Exploring The Adoption And Use Of E-Governance Systems In A Selected Local Municipality In South Africa In The Eastern Cape

Nomfusi Ndunyana[1], Raymond Mhlaba Municipality[2], Prof Viwe Mrwebi[3]*

[1, 2, 3]*Department of Business Management, University of South Africa, Muckleneuk Campus

*Corresponding author:- Prof Viwe Mrwebi

*Department of Business Management, University of South Africa Mucleneuk campus, E-mail:- mrwebv@unisa.ac.za

Abstract

This study   explored how e-governance can be used and adopted in the selected local municipality in the Eastern Cape as means to attain effective operational efficiency of municipality. The study examined subtopics regarding benefits and challenges that are related to e-governance in the local government. The study made use of the case of the selected local Municipality in the Eastern Cape Province in South Africa. The study made use of a case inquiry inclined towards interpretivist paradigm as a research philosophy. The analysis of the study found that the major problem that affects the adoption of e-governance is related to the structure of the organisation. The participants demonstrated their understanding of the benefits that can be related to e-governance and how it enhances the operational efficiency of the municipality. The study however, also discovered several issues that are hindering the acceleration of e-governance. Furthermore, owing amongst the challenges confronting the selected local municipality that are included in the analysis of the study are: technological illiteracy, privacy and security issues among several others. The study recommends   that the government, citizens and businesses must collectively cultivate effective strategies that will address the use of e-governance through harnessing structures, tasks, technology and people elements that makes up the entire information value chain.

1. INTRODUCTION

Governments in this present age have been regarded as transformers of societies with regards to the unrestricted involvement of their citizens in determining the needs of their society (Olufemi, 2013). According to (Al-jader, 2015) the evidence of transitions that are emanating in the governments are demonstrated by hurried socio-economic advancements which is more focused with quality delivery of public services and goods. Not only did the governments drift away from leadership systems such as dictatorial and administrative systems which delayed efficiency in day-to-day operations. As a result developed countries have adopted the use of information communication technology (ICT) systems to integrate citizens and the government to ensure that there is efficiency in serving and addressing the needs of the communities. Positive results have been realised and developing countries such as South Africa have also embarked in the use of the ICT systems and efficiency have been realised (Coelho, Segatto and Frega, 2015).

Furthermore, not all spheres of the government have been implemented the ICT systems such as e-government and e-filling systems to ensure that efficiency is realised. On that note, presently ICT systems are a tool that has penetrated most of the sectors that makes up a nation. Advancements and developments of the systems has been significant with evidence of the existing two revolutions (3rd and 4th industrial revolution) addresses the value that technological systems into every facet of human life. As such this study seeks to explore the issue of adoption f e-governance systems to a local municipality as a preparation of the 4th industrial revolution (4th industrial revolution). The following section will give detail to the background of the study.

BACKGROUND OF THE STUDY

Over the years, technology has penetrated all peripheries whether through political divides, cultures, racial groups and economic classes to afford boundless communication opportunities. Jansen (2014) records that among numerous modern developments; ICT has prevailed as the focal enabler for effective transformation in development of governments. Furthermore, (Taherdoost, Sahibuddin, and Jalaliyoon, 2013) posits that ICT systems have been realised as an enabler to reduce protocols that exist in government structures and decentralise processes while maintaining accountability and integrity. However, in developing countries there are still other government sectors that are lagging behind in terms of implementing technological applications such as e-governance for example the local government such as the municipalities.

(Meerman, 2016) states that electronic government (e-government) encompass three major features which includes e-services provision, e-administration, and e-participatory governance. The three features have been realised as the vehicle that changes the outlook of how operations of local government are articulated because it is founded on the notion of participatory governance. The same ICT systems have enabled governments to effectively conduct administrative duties (e-admin and e-services) (Vergez, 2015). E-government is generally aligned with an external intention of service delivery

to its communities and the direct relationship of state administration and the society. however, e-governance identifies the state as an object among a system of distributed interrelationships of objects anticipated to enhance the administration and delivery of service to the public (Meerman, 2016).

Governance of the public is one issue that has been faced with many challenges but in this revolution where automation is topical, connectivity of the public governance to its sub entities such as the communities and the protocols and regulations that guide its operations is inevitable. The 4th industrial revolution needs to enroll to all the sectors of the country when every sector is ready. However, Vergez (2015) comments that although the E-Systems to governance can be beneficial, the implementation has been coupled with costs and failures. Among other emanating challenges with regards to e-governance implementation in developed regions such as the European region indicated that there exist nonexistence of transparency and complexity in terms of frameworks guiding the government sectors. The most notable complexity for the implementation of e-governance technologies was the confinements which are from policies and the legislation of the country. Furthermore, it has been noted that most government entities across departments and within departments operate in silos (Xavier, Komendantova, Jarbandhan, and Nel, 2017).

When an organization is having a culture of division across and within departments, efficient adoption and use of e-systems is a challenge, thus structures need to be clarified to ensure that adoption is viable (Vergez, 2015). Other than the notion of division as a challenge, digital division emanated also to be an obstacle in numerous countries especially developing countries. South Africa is found in top three of the African countries with established economies and advanced in terms of technology adoption (Jansen, 2014). However, though the South African government have and is still aiming in promoting technological use in governance and servicing the communities optimal effectiveness has not been realised in major parts of the country. Early this year, the president of South Africa addressed the nation on ensuring that by 2025 when the 4th industrial revolution is expected to start to enrol globally South Africa need to be ready. One aspect that can be done as the preparation for readiness is adopting the automation of the 3IR which encompasses e-governance that encompasses the application of smart cities technologies.

This study contextualised a local municipality from Eastern Cape to investigate e-governance. Local government is the core government entity that speaks to the community direct and also report to the district municipality that speaks to the metropolitan municipality that directs the issue to the province. (ECSEC, 2017) argue that this protocol is what affects and hinders implementation of e-governance because all the protocols are in silos thus readiness of E-Systems is problematic. Raymond Mhlaba local Municipality is the local municipality under inquiry. The subsequent section will detail the problem under inquiry in relation to this background of the study.

PROBLEM STATEMENT

E-governance is recognised for reducing operational expenditure, increasing efficiency, realisation of objectives in record time, speeding organisational change and including facilitating greater teamwork (Meerman, 2016). When an e-governance system is functioning optimally it affords that the flow of information is smooth which allows decision making to be quick in all daily operations. According to (Jansen, 2014) excluding the examination of factors such as the digital divide affecting the adoption and use of e-governance in public sectors of South Africa may possibly prove to be costly to the country's aim to embrace 4th industrial revolution and can ultimately end up degrading living standards of citizens in the regions that are behind.

E-governance systems have been examined their operational efficiency internationally, in South Africa, a gap in exploring how local municipalities are performing in harnessing the e-governance in preparation for embracing 4th industrial revolution need more research (ECSEC, 2017: Morwane, 2017) As a result, this study's problem statement can be stated as follows: optimal e-governance systems adoption and use in the local municipality (RMLM) needs to be examined as e-governance can serve as a preparatory stage of channelling and embracing 4th industrial revolution.

RESEARCH OBJECTIVES

To develop guidelines for the optimal adoption and usage of e-governance system as a preparatory initiative for embracing 4th industrial revolution in the Raymond Mhlaba Local Municipality (RMLM).

Secondary objectives

• To observe the nature and state of e-governance and its relationship with 4th industrial revolution.
• To determine advantages that e-governance offers to local government in terms of efficiency to Municipalities in South Africa.
• To identify challenges hindering optimal adoption of e-governance in Raymond Mhlaba Local Municipality (RMLM) and recommendations.

SIGNIFICANCE OF THE STUDY

Under the Social Development Goals (SDGs) from United Nations, technology is recognized as an enabler for economic development. The future of human existence is undoubtedly supported more by technology and its connectivity. It is therefore of significant for the public institutions and the policy makers to ensure that they align all their operations of serving the citizens with technology to ensure efficiency and quick delivery. The exploration of the state of e-governance

in South Africa's local municipality is significant in the sense that these are the foundational grassroots spheres responsible of local citizens' wellbeing.

The framework artefact that will be designed by the study serves as a foundational base source of information that can aid policy formulation and adoption of e-system which means it will be beneficial to the local municipality under the study and those with similar settings as of the case under inquiry. The key aim of this research is to improve the degree of how governance and delivery of service is currently articulated by local municipality. From the academic standpoint, future studies can refer to this study as secondary data for literature analysis thus the body of knowledge will benefit from the findings of this study through literature on e-governance in South Africa.

LITERATURE REVIEW OF THE STUDY

The way ICT systems have penetrated the global sphere in terms of connectivity and services offered has turned all countries including South Africa to opt into the use of the systems to deliver government services. According to (Abasilim and Edet, 2015) South Africa is found in the top three of the African countries that are advanced in technology. However, one area lagging behind in South Africa in their pursuit in technology adoption is the government structures such as e-government services to the public sector. The Government of South Africa has realized the value to which technology have if integrated to business processes. As a result, the state spending in setting up the e-systems has been noted; however, efficiency in terms of operational use of the systems has not been realized while the benefits need to be seen. If benefits of e-governance are not realised it is difficult for 4th industrial revolution to successfully be adopted because digitisation is the 3IR and it is the foundation of 4th industrial revolution hence benefits of E-Systems in government must be realised as the basis of ensuring that 4th industrial revolution will be easy to understand and embrace.

DEFINITION OF E-GOVERNANCE

Governance is a term that has seen a very wide application when matters of control and management are involved in the two common settings (private and public setting) that makes up a country. A wide variety of definitions exists though not all of the definitions relate to the 'e' context. The common attributes that exist in the definition of governance are transparency and accountability (Rietbergen-McCracken, 2008; Abasilim and Edet, 2015). Though the attributes are general view of governance, (Bannister, 2016) argued that to well define governance, there are two types of governance which need to be observed and these are normative and structural governance. Normative governance addresses the notion of values and related features while structural lean more on 'how' part of the government.

According to (Bannister and Connolly, 2018) normative governance addresses to attributes which focuses on objectives such as efficiency, accountability, and enhanced service delivery. Structural governance on the other end covers at most communication lines, legislation, processes employed, stakeholders, and the procedures followed in carrying out the governance (Therkildsen, 2010). It is essential at this stage to also unearth the differences between government and governance.

E-governance and E-government

The word e-governance has been existing for decades but only gained attention in recently (Pillay, 2012). It is digitalisation and transformative government that aided the popularisation of the term e-governance. The Incorporation of technology into functions of government has led to the creation of the term e-government (Meerman, 2016). Consequently, e-government steered the birth of e-governance which is used interchangeably in some cases. In-depth examination however discloses that the two terms are not perfectly and equally interchangeable. E-governance is defined as being "comprising of technologies that support government administrative services, democratic processes, and business relationships" (Vergez, 2015).

The present view of the difference advocates that government pose as a subset or an element of governance within a given institution. In full definition, "e-governance comprises of technology aided interaction between the public sector, private sector, households and individuals in a relationship of governance" (Jansen, 2014). This interpretation consequently proposes that the government is one of the subset elements of e-governance. E-governance was comprehended out of the implications of governance philosophies that address the issue of shifting from centralised to decentralised way of governance. E-governance has been credited for positively altering governance processes, structures, and creating new structures that could not be viable without technology. The following section provides a discussion of the relationship of e-governance and the 4IR.

Relationship of e-governance and 4th industrial revolution

The 4IR is founded on the digital revolution which represents the new ways in which the technology becomes the second nature of human beings in any society to the extent of having it embedded even in the body. The technology field is a wide area and has different fields and the emerging fields that impacted the era of 4IR include robotics, artificial intelligence, nanotechnology, quantum computing, biotechnology, The Internet of Things (IoT), 3D printing and autonomous vehicles (Oosthuizen, 2016; Thurner, 2016; Bruton, 2018; Kearney and Cisco, 2019). All the above fields seek to address the issue of connectivity and communication to ensure that there is efficiency in management and conducting business. In other words this entails that even the government have to make use of this revolution to ensure

that service delivery is improved. This is due to the fact that 4IR seeks to ensure that connectivity is all over and communication is enhance thus decision making will be faster which is one issue that the public sector have been encountering in the past three revolutions though the 3IR addresses this issue using automation of e-services such as the e-government and e-governance (Bocher, 2013).

In layman's language 4IR will ensure that capabilities and talent are the core values that will be needed to human capital as industries will be using systems that can communicate with each other and with humans too. Thus more technologies will be used to executed basic jobs in a faster manner while critical human resources skills will be used for problem solving, critical thinking rather than doing common routines which the robotics and artificial intelligence can address (Solangi *et al.*, 2018).

'Service delivery' on the other hand is viewed as the distribution of basic resources citizens depend on like water, electricity, sanitation infrastructure, land, and housing. But to date in South Africa, the government's delivery and upkeep of the resources is unreliable or rather greatly inconveniencing or endangering communities as protests by citizens are proving otherwise (Waheduzzaman, 2010). The question to the failure to quality delivery lies in systems, procedures, structures, human resources and IT systems among others (National Treasury, 2015). Structures that are making the societies to protests are part of what the 3IR and the 4IR came to address to which e-governance is part of the third industrial revolution (Pearlson and Saunders, 2013).

How 4.0 and service delivery be merge

Since service delivery has a framework that have structures and systems that can be utilised to ensure that communities have proper resources to use for daily living, the 4IR seeks to ensure that there is proper management of these resources using technologies that are connected to ensure balance in the utilisation of resources. However, the issue of automation will be beneficial in the proper decentralisation of powers and reducing issues such as corruption in the public sector but the concern that comes with 4IR is increase to inequality (Kearney and Cisco, 2019). Three inter-related risks that needs proper attention from government when adopting 4IR to improve service delivery are worsening of unemployment rate, increasing concentration of economic power and wealth, and the rise in information privacy and security concerns. Robots and internet of things will remove a very large number of people from their jobs thus starting with the use of e-governance will allow government to train its available resource to focus on adding skills as more workload will be reduced without retrenchment (Weber, 2015). Automation from 4IR will ensure efficiency but removes low skilled human resources thus the government especially in developing countries like South Africa. Thus the relationship of e-governance and 4.0 is on service delivery and e-governance prepares the human resource how automation will affect their day to day work (Weber, 2015).

Benefits of e-governance

According to (Nkala, 2016) the benefits that are related to e-governance use are similar for both developed and developing countries. The application systems of e-governance allow co-operation between entities such as citizens, government sectors and the private sectors thus improving services provided by any of the entities. (Abasilim and Edet, 2015) moreover, notes that re-engineering of processes can have a significant impact towards procedures of operations and thus cost reduction is likely to be realised.

Furthermore, (Bannister and Connolly, 2018) argues that the systems need optimum usage to ensure that efficiency is realised in service delivery to all the communities. There are numerous benefits that e-governance systems bring to local governments and they range from efficiency, transparency, condensed transactional costs, and improved services for the populations. Moreover, (Al-shboul *et al.*, 2014) recognises other e-governance benefits to be, satisfaction of the citizens, reduction in human effort in delivery which encourages the notion of new conception of work avenues, enhancement of ICT skills, increased knowledge of internet usage and freed time allows individuals to pursue new business.

Nevertheless, for organisations to ensure that all the mentioned benefits are met, the project of implementing the e-system must be properly done from a grassroots level. It must be noted prior to implementation that ICT systems have challenges and need to be reduced before implementation and developing countries have suffered in this regards.

Challenges of e-governance

According to (Heeks, 2006) issue related to corruption have affected optimal implementation of e-systems in the government sector. But the common challenges that are related to adoption of e-systems are categorised into four key areas which are the social, the organisational, the financial and the technical area (Abasilim and Edet, 2015).

These four areas have different subcategories that will need each to be detailed in the literature chapter on how each can affect full realisation of transforming the local government culture of service provision to making use of ICT as an enabler to realise fast and efficient service delivery. In preparation of the 4th industrial revolution it is crucial to ensure that a shift from traditional paper based systems to automated systems is key and the four classes of challenges related to e-governance need to be addressed well for RMLM to serve it communities. The study will use a socio-technical theory to address the challenges related to e-governance. Below is the discussion of the theory of the study.

Socio-technical theory

Trist and Bramforth developed the theory around 1950s, predicting how technology will affect the spheres that humans operate in. The socio-technical theory was designed for humans to realise that managing of information technological systems comes with challenges that emanate from either the social or technical system (Bostrom and Heinen, 2014). Figure one presents the complete system of the socio-technical theory and each system will be discussed below.
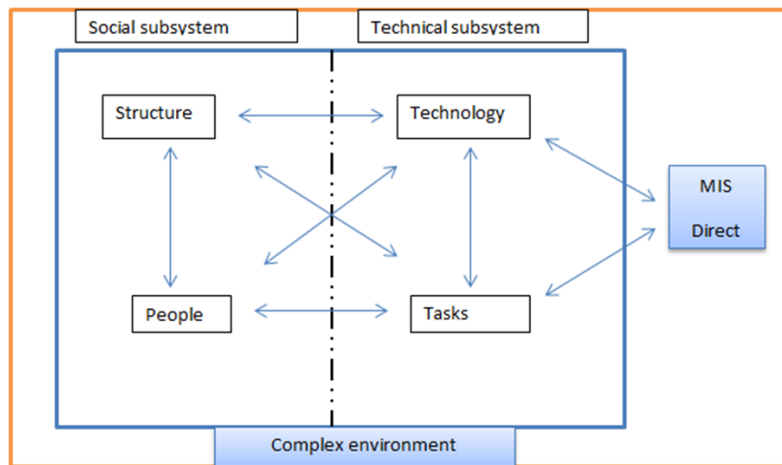

Figure 1: Socio Technical Theory (Source: Bostrom and Heinen, 2014)

The socio-technical theory founders believed that ICT systems are affected by two subsystems namely, the technical and social subsystems and how need in depth review to ensure that their interconnectedness can be easily pictured for the implementation and adoption of the ICT system at any organisation. For this study, the subsystems are for understanding how e-government systems can be utilised by the RMLM as foundational steps to prepare for the 4th industrial revolution. The technical subsystem has two elements which are technology and tasks and the elements have an interdependence effect to the social subsystem elements (Bostrom and Heinen, 2014). Technology elements are the physical devices, tools and techniques that are utilised in the transformation of inputs to outputs which must be beneficial to the organisation being affected. The tasks element is the element that provides inputs for individuals or systems to get outputs.

Under the subsystem of social it has elements of structures and the people. Structures are the policies which guides how the organisation operates, people on the other hand are the element that brings into the organisation values, knowledge, skills and attitudes that ensure that the organisation operates in a beneficial way (Bostrom and Heinen, 2014; Wright, O'Mahony and Cilliers, 2018). All the subsystems are affected by the following challenges.

Security

Citizens and organizations (*people under Socio-technical theory*) in their transition towards the digital age are increasingly becoming concerned about the security of their information. Citizens, businesses and other agencies wary of the potential security breaches of information and inadequacy of transparency in the use of their personal data (Fung, 2015). For all agencies to fully participate in e-governance there exist a dire need for security assurance. With numerous bad stories and news of hackers and other information security breaches, it is difficult to guarantee trust to participants (UN, 2011). Security systems are usually costly and also require continuous maintenance.

Privacy

Information privacy (*affects all the two subsystems of the theory*) speaks to issues of confidentiality in the manner in which data and information are handled. Lack of privacy could be deterrent for participants in e-governance (Rijkers, 2014). The government must be responsible custodians of the enormous amounts of personal information they hold. Growth in the e-governance scale and transactions creates vulnerability to information spillage and therefore there is need for caution to be exercised. Safeguarding the privacy of citizens' personal information while making effective use of it is crucially important, one which policymakers must address (Brynard, 2011).

Legislation and regulatory policies

There exists a mismatch between the rate at which technology is changing and the rate at which laws are changing in order to keep cyber law well updated (Brynard, 2011). The lag in technology related law in adapting to the fast-paced changes create several unregulated gaps e-governance (*affects the structures in the theory*). Law makers must set up new bodies responsible for researching and updating cyber laws in order to deal with the explosive phenomenon (Zigomo, 2017). It is essential to note that it is not only technological related challenges that may disrupts or hinder successful implementation of e-governance. Outdated laws, ancient regulatory administrations, overlapping and conflicting authorities can disrupt or halt an initiative (Zigomo, 2017). Furthermore, policymakers must consider the impact of law

and public policy on driving efficiency in public institutions. This therefore suggest that for the online world to function without hurdles, there is need for the adoption of new legal reforms and policies.

Digital divide
This term refers to the gap between areas and demographics that have access to Information and Communication Technology (ICTs) and those that do not have or have limited access (*affects people from the theory*). This technology include internet and devices such as telephone, mobile phones, radios, personal computers and television (Eriksson and Nilsson, 2007). In every country, some groups are lagging behind in terms of technology. This is exacerbated by factors such as income, class, race, gender, ethnicity and geography among other factors. Tied to this issue of digital gap are two issues of concern:

- *E-literacy.*
Owing to the growth and increase in use of technology, there is a shift from dealing with classic illiteracy to e-literacy problems. This suggests that those that lack the required skills and knowledge to use a computer, even when they are located in regions where the necessary technological infrastructure is in place would not have the ability to benefit from e-government services. As a result, e-government programs will have to formulate and facilitate programs for those that are not e-literate. Muciimi & Ngumo, (2014) argue that e-government has the potential to make even access to government or to expand the gap between those who are privileged and those that are underprivileged. Such a division will only intensify the difficulties of socio-economic inequalities that e-government is hoped will help solve.

- *Accessibility.*
It is the responsibility of governments to serve all their citizens equally, irrespective of their physical abilities. Internet provided services would be useful particularly to disabled people. This implies that online services must be designed with the appropriate interfaces that cater for the needs of disabled people (Tiebeam, 2017). Several software companies are creating interfaces and instruments intended to enable visually impaired, deaf or paraplegic individuals to utilize the internet as freely as others (Bocher, 2013). Thus, governments need to employ, adopt or and improve these solutions on the public administration websites.

Transparency
A standout among most widely recognized grievances is that citizens do not comprehend the manner in which public administration works as well as how decisions are made. This lack of comprehension makes it harder for the citizens to participate and engage in the public policies (Abasilim and Edet, 2015). In the context of business or governance, transparency refers to openness and honesty. Transparency together with accountability are considered to be the core aspects of good corporate governance (Therkildsen, 2010). The absence of transparency can hide corruption or favouritism among others. In order to enhance transparency, there is need for an electronic structure in which every document has a certain way to go through the processes and can be traced to the responsible public servant. This in turn will promote accountability.

Infrastructure development
Lack of the appropriate technological infrastructure is one of the challenges that impede the implementation of e-governance.it is imperative to note that almost every country in pursuit of e-government have tried to develop the basic infrastructure so as to take advantage of the new technologies. In developed countries such as Japan, North America, South Korea part of the required infrastructure already exists (Eriksson and Nilsson, 2007). The infrastructure was built by commercial operators. Whereas in other parts of the globe, India and Africa, there is a greater need for governments to include the necessary ICT infrastructure in their e-government plans.

RESEARCH METHODOLOGY OF THE STUDY
Research methodology in research studies details how the research will be answering the problem focusing more on the way primary data will be gathered and analysed. To ensure that the process is well followed, there are various methodological sections which are interlinked that will be discussed in this section and these are; the research design, research philosophy, the approach, data collection sampling strategies, data analysis and ethical considerations.

Research Design
Creswell, (2014); DePoy and Gitlin (2016) posits that design in academic research depicts the nature to which the study is premising its findings that addresses the problem. In simpler terms the design determines the nature of how the problem will be addressed thus; it is the umbrella parent of how the primary phase of research will be addressing the problem. According to (Creswell, 2014) it is the research problem that defines the type of research design. This study is exploring the case related to the adoption of e-system in the municipality specifically the e-governance system as a foundational step for preparing for the 4th industrial revolution; hence the design to which will be followed is an exploratory research design. Exploratory research design seek to address cases that the subject matter has been uncertain or faced ignorance

due to its complexity (van Wyk, 2017). In developing countries, the issues related to technology acceptance and use have faced challenges of ignorance due to its complexity hence this study opted to utilise this design.

Research Philosophy

A philosophy under academic research is what determines how the problem will be answered guided by the design and the problem. It is a belief that researchers seek to trust in answering the problem under inquiry. In this case, the challenge identified in the problem seeks to ensure that humans are prepared for the 4th industrial revolution and to ensure that the preparation is effective, human experiences and views need to be foundational in gathering primary data. The philosophical paradigm that suits best with human involvement of their views and experiences towards the issue of integration of e-systems for quality services delivery is interpretivist philosophy. According to (van Wyk, 2017), when a study opts for an interpretive philosophy it implies that it assumes that reality of that which is being investigated lies in the social constructs and shared meanings from within subjective experiences of humans. Thus, this study acknowledges that the issue of 4th industrial revolution preparations need to involve the subjective views of humans. Therefore, the problem suits best to be addressed using the interpretivist philosophy and the philosophy guides the choice of research approach which are discussed in the next section.

Research Approach

Two common research approaches exists and these are the qualitative and the quantitative research approach (Thomas, 2010). The approaches can either be used each alone or both of them but it depends on the choice of the research paradigm. Each approach is discussed below.

Created inductively from the primary data or deductively from the objectives and literature. To ensure that the thematic analysis process is easy to understand, Braun and Clarke (2006), argues that, there must be phases that need to be followed for the process to be easy. There are six phases that the study will follow and they include "familiarising yourself with your data; generating initial codes; searching for themes; reviewing themes; defining and naming themes and producing the report." Once the process of analysing data commences validation of findings need to be taken into account. Quantitative inquiry is more involved on issues of reliability and generalisability when validating its findings, while qualitative inquiry relies on trustworthiness and credibility of findings.

Strategies for data validation

During the data analysis procedures, validation research concerns form part of the vital issues needed in ensuring the legitimacy of the findings. While quantitative research studies are concerned more about validity and reliability, qualitative studies depend on credibility and trustworthiness. Validation in an inquiry seeking to report the objectivity and accuracy that the research study has when presenting the quality of the collected empirical data (Braun and Clarke, 2012; Sitko, 2013). In qualitative research the demand for validity related issues are raised using terms like; transferability, credibility, confirmability and dependability. Empirical data of this study (findings) were validated using triangulation.

Triangulation is a method exercised in qualitative research or mixed triangulation in research is the "sequential or simultaneous use of more than one research procedure/method or data collecting technique to have different understandings of the same problem called triangulation of procedures." Triangulation of procedures is also known as 'methodological triangulation' which can be applied in form of 'inter-method' or 'intra-method' in the method that the study will apply to ensure that validation is guaranteed. Intra-method the chosen method to be employed by the study make use of two or more techniques of the same research approach to collect data in which this study utilise (Weyers, Strydom and Huisamen, 2011). The study used one focus group interview session and three one to one interviews to collect data adding from document analysis of related reports and similar studies for literature review which guided the crafting of the research instrument.

EMPIRICAL FINDINGS OF THE STUDY

This section presents the findings of the study. It discusses the collected primary data following the processes that were discussed in the methodology chapter. Moreover, the guidelines of the analysis are guided by the research problem and research objectives highlighted (cf. sections 1.3 and 1.4 respectively). The primary objective of this study was identified as being to develop a framework with guidelines for the optimal adoption and usage of e-governance system as a preparatory initiative for embracing 4th industrial revolution in the selected Local Municipality. The findings chapter will start discuss the analysis process which is followed by code generation, and prior to conclusion is the thematic review and discussion. The chapter concludes with a summary detailing the main findings of the study.

Data analysis process

In qualitative research study, researchers can either make use of thematic or content analysis when analysing qualitative data. For the current study, as highlighted in the methodology chapter (cf. section 3.2.6) the researcher preferred using thematic analysis. Themes derived from the primary data for this study were deductively generated using research objectives to provide premises for answering the research problem. In this chapter, the researcher since she was involved

in the entire data collection the stages that were followed were the initial codes generation; theme searching and theme review and report writing.

Demographics analysis

Interviewee Name A (pseudo names for anonymity)	Gender	Marital status	Highest qualification obtained?	How long have you been employed RMLM?	Management level
FP01	Female	Married	B.com degree	6 years	Middle
FP02	Male	Single	Degree	8 years	Middle
FP03	Female	Single	Post graduate diploma	4 years	Junior
FP04	Female	Divorced	Master's degree	2 years	Junior
FP05	Male	Single	Degree	10yrs	Middle
FP06	Male	Single	HND	5 years	Middle
FP07	Female	Single	ND Administration	4 years	Junior
W01	Female	Divorced	MBA	3 years	Top
W02	Male	Married	N/A	5 years	Top
W03	Female	Married	N/A	9 years	Top

Demographic analysis which this study conducted was based on gender, marital status, and qualification, level of management and years of employment at the municipality. Gender analysis disclosed that 60% of the participants were female while 40% were male. The implication mean that females are now actively involved in the administration of the local governance like male. From the pseudo names, seven participants with a code **FP00** represent Focus group participants while **W00** represent one-to-one interviews. These codes are used in the entire study to quote what the participants suggested from the interviews. From the qualification, the least certificate identified from the sample is the national diploma which implies that the current human resources are educated. Two participants from the one-to-one interviews did not disclose their qualifications and the researcher valued their position as they have the right to disclose or opt not to. However, Demographic information does not have more value in the qualitative research study but it can be useful in making conclusions and inferences where necessary. The following section discusses the initial code generation of the study.

Initial codes generation

Initial code generation is the fundamental phase when analysing primary data. For this study, the generation of codes was conducted manually. Themes are deduced from the primary data and linking them with the research objectives while the researcher maintained context and objectivity by only coding the relevant phrases relating to the objectives. To achieve this, the researcher analysed each of the transcripts and formed codes using questions from the instrument. The examination was also guided by related past empirical reviewed literature. A total of 12 questions were obtained from the instrument and the codes generated are exhibited in the table below.

Table 1: Themes regeneration

Instrument guide questions	Thematic codes
1. What is your understanding of e-governance?	Knowledge of e-Governance
2. What is your understanding of the term 4th industrial revolution	Knowledge of 4th Industrial revolution
3. Does e-governance assist in the establishment of operational efficiency? If yes, how?	E-governance and operational efficiency
4. What are the possible benefits of e-governance to ordinary citizens of South Africa?	Benefits of E-governance
5. In your own understanding, how does e-governance improve governance matters at local municipality level in South Africa?	Benefits of E-governance
6. Comment on how e-governance system can be a tool that can be used to prepare for the 4th industrial revolution?.	e-systems as a pre-preparation of cyber physical systems
7. Outline any challenges hindering optimal adoption of e-governance in RMLM.	Challenges hindering e-governance
8. Operational efficiency is a priority matter for governments. To what extent is operational efficiency being achieved in the South African public sector?	Challenges hindering e-governance
9. What changes do you think must be made in order to increase accessibility of internet technology and use in governance?	Factors to improve e-governance
10. List any factors that can be followed to ensure that adoption of e-governance services in RMLM	Factors to improve e-governance

Instrument guide questions	Thematic codes
11. Any other issue that you can add to address the issue of ICT implementation and usage?	ICT adoption and usage
12. The president of South Africa is always talking about embracing the 4th industrial revolution. Do you think the 4th Industrial revolution can improve RMLM in governance of citizens? How can it improve or how can it not improve?	Recommendation evaluation for readiness

1.1 Theme searching, reviewing and naming
Once the initial codes are generated, a process of aligning the codes to the main themes is of importance. Themes are the source upon which qualitative primary data analysis must originate. They provide guiding principles to which the attainment of the main research objective and answering the research problem is realised. The codes identified in the section 4.3 were grouped in line with the themes below which were created from the three secondary objectives of the study. Each theme is discussed using all the codes that are related to it.

Theme 1: Knowledge and Status of e-governance in South Africa
Codes:
• Knowledge of e-Governance
• Knowledge of 4th Industrial revolution
• E-governance and operational efficiency

Theme 2: E-Governance, Operations and Benefits
Codes:
• Benefits of E-governance
• e-systems as a pre-preparation of cyber physical systems

Theme 3: Challenges in the implementation of e-governance
Codes
• Challenges hindering e-governance

Theme 4: Improvement areas
Codes
• Factors to improve e-governance

Theme 5: Readiness to embrace technology
• ICT adoption and usage
• Recommendation evaluation for readiness
Knowledge and Status of e-governance in South Africa

Knowledge of E-governance
On the ten respondents nominated in this study, they all grasped the concept of E-governance. They all understand that e-governance comprises of technologies that upkeep business interaction of the government, administrative service, and democratic practice. They admitted that it is the use of ICT to deliver government services. All the participants expressed that growth in South Africa over the past years has been restrained particularly by the level of intervention of the government in activities that happen in the public sector such as the RMLM. From understanding of what e-governance is the code that followed was relating to the knowledge of 4IR.

Knowledge of 4IR
From one participant (*W01*) from the interview stated that "*4IR is the current and developing environment in which disruptive technologies such as Internet of Things (IoT), robotics, artificial intelligence (AI), and virtual reality (VR) are changing the way we live and work*". This response shows that the topical issue of 4IR has been discussed and understood by *W01*. Another participant who showed in depth understanding of 4IR was from the interview (*W02*) who said, "*it is also termed cyber-physical systems with capabilities of machines imitating humans and being embedded in our lives ……..moreover the nature to which this revolution is penetrating is threatening humans to the extent that there might be resistance to change in other countries which will affect the state of the countries as the developed worlds are already applying the technologies.*" Though it was mentioned that there might be resistance to change, the key aspect that was outlined by (*W02*) was that, "*4IR advances what the 3IR introduced*". From the (EDUCAUSE, 2018) the 3IR was mainly focusing on the adoption of automation thus, digitisation of systems and e-governance is one of the systems that was of importance. From the focus group session all the individuals had an idea that 4IR will change the way people live. Therefore, all the participants provided the research with a positive feedback that the human resources in the RMLM have

an idea of the current revolution that is topical presently. The last code for the theme was reviewing the assistance of e-governance in ensuring operational efficiency.

E-governance and operational efficiency

E-Governance if properly adopted and used it improves the efficiency of the existing systems that are being utilised by a number of Municipalities in South Africa. Systems that exist in the government structures have been known for paper related systems for their operations. From the Focus group session, **FP05** mentions that, "*it decreases the need for labour required in dealing with a lot of paper based work. This, therefore, allows the procedure to be handled by lesser employees and hence leading to reduced operations cost*". It is maintained by Jansen, (2014), arguing that when employed effectively; e-governance systems may bring about improved public service delivery which is noteworthy, effective and accurate. From, **FP02**, the issue of long waiting periods due to lack of flexibility access of information was raised as the paper system restrict citizens to access the needed information or service. In support of (**FP02**), (**W03**) argued that "*e-governance reduces red tape in the government.*" Literature posits that e-governance offers an increased range of public services to the citizens in a resourceful and cost effective manner which decreases the financial and time costs related to paper based systems (Bannister, 2016).

E-Governance, Operations and Benefits
Benefits of E-Governance

Improved efficiency, cost reduction and savings. **FP01** states that, "*e-government allows government departments to centralize decision making and obtaining a reduction in costs". The centralization of such kind of activities tends to eradicate inefficient and costly redundancies*". This relates to a study done by Moon, (2002) on the evolution of e-government among Municipalities which established that e-government has subsidized significantly in creating business processes more effective for the local governments. For example, accruing the number of tenders and the value of tenders for successful procurements; re-engineering business processes by some municipalities.

Elimination of delays. The government and citizens all benefit from utilizing the online services offered by the e-governance systems. It reduces delays therefore; all affected parties in need of the service have the ability to save time. **FP07** views that "*e-government services aid in improving the effectiveness of business environment through creating intelligent customers, assisting businesses to save, money and time, energy to be invested somewhere else.*" Moreover, **W02** in support of elimination of delays argued that, "*electronic access makes it easier to change things such as changing of a simple marital status or address without wasting time, effort and money*." (Heeks, 2006) alludes that flexibility that is offered by online services eliminates delays that exist in terms of decision making to all the affected parties. Therefore, such a type of systems aligns well with the demands of the local Municipality such as the RMLM as it serves citizens from diverse geographical spaces.

Facilitating improved communications between citizens, private sector and the government. Another benefit that comes with engaging in e-government is establishment of better communications between the government with its citizens and businesses (Xavier *et al.*, 2017). **W02** postulates, "*one good example that we have is e-Procurement, which accelerates Government to government (G2G) and Business to business (B2B) communication; in South Africa this have made it possible for businesses to contest for government contracts but still paper based is being utilised*". Such type of platform shapes an open market and a strong economy, which improves the relations between businesses and the government (Persad and Padayachee, 2015). Other researchers also indicated that a trend toward more partnership involvement between governments, the private sector and the citizens allows a proper implementation of e-government services (Jansen, 2014). The private sector applies pressure to government agencies to intensify efficiency which offers improved communications between affected parties (Persad and Padayachee, 2015). Therefore the development of e-governance system at local municipalities helps to distribute information and extend the attitude that citizens are customers that need to be served with value because they are of value.

Easy access to online services. Simplification of processes and information access is one attribute that government sectors in developing countries fail (International Women's Forum South Africa, 2011). Citizens when having easy access to information have the ability to relate with the government at any time (International Women's Forum South Africa, 2011). According to **FP04, FP06, W02** and **FP01**, in the present old model of public service delivery in RMLM, the processes lack transparency, long and time consuming. Citizens and other stakeholders often spend more time for a simple service. However, e-governance initiative on the other hand makes government services to be accessible online, thus offering easy access, transparency and eliminating bureaucracy which enhances the services quality in the viewpoint of time, content and accessibility.

Transparency and Less Bureaucracy. When approved laws and policies are accessible on the municipal e-governance systems, it is ample easier for experts and the general citizens to assess and debate government decisions. This methodology serves the nation as a security for liberty of information, transparency and effectively inhibiting corruption

(Xavier *et al.*, 2017). According to **W03**, "*e-governance implies less bureaucracy, as digital information can move rapidly from one answerable office to another, therefore there won't be any need to wait for paper documents*". Bannister (2016) argued that there is common opinion, that e-governance is a means that can work towards changing the outdated bureaucracies that exist in the government sectors. In support of this, **W01** posits that "*there is increased accountability that can be traceable rather than the paper system.*" The issue of accountability is what the focus group participants raised, arguing that it is one of the issue that makes top management not to support implementation of e-government effectively. This therefore echoes a better transparency of offered services by the government to which corruption will be mitigated.

E-systems as a pre-preparation of cyber physical systems
Since the participants raise the benefits that are related to the use of e-governance, this code relates to the link that the e-governance system offer in the preparation of merging the physical system and the cyber systems. According to **FP04**, e-governance can serve as a pre-preparatory phase to 4IR but feels the first priority needed to ensure that this is viable is to give the citizen more connectivity before addressing it into the municipalities. This was supported by (Hearn *et al.*, 2005) arguing that is the society which wants to be served does not have the access to the internet then 4IR cannot be well embraced. **FP03** also posits that increment in public access will allow them to fully utilise the e-governance systems rather than keep walking into different municipalities to be served as they fail to conduct their activities on their phones due to the costs of data. Other than the increased access need, **FP01** said "*digitisation is now a standard of living thus e-governance will serve to make government and its citizens to start embracing the go-green initiative because they are the ones who are slow in changing.*" From the interviews, W01 argued that, "*the e-governance will easily make the concept of 4IR to be understood and embraced by all affected parties in a gradual manner.*" Thus, there element of not leap frogging to the 4IR cannot be accepted well by the affected entities but a step-by-step adoption of all stages is key to the successful adoption of technologies in 4IR. However, implementation of e-governance has its own challenges and are discussed following.

Challenges in the implementation of e-governance
Challenges hindering e-governance
There are several challenges faced through use of e-governance and among them include lack of equality in public access to the internet, Issues related to privacy and security concerns, Lack of digital literacy skills among the human resources, Budget to procure the infrastructure and Resistance to change from primary data and confirmed by literature. These will be discussed in the section below.

Digital divide towards public access to the internet. Studies which were analysed by Internet World Stats (2016) over the issue of e-services from the governments of developing countries in the recent years have revealed that usage of online government services is hindered due to issues related to digital divide. According to the participants of the focus group and the interviews, there is a huge gap between the societies that exist in the Eastern Cape Province in terms of network accessibility prior to the issue of public internet access. Particularly **FP05** and **FP07** stressed that, "*as long as there is no access to free public internet it means successful application of e-services to the citizens will not succeed.*" In support of this case, Bannister (2016), also argues the same sights that the major disadvantages of e-government operation lie on the likelihood of exclusion of key stakeholders' needs which is digital e-exclusion by limiting them public internet access. Therefore, this is the foundational attribute that is needed to be addressed from this study.

Issues related to privacy and security concerns. Although the level of assertion in the safety delivered by government websites are high, the use of public internet makes citizens to be worried over information privacy and security (Alalwan, Dwivedi and Rana, 2017). Similarly, **W01** posits this too arguing that, "*in spite of the efforts being made by government agencies to guarantee the safety of citizens' private data, e-governance websites are still predisposed to attack from hackers. In some cases, personal data can be uncovered; this causes less trust on how the information is kept safe and whose hands it falls on*". Mcneish and Mcneish, (2015), further supports the sentiments raised by **W01** arguing that one of the limitations could normally be the level of commitment as a result of low levels of trust by consumers of the e-government platforms. Even the 4IR has a challenge of privacy and security however; this needs to be addressed by making adequate recommendations to address these challenges

Lack of digital literacy skills among the human resources. According to (Lam and Wong, 2015) ICT skills are in short supplies while technology is advancing at a rate that the use of technological systems is now a norm. The citizens needing more services, the human resources that are currently working in the government sectors have not been exposed to educational programmes relating to this issue of using technologies to process a service thus, it is a challenge to ensure full successful adoption and use of the e-governance. **FP05** said that "*Literacy of the operators and the ability to operate computers is an issue of concern for human resources and the old aged citizens above 50years of age*". Technological literacy was pointed out as being a drawback and users need assistance because failure to assist results in wastage of money and also resistance to change.

Budget to procure the infrastructure. Meerman (2016) posits that a well-organised e-system entails that most of its citizens must have access to the Internet. Thus, hardware such as internet-enabled devices, routers and a connection setup are fundamental to connect and access the services from the government websites. All the respondents posit that there is too much costs related to adoption of e-government services. **W03** put forward that, "_normally public sector organisations need advanced servers and security mechanism to handle vast volumes of information and fire walls for intricate cyber threats. So you will see that all these necessities are very costly investments, which go beyond the reach of economically less developed countries and the budgets given to RMLM the local municipalities"._ Farelo and Morris (2014) agree to the sentiments of **W03** that high technological costs proves to be a challenge is the local Municipalities seek to have a robust system for its online operations. The costs that relates to the robust systems comprise of improvement of existing infrastructure, interoperability of the technologies, permanent safety and accessible systems, cost arrangements and standard settings, training and education of operating the technology. Such a colossal cost amount is unfavourable to the government.

Resistance to change. Technology that the 3IR and the 4IR have introduced and are still to introduce is viewed as a challenge to job security among the employees (O'Donnell and Boyle, 2008). As a result anything that is viewed as a threat to individual's employment is not embraced or adopted fully. However, the notion is not always true to different technologies such as the e-systems that remove processes that delay rendering services on time. Information as this lacks to the human resources and when lacking it is a challenge to adopt thus, there is a need to involve the human resources to ensure that they understand what the e-system will serve rather than for them to view it as a threat to their jobs. From all the participants of focus group and the three interviews, the fear of job loss was said to be a challenge that leads to resistance to change. Therefore, the study observes that the implementers of these systems are failing to provide the necessary information and considerations that are needed for the users not to resist change in the assumptions of threat to jobs and power.

Internal politics leading to divisions. Organisational culture that exists in the RMLM was viewed as a challenge by the individuals from the focus group interview session. In particular **FP04** argued that "_there is limitation of information flow as if there is competition in the same Municipality_." In addition, **FP07** said, "_such competition will not accept the notion of having a system that when one enters information it is easily accessible to the other departments and affected parties outside the RMLM_." Silos according to literature are cumbersome and will not allow services to be rendered easily and quickly (Gaffoor and Cloete, 2010).Therefore such an observation that is growing can only be terminated when the organisational vision and mission is well delivered to all the human resources as all the work done in the Municipality serves the citizens not the self-rewards of employees through limiting information to other departments for quality service delivery. Having realised the challenges and discussed them, the following theme addresses ways to improve e-governance systems in the RMLM.

Improvement areas
Factors to improve e-governance
Factors that were identified by the participants for RMLM to consider in ensuring that they adopt e-governance in a way that yield positive results are as follows:
- Educational workshops and training of human resources with regards to ICT related issues (using, security, privacy) must be done in regular basis
- Improvement of the current ICT infrastructure
- Accessibility of public networks (ICT in rural areas) and the data tariffs must be addressed by the government
- Budget allocation on ICT systems need to be prioritised
- Awareness campaigns to the communities to ensure that e-systems are known (digital inclusion)

The areas identified by participants to need attention, relates to the theory of the study (socio-technical theory) in a manner that in the two subsystems have four key attributes that are affected by challenges and the challenges can be solved using the above factors. From the factors highlighted above, it is clear that the two major problems are the HR and the technology itself. Therefore, rigorous practical research need to be done to ensure that a clear foundation is set in the RMLM for e-governance to be implemented and used successfully. The foundation can be discussed using the last theme which is reviewing the readiness of the RMLM to embrace technology in their provision of service to the citizens of the Municipality.

Readiness to embrace technology
ICT adoption and usage
The adoption and usage of ICT is coupled with complex processes that need proper evaluation and research prior to implementation of the systems (Abasilim and Edet, 2015). The tasks and the structure of the organisation set the tone of what to research about as systems differ due to the needs. From the participants' response to the issue of usage, it was noted that they feel that education, training and development of the human resource allows clarity to the individuals who

are the primary sources of change. *FP02* in particular, posits that, "*ICT should be added to basic education curriculum and also accommodating the elderly in the evening classes to ensure that there is no resistance to change due to lack of ICT skills. Moreover, education will provide the human resources with information that will enable the society to embrace 4IR.*" In support with *FP02*, *FP07* argued that, "*adoption and usage can only be successful when there is human resources capacitation.*" Thus, the participants seek to agree that people contribute a major degree to the successful adoption and use of technologies which the socio-technical theory concur with the view that people pose a challenge to adoption of technology (Bostrom and Heinen, 2014). To this end, the following last code of the theme readiness to embrace focuses on the recommendations that were identified by the participants.

Recommendation evaluation for readiness
The issue of readiness was aligned to the 4IR as a revolution that can change RMLM. E-governance in this chapter was aligned to be a foundational initiative of making the RMLM technology centric municipality that makes use of technology to deliver quality service to its communities. The majority of the participants agreed that 4IR can enhance the lives of the citizens however, the issue that emanated from all of them was that the state of South Africa as a whole and RMLM in particular is that the technological readiness is far from embracing 4IR even if the president is taking strides to embrace the revolution. *W01* in particular posits that "*there exist a huge gap in RMLM in terms of readiness and the truth of the matter is that we cannot leap from basic automation like e-governance to robotics.*" *FP02* also said, "*Readiness does not exist because there literacy levels that the human resources have are not technology centric.*" In summary, digital divide is what needs to be addressed in the RMLM to ensure that the human resources that will be affected by the technologies are equipped prior to adopting more advanced systems.

EMPIRICAL FINDINGS OF STUDY
Findings from the primary data revealed that participants understand that e-governance systems comprises of technologies that aid the upkeep of administrative services of the government, enhance democratic practices, and smoothens business interactions. To businesses and citizens, e-governance reduces delays thus saving time and enhances the usefulness of the way information will be distributed around the business environment.

The findings discovered that e-governance is attributed for decentralize decisions, reduce costs and coordinate stakeholders. It was also mentioned that e-governance reduces delays thus, reflects better transparency, saves time and leads to reduction of corruption. Challenges inherent in the RMLM office comprise of the digital divide in public access to the internet, security concerns and resistance to change among others. Some of the recommendations to improve were deal with people in terms of training and education, budgets for technology to be foundational and digital inclusion. In terms of evaluation for readiness, it was mentioned that RMLM has a long way to embrace 4IR because the e-systems are not yet operational and efficient thus there is a need to ensure that basic automation or use of integrated systems is fundamental. The following section provides recommendations of the study in relation to e-governance in the RMLM.

Recommendations of the study
The arguments presented in the findings chapter and the summary in the preceding section thereof aimed at concluding issues about the use of e-governance systems as a driver for efficiency and 4IR preparation in the RMLM of South Africa. The major recommendations that were discovered from literature and primary findings are centred on cultivating the collaboration and participation of all stakeholders affected by the e-governance matters. The study recommends the following in form of a framework guided by the four key attributes found in the socio-technical theory as it presents the challenges of information systems:

Structure:
- Re-engineering of the communication culture that currently exist in the organisation to accelerate information dissemination.
- The culture can be enhanced by making improvements by establishing systems such as Ward Committee Systems to address the overall matters from ward level that is grassroots innovation which could steer participatory governance in South Africa.

Technology:
- Social media platforms are what most citizens spend time on, therefore the government need to initiate information sharing through these platforms. Such an initiative is a stepping stone to embrace technology at the same time furthering participatory governance as there are high volumes of responsive interactions.
- There is a need of expansion for the budget of ICT infrastructure (reduction of digital divide) and its educational supporting programmes. Workshops, awareness initiatives, and educational trainings must be continuously conducted and frequently.

Tasks:
- The policies that guide the adoption and use of e-systems need to be well established and be operational as they are the ones that will ensure that there is no resistance to change from the employees when they know what the system will do so that there are no job insecurities among the human resources in RMLM.

People:
- Shared ownership of community development initiatives by the RMLM and all other stakeholders is key to ensure that successful implementation and adoption of e-governance system.
- Digital literacy must be developed in communities, via mass educational programmes and delivery of public libraries that have computer labs. Digital divide is one inhibitor of accelerated growth of RMLM in terms of quality service delivery thus, thorough grassroots innovation research studies need to be conducted at ward level to ensure full ownership and citizens participation is realised.

Limitations and areas of future works
One of the major limitations observed by the researcher in conducting this study was the use of a unit case of analysis. Hence, future research may use a cross case examination with another Municipality that has effectively adopted and the other with semi effective adoption to have lessons learned and view the complexity of the problem in different views. Future studies can also use quantitative research and statistical analysis and mixed methods to solicit responses from divergent viewpoint thus resulting in impactful research studies where various answers to the research problem can be used.

Conclusion of the study
This study explored how e-governance can be used and adopted in the RMLM as means to attain operational efficiency. The study examined topics around benefits and challenges related to e-governance in the local government. The study made use of the case of the selected Local Municipality from the Eastern Cape Province in South Africa. It made use of a case inquiry inclined towards interpretivist paradigm as a philosophy. The analysis of the study found that the major problem that affects the adoption of e-governance is related to the structure of the organisation. The participants showed that they understand the benefits that can be related to e-governance. The study also discovered several issues hindering the acceleration of e-governance. Owing among the challenges included in the analysis, technological illiteracy, and privacy and security issues among several others. The final recommendation was that the government, citizens and businesses must collectively cultivate strategies that will address e-governance through harnessing structures, tasks, technology and people.

References
Abasilim, U. D. and Edet, L. (2015) 'E-Governance and Its Implementation Challenges in the Nigerian Public Service', *Acta Universitatis Danubius. Administratio*, 7(1), pp. 1–8.
Al-jader, R. A. (2015) 'An Empirical Study on the Mediating Effect of E-Service Recovery Satisfaction on the Achievement of Customer Retention in the Airline Industry in Malaysia', *IOSR Journal of Business and Management*, 17(1), pp. 42–49.
Al-shboul, Muhannad *et al.* (2014) 'Challenges and Factors Affecting the Implementation of E-Government in Jordan', *Journal of Software Engineering and Application*, 7(December), pp. 1111–1127.
Alalwan, A. A., Dwivedi, Y. K. and Rana, N. P. (2017) 'Factors influencing adoption of mobile banking by Jordanian bank customers: Extending UTAUT2 with trust', *International Journal of Information Management*. Elsevier Ltd, 37(3), pp. 99–110. doi: 10.1016/j.ijinfomgt.2017.01.002.
Bannister, F. (2016) 'Defining E-Governance', *e-Service Journal*, 3(January). doi: 10.2979/eservicej.8.2.3.
Bannister, F. and Connolly, R. (2018) 'Defining E-Governance 1', *e-Service Journal*, 8(2), pp. 3–25.
Bocher, L. (2013) *Understanding Business Process Automation*. Pretoria.
Bostrom, R. . and Heinen, J. S. (2014) 'MIS Problems and Failures A Socio-Technical Perspective.', *Management Information Systems Quarterly - MISQ*.
Braun, V. and Clarke, V. (2012) 'Thematic analysis', in Cooper, H. (ed.) *APA Handbook of Research Methods in Psychology*. American Psychological Association, pp. 57–71. doi: 10.1037/13620-004.
Bruton, M. (2018) 'Is this the 4IR or the FDR ?', (September).
Bryman, A. and Bell, E. (2011) *Business Research Methods (3rd ed.)*. New York: Oxford University Press.
Brynard, P. (2011) *POLICY IMPLEMENTATION : LESSONS FOR SERVICE DELIVERY*. UNiversity of Pretoria.
Burns, alvin, C. and Bush, Ronald, F. (2014) *Marketing research*. Internatio. Edited by S. Wall. Essex: Pearson Education.
Burns, A. C. and Bush, R. F. (2014) *Marketing Research (7th ed.)*. Harlow, England: Pearson Education.
Churchill, G., Brown, T. and Suter, T. (2009) *Basic Marketing Research*. 7th edn. Hampshire: Cengage.
Coelho, T. R., Segatto, A. P. and Frega, J. R. (2015) 'Analysing Ict and Development From the Perspective of the Capabilities Approach: a Study in South Brazil', *The Electronic Journal of Information Systems in Developing Countries*, 67(2), pp. 1–14. Available at: www.ejisdc.org.

Creswell, J. W. (2013) 'Qualitative, quantitative, and mixed methods approaches', in *Research design*. 2nd edn. Sage publications, pp. 1–26. doi: 10.2307/3152153.

Creswell, J. W. (2014) 'Research Design: Qualitative, Quantitative, and Mixed Methods Approaches'. doi: 10.1016/j.math.2010.09.003.

DePoy, E. and Gitlin, L. (2016) 'Essentials of Research. In Introduction to Research', pp. 14–23. doi: 10.1016/B978-0-323-26171-5.00002-1.

ECSEC (2017) *Amathole District Municipality Socio - Economic Review*. East London.

EDUCAUSE (2018) *Governance*, *EDUCAUSE*. Available at: https://www.educause.edu/about/mission-and-organization/governance-and-leadership (Accessed: 4 December 2018).

Eriksson, K. and Nilsson, D. (2007) '"Determinants of the continued use of self-service technology: The case of Internet banking".', *Technovation*, 27(4), pp. 159–167.

Etikan, I. (2016) 'Comparison of Convenience Sampling and Purposive Sampling', *American Journal of Theoretical and Applied Statistics*, 5(1), p. 1. doi: 10.11648/j.ajtas.20160501.11.

Fung, A. (2015) 'Putting the Public Back into Governance: Th e Challenges of Citizen Participation and Its Future', pp. 513–522. doi: 10.1111/puar.12361.Putting.

Gaffoor, S. and Cloete, F. (2010) 'Knowledge management in local government: The case of Stellenbosch Municipality', *SA Journal of Information Management*, 12(1), pp. 1–8. doi: 10.4102/sajim.v12i1.422.

Hearn, G. *et al.* (2005) 'A Way Forward: Sustainable ICTs and Regional sustainability', *The Journal of Community Informatics*, 1(2), pp. 18–31.

Heeks, R. (2006) *eGovernment for Development Success and Failure in eGovernment Projects Success / Failure: Case No.24*, *Management*.

International Women's Forum South Africa (2011) *The status of women in South Africa*. Pretoria. Available at: http://myfundi.co.za/e/The_status_of_women_in_South_Africa_(2000).

Internet World Stats (2016) *Internet Usage Statistics for Africa (Africa Internet Usage and 2015 Population Stats)*, *Internet World Stats*. Available at: http://www.internetworldstats.com/stats1.htm Page (Accessed: 6 June 2016).

Jansen, A. (2014) *Assessing E-government progress – why and what*. University of Oslo.

Kearney, A. and Cisco (2019) 'Accelerating 4IR in ASEAN : An Action Plan for Manufacturers', *Cisco Publication*.

Lam, C. and Wong, C. (2015) 'Challenges for Digital Literacy in English Curriculum', pp. 32–36.

Lund Research (2012) *Purposive sampling*, *Laerd dissertation*. Available at: http://dissertation.laerd.com/purposive-sampling.php (Accessed: 18 November 2016).

Mabuza, L. H. *et al.* (2014) 'African Primary Care Research: Qualitative data analysis and writing results', *African Journal of Primary Health Care & Family Medicine*, 6(1), p. 5 pages. doi: 10.4102/phcfm.v6i1.640.

Maholtra, K. (2012) *Basic Marketing Research*. Fourth edi. Hagerstown: Prentice Hall.

Mcneish, J. and Mcneish, J. (2015) 'Consumer trust and distrust : retaining paper bills in online banking'. doi: 10.1108/IJBM-08-2013-0088.

Meerman, S. (2016) 'CPSI 4 th Public Sector Innovation Conference The state of e-Government in South Africa.', in. Cape Town: SITA.

Morwane, J. (2017) 'National_e-Gov_Strategy'. Pretoria: Information Society Development and Research.

Muciimi, E. N. and Ngumo, E. M. (2014) 'Implications of Globalization for International Business Strategy : A Multi-Sectoral Approach', *International Journal of Science and Research*, 3(4), pp. 68–78.

National Treasury (2015) *2015 Public Sector Supply Chain Management Review*. Available at: http://www.treasury.gov.za/publications/other/SCMR REPORT 2015.pdf.

Nkala, S. (2016) 'The benefits of e - governance for municipalities and citizens', *e-Service Journal*, 12(6), pp. 1–7.

O'Donnell, O. and Boyle, R. (2008) *Understanding and Managing Organisational Culture*, *Institute of Public Administration*.

Olufemi, J. (2013) 'Performance Management Systems and Productivity in the Public Sector ': Cape Town: Wither African Public Administration, pp. 77–105.

Oosthuizen, J. (2016) 'An Assessment of 4IR-Intelligence of South AFrican Management Practitioners Through the Lens of the Fourth ...', *10th International Business Conference*, (September).

Pearlson, K. . and Saunders, C. . (2013) *Strategic management of Information Systems*. 5th edn. Singapore: Wiley.

Persad, K. and Padayachee, K. (2015) 'The factors that influence customer e-services adoption', *SACJ*, 56(11), pp. 80–106.

Pillay, K. N. (2012) *e-Government in South Africa : Predictors to failure and success*. University of Witwatersrand.

Pretorius, A. H. (2015) *Project Portfolio Management : A structured review of academic literature*. Capetown, South.

Rietbergen-McCracken, J. (2008) 'Participatory Policy Making', *Civicus*, pp. 1–16.

Rijkers, R. J. D. (2014) 'The Influence of Company Image , Trust and Price on Satisfaction and Intensity of Repurchase at the Large Retail Businesses in Makassar , South Sulawesi Indonesia', 4(12), pp. 1–17.

Shiu, E. *et al.* (2009) *Marketing Research*. New York: MacGraw-Hill.

Sitko, N. J. (2013) 'Qulitative Methods : Data Analysis and Validation', *IAPRI*, p. 28.

Solangi, Z. A. *et al.* (2018) 'The future of data privacy and security concerns in Internet of Things', in *2018 IEEE*

International Conference on Innovative Research and Development (ICIRD). IEEE, pp. 1–4. doi: 10.1109/ICIRD.2018.8376320.

Sousa, D. (2014) 'Validation in qualitative research: General aspects and specificities of the descriptive phenomenological method', *Qualitative Research in Psychology*, 11, pp. 211–227. doi: 10.1080/14780887.2013.853855.

Suri, H. (2011) 'Purposeful Sampling in Qualitative Research Synthesis', *Qualitative Research Journal*, 11(2), pp. 63–75. doi: 10.3316/QRJ1102063.

Taherdoost, H., Sahibuddin, S. and Jalaliyoon, N. (2013) 'E-Services Usage Evaluation ; Applications ' level of Co-Creation and Digitalization', *InternationalJournal of Academic Research in Management*, 2(1), pp. 10–18.

Therkildsen, O. (2010) 'Efficiency , Accountability and Implementation Public Sector Reform in', (3).

Thomas, P. . (2010) 'Research Methodology and Design', in *Research Methodology and Design*, pp. 291–334. doi: 10.1515/9783110215519.82.

Thurner, T. (2016) 'Leaders Angle Impact of 4IR by Prof Thomas Thurner'. New Jersey: Edward Elgar Publishing.

Tiebeam (2017) 'Business Process Automation'. Nairobi: Tiebeam Ventures.

UN (2011) *Challenges and Opportunities of Participatory Governance in North African Countries : Engaging Citizens and their Organizations in Public Development Affairs through Adequate Institutions*.

Vergez, C. (2015) *Implementing e-government in oecd countries: experiences and challenges.* Paris.

Waheduzzaman (2010) *People ' s Participation for Good Governance : A Study of Rural Development Programs in Bangladesh Date :* Victoria University.

Weber, R. H. (2015) 'The digital future – A challenge for privacy?', *Computer Law & Security Review*, 31(2), pp. 234–242. doi: 10.1016/j.clsr.2015.01.003.

Weyers, M. L., Strydom, H. and Huisamen, P. (2011) 'Triangulation in social work research: the theory and examples of its practical application', *Social Work/Maatskaplike Werk*, 44(2), pp. 207–222.

Wiid, J. and Diggines, C. (2013) *Marketing Research*. Second Edi. Edited by W. Prillaid. Cape Town: Juta.

van Wyk, B. (2017) 'Research design and methods Part I'. Cape Town: University of Western Cape.

Xavier, R. *et al.* (2017) 'Participatory governance in the transformation of the South African energy sector : Critical success factors for environmental leadership', *Journal of Cleaner Production*. Elsevier Ltd, 154(Participatory governance in the transformation of the South African energy sector: Critical success factors for environmental leadership), pp. 621–632. doi: 10.1016/j.jclepro.2017.03.146.

Zigomo, R. (2017) *Discussion paper Participatory governance and citizen action in post-apartheid South Africa Steven Friedman Visiting Professor of Politics*. Rhodes University.

Zikmund, W. and Babin, B. (2010) *Essentials of marketing research*. 9th edn. South Western: Cengage.