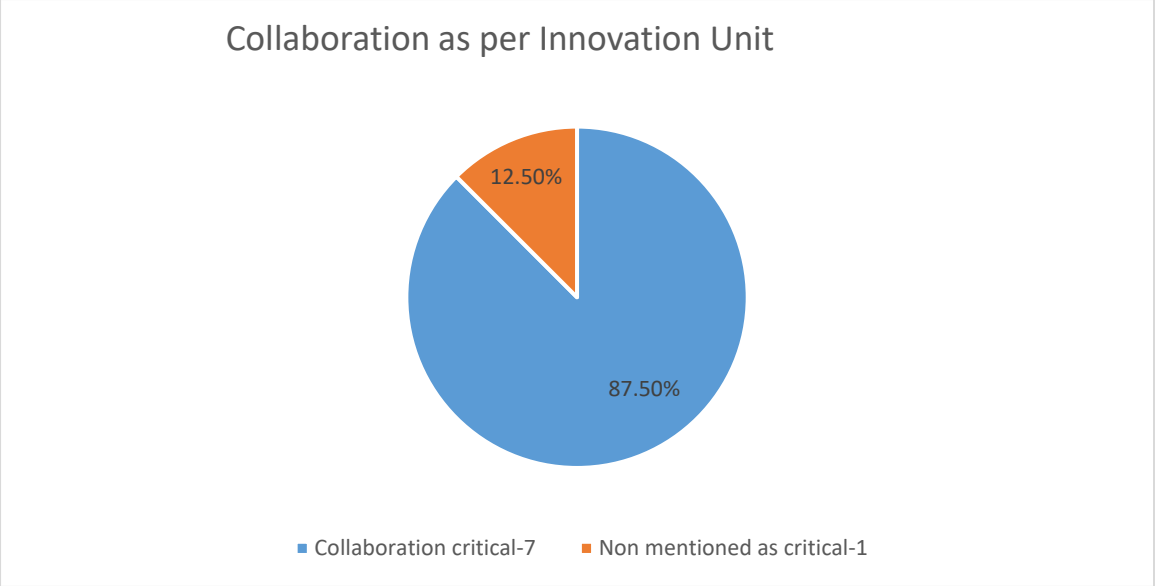


Figure 4.8: Collaboration as per Innovation Unit

With regards to the Innovation Unit's view of collaboration, the findings indicated that 87.5% of participants consider collaboration critical for successful innovation.

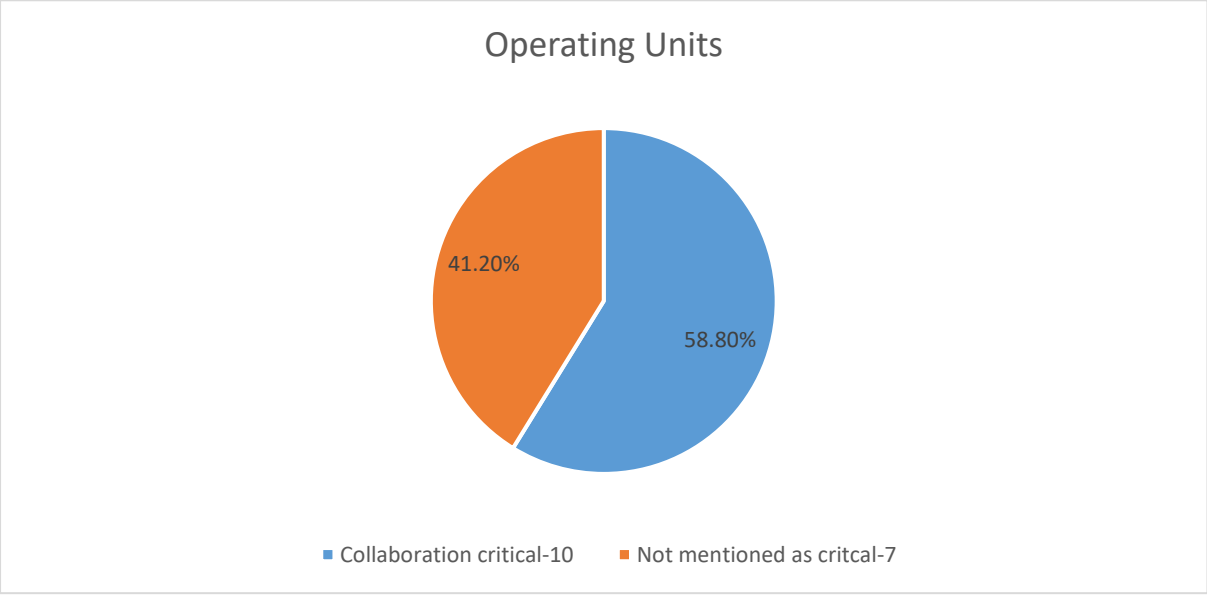


Figure 4.9: Collaboration as per Operating Units

With regards to the other operating unit's view of collaboration, the findings indicated that 59% of participants consider collaboration critical for successful innovation while 41% of participants did not mention collaboration as critical.

4.3 SUMMARY

This chapter presented the findings of the study. The interviews and secondary data review produced interesting results that mainly support the literature on innovation drivers and barriers in local government sphere. The main finding from the secondary data review of CoT Innovation Documents was that CoT has innovation strategy in place and was considered a leader in local government innovation although it seems to have lost that position of late. The Innovation Capability Index Review identified innovation strategic intent as a strong point while innovation culture was identified as the weakest point for CoT.

Majority of participants indicated that innovation strategy, culture of innovation, key innovation drivers and barriers as well as collaboration as critical factors for successful innovation in CoT. Of all innovation drivers and barriers identified, leadership commitment and management support, interactive learning innovation champion and service delivery challenges were considered important drivers while risk averse culture or poor culture of innovation, lack of resources, poor reward and recognition or negative incentive structure are considered important barriers. On the other hand, participants indicated that the most effective intervention should be at leadership level because leadership cut across and affects all other factors.

CHAPTER 5 : ANALYSIS OF THE RESEARCH FINDINGS

5.1 INTRODUCTION

This chapter focuses on the analysis and synthesis of the data presented in Chapter 4 as well the insights and information gained through the literature reviewed in Chapter 2. The analysis focuses on four key areas, namely: innovation strategy, culture of innovation, innovation drivers and barriers and collaboration. The research findings will be compared and contrasted with the reviewed literature to assist in answering the main research questions of this study. This study analysed a combination of primary data collected through face-to-face semi-structured interviews and secondary data.

As this field of research is still developing (Wirtz *et al.,* 2015), this study sought to add to the existing literature on the concept of regional systems of innovation and public sector innovation theories to frame the study to explore the deeper understanding innovation drivers and barriers in local government. The researcher was of the view that a better understanding of the public sector innovation concept would help municipalities in local government to think through the various elements involved in local government innovation. While the literature review revealed some obvious drivers and barriers of innovation, this study also endeavoured to explore the more nuanced issues of public sector innovation and the role played by innovation drivers and barriers in innovation in local government.

Accordingly, four themes emerged from the study and the resultant research findings are now discussed and analysed below.

5.2 ANALYSIS OF THE RESEARCH FINDINGS

5.2.1 What are stakeholders view about CoT innovation strategic intent (innovation strategy)? An analysis of findings on research question 1

Literature identifies innovation strategic intent as one key drivers of innovation in any organisation, without which innovation is unlikely to thrive. Innovation strategic intent is closely linked to leadership. Innovation strategic intent is the beginning of the innovation journey and is considered critical because it determines and influences all other factors such as management commitment, resource allocation, culture of innovation and reward and recognition.

While the majority of participants value the importance of innovation strategic intent and strong leadership to set the tone for innovation in the City, it is a worrying concern that all participants from operating units are either not aware of the innovation strategy or they are aware but have not seen nor read the strategy. It is interesting that majority of external expert participants commend CoT for driving innovation in local government, albeit with declining momentum in recent years while a key stakeholder like internal CoT operating units are unaware or are yet to see or read the innovation strategy. The CoT Innovation Unit and external experts finding consistent with the recent Innovation Capability Index Review which identified leadership and ambition as the strong point for CoT particularly in 2014 when it scored highest at 59%.

It would seem that CoT should ensure that other operating units are deliberately involved in the review of the innovation strategy so that they may actively participate in the review and the implementation of the revised strategy. Generally, the research finding is in line with the literature review, which identified innovation strategy as critical for providing a clear direction and galvanised the entire organisation on a common goal.

5.2.2 What are stakeholder perception about the culture of innovation in CoT? An analysis of findings on research question 2

Majority of participants are of the view that the culture of innovation is either non-existent or at its infancy stage, only a minority view innovation culture in the positive light. This finding is consistent with the Innovation Capability Index Review in 2014 which identified people and culture as the weakest link in the City. There is a risk averse culture which serve as a barrier for innovation in CoT. Literature identifies poor culture of innovation as an important innovation barrier. Culture of innovation is linked other factors such as organisational structure, individual behaviour, motivation and leadership, all of which are important aspects for creating an enabling climate in which employees function.

Literature has identified a culture of risk aversion as one of the key barriers to innovation in public sector which must be mitigated to create a conducive environment for innovation. Raipa and Giedraityte (2014) argues that the most important obligation for public governance is to create standards of services, to maintain continuity of decisions and to inform and account to the society as opposed to conducting experiments or trying new technologies. Unless innovation is part of the dominant logic in an organisation, its success may not be possible. Given that innovation culture is critical for successful innovation outcomes and that CoT has a poor innovation culture, it is prudent that CoT devise an intervention aimed at improving the culture of innovation in the organisation. This implies that the city should focus its efforts to improve the culture of innovation in order to increase the probability of successful and sustainable innovation outcomes and improved quality of life.

5.2.3 What are stakeholder perception about the key innovation drivers and barriers in CoT? Analysis of findings on research question 3

Literature underscores that the need for local government organisations to identify and manage both innovation drivers and barriers in order to create a conducive environment for successful innovation. While some authors listed separate lists of innovation drivers and innovation barriers the OECD (2017) argues that it is difficult to provide a definitive list of innovation drivers or barriers because a role a particular

factor plays in the innovation process can change as a function of context. What is some circumstances could be a driver of innovation might in others act as a barrier. It is difficult to isolate particular factors as driving or hindering any systemic innovation because as innovation drivers and barriers act within a dynamic, complex and closely interconnected context. Majority of the participants seemed to agree with the observation from literature review in that innovation drivers and barriers are complex and context specific and are embedded in the environment they operate. Each innovation driver or barrier may positively and or negatively influence innovation.

The study identified leadership as the most critical innovation driver which affect all other drivers and barriers. Other important innovation drivers includes interactive learning or organisational learning, opportunity to innovate, innovation champion, service delivery challenges and technological platforms and social media. With regards to barriers, a poor culture of innovation or a risk averse culture is the most critical barrier. Other barriers include lack of resources both financial and human capital, poor reward and recognition system or negative incentive structure, rigid organisational structure and regulation.

Leadership commitment and management support: The findings indicated that the most important innovation driver and barrier is leadership commitment and management support. Majority of participants mentioned leadership commitment and management support as one of the most critical innovation drivers or barriers. This finding is consistent with most of the literature on the matter wherein leadership commitment and management support was identified as critical for success or failure of innovation. All participants from the Innovation Unit and external experts identified leadership and management commitment and support as absolutely important determinants of innovation.

Sekwele (2015) argues that organisational success and effectiveness is influenced by the leadership and management of the organisation. Kuipers *et al.,* (2013) cited in Bekkers *et al.,* (2013) argue that literature on PSI and change management stresses the importance of leadership. According to Mudaly (2016), the ability of leaders to imagine a *'different world'* and to drive this change throughout an organisation is

considered central to the innovation process. Depending on the nature, style and context, leadership may drive or stifle innovation in local government. The research findings concur with literature that emphasised that the importance of leadership in innovation cannot be overstated.

Leadership is closely linked to organisational culture, good governance, human resources management and incentives for staff. It creates an environment in which people operate and thrive or perish. Top management commitment and support is one of the most important factors for successful innovation. Managers must find ways to lead by example and reinforce a sense of management commitment and support literally and figuratively. The importance of leadership influence in a local government institution cannot be over-emphasized, it can influence the perceptions of work environment to be receptive to change.

Culture of innovation: The findings indicated that the second most common factor that influences innovation in the CoT. In terms of the finding there is poor culture of innovation which serve as a barrier to innovation. This finding is consistent with most of the literature such as Goffin and Mitchell's (2017), who argues that organisations should create a culture of innovation in which employees are motivated to be constantly innovative. Culture of innovation is related to leadership, resources allocation and management, organisational structure and individual behaviour.

Resources: budget and human capital: The findings indicated that resource allocation, both budget and human capital is critical for successful innovation. Sixty-five per cent of participants mentioned that absence of both budget and human capital resources is responsible for failure of innovation. This finding is also in line with most of the literature which identified availability or non-availability of resources as critical for success or failure of innovation. Most participants from the Innovation Unit and external experts indicated that presence of resources is an important determinant of successful innovation. In general, most participants viewed the decision to allocate resources for innovation as critical for its success or failure. Research findings concur with literature review that human and financial resources may serve both as important driver or barrier of innovation depending on its availability. People and financial

resources are at the centre of innovation process and people's commitment and determination drives every step of the innovation process (OECD, 2017).

Accordingly, absence or presence of financial resources may promote or hinder innovation or vice versa. Howard (2012) argues that although economic times may lead to budget cuts resulting in closure of innovation projects, simultaneously budget cuts may force municipalities to rethink the way they do business, and in the process, become more innovative as they become cost effective and efficient in delivering services. On the other hand, availability of financial resources may promote innovation because innovative projects need financial resources while lack of financial resources may obviously stifle innovation. Raipa and Giedraityte (2014) argues that traditionally, public sector never really budget for innovation initiatives. Resource allocation is directly linked to leadership who are in charge of prioritising and allocation of resources to programmes and projects.

Lack of reward and recognition: The findings indicated that a significant number of participants identified lack reward and recognition or negative incentives structure as one of the important barriers for innovation. This finding is also consistent with most of the literature where negative incentives structure is identified as critical factor for unsuccessful innovation in PSOs. Mumford and Licuanan (2004) argues that organisations should develop management practices that are directed to evaluating and rewarding critical behaviour and performance that influence innovation. Reward and incentive systems should allow for dual ladder to enable technologically innovative staff to progress within organisations without having to move across to management posts. However, CoT just like many other organisations have reward system that reinforces and rewards repeated tasks rather than encouraging the initiation of new ideas. Reward and recognition is linked to organisational culture, resource allocation and leadership. Organisations are therefore encouraged to recognise and reward innovative behaviours and not to discourage the spirit of innovation in employees.

Learning organisations (interactive learning): The findings indicated that the ability to learn is an important innovation driver for any organisation. This finding is consistent with the literature on the matter wherein a learning organisation is more likely to

succeed in their innovation journey and learn from their mistakes or failed projects. The research findings are consistent with literature review that alluded to the fact that learning is central to enhancing the capacity of local councils to innovate (Ramoroka et al., 2017). More importantly, the ability of municipalities to learn, unlearn and relearn will be key determinant of innovation success of failure. Strand et al., (2015) argue that the findings from general innovation theory tell us that most product innovations fail and that the success of an innovation process is therefore closely linked to successful organisational learning.

Researchers such as Koch and Haukenes (2005) found that the absence of capacity for organisational learning is characteristic of public sector. It is important for local government councils to build capacity to become learning organisations in order to be able to innovate. Some literature identified capability to learn, unlearn and relearn as an important factor for successful or failure of innovation. The ability of organisations to learn and unlearn is closely linked to organisational culture and leadership style.

Organisational structure: The findings indicated that the bureaucratic organisational structure is an important innovation barrier. This finding is consistent with what the literature review showed that organisational structure is crucial for success or failure of innovation. Most participants highlighted that a rigid organisational structure may not supports an environment conducive for innovation. Sekwele (2015) suggests that organisational structure should be an enabling mechanism that reinforces and encourages interactive progresses for speedy and effective innovation. However, many participants felt that local government structure has too much ‘red type” and is too bureaucratic resulting in prolonged turn-around time for decisions and approval. Generally, CoT organisational structure is typically not in sync with innovative organisations. It should be concerning that the Innovation Unit was recently restructured and reduced from being a department to a division. This may be indicative of the fact that innovation is no longer a top priority as it used to be in the city.

According to Luthans (2011), there is no one best structure that guarantees successful innovation. Successful organisations tend be those that have the best fit between structure and operating requirement. Flexible, horizontal and flatter structures are

recommended for improved innovation environment. Organisations that support learning design horizontal structures and set up cross-functional teams that encourage employees to assume authority and make decisions directly related to their activities.

Opportunity to innovate and experiment: The findings indicated that an opportunity to innovate and experiment is an important innovation driver for innovation in local government. The research finding is consistent with literature that also identified opportunity to innovate as an important driver of innovation because if no opportunity is created for innovation, there will not be innovation at all. OECD (2017) argues that opportunity to innovate is shaped by creativity, autonomy and collaboration. Employees must be given an opportunity to innovate and experiment. Management must create opportune environment for employees to innovate. Opportunity to innovate is linked to leadership, culture of innovation, learning organisation and organisational structure.

Regulation and compliance requirements: The findings indicated that regulation and compliance requirements as an important innovation barrier. This finding is consistent with most of the literature wherein regulation and compliance requirements is identified as an important factor for success of innovation. Raipa and Giedraityte (2014) alluded that public servants perceive rules, procedures and regulations to be hindering their capacity to innovate although there is limited to evidence to support that argument. A better understanding of rules and regulations may prove to be more useful to establish what is really allowed as opposed to general perception of seeing regulations as a barrier. In fact, most of recent environmental laws are forcing governments and firms alike to innovate environmentally friendly, cleaner and sustainable technologies to mitigate climate change challenges.

Procurement**:** The findings indicated that procurement trajectory is an important innovation barrier. This finding is consistent with literature review that also identified procurement as an important enabler or barrier of innovation. For procurement to become a driver, innovation should be one of the procurement objectives.

Procurement is linked to resource allocation and financial management and good governance and leadership.

Service delivery challenges: The findings indicated that service delivery pressures are important innovation drivers. This finding is also consistent with literature review that also identified service delivery pressures as important drivers of innovation. The public has a very high service delivery expectations and demands which are difficult to meet given budgetary and capacity constraints referred to above but forces authorities to think outside the box.

Innovation champions: The findings indicated that innovation champions are an important innovation drivers. This finding is also consistent with literature review that also identified innovation champions as an important driver of innovation.

Other innovation drivers include technology platforms and social media, effective communications while other barriers include resistance to change and short-term budget and planning horizon. Success in one or a few of the innovation drivers and barriers is not sufficient for ensuring successful innovation, a balanced and measured approach is required for successful innovation since innovation drivers and barriers are interrelated and interdependent. The findings show that understanding innovation drivers and barriers in local government is a complex and intricate pursuit with multitude of factors that needs to be managed both individually and as part of whole.

Interventions to make innovation successful: Of the 11 interventions identified 5 had more than three participants indicating that they are key for making successful innovation. Top amongst those is the leadership commitment and management support. This finding seemed to be in line with most literature which emphasises that leadership is at the centre of successful innovation because it set the tone, develops strategies, allocate resources and manage personnel. It can be argued that for successful innovation to be achieved dedicated intervention should be at the highest level of the City, Executive Mayor, City Manager, Executive Team and Top Management. The executive team and top management should show commitment

and enthusiasm about innovation to galvanise all stakeholders and mainstream innovation in the organisation across the greater Tshwane region.

Other key interventions include training and capacity building, creating platforms and opportunity to innovate, strengthening collaboration and allocation of appropriate resources. Training and capacity building is closely linked to a learning organisation and organisational culture. Both innovation theory and learning theory showed that innovation and learning are closely related and intertwined. A culture of learning should be created successful innovation. Strengthening collaboration with key actors within and outside the organisation is critical. CoT should strengthen collaborative arrangement across the region and play a coordination function. Further interventions mentioned include to mainstream innovation, acknowledging small victories, better communication, revising strategies, taking calculated risks and converting barriers into drivers.

Innovation drivers and barriers are interrelated, interdependent and intertwined and as such a holistic approach should be adopted in addressing the challenges taking into account specific circumstances and contextual environment in which innovation is taking place.

5.2.4 What are stakeholder perception about collaboration in innovation? Analysis of findings on research question 4

Majority of participants consider collaboration (including intra-organisational interaction and networked governance) as an important factor for successful innovation. This finding is consistent with most of the literature that identified collaboration as critical for successful of innovation. Cankar and Petkovsek (2013) argue that collaboration enables the participants to exchange and share knowledge, experiences, know-how and expertise. It helps to bring a broader set of skills and talents and a more responsive work culture into public sector organisations, along with innovative thinking and creativity.

All expert participants consider collaboration critical for successful innovation. One expert participant indicated that *“innovation happens through networks and puts*

premium value on effective collaboration. CoT was seen as well placed to play a leading in facilitating collaboration amongst innovation actors in the region".

Collaboration is closely related leadership and management style, organisational culture and resource allocation. One of the key interventions mentioned above was the need to strengthen collaboration and for CoT to play a much more active role in coordinating innovation amongst key actors across the Tshwane region.

5.3 SUMMARY OF THE ANALYSIS OF THE FINDINGS

The chapter presented the analysis and synthesis of the data collated through literature review, secondary data review and semi-structured interview. The analysis focuses on four key areas: innovation strategic intent, culture of innovation, innovation drivers and barriers as well as collaboration. The study endeavoured to explore the more nuanced issues of public sector innovation to gain a deeper understanding of the role of innovation drivers and barriers in local government.

Innovation strategic intent was identified as one of the key drivers of innovation in any organisation, without which innovation may not succeed. It is closely linked to leadership. It is the beginning of the innovation journey and is critical because it influences all other factors including management commitment, resource allocation, culture of innovation and incentives policy. The fact that majority of participants from operating units are either not aware of the CoT innovation strategy or have not seen nor read the strategy is a worrying concern that need to be addressed.

Culture of innovation was identified as a problematic area for CoT which requires attention. The finding is consistent with the Innovation Capability Index Review which identified people and culture as the weakest link in the City. Literature identifies poor culture of innovation as an important innovation barrier to innovation. Culture of innovation is closely related to organisational structure, individual behaviour, motivation and leadership, all of which are important aspects for creating an enabling climate in which employees function.

Innovation drivers and barriers are an important factor for successful innovation in local government organisations. Literature defines innovation drivers and barriers as dynamic, complex, interactive, interrelated, interdependent and context-specific factors that may be bi-directional. While it is difficult to provide a definitive list of drivers or barriers because the role each particular factor plays can change as a function of context, the study found that leadership is the most critical innovation driver. Other important innovation drivers are interactive learning or learning organisation, innovation champion, services delivery challenges and technology platforms and social media. With regards to innovation barriers, it was found that a poor culture of innovation is the most critical barrier followed by lack of resources (both financial and human capital), bureaucratic organisational structure and regulations. The finding is consistent with most of the literature on the matter wherein leadership commitment and management support was identified as critical for success or failure of innovation. Leadership is at the centre of successful innovation because it set the tone and develops and implement strategies, drives of innovation, allocates resources, creates a learning organisation and manages personnel.

Collaboration is considered an important factor for successful innovation because of its ability to transcend most innovation barriers such poor culture of innovation, bureaucratic organisational structure and lack resources and skills. CoT is expected to play a leading role in facilitating collaboration across innovation actors in Tshwane region.

CHAPTER 6 : CONCLUSION AND RECOMMENDATIONS

6.1 INTRODUCTION

This section summarises key findings and analyses of both the primary findings of the study and literature reviewed including the secondary data. The chapter also highlighted the most pertinent themes that emerged from the study. The themes covered are the innovation strategic intent, culture of innovation, innovation drivers and barriers and collaboration. It concludes with study limitations and recommended further areas of future research. The research objectives of the study were to:

- To examine current trends, issues and themes around innovation in public services and local government in particular.
- To conduct primary research to gain deeper insights and understanding of innovation drivers and barriers in local government.
- To compare innovation drivers and barriers in local government with those in the literature to determine similarities and differences.
- To contribute towards the body of literature on the concept of innovation drivers and barriers in local government.
- To make recommendations regarding important innovation drivers and barriers that should be considered when embarking on innovation journey in local government.

The study posed the following questions in an attempt to respond and address the abovementioned objectives:

- Research question 1: How aware are stakeholders of the CoT innovation strategic intent (innovation strategy)?
- Research question 2: What are stakeholder's perception about the culture of innovation in CoT municipality?
- Research question 3: What are stakeholder's perception about the key innovation drivers and barriers in CoT?
- Research question 4: What are stakeholder's perception about the importance of collaboration in innovation?

6.2 KEY CONCLUSION OF THE STUDY

The study concludes that four key areas are critical for successful innovation in CoT. They are innovation strategic intent, culture of innovation, innovation drivers and barriers and collaboration.

6.2.1 Major findings on innovation strategic intent

The study findings support the literature viewpoint that innovation strategic intent is critical for setting the tone and direction in terms of defining what sort of innovation will be persuaded, at what pace and with what resources. Setting innovation strategic intent is a function of leadership and top management hence it is critical for leadership to be seen to be driving innovation to galvanise everybody in the organisation. It is the beginning of the innovation journey and is critical because it influences all other factors including management commitment, resource allocation, culture of innovation and incentives policy. Innovation strategic intent is closely linked to leadership. Generally, the research finding is in line with the literature review, which identified innovation strategy as critical for providing a clear direction and galvanised the entire organisation on a common goal.

The majority expert participants commended the CoT for driving innovation, albeit with declining momentum in recent past. This view is line with the Innovation Capability Index Review that identified leadership and ambition as CoT strength in 2014 but somewhat declined in 2016 and 2018 reviews. However, all internal participants from selected operating units are neither aware nor have seen nor read the innovation strategy. This contradiction makes an interesting finding. Could it be that other operating units in CoT were left out from the innovation journey, or is it because of silo mentality, lack of mainstreaming or just poor communication? The fact that majority of participants from other operating units feel left out of the innovation process is a worrying concern that need to be addressed. A deliberate intervention would be required to ensure other operating units are included in the innovation journey. The review of the CoT Innovation Strategy should consider effective and inclusive mechanisms to sought participation by other operating units.

6.2.2 Major findings on the culture of innovation

Literature identifies culture of innovation as critical for successful implementation of innovation in local government. Government is generally associated with risk averse culture. Majority of participants are of the view that the CoT's culture of innovation is either non-existent or at its infancy stage. Poor culture of innovation is a barrier to innovation CoT. This finding is consistent with Innovation Capability Index Reviews which identified culture and people as one of the weakest links in CoT. Culture of innovation an area of concern which requires an intervention to create a conducive environment for innovation.

Unless innovation is part of the dominant logic in an organisation, failure may be inevitable. This implies that the city should focus its efforts improve the culture of innovation in order to increase the probability of successful and sustainable innovation outcomes and improved quality of life. Culture of innovation is closely related to organisational structure, individual behaviour, motivation and leadership, all of which are important aspects for creating an enabling climate in which employees function.

6.2.3 Major findings on innovation drivers and barriers

The study found that innovation drivers and barriers are important factors for successful innovation local government. Literature defines innovation drivers and barriers in local government as complex, dynamic, interactive, interrelated, interdependent and intertwined factors but also context-specific and are imbedded in the environment they operate. Innovation drivers and barriers may be bi-directional because the role of a particular factor plays can change as a function of context. What in some instances could be a driver of innovation might in others act as a barrier. While it is difficult to produce a comprehensive list of drivers and another for barriers, because drivers may become barriers and barriers become drivers depending on the circumstances or the stage of innovation process, the study found that leadership commitment and management support is the most critical innovation driver because it affects all other factors. Other important innovation drivers are learning organisation (interactive learning), innovation champion, services delivery challenges and technology platforms. With regards to innovation barriers, the most critical barrier is

the poor culture of innovation followed by lack of resources both financial and human capital, poor reward and recognition system (negative incentives structure), bureaucratic organisational structure and regulations. Those need attention if innovation was to be successful.

The finding is consistent with most of the literature wherein leadership commitment and management support was identified as critical for success or failure of innovation. Leadership is at the centre of successful innovation because it set the tone and develops and implement strategies, drives of innovation, allocate resources, create a learning organisation and manage personnel. Leadership is closely linked to all other important drivers and barriers such strategy and policy development and implementation, culture of innovation, resource allocation, reward and recognition, organisational structure and behaviour, regulatory regime and opportunity to innovate. A much more holistic and measured approach is required to address the challenges confronting innovation considering that innovation drivers and barriers are interdependent, intertwined and imbedded in the environment they operate.

Regarding preferred interventions to make innovation successful, of the 11 interventions identified, the highly recommended intervention is at the leadership level because leadership affects all other factors in the system. Other intervention recommended are training and capacity building, opportunity to innovate, strengthening implementation and resource allocation. This finding seemed to be in line with most literature which emphasises that leadership is at the centre of successful innovation because it set the tone, develops strategies, allocate resources and manage personnel. Leadership also promote innovation drivers and helps mitigate innovation barriers at the same time. Leadership is linked to training and capacity building, opportunity to innovate, implementation and resource allocation.

6.2.4 Major findings on collaboration in innovation

Majority of participants consider collaboration as an important factor for successful innovation. This finding is consistent with most of the literature that have identified collaboration as critical for success of innovation. Collaboration is considered an important factor for successful innovation because of its ability to transcend most

innovation barriers such poor culture of innovation, bureaucratic organisational structure and lack resources and skills. Majority of external expert participants seemed to agree in their expectation for CoT to play a leading role in facilitating collaboration across innovation actors in region

6.3 RECOMMENDATIONS

This part attempts to suggest recommendations for consideration by key role players in the innovation process in CoT. The recommendations are based on the findings that came out of the research work conducted.

With regards to Innovation Strategic Intent: Given that majority of external experts consider CoT Innovation Strategic Intent quite highly, albeit with declining momentum and the fact that the Innovation Capability Index Reviews consider the leadership and ambition pillar as a strength, CoT should continue to strengthen its strategic intent for innovation as they review the innovation strategy. Based on the lack of awareness of the innovation strategy by some operating units, the review process should be open and inclusive in order to take along as many employees as possible. The review of the innovation strategy should also have outward outlook to ensure participation by key actors in the regional system of innovation to facilitate collaboration in the region. Strategic intent is closely linked to leadership and leadership drives all other aspects of business such as setting the tone and direction, lack of culture of innovation, resource allocation and people management.

Regarding culture of innovation: Literature identified culture of innovation as an important factor for successful innovation while both the research results and Innovation Capability Index Review identified culture of innovation as one of the weakest elements in CoT. The current culture of innovation is rather poor and intentional programmes should be devised to turn the situation around. CoT should thrive to build a conducive innovation culture by reviewing and revising the overall organisational environment, practices and behaviours.

Regarding innovation drivers and barriers: The study found that innovation drivers and barriers are an important factor for successful innovation in local government.

Literature defines innovation drivers and barriers as complex, dynamic, interactive, interrelated, interdependent and intertwined factors but also context-specific and are imbedded in the environment they operate. Innovation drivers and barriers may be bi-directional because the role of a particular factor plays can change as a function of context. What in some instances could be a driver of innovation might in others act as a barrier. Leadership commitment and management support is the most important innovation driver because it influences all other factors such as strategy formulation and implementation, culture of innovation, resource allocation and learning organisation. Other important innovation drivers are interactive learning or organisational learning, innovation champion, service delivery challenges and innovation platforms and social media. On the other hand the most critical innovation barrier is poor culture of innovation followed by lack of resources, poor reward and recognition system or negative incentive structure, bureaucratic organisational structure and regulations.

Regarding collaboration: the study found that collaboration is important for innovation and that CoT should strengthen its collaboration approach and tap into rich resources and experiences of key actors in the innovation system in the region. The region is endowed with vibrant youth, tertiary institutions, research councils, private firms, innovation driven organisations, national government departments, and foreign embassies that the city should thrive to coordinate the innovation efforts in the region. There is an expectation that CoT should play an active role in facilitating collaboration amongst various innovation actors in the region.

6.4 LIMITATIONS OF THE RESEARCH

Potential limitations were identified and attempts were made to minimise their impact, in particular researcher biasness.

Researcher biasness: Being the Divisional Head of Environmental Management and Parks Division which is part of CoT was seen as a potential limitation in that it may somehow negatively or positively influence interactions with CoT participants. For that reason, none of the participants report directly to the researcher. Although participants

do not report directly to the researcher there was a perception about seniority in the organisation. All participants were made to understand that the seniority does not apply in this study and that they must feel free to participate as the study was confidential. This limitation was further mitigated by employing different techniques of data collection and analysis such as literature review, participant-observation, semi-structured interviews with participants from different units and external experts and secondary data analysis. The fact that the researcher was aware of the potential bias might minimise the impact of such limitation.

6.5 SUGGESTIONS FOR FUTURE RESEARCH

Since this study area is relatively a new area of study and there are literature gaps on a number of the emerging concepts, there are a number of recommended research topics to be explored further.

6.5.1 Understanding the role of local government in regional systems of innovation
6.5.2 Role of Innovation Unit in fostering innovation in local government
6.5.3 Building conducive culture of innovation in local government
6.5.4 Role of leadership in implementing service innovation in public service
6.5.5 Incremental or radical innovation for local government in Gauteng Province

6.6 CONCLUDING REMARKS

The study produced interesting findings that build on the regional systems of innovation and the emerging public sector innovation theories to frame the study and analysis for the deeper understanding of the role of innovation drivers and barriers in local government and public sector in general. Key themes emerging from literature and confirmed by research findings are: the importance of innovation strategic intent, culture of innovation, innovation drivers and barriers as well as the importance of collaboration in innovation. Innovation drivers and barriers are complex and context-specific. The study endeavoured to explore the more nuanced issues of public sector innovation and the role played by innovation drivers and barriers in local government.

Innovation strategic intent was identified as one of the key drivers of innovation in any organisation, without which innovation may not succeed. It is closely linked to leadership. It is the start of the innovation process. It influences other factors such as management commitment, resource allocation, culture of innovation and incentives policy. The fact that majority of participants from operating units are either not aware of the innovation strategy or have not seen nor read the strategy is a worrying concern that need to be addressed.

Poor culture of innovation was identified as a problematic area for CoT which requires attention. The finding is consistent with the reviews which identified people and culture as the weakest link in the City. Literature identifies culture of innovation as an important innovation driver and barrier. Culture of innovation is closely related to organisational structure, individual behaviour, motivation and leadership, all of which are important aspects for creating an enabling climate in which employees function.

Innovation drivers and barriers are an important factor for successful innovation in local government organisations. Literature defines innovation drivers and barriers as dynamic, complex, interactive, interrelated, interdependent and context-specific factors that may be bi-directional. While it is difficult to produce a comprehensive list of drivers and another for barriers, because drivers may become barriers and barriers become drivers depending on the circumstances or the stage of innovation process, the study found that leadership commitment and management support is the most critical innovation driver because it affects all other factors. Other important innovation drivers are learning organisation (interactive learning), innovation champion, services delivery challenges and technology platforms. With regards to innovation barriers, the most critical barrier is the poor culture of innovation followed by lack of resources both financial and human capital, poor reward and recognition system (negative incentives structure), bureaucratic organisational structure and regulations. Those need attention if innovation was to be successful.

The finding supports literature which identified as leadership as critical for success of innovation. Leadership is central because it sets the tone, develops and implement strategies, drives of innovation, allocate resources, creates a learning organisation and manages personnel.

Lastly, collaboration is considered an important factor for successful innovation because of its ability to transcend most innovation barriers such poor culture of innovation, bureaucratic organisational structure and lack resources and skills. CoT is expected to play a leading role in facilitating collaboration across innovation actors in the region. A balance approach is required to manage them for successful implementation of innovation in local government because both drivers and barriers may play interchangeable roles in promoting and or hindering innovation as a function of circumstances.

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8. APPENDICES

ANNEXURE A: INTERVIEW SCHEDULE

Introductory remarks

Thank you for participating in this important study. The primary purpose of this study is to determine and understand key innovation drivers and barriers in local government for better innovation outcomes and service delivery from the perspective of City of Tshwane Innovation Unit personnel.

Please read and sign the consent form accordingly. By signing the consent form, you agree that you accept and understand the content of the form and that you are happy to participate in this study. Should you have any question or concern, please feel free to contact me or my supervisor on the details provided in the consent form to clarify such aspects.

NB: Please confirm your consent by word of mouth that you agree to voluntarily participate in this study. You may choose to withdraw from this study at any time with no implications nor penalty at all.

Demographic related questions

Gender, qualification, position, role and years of experience in innovation relevant work.

Question 1: Understanding CoT municipality innovation strategic intent: How aware are stakeholders of the CoT innovation strategic intent?

- Does CoT municipality have a clear strategic intent (innovation strategy) in place?
- How would you describe main pillars or focus of your innovation strategy?
- How often do the municipality review its innovation strategy?

Question 2: Understanding CoT municipality culture of innovation: What are stakeholders' perception about the culture of innovation in CoT municipality?

- What are your views about the culture of innovation in CoT municipality?
- How integral or foreign innovation is in the municipality?

Question 3: Understanding innovation drivers and barriers in the CoT municipality: What are stakeholder's perception about key innovation drivers and barriers in CoT?

- What are the key innovation drivers and barriers in CoT and in local government in general?
- How should one manage or mitigate innovation drivers and barriers for improved innovation outcomes and quality service delivery?

Question 4: **Understanding collaboration and linkages as important part of innovation**: **What are stakeholder's perception about the importance collaboration in innovation?**

- What are your views about collaboration and linkages in innovation in local government?
- What role should a local government (CoT) municipality play in the local system of innovation?

Thank you very much for participating in this study and if you would like to have a copy of the final report, it is anticipated that the report will be available from June 2019 on request.

ANNEXURE B: PERMISSION TO CONDUCT INTERVIEW

CITY OF TSHWANE
IGNITING EXCELLENCE

City Strategy and Organisational Performance

Room CSP23 | Ground Floor, West Wing, Block D | Tshwane House | 320 Madiba Street | Pretoria | 0002
PO Box 440 | Pretoria | 0001
Tel: 012 358 7542
Email: NosiphoH@tshwane.gov.za | www.tshwane.gov.za | www.facebook.com/CityOf Tshwane

My ref: Research Permission/ Mafunzwaini
Contact person: Pearl Maponya
Section/Unit: Knowledge Management

Tel: 012 358 4559
Email: PearlMap3@tshwane.gov.za
Date: 26 July 2018

Mr. Aluoneswi Mafunzwaini
P O Box 57198
Arcadia
Pretoria
South Africa
0001

Dear Mr. Mafunzwaini,

RE: UNDERSTANDING INNOVATION DRIVERS IN LOCAL GOVERNMENT: CITY OF TSHWANE INNOVATION UNIT PERSPECTIVE.

Permission is hereby granted to Mr. Aluoneswi Mafunzwaini, a Master of Management in Innovation Studies candidate within Wits Business School at University of the Witwatersrand, to conduct research in the City of Tshwane Metropolitan Municipality.

It is noted that the research aims to outline key innovation drivers and barriers for innovation in local government from the perspective of Innovation Unit managers and staff of City of Tshwane Metropolitan Municipality. The City of Tshwane further notes that all ethical aspects of the research will be covered within the provisions of University of the Witwatersrand Research Ethics Policy. You will be required to sign a confidentiality agreement form with the City of Tshwane prior to conducting research.

Relevant information required for the purpose of the research project will be made available upon request. The City of Tshwane is not liable to cover the costs of the research. Upon completion of the research study, it would be appreciated that the findings in the form of a report and or presentation be shared with the City of Tshwane.

Yours faithfully,

PEARL MAPONYA (Ms.)
DIRECTOR: KNOWLEDGE MANAGEMENT

Subject: RE: Request for permission to conduct research interview with SALGA staff on innovation in local government

Dear Alu

The permission is herewith granted to conduct your research interview as requested.

Kindly liaise with Ms Mapule Letsweni who is our Director for Knowledge Management –she is also copied herein for ease of reference. You may contact her via email: mletshweni@salga.org.za or at 012-369 8000.

Regards
Nomawethu

ANNEXURE C: PARTICIPANT CONCERT FORM

The Graduate School of Business Administration
2 St David's Place, Parktown,
Johannesburg, 2193,
South Africa
PO Box 98, WITS, 2050
Website: www.wbs.ac.za

MM RESEARCH CONSENT FORM

(Innovation Studies)

Title of the Study: "Understanding Innovation Drivers and Barriers in Local Government: City of Tshwane Innovation Unit Perspective"

INFORMATION SHEET AND CONSENT FORM

Who I am

Hello, I am Aluoneswi Elvis Mafunzwaini. I am conducting research for the purpose of completing my Master of Management in Innovation Studies at Wits Business School

What I am doing

I am are conducting research on understanding innovation drivers and barriers in Local Government from the perspective of personnel of the Innovation Unit of City of Tshwane Metropolitan Municipality and few selected operating units. I am conducting a qualitative study using semi-structured interviews involving about 31 participants from COT Innovation Unit, three operating units and experts from external organisations such as DST, CPSI, SALGA, IERI of TUT and the Innovation Hub.

Your participation

I am asking you whether you will allow me to conduct one interview with you. If you agree, I will ask you to participate in one interview for approximately one hour. I am also asking you to give me permission to allow my scriber to take notes of the interview in order to properly and accurately record the proceedings.

Please understand that **your participation is voluntary** and you are not being forced to take part in this study. The choice of whether to participate or not, is yours alone. If you choose not take part, you will not be affected in any way whatsoever. If you agree to participate, you may stop participating in the research at any time and tell me that you do not want to go continue. If you do this there will also be no penalties and you will NOT be prejudiced in ANY way.

Confidentiality

Any study records that identify you will be kept confidential to the extent possible by law. The records from your participation may be reviewed by people responsible for making sure that research is done properly, including my academic supervisor/s. (All of these people are required to keep your identity confidential.)

All study records will be destroyed after the completion and marking of my thesis. I will refer to you by a code number or pseudonym (another name) in the thesis and any further publication.

Risks/discomforts

At the present time, I do not see any risks in your participation. The risks associated with participation in this study are no greater than those encountered in daily life.

Benefits

There are no immediate benefits to you from participating in this study. However, this study will be extremely helpful to us in understanding the driver and barriers of innovation in local government which may assist in the management of such factors for improved innovation outcomes and service delivery.

If you would like to receive feedback on the study, I can send you the results of the study when it is completed sometime after June 2019.

Who to contact if you have been harmed or have any concerns

The Wits Business School has approved this research. If you have any complaints about ethical aspects of the research or feel that you have been harmed in any way by participating in this study, please contact the Research Office Manager at the Wits Business School, Kedibone Tyeda at: Kedibone.tyeda@wits.ac.za

If you have concerns or questions about the research you may call my academic research supervisor: Dr. Geci Karuri-Sebina at 011 717 3520 or email her at Geci.Karuri-Sebina@wits.ac.za

CONSENT

I…….. hereby agree to participate in research on "understanding the drivers and barriers of innovation in local government". I understand that I am participating freely and without being forced in any way to do so. I also understand that I can stop participating 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 in the immediate or short term.

I understand that my participation will remain confidential.

……..

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

……..

Signature of researcher **Date**: ……

ANNEXURE D: ETHICAL CLEARANCE APPROVAL

Dear Aluoneswi

This email is sent on behalf of Meisie Moya.

Your ethical clearance number is: WBS/IS1973648/349

Kind regards

Sumaiya Kahn

MBA Research Coordinator

Wits Business School

2nd floor, Admin Building, AB 211

T +2711 717 3932

E sumaiya.ally@wits.ac.za

W www.wbs.ac.za

2 St. David's Place, Parktown, Johannesburg, 2193, South Africa

ANNEXURE E: LIST OF PARTICIPANTS

LIST OF PARTICIPANTS FROM CoT INNOVATION UNIT

Participant No	Position Description	Responsibility	Time (min)
P1	Specialist	Knowledge management	55
P2	Specialist	Knowledge management	60
P3	Senior management	Innovation	90
P4	Senior specialist	Innovation	70
P5	Executive management	Oversee strategic direction for research and innovation	80
P6	Senior management	Knowledge management	90
P7	Senior specialist	Quality management	70
P8	Project specialist	Project management	60

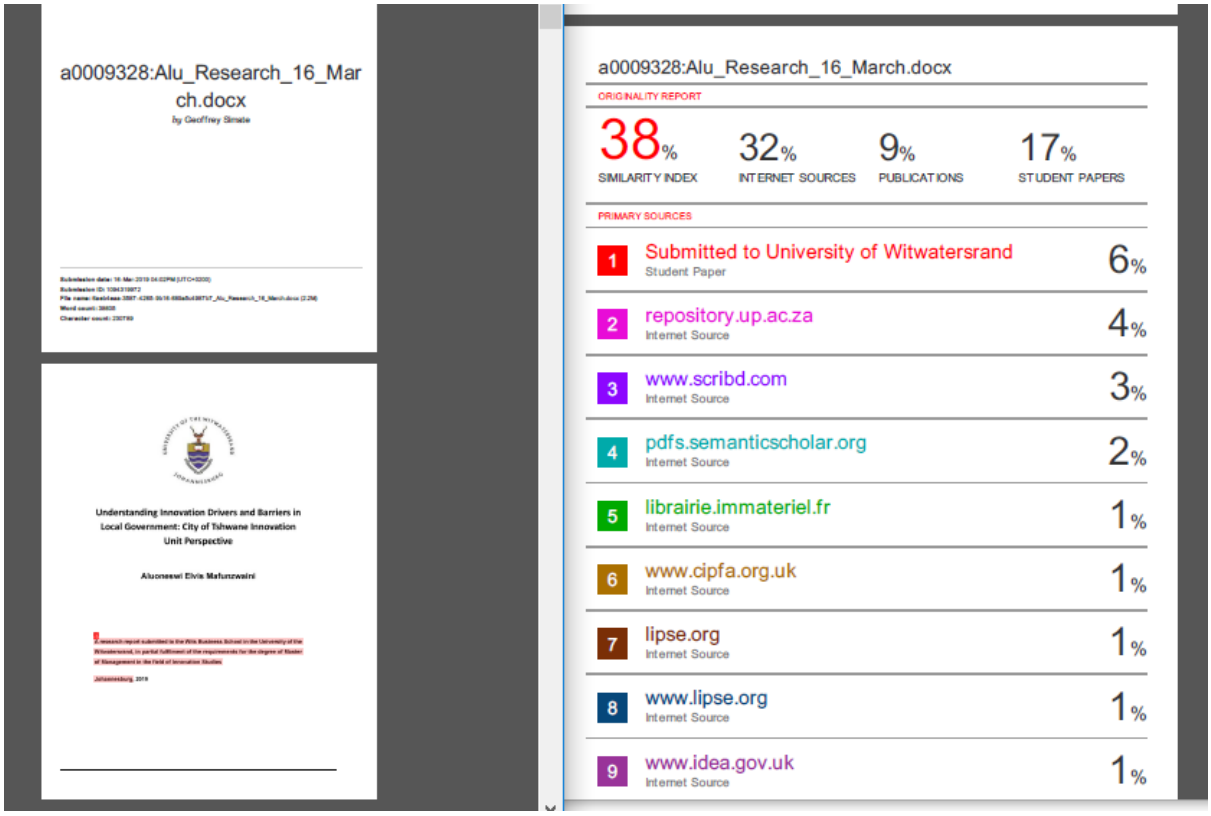
LIST OF PARTICIPANTS FROM COT OPERATING UNITS: AGRICULTURE AND RURAL DEVELOPMENT, WASTE MANAGEMENT AND SUPPORT SERVICES UNIT (HR & FINANCE)

Participant No	Position Description	Responsibility	Time (min)
P9	Executive management	Agriculture and rural development	45
P10	Middle management	Agriculture: farmer support, Agri-business development	40
P11	Middle management	Agriculture: farmer support Agri-business development	30
P12	Specialist	Agri-business development	25
P13	Specialist	Agriculture: farmer support	30
P14	Specialist	Agriculture: farmer support	65
P15	Senior management	Agriculture and rural development	55
P16	Specialist	Agriculture: farmer support	45
P17	Project specialist	Waste: Project management	25
P18	Senior management	Waste: Alternative Waste Treatment Technology	50
P19	Staff member	Waste: administration	23
P20	Senior management	Waste: landfill and transfer station management	40
P21	Executive management	Waste management	35
P22	Middle management	Support services: finance administration	25
P23	Middle management	Support services: finance administration	20
P24	Senior specialist	Support services: human resources	25
P25	Officer	Support services: human resources	29

LIST OF EXPERT PARTICIPANTS FROM EXTERNAL ORGANISATIONS

Participant No	Position Description	Responsibility	Time (min)
P26	Senior management	Department of Science and Technology: Local Innovation Systems	60
P27	Senior management	South African Local Government Association	90
P28	Executive Management	Government Agency: Centre for Public Service Innovation	110
P29	Senior management	Department of Science and Technology: Innovation for Local Economic Development	40
P30	Lecturer	Academic/research institution: Institute for Economic Research on Innovation of TUT	70
P31	Executive management	The Innovation Hub	65
Overall average interview time per person			54
Overall total interview time			1677

ANNEXURE F: TURNITIN REPORT



a0009328:Alu_Research_16_March.docx

by Geoffrey Sinsabe

Understanding Innovation Drivers and Barriers in Local Government: City of Tshwane Innovation Unit Perspective

Aluoneswi Elvis Mafunzwaini

a0009328:Alu_Research_16_March.docx

ORIGINALITY REPORT

38%	32%	9%	17%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	Submitted to University of Witwatersrand Student Paper	6%
2	repository.up.ac.za Internet Source	4%
3	www.scribd.com Internet Source	3%
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6	www.cipfa.org.uk Internet Source	1%
7	lipse.org Internet Source	1%
8	www.lipse.org Internet Source	1%
9	www.idea.gov.uk Internet Source	1%

ANNEXURE G: LANGUAGE EDITING CERTIFICATE

EDITING AND PROOFREADING CERTIFICATE

7542 Galangal Street

Lotus Gardens

Pretoria

0008

26 March 2019

TO WHOM IT MAY CONCERN

This certificate serves to confirm that I have edited and proofread Mr AE Mafunzwaini's dissertation entitled, **"Understanding Innovation Drivers and Barriers in Local Government: City of Tshwane Innovation Unit Perspective".**

I found the work easy and intriguing to read. Much of my editing basically dealt with obstructionist technical aspects of language, which could have otherwise compromised smooth reading as well as the sense of the information being conveyed. I hope that the work will be found to be of an acceptable standard. I am a member of Professional Editors' Guild.

Hereunder are my particulars:

Jack Chokwe (Mr)

Contact numbers: 072 214 5489

jackchokwe@gmail.com

Professional EDITORS Guild

Open Rubric