



School of Computing and Informatics
Department of Informatics

E-COLLABORATION FRAMEWORK FOR EFFECTIVE DECISION- MAKING IN A NAMIBIAN PUBLIC ORGANISATION

By

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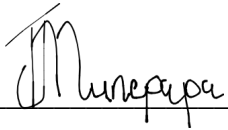
October 2018

DECLARATION

I, Judith K Munepapa, born on 17 August 1984 at Ruacana, Namibia, hereby declare that the work contained in the report presented for the degree of the Master of Informatics at the Namibia University of Science and Technology, entitled:

E-Collaboration Framework for Effective Decision-making in a Namibian Public Organisation

is my original work, and that I have not previously, in it's entirely or in part, submitted it to any other university or higher education institution for the award of a degree.



Judith K Munepapa

08 October 2018

Date

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DEDICATIONS

This thesis is dedicated to my family for their unconditional love and support.

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LIST OF ACRONYMS

AT	Activity Theory
eSAP	e-Government Strategic Action Plan
ICT	Information and Communication Technology
IT	Information Technology
ITSM	Information Technology Service Management
MoF	Ministry of Finance
NPD5	Fifth National Development Plan
OMAs	Offices/Ministries/Agencies
OPM	Office of the Prime Minister

ABSTRACT

The public sector is witnessing a digital revolution and are being challenged by many obstacles as correct electronic platforms are provided for the improvement of collaborative activities, sharing of information and knowledge, regardless of time, space or location. In this study the focus was on three main subject matters: decision-making, tools for collaboration, and challenges that may arise when using these tools for collaborative activities. The empirical part of the thesis employed qualitative techniques to assess the problem context.

A case study design was utilised to enable varied data collection instrument including semi-structured interview, observation and document analysis to investigate the complex phenomena to enable the researcher capture managers' facet points of view. The findings indicated that there were existing tools of collaboration being used particularly by managers within the public sector. Managers are motivated to use new kinds of collaboration tools due to its effect of enhancing social interaction amongst their peers and are equipped with needed skills to operate them. The large majority of managers have sufficient skills for everyday and routine working practices, however quite a large number, still have difficulties in finding a meaningful pedagogical use for e-collaboration tools.

Keywords: Decision-Making, Collaboration, e-Collaboration tools, Public sector

CHAPTER 1: INTRODUCTION TO THE STUDY

1.1. Introduction

The public sector in several countries including Namibia are vitally concerned with increasing the access of citizens to governmental information, and services through effective decision-making. This internal governmental driver to increase the legitimacy, credibility, transparency, and responsiveness of government has a counterpart in society.

Decision-makers are expected to have better understanding of their operational context and linkage to other departments or functional unit of other public institutions, thereby enabling them to provide more comprehensive delivery of services to the public (Szymaniec-Mlicka, 2017). Thus, requiring exchange of views from varied stakeholders on pertinent society challenges both within and outside the establishment. The need for shared knowledge and understanding from different stakeholders who are most often not restricted by location but are highly mobile and in geographical dispersed locations.

The demand and the need to provide timely and access to qualitative governmental information necessitate that every stakeholders' opinion be considered before making decisions. To make information available to the public make bricks and mortar collaboration inefficient, hence the need for e-collaboration. The advancement of Information and Communication Technology (ICT) has further increased the number of collaboration tools available other than telephone but including internet technologies such as email, instant messaging, video conferencing and the likes. The utilization of these varied collaboration tools to increase participation and contribution for timely and qualitative information amongst contributors is commonly referred to as e-collaboration.

E-collaboration should not be confused with e-Governance in the public sector. E-Governance in the Namibian sector was implemented to simply support and simplify the access to government

information for all parties; government, citizens and businesses through online portals. On the other hand, the use of e-Collaboration is more concerned with the tools that can be used either internally, externally, or holistically to exchange ideas, skills, expertise, and share information for decision-making. The use of e-collaboration specifically in the Namibian sector need a shift from the current traditional tools that are used such as face-to-face meetings, telephone, faxes, and relatively e-mails. These collaboration tools are, however, not that adequate enough especially in this age of digital transformation. Thus, current acceptance and utilization of e-collaboration in Namibia still need to be realised to its full advantage by encouraging new ways of working to support decision-making in the public sector.

1.2. Background to the study

A report that was carried out by Ministry of Information and Communication Technology in 2009 stated that the evolution of ICT in Namibian public sector is fast-growing, and bringing new opportunity to increase the rate of development in the country. The in the past years the Namibian public sector has introduced key enablers to achieve its development objectives outlined in Fifth National Development Plan (NDP5), Vision 2030, Harambee Prosperity Plan and e-Government policies. Thus, Namibia needs to increase its efforts on moving with technology trends around the globe. Namibia has a number of apparent organizational challenges that can hinder the improvement of ICT in the public sector environment. For example, Information Systems and other ICT technologies such as Skype for Business and Microsoft SharePoint would be introduced as innovate tools, but would however not be used fully to provide new ways of collaborating and making decisions.

This study aimed to empirically provide a conceptual framework that may facilitate public sector managers in selecting the most appropriate e-collaboration tools that can assist in making effective decisions. The next part covered an introductory to the keywords of the study:

i) Decision-Making

Snow, and Phillips (2008) asserted that decision-making in organisations is very important, and vital as it helps organization achieve its goals. The way decisions are made has an impact to the success of the organization as decisions need to be made in an efficient and effective way to benefit all the stakeholders involved (Berkun, 2008).

ii) Collaboration

According to Wilson and Salmons (2009) collaboration is an interactive process that engages two or more individuals to work together to achieve outcomes they could not accomplish independently. Collaboration provides a lot of benefits to the organisation to make effective decisions (Cankar & Petkovsek, 2013). Therefore, technologies such as e-collaboration are made available as they create platforms that allow exchange of information, ideas, and documents. Individuals are able to work together and reflect on their views, making decisions effective (Nikoi & Boateng, 2013).

iii) E-Collaboration Technologies

E-collaboration has been defined in many ways in the past (Kock, 2010). According to Blecker and Liebhart (2008), the advances in ICT are the core of e-collaboration since they make up the 'e' in e-collaboration. The application of ICT enables personal communication such as e-mail, video-conferencing, chats, etc. On the other hand ICT is often a necessary precondition to get access to common information or rather to allow people to interactively share information at a distance which is used in and arise during the collaboration process. Therefore we call this type of collaboration e-collaboration as it is facilitated by ICT. E-collaboration can also be referred to the technological infrastructure, meaning most systems apply internet technologies because information sharing is the core element of all forms of collaboration.

To support organizations and groups in their collaboration efforts, a myriad of technical approaches for e-collaboration support have been developed, such as group (decision) support systems, web-based chat tools, web-based asynchronous conferencing tools, whiteboard sharing, e-mail, collaborative writing tools, and teleconferencing tools can like blogs and microblogs which are more individualistic and have a high level of control while others like Web 2.0 technologies, wikis support collaboration and collaborative work more on team collaboration (Kock, 2008b).

1.3. Problem Statement

Public sector organizations play a major role in the development, planning and implementation of programme and projects of every sectors of the country. The public sector as in other countries all over the world has varied Offices/Ministries/Agencies (OMAs) departments similar to what is obtained in Namibia. The OMAs in Namibia are spread across 13 regions of the country in different geographical locations. The decentralisation of OMAs has created the advantage of bringing service delivery closer to the people. In the meantime, the Namibian public sector is currently faced with fiscal crisis which has led the government to cut on expenditures to deliver services to the citizens. The public sector organizations, in order to fulfil their mandate has develop strategy tag “Vision 2030” with the aim of creating a technology-driven approach in services provision across the nation. In the recent time the public sector has also champion the introduction of the e-Government Strategic Action Plan (eGSAP) started in 2014, with the aim of achieving a networked of OMAs to enable the sharing of Government resources (e.g. data, infrastructure, services and solutions) through a collaborative approach by 2018. This is to eliminate resource redundancy, wastage; subscribing to optimal resource usage across the nation.

The problem addressed in this study was that there is little evidence or research regarding how managers used e-Collaboration tools within the public sector to support their decision-making processes for communication, discussions, group work and other activities that they carried out.

However, managers were challenged to accomplish the desired results for the decisions they have to make because of lack of collaborations tools that are available to them. One of the challenge that managers face in the public sector is the silos created due to the dispersed offices. This challenge cause lack of collaborations amongst all decision makers involved. Less emphasis has been given to collaboration technologies infrastructure in the public sector specifically in Namibia. Managers are not aware of the tools and the know-how of what is available for their use within their environment. The improvement on these technology infrastructure can facilitated the way information is communicated, coordinated, connected and collaborated to improving decision-making.

Thus, this study was driven by the fact that the public sector organizations in Namibia are challenged and limited to incorporating collaboration platforms that can effectively support decision-making in their work environment.

1.4. Research aim

The purpose of this study was to develop a conceptual e-Collaboration framework for the facilitation of effective decision-making within the Namibian public organisations in this age of digital transformation.

1.5. Research objectives

This study was comprised of the following three research objectives:

1. To assess decision-making efforts that require collaboration within the Namibian public organizations.
2. To identify collaboration tools that could be used for effective decision-making within the Namibian public organizations.
3. To analyse collaborative tools barriers and challenges that hamper managers' decision-making in a Namibian public organizations.

1.6. Research questions

From the research objectives the following research questions were derived:

1. What are the decision-making efforts that require collaboration within the Namibian public organisations?
2. How could the collaboration tools be used for effective decision-making in the Namibian public organisations?
3. What are the collaborative tools barriers, and challenges that hamper managers' decision-making in the Namibian public organisations?

1.7. Theoretical underpinnings

1.7.1. Activity Theory (AT)

Activity Theory was used as a lens in this study for the analysis and understanding of human interaction through their use of tools and artefacts (Hashim and Jones, 2007). As, this research was a qualitative and interpretive one, AT supported to accomplishing the aim of the study. According to Murphy and Rodriquez-Manzanaries (2008) AT is a framework or descriptive tool that provides “a unified account on the nature and development of human behaviour”. AT is useful as a lens to analyse the activity of an organisation that involves computer use (Kaptelinin, 1996; Engeström, 1999). Iyamu and Ngqame (2017) further noted that AT explains the interaction that takes place between human beings and social system, which include working environment and community of people.

Activity Theory, based on the work of Vygotsky and colleagues, has developed into a contemporary social theory for studying work and social activity (Hashim, & Jones, 2007). According to Vygotsky

(as cited by Hashim, & Jones, 2007), the interaction between the human agent (the subject) and the world (the object) is mediated by tools and signs.

Engeström (1999) states that the work activity system is comprised of the following components:

- individual workers, their colleagues and co-workers
- the conceptual models, tools and equipment they use in their work
- the rules that govern how they work, and
- the purpose to which members of the workplace community direct their activity.

1.7.2. Hermeneutics Approach

Hermeneutic philosophy as a theory of interpretation of experience emphasizes how we cope in the world and come to understand objects and subjects (Barrett, Powley, & Pearce, 2016; Ghasemi, Taghinejad, Kabiri, & Imani, 2011). Hermeneutics was selected for this study based on the capability it has to better understanding experiences, and intentions of the phenomenon that was being investigated.

1.8. Research Methodology

According to Mkomazi and Iyamu (2013), empirical (or experimental) research methodology comprises a class of methods, techniques and approaches in terms of which empirical observations or data are collected in order to answer specific research questions.

1.8.1. Research Strategy: Qualitative method

The case study research methodology is considered to be the most suitable when the research question asks “how” and “why”, as well as when the researcher cannot manipulate directly, precisely and systematically events and there is a contemporary focus in a real-life context. (Yin, 2002). The study utilized the qualitative research methods to achieve the research objectives.

1.8.2. Research Design: A Case Study Approach

According to Yin (2002) a case study is an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident. Considering the research questions in this study, Ministry of Finance in Namibia was investigated to compare and contrast different collaboration platforms that are being used as tools for decision-making. Selecting a case enabled the researcher to gain an in-depth understanding of why and how collaborative activities take place within the Namibian public sector.

1.8.3. Data Collection Method

Medhi (2013) stated that data collection is a process of obtaining valuable, reliable and relevant information from past and present serving as basis for study as well as analysis. Degu and Yigzaw (2006) pointed out three principles of data collection, which are to use multiple sources of evidence, create a case study database and maintain a chain of evidence, that may be applied for the in-depth study and development of converging lines of enquiry essential for the construct validity and reliability of a case study.

1.8.3.1. Semi- structured interview

Semi-structured interviews are conducted on the basis of a loose structure consisting of open-ended questions that define the area to be explored, at least initially, and from which the interviewer or interviewee may diverge in order to pursue an idea in more detail (Brinkmann, 2014). In this study, semi-structured interviews were used to collect data from managers, such as directors, deputy directors, chiefs and seniors using open-ended questions. This helped the researcher answer the research questions for this study.

1.8.3.2. Observation

This method of data collection was used to observe how the subject interacted with the available tools within their work environment. Observation enables the researcher to observe the cultural members in their daily lives and to participate in their activities to facilitate a better understanding of those behaviours and activities (Kawulich, 2005). This was useful and feasible to this study as it answered some questions that otherwise could not be answered by interview questions.

1.8.3.3. Documentation analysis

Document analysis is a social research method and is an important research tool in its own right, and is an invaluable part of most schemes of triangulation, the combination of methodologies in the study of the same phenomenon (Bowen, 2009). This method was used in the data analysis in which documents were interpreted by the researcher to give voice and meaning around an assessment topic.

1.8.4. Data Analysis

According to Onwuegbuzie, Leech and Collins (2012), to analyse means to break down a whole into its components or constituent parts. The study will use a qualitative approach with Activity Theory, as a framework for analysing data, provide means for observing the emergence of patterns in human activity in terms of achieving goals and purposes, awareness, focus of attention and tools. Semi-structured interviews was used to collect data because they were flexible, interactive and allow deeper understanding of issues, and a greater exploration of these issues. The interview questions were open-ended and one-to-one interviews were carried out. Interpretive analysis was used to analyse the data collection process. It helped in summarising the researcher's main points and ideas. One (1) public organisation within the Namibian public sector was conducted for data collection. The selected sampling population for this study were managers within the Namibian public sector.

1.9. Significance of the Study

The study provided a conceptual e-Collaboration framework for the public sector organisations. Moreover, the study aimed at enhancing managers' knowledge on the possible collaboration tools that would support their decision-making process. This study may also be significant to the future researchers, as it provided a baseline of the status of e-collaboration tools within the Namibian public organisations.

1.10. Organization of the study

The chapter outline of the study was as follows:

Chapter One provided the introduction, problem statement, objectives of the study, significance of the study, limitations to the study, and outline how the study was organised.

Chapter Two reviewed the literature relating to the study. This chapter started with the understanding of decision-making efforts in organisations. Secondly, the various collaboration technologies which can be used in the workplace were discussed. Thirdly, the various collaboration barriers were analysed. This chapter also covered theories that were used to analyse data.

Chapter Three described the research methodology that was applied in this study with a detailed description of the interpretive research approach, the case study strategy, and research design methods. This chapter also gave an overview of the case study site that was selected.

Chapter Four described the analysis of the data, and the findings from the analysis. Hermeneutics approach, and AT were used to analyse the data collected.

Chapter Five presented the discussion of the findings. The research objectives were used as the main guide in this chapter.

Chapter Six presented a conclusion, and recommendations to the study. The three research questions were answered in this chapter. The presentation of the e-collaboration framework that was proposed, was presented here as well. The contribution to the body of knowledge was also discussed in this chapter.

1.11. Ethical Consideration

Bias on the part of the researcher is unethical. Bias is a deliberate attempt to either to hide what you have found in your study, or highlight something unreasonably to its true existence. Both the provision and deprivation of a treatment intervention may pose an ethical dilemma for you as a researcher. Is it ethical to provide a study population with an intervention treatment that has not yet been conclusively proven effective or beneficial (Kumar, 2005). This study avoided biased information and findings. In the course of the data collection process confidentiality was highly considered. Participants were informed on how the interviews was going to be conducted.

1.12. Limitations of the Study

The study was limited by the small sample size of managers, and supervisors within the Ministry of Finance. This was due to factors such as time constraint, proximity, and the role that the Ministry of Finance plays in the Namibian public sector organisations.

1.13. Summary

This chapter presented the introduction, the background of the study, problem statement, research objectives, and questions, the limitation to the study, the significance of the study and overview of the research design. The next chapter reviewed the literature relevant to the study.

CHAPTER 2: LITERATURE REVIEW

2.1. Introduction

A number of studies have been done in this area of interest but without specific focus on the public sector organisations work environment. This chapter reviewed the literature relating to the study. Hence, the main keywords surrounding the study were reviewed. The chapter started with the understanding of decision-making efforts in organisations. Secondly, the various collaboration technologies which can be used in organisations were discussed. Thirdly, the various collaboration barriers, and strategies were analysed. This chapter also covered theories that were used to analysis data in this study. Finally, the chapter ended with a summary.

2.2. Decision-making efforts in organisations

According to Berisha-Namani (2010) and Naik (2015) decision-making is an integral part of management, and occurs in every function, and at all levels of making a decision. Dillon, Buchanan, and Corner (2010) also argued that decision-making is the most common task for managers, and executives in an organisation. Conversely, Al Shra'ah (2015); Ben and Cruz (2009) eluded that decision-making process is a basic activity in organisations.

Negulescu (2014) stated that the process of selecting between two or more alternatives to accomplish one's purpose, managers need to make scheduled routine decisions which can arise from either the policies, strategic decisions, unscheduled and unique organisation's strategy that are related to environmental factors. In a collaboration, a decision-making effort is the extent to which participants have to depend on each other when articulating shared goals, and direction, and working towards accomplishing the goals through joint decisions (Negulescu, 2014).

The figure below shows the decision-making process in 5 steps according to Negulescu (2014): identifying the decision to make, examining the options, gathering information, decision-making and implementation of decision.

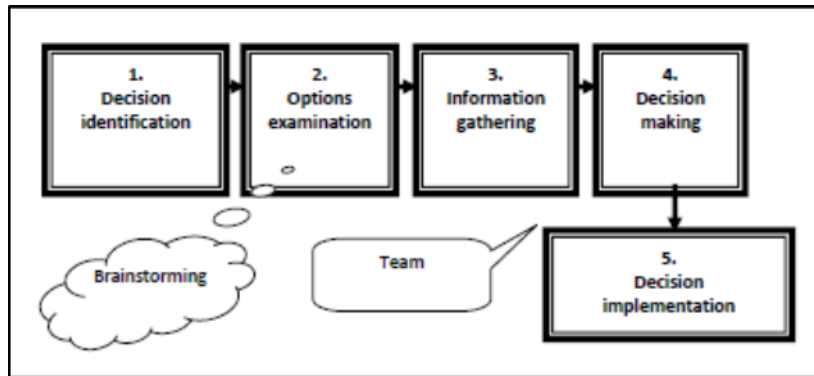


Figure 2. 1 Decision making process (Negulescu, 2014)

2.2.1. Collaborative decision-making

Naik (2015) argued that collaborative business decisions cannot be made in isolation. The decision-making process in any organisation will have to involve different collaborative tools. These tools will not only make collaboration and decision-making simpler, and faster but also effective and efficient. According to Mauher (2011) decision-making process aims at generating conclusions, it also generates the documents specifying what, who, when, why, and how someone acts to fulfil given conclusions or requirements. The requirements are directed to achieve specified strategic outcomes that are based on given specification planned scenario of activities, schedules, and workflows that has to be defined. Decision-making process involves the existence of a decision problem which have to be understood by the decision-maker and accurately defined to find opportunities to solve it (Negulescu, 2014).

Naik (2015) highlighted that collaborative efforts of employees within the organisation and external stakeholders are both needed. Collaborate efforts are easier to implement due to the improvement of

information, and communication systems. According to a report that was carried out by Forbes Insights (2013) tools that are mainly in the cloud are able to assist employees work from anywhere, and have access to information sources and communicate with others in the organisation. Kelly, and Schaefer (2014) emphasised that true organisation-wide collaboration can provide sustained benefits such as:

- Fully engaged workers who are eager to take on new projects, and challenges, and who embrace change.
- Improved organizational flexibility and agility.
- Improved employee health, wellness, and performance.
- Productive, and energized meetings.
- Extremely high retention rates.
- A competitive advantage when attracting top talent.

2.3. Collaborative technologies in organisations

Collaboration is about working together creatively and collectively, even under massive pressures and deadlines, toward shared goals. Managers need to assess how the responsibilities and tasks they assign to each person or team build or break down the chances of collaboration. According to Weiseth, Munkvold, Tvedte, and Larseet. (2006) collaboration technologies form part of ICT infrastructure in organisations. One of the key resources used by today's teams is the collaborative technological infrastructure that permits communication, information sharing, process management, and decision-making among scattered members (Fedorowicz, Laso-Ballesteros & Padilla-Meléndez, 2008).

Kock (2009) and Kock et al. (2001) maintained that e-collaboration technologies that build on the infrastructure provided by the internet connections have undoubtedly revolutionized. Organisations are increasingly adopting electronic communication tools to facilitate collaboration among

individuals and groups, both within, and beyond organisational boundaries. Virtual teams operate across geographic or organisational boundaries, and use telecommunication, and other information technologies to collaborate during group tasks (Hunsaker & Hunsaker, 2008; Lee-Kelley & Sankey, 2008). This trend is driven by the motivation of organizations to take advantage of the collaborative potential of such tools as discussion boards, instant messaging, and groupware for facilitating communication and coordination without the limitations of time and place (Fink & Gurion, 2007).

Research done by Hamilton et al. (2013) maintained that new collaboration technologies has changes the way employees do their work. Employees are able to work in a more collaborative way. Organizations are able to embed technologies into their everyday work, making it easy for them to make decision. Organisations also need to set their objectives that are related to the roles and responsibilities of decision-makers.

According to Fedorowicz et al. (2008), e-collaboration technologies can supply seamless connectivity to allow work anywhere, and anytime. Moreover, they can help to manage the complexity derived from the diversity of workers, knowledge, and other resources that must coordinate effort on a collective creative task. E-collaboration technologies can ensure access to contextualize services that will assure easy interaction among team members.

2.3.1. Groupware

Kock (2008a) and Kock (2008b) asserted that groupware is software that enables group members to work together on a project, even from remote locations, by allowing them to simultaneously access the same files. Lee (2007) also maintained that computing systems to facilitate collaboration in groups are referred to as Groupware or CSCW (Computer Supported Cooperative Work) systems. Examples of groupware include electronic whiteboard, GDSS (Group Decision Support System), instant messaging, work flow system, group calendar, collaborative writing systems, and collaborative design systems.

Computer- supported cooperative working environments allow people to work closely with each other even when geographically separated. Managers can use flexible work arrangements. Numerous CSCW applications support synchronous collaboration by assisting the remote sharing of a workspace. These tools, also called real-time groupware, provide joint viewing of a computer display in a what-you-see-is-what-I-see mode, as well as teleportation that allows the participants to interact with the joint view. Shared whiteboard tools, and shared application tools are examples of such applications (Li, 2012).

Groupware is often broken down into categories describing whether the members work together in real-time (i.e., synchronously) or at different times (i.e., asynchronously) depending on the level of collaboration (Lim, 2017; Lock, 2009):

1. **Communication:** allows for information to be send, such as files, information, or other documents between people or groups of people, and, hence, coordinate the sharing of information. For example, tools such as Lotus Notes, wikis and Microsoft Exchange enable groups to share information asynchronously, whereas tools such as Microsoft Office Groove, and Webex enable groups to share information.
2. **Conferencing:** refers to collaborative activities toward a common goal. These tools enable the sharing of information. Brainstorming, instant messaging, videoconferencing and internet forums are examples of conferencing tools.
3. **Co-ordination:** refers to more difficult collaborative activities toward a shared goal. These tools include electronic calendars, project management and knowledge management.

Ali and de Vreede (2006) distinguished that collaborative computing entails using state-of-the-art computer software, and hardware to help the people to work better together. He further noted that collaborative system enable people to share information without the constraints of time and space, and it allows people to work far away from their office or organisation. Tools, routines, protocols

and collaborative environments also help to supply scaffolding for pushing beyond common interpersonal barriers and encouraging interaction.

2.3.2. Web 2.0

Hastings (2009) noted that Web 2.0 collaboration will work for a small group within a single organisation or a large project team spread around the world. According to Naik (2015) the features of Web 2.0 include the opportunity to use the expertise and skills of the employees that can provide effective communication and sharing of information. Organisational communication provide productive and produce “mash ups” of current applications to create new ones. A mash up is where a single website or application uses contents from different sources to produce a new service.

Almeida (2012) explained that Web 2.0 describes social technologies that influence the way people interact. Web 2.0 technologies are used in the organisations to radically transform the way all stakeholders communicate and collaborate. Technological innovations in organisations continues to bring new opportunities and threats. Organisations need to determine how to make use of new technological tools, by ensuring that there is ongoing efforts to help them stay up to par to add new value and agility to their business’s infrastructure, information, and employees.

According to Wang (2006) software can support the collaboration process and help to manage its complexity. Collaboration technology has enormous potential to establish many-to-many interactions, to help us manage them, and to maintain logs of what transpired. What Web 2.0 brings to the equation is the ability to use many channels of communication in your collaborative efforts. Built-in instant messaging, bulletin boards, and other methods of communication are easy to install, and use in most Web 2.0 services.

Hastings (2009) revealed that all the data, the methods of creating project deliverables—reports, articles, presentations, pictures, or other media—in support of your project, and editing or collaborating tools are available twenty-four hours a day, seven days a week online.

2.3.3. Synchronous and asynchronous collaboration technologies

Synchronous collaboration is very interactive, and requires participants to be actively available. Asynchronous collaboration, on the other hand is less interactive and does not require the active availability of the participants (Salmons & Wilson, 2009; Kock, 2010). Collaboration can happen to everyone working together at the same time—synchronous collaboration (Hastings, 2009). To enhance communication and collaboration of the employees, organisations opt to make use of both synchronous, and asynchronous collaboration technologies to enhance their employees (Sundaravej, 2013). He further noted that technology helps with asynchronous work—forums, and message boards are great ways to communicate when people are working at different times of the day, due to either time zone or scheduling issues.

According to Hastings (2009) technology mediated collaboration can fall into four categories as illustrated in figure 2-8 below: (a) same time, same place (phone conference within the same building); (b) same time, different place (phone conference or web meeting within the same organization between two members in different buildings); (c) different time, same place (shared files on a network); or (d) different time, different place (e-mail and voice mail exchanges).

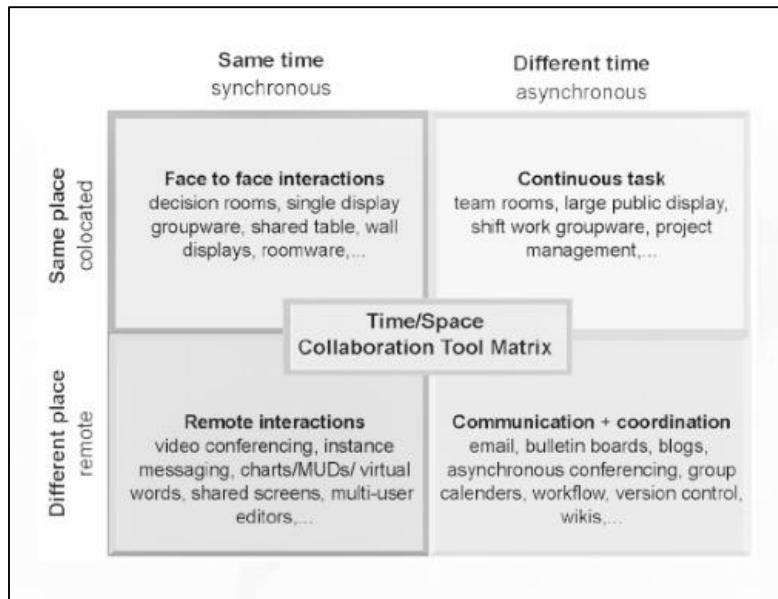


Figure 2. 2 Time/Space collaboration tools (Hastings, 2009)

Sundaravej (2013) affirmed that synchronous collaboration technologies allow all participants from the same or different locations, time zones, or organizations to collaborate on the same tasks in real time, while asynchronous collaboration are used when participants wish to share information but simultaneous interaction is not necessary. The author further narrated that collaboration technologies enable efficient message transmission, and are related to reduced cognitive effort to interpret messages, whereas collaboration technologies with low synchronicity allows participants to take more time between message in analysing the content of messages.

According to Branon and Essex (2001), synchronous tools enable communication and communication to be done in real-time, in a “same time-different place” mode. These tools allow people to connect at a single point in time, at the same time. Synchronous tools possess the advantages of being able to engage people instantly and at the same point in time. It is important to understand that media synchronicity can depend upon the manner in which participants use technologies. It is also important to consider that team members often use an array of collaboration

technologies to interact with their cohorts. Therefore, this study focused on all kinds of synchronous and asynchronous collaboration technologies (Sundaravej, 2013).

Lee (2007) contended that synchronous distributed interaction requires enriching support for communication since group members in distant locations may lose much information of awareness such as who is talking or what others are doing, while asynchronous interaction needs substantial support in coordination of activities such as when each group member is supposed to accomplish a task. Synchronous interaction in same place gains numerous benefits from collaboration technologies emphasizing cooperation which enhances information sharing, and manipulations of shared documents (Hall et al., 2018).

Mauher (2011) argued that e-collaboration provide techniques, terms and reference models for modelling collaborative processes. It also offers a standardized approach for business partners to codify the business conventions, agreements, and rules that govern business collaborations, and to share business process information (Hain & Back, 2011).

2.3.3.1. Synchronous collaboration tools

This section presented synchronous collaboration tools used in organisations to facilitate decision-making. The usability, and limitations of these tools are also presented.

Table 2. 1 Synchronous collaboration tools (Lim, 2017; Hall et al., 2018; Tan, 2015; Branon, 2001; Sundaravey, 2013; Hastings, 2009; & Lee, 2007, Bouras et al., 2008)

Collaboration Tool	Usability	Limitations
Skype for Business	Schedule meetings, drag and drop to share with meeting attendees, make and receive online, phone or video calls.	Has a robust communication offering and does not integrate with a large number of online work platforms.

Google Docs/Drive	Document can be shared and stored online. Access to the documents can be done from any other desktop, laptop or device.	Not all capabilities are available and relies on internet access.
Interactive Whiteboards	Greater level of flexibility and more effective means of communication. Facilitates immediate feedback, quick identification of grey areas and strong affirmation or correction of key points.	Needs internet connectivity to perform, which can sometimes limit access to the user. There are file size limitations set on these platforms.
Audio, Video and Web Conferencing	Allow shared applications, access control, moderated conferences, and recording and file sharing among the participants in real-time interactions.	May be expensive and complicated to use. May lack the documentation functionalities.
Instant Messaging (Google talk, MSN, Yahoo, Skype, Twitter,)	Provide the ability to communicate quickly and easily with employees. It connects people regardless of where they are located.	Can disturb or distract once you are busy or in a meeting.
Internet Telephony(VoIP)	Allows phone calls to be made over a broadband internet connection instead of typical analog telephone lines.	Can be vulnerable to spam over internet telephony (SPIT), spoofing, and identity theft

Telephone Calls	It is more personal and enables the expression of feelings and clarify points that may be misconstrued using other communications.	There is no permanent record of what was discussed over the telephone.
Group Chat	Text and graphics capabilities are available for information sharing of low complexities. Can be useful for one on one communication.	Can be time consuming as communication is done back and forth.
Face-to-Face Meetings	Build stronger, more meaningful business relationships. Facilitates the transfer of tacit knowledge. Increased motivation and engagement with decision-making.	Business travel is too costly for geographically dispersed offices. Large time commitment for interactions can be focused on task-related issues.
GoToMeetings	The ability to pass control of your computer to your meeting attendees. Great for large-scale collaboration. Allows document sharing.	The video sharing capability can be slow, and quality varies. Connectivity issues depending on bandwidth.
Decision Support Systems	Support organizational decision making activities that helps to automate the managerial processes.	Information overload can slow down communication.

2.3.3.2. Asynchronous collaboration tools

According to Sundaravej (2013), Asynchronous collaboration tools give access to employees to communicate and collaborate at different time, and different place. Participants are able to connect at their own convenience, and own schedule. These tools are useful for supporting discussions and collaboration over a period of time and providing people with resources and information that are instantly accessible, 24/7.

This section presented (Table 2.2.) asynchronous collaboration tools used in organisations to facilitate decision-making. The usability, and limitations of these tools are also presented.

Table 2. 2 Synchronous collaboration tools (Lim, 2017; Hall et al., 2018; Tan, 2015; Branon, 2001; Sundaravey, 2013; Hastings, 2009; & Lee, 2007, Wyld, 2010, Bouras et al., 2008)

Collaboration Tool	Usability	Limitations
Virtual Meeting Systems	Allow geographically distributed knowledge workers to collaborate on a variety of workplace tasks, share presentation and files online. Files can be edited or revised online by members of the team.	A number of software and hardware is needed. Employees can be distracted during virtual meeting. Often lacks a true social presence.
Electronic Email (E-mail)	Document and track conversations and activities, and send files to one another or a group of people. Schedule meetings, events and daily activities and notify or	A large volume of emails can be overwhelming and hard to follow. There is no immediate feedback. Written ideas may be misinterpreted.

	remind group members automatically.	
Microsoft SharePoint	Allows employees to collaborate, to share information, manage documents and publish reports to help make decisions.	The software and licences can be quite costly.
IBM/Lotus notes	Powerful track for developing workflow applications. It is safe and secure platform as compared to other email client.	Short attention span and information security could be a limitation.
Mobile phones	More mobility, facilitate the ability to work in the field without missing calls.	Technical limitations and restrictions on sharing documents.
Cloud Collaboration Services	Accelerate business results, improve business processes and stimulate innovation. Breaking down barriers between time zones and functions and enhancing mobile workforce productivity.	Access fully dependent on internet connection.
Social Media (WhatsApp, Facebook, Twitter and LinkedIn)	Provide real time information and data to all the decision makers, and also reach out to their customers.	It is time intensive as communication is back and forth.
Discussion Boards	Provide a structured approach for participants to leave postings on areas of interest. Enables	Can be time consuming and communication may be lost. Irregular or

	employees to review and participate in discussions with others at times convenient to them.	inconsistent contribution by individuals can affect the richness of discussion.
Project Management Systems	These systems track, schedule, and chart the stages in a project as it is being finished.	Restricts users flexibility when it comes to task management and allocation.
Knowledge Management Systems (wikis)	These systems can collect, manage, organize, and share information.	Technical and interface difficulties such as slow server response times.
Web Logs (blogs)	Allows many readers to comment on the original posting, thereby encouraging wider audience discussions.	Tracking participants to make decision can take time as one need to go through every post.

2.4. Barriers to collaboration technologies in organisations

As organizations become more cross-functional, and as organizational environments become dynamic and complex, decentralized organizations will continue to increase their need for effective, dynamic collaboration across divisional lines (Caruso, Rogers and Bazerman, 2008).

Unfortunately, there are a number of barriers and challenges that prevent collaborative activities from taking place in the public sector. Simataa (2001) postulated that there are a number of issues that many African government face when trying to work towards modernizing their public services such as the structure, attitudes of perceptions, procedures, ethics, human resources development, promotion of initiative, planning and budgeting, monitoring and evaluation, funding, public private partnership, positive down-sizing and public consulting.

Kolfschoten, Niederman, Briggs and Vreede (2012) noted that having a successful collaboration does not come without difficulty, thus groups and teams need to overcome collaboration challenges as they come. The following section reviewed some factors that contribute to the challenges and barriers found in the public sector.

2.4.1. *Geographically dispersed employees*

According to Thomas, Botha, and van Greunen (2015) it is difficult to achieve an effective collaboration especially when employees are geographically dispersed, and are engaged in a variety of diverse, interdependent activities. Caruso, Rogers and Bazerman (2008) emphasized that when employees that are decentralized, it becomes difficult for them to work with other departments, sections, or divisions. The authors further noted that no matter how a multi-divisional organisation is designed, it needs to find effective ways to spontaneously and responsively coordinate information and activity across its resulting units.

Ad hoc teams tend to work across time, geographical, and technical boundaries (Fan, 2012). Vakkayil (2012) argued that boundaries are composite, and varies from organisation to organisation, in strength as well as in substance. In this case, when employees are geographically dispersed, it means that the chance of lack of communication is greater, and there is an increasing need to manage data and collaborate across, and outside departments within the organization. Having boundaries make employees not to instinctively reach across divisional lines to integrate their knowledge and expertise (Caruso, Rogers & Bazerman, 2008).

2.4.2. *Communication*

According to Vakkayil (2012) communication barrier can likely be caused by information overload especially in time of pressured environments, whereby a manager is required to make a decision this

causes uncertainty, and ambiguity, leading to managers using their intuition to simplify their decision-making. Thus, Naik (2015) noted that communication, and information sharing between individuals participating in decision making is very important as lack of information sharing and communication can lead to tensions within the organization and delay decision effectiveness. Managers in public sector need to find ways in which they can engage in inter-organisational collaborations as a way of building financial sustainability and increasing innovation. However, engaging in collaboration seems difficult in practice and many remains to be learned about the factors that influence its success (Thomas, Botha, & van Greunen, 2015).

2.4.3. *Culture*

According to Bettoni, Bittel, Bernhard and Mirata (2016), organizational culture involves dealing with employees' emotions, and values. Thus, it is important to ensure that aspect of decision-making is not the same. Managers must be as coordinated, clear, and transparent as possible about their priorities. Organisational structure is an important aspect as it determines the future function of the whole system; namely subordination and leadership.

Formal subordination defines how responsibilities for different functions and processes are allocated to different organisational entities like functional units, matrix units or teams. Berisha-Namani (2010) posited that managers not only use information to take decisions, but also to act in a variety of management functions. Therefore, it is usually that information systems are required when organisations grow, and management function is performed by people who are specialised, and may be removed from day-to-day activities.

2.4.4. *Aversion to change*

Bolfikova et al. (2010) and Buttles-Valdez et al. (2010) asserted that change is an unavoidable phenomenon arising from the dynamics of environment, and it is inevitable for an organisation that

desires to grow, achieve its mission, vision and objectives. Thus, organisations have to adapt to the environment to become competitive, and stay ahead or at least keep afloat. The authors also noted that change is a process that organisations face constantly, especially nowadays where the technology is on its peak. Managers in public organisations are constantly faced with challenges arising from the limitations imposed by their external organisations environment, from the transitional expectations, and from required structures within their governmental processes that influence how they must make strategic decisions. According to Serrat (2012) and Serrat (2017) people resist change due to many factors, some of which are a lack of information on the proposed change and a comfort in the stable environment to which they have become accustomed and in which they find predictability and security.

Islami et al. (2015) noted that collaboration with oversight bodies often produces suggestions that become favoured alternatives, thus public sector managers are expected to use these ideas, which can limit their capabilities. In addition, decision makers in public organisations often lack information to fend off ideas they believe to be inappropriate. The need to alter comes as a result of external environment requirements or from internal adjustment of the enterprise.

2.4.5. *Lack of resources*

The public sector organisations may not have the necessary technological infrastructure in place to carry out e-collaboration (Saeed, 2010). In most organisations, there already exist many other collaboration tools but employees may be unwilling to learn to use another tool particularly if the purpose of the wiki is unclear and employees are unsure of the benefits. Employees may need good reasons to change their work practices such as a belief that the change will enhance their power and identity. There is also no guarantee that a newly introduced technology will have a lasting power. Micheli, Schoeman, Baxter, and Goofin (2015) affirmed that the government worldwide are under pressure to reduce spending, and yet the demand for public services is generally increasing.

2.5. Underpinning theories

To achieve the objectives of this study, Hermeneutics analysis, and Activity Theory (AT) were selected as the lens of analysis.

2.5.1. Hermeneutics Approach

According to Wright and Losekoot (2008) the interpretation in hermeneutics, is the attempt to try make sense of the object of the study. The object being studied must be a text or a text-analogue, which is regarded as perhaps confused, incomplete, cloudy, or unclear. Thus, the aim of using hermeneutics is interpretation is to bring light the essential rationality or sense (Wright & Losekoot, 2008). Hermeneutic phenomenology focuses on every day of how human experience their environment. Kafle (2011), narrated that the focus is toward enlightening details, and seemingly insignificant aspects that seems not so important in our experience or work environment.

According to Barret et al. (2016), hermeneutic phenomenology tests the ability of the researcher to reflect deeper on what the text that is being analysed is saying. The researcher should be able to make sense and create deeper conversation with them. Ghasemi et al. (2011) noted that the goal of this type of research is not to clone the texts of the field for the reader of the research but to invite the reader to enter the world that the texts would disclose and open up in front of themselves. This figure (2.1) below shows how data analysis that is often applied to perform the hermeneutic cycle. The cycle consists of reading, reflective writing and interpretation (Laverty, 2003).

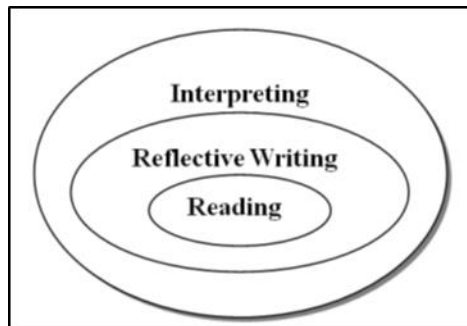


Figure 2. 3 Hermeneutic Cycle (Kafle, 2011)

With relevance to the study, hermeneutics approach enabled the researcher to qualitatively interpret and gain an in-depth understanding of how managers understand the importance of collaboration tools that are within their work environment for decision-making.

2.5.2. Activity Theory (AT)

According to Crawford , and Hasan (2006), Activity Theory was suggested decades before the introduction of computers, its holistic, and insightful nature has the potential to provide a suitable vehicle for understanding, and analysis in many areas of IS research and practice. Murphy and Rodriquez-Manzanaries (2008), also asserted that Activity Theory (AT) is a framework that provides a unified account on the nature and development of human behaviour. Murphy and Rodriques-Manzanaries (2008) alluded that during the past decade a group of researchers have been attracted to activity theory. AT contribute to theory and research in technical communication: human-computer interaction, and composition studies.

Concurrently, Hashim, and Jones (2007) also mentioned that AT is a theoretical framework that is help with the analysis, and the understanding of human interaction through the use of tools and artefacts. The authors also contained that AT is a holistic, and contextual method that researcher can use to support qualitative and interpretive research analysis. Research done by Hashim and Jones (2007) showed that, AT is particularly significant in situations that have a huge historical, and

cultural context, and where the participants, their purposes and their tools are in a process of rapid and constant change. Furthermore, Kaptelinin (1996), and Hashim, and Jones (2007) stressed that AT focuses more on argumentative analysis on the interaction between people and their mediated tools or artefacts which have been formed by technical elements. With the advancement of the Internet, information systems, and computer-based technologies. AT is useful as a lens to analyse the activity of an organisation that involves computer use (Kaptelinin, 1996).

According to Wartofsky (as cited in Hashim & Jones, 2007) there are a number of tools that mediate human activities: primary (tangible, external or physical), secondary (internal, semiotic or mental), or tertiary (schematics where mind, and culture act together such as environments or ecosystems). Using the Activity Theory lens for research takes activity as the unit of analysis, where activity is defined by the ‘dialectic relationship between subject, and object’, in other words, ‘who is doing what for what purpose’. In most complex situations, there are many dynamic inter-related activities forming what could be seen as a system of activities. A growing band of researchers recognise that the theory provides a rich holistic understanding of how people do things together with the assistance of sophisticated tools in complex dynamic environments (Hasan & Kazlauskas 2014).

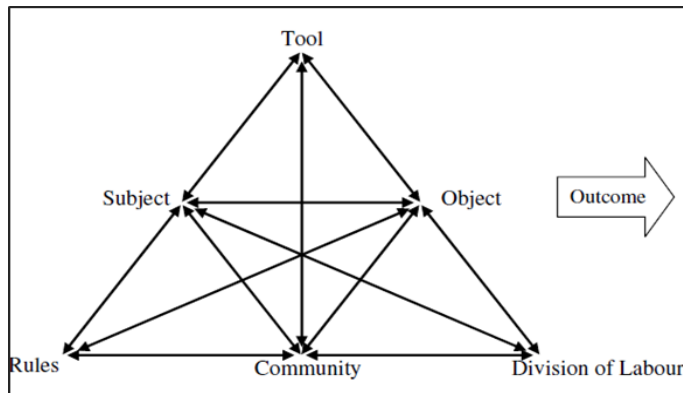


Figure 2. 4 Activity Theory (Engestrom, 1999)

The figure above showed the components of AT as discussed by Engeström (1999), which are tools, objects, division of labour, community, rules, and subject. According to Hasan, and Kazlauskas

(2014) in an Activity Theory, the relationship between subject (human doer), and object (the thing being done) forms the core of an activity. The object of an activity encompasses the activity's focus, and purpose while the subject, a person or group engaged in the activity, incorporates the subject's/s' various motives. The outcomes of an activity can be the intended ones, but there can also be others that are unintended.

Activity theory (AT) is portrayed as a triangle as shown above (Figure 2.4.):

1. The **subject** component is defined as an individual or individuals involved in the central activity (Engeström, 1999). An activity system is the individual or group whose viewpoint is adopted.
2. The **object** refers to the “raw material or problem space at which the activity is directed and which is moulded or transformed into outcomes with the help of physical and symbolic, external and internal tools “(Engeström, 1999, p. 67).
3. **Tools** mediate the object of activity. They can be external, material (e.g., a computer) or internal, symbolic (e.g., language). Tools take part in the transformation of the object into an outcome, which can be desired or unexpected. They can enable or constrain activity.
4. **Community** refers to the participants of an activity system, who share the same object.
5. **The division of labour** involves the division of tasks, and roles among members of the community, and the divisions of power and status.
6. **Rules** are explicit, and implicit norms that regulate actions, and interactions within the system (Engeström, 1999).

According to Mkhomazi and Iyamu (2013), the main reason why theories are utilized in studies is to underpin areas that are within qualitative interpretive research, because of the interplay between technical and non-technical factors which are involved in the field of IS. Hence, the Activity Theory was utilized as a lens to conceptualize this study with the focus on e-Collaboration in the public sector.

2.6. Summary

This chapter presented the relevant literature, looked at the decision-making efforts, then at the different collaborative technologies used in organizations, then the barriers to collaborative activities were also conferred and lastly the theories that underpinned the study were examined. The next chapter discussed the methodology that was used to answer the research questions of the study.

CHAPTER 3: RESEARCH METHODOLOGY

3.1. Introduction

According to Kothari (2004) research methodology is a way to systematically solve the research problem. It may be understood as a science of studying how research is done scientifically. Vargas-Hernández (2010) also noted that research methodology is defined as highly intellectual activity used in the investigation of nature, and matter and deals specifically with the manner in which data is collected, analysed, and interpreted. A research methodology defines the research purposes, activities, procedures, measurements, and applications. Research methodology explain how the research is done, the methods of data collection, materials used, subjects interviewed, or places visited. It details out the account of how, and when the research is carried out. It also gives reasons on why a particular method is use, rather than other methods (Sidi, Selamat, Abd & Ibrahim, 2009; Myers, 2009).

This chapter outlined the research design that was used in this study. Based on the objectives of the study, the qualitative method was selected, through which an understanding of a case was sought. The study employed a case study as a research strategy together with semi-structured interviews, observation and documentation analysis as means of data collection.

3.2. Interpretive research approach

Interpretive Phenomenology is a qualitative approach which aims to provide detailed examinations of personal lived experience (Smith & Osborn, 2015). It produces an account of lived experience in its terms rather than one prescribed by pre-existing theoretical preconceptions, and it recognises that this is an interpretative endeavour as humans are sense-making organisms. Degu and Yigzaw (2006) attained that research attempts to increase our understanding of why things are the way they are in

our social world, and why people act the ways they do is “qualitative” research. According to Quinn (2003) a qualitative approach is one in which the inquirer often makes knowledge claims based primarily on constructivist perspectives.

Hancock, Ockleford Windridge (2009) noted that qualitative research is concerned with developing explanations of social phenomena. That is to say, it aims to help us to understand the world in which we live, and why things are the way they are. It is concerned with the social aspects of our world, and seeks to answer questions about:

- Why people behave the way they do
- How opinions, and attitudes are formed
- How people are affected by the events that go on around them
- How, and why cultures have developed in the way they have

Denzin, and Lincoln (2003) argued that qualitative research is naturalistic; it attempts to study the everyday life of different groups of people, and communities in their natural setting; it is particularly useful to study educational settings, and processes. Qualitative research involves an interpretive, naturalistic approach to its subject matter; it attempts to make sense of, or to interpret, phenomena regarding the meaning people bring to them. According to Myers (2009) qualitative research aims to explore, and to discover issues about the problem on hand, because very little is known about the problem. There is usually uncertainty about dimensions and characteristics of problem so it helps researchers understand people, and the social, and cultural contexts within which they live. According to Hancock, Ockleford, and Windridge (2009) the following are importance of qualitative design:

- Tends to focus on how people or groups of people can have (somewhat) different ways of looking at reality (usually social or psychological reality)

- Takes account of complexity by incorporating the real-world context – can take different perspectives on board
- Studies behaviour in natural settings or uses people's accounts as data; usually no manipulation of variables focuses on reports of experience or on data which cannot be adequately expressed numerically
- Focuses on description, and interpretation, and might lead to development of new concepts or theory, or to an evaluation of an organisational process
- Employs a flexible, emergent but systematic research process

The decision for selecting the interpretive research paradigm was because of its qualitative approach. The aim of this study was to understand and assess the collaborative activities that impact decision-making in the Namibian public sector. The use of interpretive research approach was also based on its suitability to answer the research objectives and questions of this study.

3.3. The case study strategy

The case study is a widely accepted research strategy in the field of IS. The use of the case study method has gained mainstream acceptance in both entrepreneurship and information systems research to develop conceptual, and theoretical models that are novel, yet grounded in the literature (Ponelis, 2015). The case study design was utilized as indicated by Creswell (2007), that 'case study design enable detailed investigation utilizing various data collection instruments'. The instruments used in this study were interviews, observation and document analysis.

According to Yin (2014), a case study is an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident.

Case study design was utilised as indicated by Creswell (2007) that case study design enable detailed investigation using various data collection instruments. The instruments used in this study were semi-structured interviews, document analysis and observation. This study mainly focused on the research questions and the case study strategy was the most appropriate due to the fact that it facilitated the collection and presentation of more detailed data. The detailed information was then used to conceptualise an e-collaboration framework that may facilitate public sector managers in their decision-making processes.

3.4. Research design

3.4.1. The selection of the case study site

Ministry of Finance was selected as the research site within a Namibian public sector. The Ministry of Finance mandate is to be responsible for managing the state revenue fund, overseeing Government assets and liabilities and formulating the budget. Further embedded in this core mandate is providing stewardship for public finance management and for the financial sector. The vision of the Ministry of Finance is to be a dynamic and reputable institution excelling in fiscal and financial management and its mission is to develop and administer fiscal and financial policies that ensure macro-economic stability, sustainable and equitable socio-economic development. The Ministry strive to execute their duties guided by the following guiding values:

1. Competency: to continuously improve on knowledge, skills and attitude and ensure quality service delivery.
2. Accountability: to be answerable for our actions and responsive to our stakeholders.
3. Loyalty: to be committed to hard work and ensure that our actions are dedicated to the priorities and objectives of the Ministry.
4. Integrity: to be honest, fair, respectful, transparent and consistent

The Ministry has about 1 800 employees with 2 departments, 4 directorates, and 2 divisions. Top management includes the Permanent Secretary, Commissioners, Directors and Deputy Directors. The Ministry is organized according to superior-subordinate relations, a chain of command that extends from the Permanent Secretary to the lowest level civil servants in the government through chains of command that are structured vertically through departments. Participants in the study were selected according to the role they played in decision-making that requires them to communicate, coordinate, and collaborate with each other to perform functions.

The Figure (3.1) below showed the top management structure within Ministry of Finance.

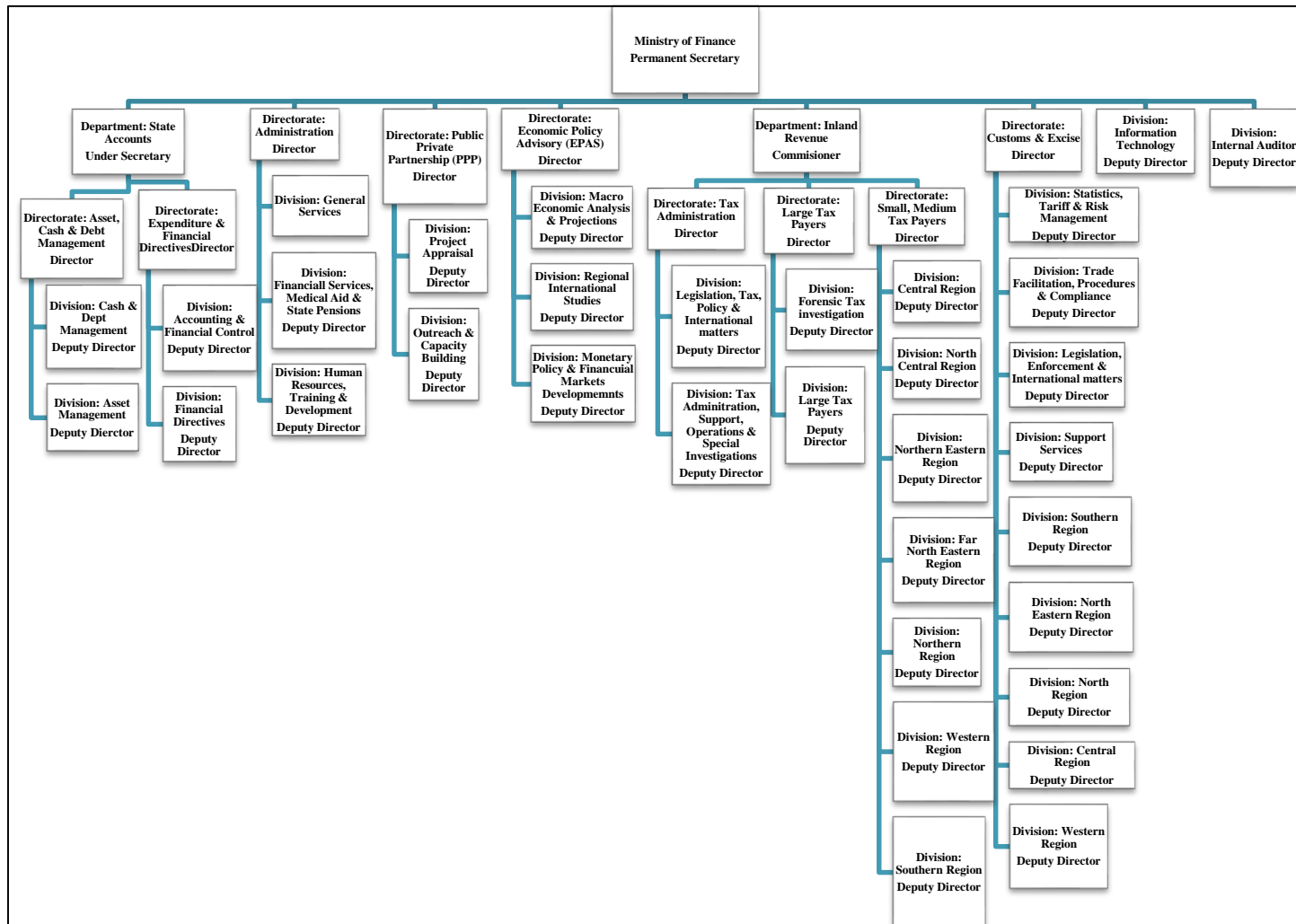


Figure 3. 1 MoF top management structure

3.4.2. Units of analysis

According to Grad (2012) quantitative research requires standardization of procedures, and random selection of participants to remove the potential influence of external variables, and ensure generalizability of results. In contrast, subject selection in qualitative research is purposeful; participants are selected who can best inform the research questions and enhance understanding of the phenomenon under study. Hence, one of the most important tasks in the study design phase is to identify appropriate participants. Decisions regarding selection are based on the research questions, theoretical perspectives, and evidence informing the study.

The unit of analysis in this study are managers such as directors, deputy directors, chiefs and seniors from the departments/directorates/divisions within the Ministry of Finance. The researchers gained permission from the participants by sending out an email for acceptance, and to indicate an appropriate time that they were willing to conduct the interviews. To the email a cover letter from the institution describing the purpose of the interviews was attached (see Appendix A). The participation in the interviews were voluntary.

The number of selected participants in this study depended upon saturation as the number required to inform fully all important elements of the phenomenon being studied. That is, the sample size is sufficient when additional interviews or focus groups do not result in identification of new concepts, an end point called data saturation. To determine when data saturation occurs, analysis ideally occurs concurrently with data collection in an iterative cycle.

3.4.3. Data sources

Data collection was done through both secondary and primary sources. Primary data sources included key participants for the case study. Secondary data sources mainly covered government publications, technical document, department's charters and annual reports of the Ministry.

3.4.4. Data collection and analysis

According to Mehdi (2013), data collection is the process of obtaining valuable, reliable, and relevant information from past and present serving as basis for study as well as analysis. Qualitative data sources include observation and participant observation (fieldwork), interviews and questionnaires, documents and texts, and the researcher's impressions, and reactions. Data is derived from direct observation of behaviours, from interviews, from written opinions, or from public documents. Written descriptions of people, events, opinions, attitudes and environments, or combinations of these can also be sources of data (Myers, 2009).

3.4.4.1. Semi-structured interviews

Semi-structured interviews give the researcher the opportunity to 'probe' for more information by asking the respondent to give more clarification to his answer. This is significant for those who adopt a phenomenological approach because a prime concern is focused on understanding the meanings that the respondents ascribe to various phenomena (Saunders et al., 2003).

The interviews involved face-to-face meeting with the respondents. Interviewing can either be structured, unstructured, semi-structured or focus-group, this study used semi-structured. All interviews were transcribed and in addition, field notes were recorded after the sessions by the interviewer regarding new insights that had been gained from the participants. This study employed qualitative "semi-structured" interviews which involve a number of open-ended questions based on the topic areas that the researcher want to cover. The open-ended nature of the questions posed defines the topic under investigation but provides opportunities for both interviewer, and interviewee to discuss some topics in more detail. If the interviewee has difficulty answering a question or provides only a brief response, the interviewer can use cues or prompts to encourage the interviewee to consider the question further. In a semi structured interview the interviewer also has the freedom to probe the interviewee to elaborate on an original response or to follow a line of inquiry introduced

by the interviewee. According to Shneiderman, and Plaisant, (2005), and Priyanga (2007) the following are advantages of interviews:

- Direct contact with the users often leads to specific, constructive suggestions
- Data from interview are usable
- Depth of response can be assured
- Higher proportion of responses is obtained
- They are good at obtaining detailed information
- Few participants are needed to gather rich and detailed data

This study was based on 10 in-depth interviews as shown in table (3.1) below, with 10 different managers (directors & deputy directors), and supervisors (chiefs and seniors) from different departments, directorates, and divisions within the Ministry of Finance. Interviews lasted from 20 minutes to 1 hour, which included face-to-face interview session. Sample size for interview was identified conveniently in the Ministry of Finance based on the availability of the participants.

Table 3. 1 Interview participants

Name of Directorate/Department/Division	Title of Participants	Number of staff	Total
Department of Inland Revenue: (Directorate: Tax administration)	Director	1	1
Department of Customs and Excise: (Division: legislation, enforcement, & international matters)	Deputy Director	1	1
Department of State Accounts: (Division: Accounting, Financial Control)	Deputy Director	1	1
Directorate: Administration: (Division: Human Resources, Training & Development)	Chief Training Officer	1	1

Directorate: Public Private Partnership (PPP)	Director	1	1
Directorate: Economic Policy Advisory (EPAS): (Division: Macro Economic Analysis & Projections)	Chief Economist	1	1
Division: Information Technology	Chief Systems Administrator	1	
	Chief Analyst Programmer	1	
	Senior Systems Administrator	1	
			3
Division: Internal Audit	Senior Internal Auditor	1	1
Total			10

3.4.4.2. Documentation analysis

A document is any substance that gives information about the investigated phenomenon, and exists independently of the researcher's actions (Bowen, 2009). It is normally produced for specific purposes than those of the research but it can be used by the researcher for cognitive purposes (Yin, 2014). According to Hancock, Ockleford, and Windridge (2009), there are a number of written materials that can produce qualitative information that can be particularly be useful in trying to understand the philosophy of an organisation as may be necessary in ethnography. These materials can include policy documents, mission statements, annual reports, and minutes of meetings, codes of conduct, web sites, memos or emails.

Corbetta (2003) identified a number of advantages of the documents over other research methods.

(a) It is a non-reactive technique where the information given in a document is not subject to a possible distortion as a result of the interaction between the researcher and the respondent, e.g. as in interviews; (b) it helps the researcher to study the past; (c) it is a cost-effective method as the

information has already been produced. The following table showed the documents that were reviewed for the purpose of this study.

Table 3. 2 Documents reviewed

Documents reviewed	O/M/A
IT policy for the Republic of Namibia	OPM
E-Government Strategic Action Plan (eSAP)	OPM
Service Charter for Directorates/Departments/Divisions	MoF
ITSM policy	MoF (IT division)

3.4.4.3. Observation

Kawulich (2005) described participant observation as the beginning step in ethnographic studies, which involves a variety of activities over an extended period to enable the researcher to observe the cultural members in their daily tasks. These provide a way for the researcher to check for non-verbal expression of feelings, helping in determining the interactions of whom, and how participants communicate with each other, and check for how much time is spent on various activities.

Backer (2006) added to this understanding, indicating that observation allows for the researcher to study people in their environment, understanding “things” from their perspective. Backer (2006) further noted that with observation the researcher need to spend some time in the field in order to gain a more complete understanding of the people being studied.

3.4.4.4. Data analysis

Hancock, Ockleford, and Windridge (2009) argued that analysis of data in a research project involves summarising the mass of data collected and presenting the results in a way that communicates the most important features. Carry out qualitative analysis is about reducing data without losing its meaning. At the end of the day the findings should represent the data that you have collected and at

the same time the findings should address the research questions (Adu, 2017). Research carried out by Bogdan, and Biklen (2007) defined qualitative data analysis as the means of working with data, that is organized, and broken down into manageable units, that are synthesized, searching for patterns to discover what is important and what is to be learned, and deciding on what to tell others.

Data analysis consists of examining, categorizing, tabulating, or otherwise recombining the evidence to address the initial propositions of a study (Yin, 2002). According to Neuendorf (2016) there are two main approaches for analysing qualitative data: content analysis, and grounded theory. Thomas (2003) affirmed that inductive approach is used to summarise extensive, and varied raw text data into a brief, summary format; to establish clear links between the research objectives, and the summary findings derived from the raw data, and to develop of framework or theory about the underlying structure of experiences or processes which are evident in the raw data.

3.4.5. Theoretical underpinnings

Following the literature from chapter 2, the philosophical assumptions underlying this study came mainly from interpretivism (of hermeneutic in nature). Hermeneutic philosophy as a theory of interpretation of experience emphasizes how we cope in the world and come to understand objects and subjects (Barrett, Powley & Pearce, 2011).

The Activity Theory was also used as a lens to understand the human interaction towards the collaboration tools that they use in their work environment for the purposes of data analysis. The main aim of this research was to develop a conceptual e-collaboration framework that would facilitate managers' decision making within the Namibian public sector.

3.5. Ethical considerations

There are a number of ethical standards to consider when doing a qualitative research. According to Patton and Cochran (as cited in Bricki and Green, 2007) there are two key ethical issues that should be considered in any study:

- *Consent*: Everyone who participates in the study should freely have the consent to participate, without being coerced or unfairly pressurised. This means they should be well-informed about what participation entails, and reassured that declining will not affect any services they receive. While written consent may in some situations frighten the individuals you are talking to, you should at the very least obtain verbal consent.
- *Confidentiality*: It is not always easy or even possible to measure the dangers of a certain context to a given population, let alone to individuals. It is therefore essential to protect the identity of the person from whom you gather information. If collected, the identity of the participants must be protected at all times and not be left lying around in notebooks or unprotected computer files.

Creswell (2007) also asserted that assigning aliases to the participants to protect their privacy is important, as well informing the participants of the purpose, and procedure of the research beforehand, informed consent, and not disclosing the identities of participants these all form part of the ethics or care, confidentiality and other issues as required like that of sharing the research findings with the participants.

Primarily, the purpose of the study was explained to the participants as they were informed via a written consent (see Appendix A). The participants were also informed that the interview sessions were going to be recorded for data collection purposes. Confidentiality was assured to the participants as well, and none of their names were going to be used within the data collection process.

3.6. Summary

This chapter focused on the research approach and design used to address the research objectives of the study. Qualitative research method was used for data collection and analysis. The next chapter presented the results that were obtained, and discussed the data analysis from the case study.

CHAPTER 4: DATA ANALYSIS

4.1. Introduction

The prior chapter discussed the methodology that was used in this study. This chapter presented the data as obtained from the respondents regarding the use of collaboration tools for decision-making. The data collection was done using the qualitative method. The first section of the chapter used the hermeneutics approach to seek understanding of how the participants interacted with collaboration tools. Responses to the questions were presented in tables and figures' formats. The second part presented the data analysis using the Activity Theory as a lens to this study.

4.2. Data analysis using hermeneutic approach

The application of hermeneutics in this section was employed to interpret and seek understanding of the data collected from the (10) participants within the Ministry of Finance using qualitative semi-structured interviewing techniques to collect data.

4.2.1. Roles and responsibilities

Question one: Briefly tell me about your role and responsibility in the directorate/department/division?

Table 4. 1 Role and responsibilities of managers and supervisors

Reflective writing	Participants' response to question one
Control Procedures	<i>Respondent 1: I am responsible for ensuring that internal control procedures are in place and adhered to so as to avoid risk and guarantee the prevalence of safety and security of Ministry's operations.</i>

Reporting and Projecting	Respondent 2: My role deals with reporting and projecting, operations, procurement and training within the Inland Revenue Department (IRD).
IT Administration	Respondent 3: My role as a chief systems administrator includes administering all Microsoft run systems such as the active directory, running backups, maintaining firewall, etc.
Support and manage operations	Respondent 4: My role is to execute the daily operation activities needed to support and manage all of the organisation. I also managing the technical support and hardware within the IT division to ensure the level of availability and performance of service.
Troubleshoot IT issues	Respondent 5: My role is to act as a single point of contact for phone calls and emails from users regarding IT issue and queries, act as 1 st and 2 nd line support troubleshooting of IT related problem and to escalate unresolved calls to the 3 rd or 2 nd line support.
Infrastructure investments	Respondent 6: My role is to facilitate private investments in public infrastructure investments; facilitating in writing legislations and policies that clarify this area, we do a lot on capacity building, but most importantly we work with other government ministries in helping them with bring their infrastructure development on public service delivery projects that they want to get done with private participation from a conception stage to level of maturity.
Training	Respondent 7: As a Training officer, I am supposed to identify staff training requirements and development needs for all the staff members. Ensure that all staff members, new and existing, within the departments are trained on the application to an appropriate level. A training needs assessment (TNA) tool is used to identify the staff members needs in this regard.

Financial analysis	Respondent 8: <i>I deal with financial analysis and reporting to management as needed. I also perform month-end accounting activities such as reconciliations and journal entries. Coordinate with finance team to complete assigned accounting tasks within</i>
Control imports Classify disputes	Respondent 9: <i>My role is to work with other customs officials who are at the borders, head office, airports, harbours and regional offices so we can prevent the importation of illegal and/or dangerous goods into the country. I also deal with classification disputes forwarded by all these areas.</i>
Economic and fiscal analysis	Respondent 10: <i>We work on a range of key tasks for the Ministry. On the whole it is the primary advisory function within the Ministry, responsible for economic and fiscal analysis and regional/international issues.</i>

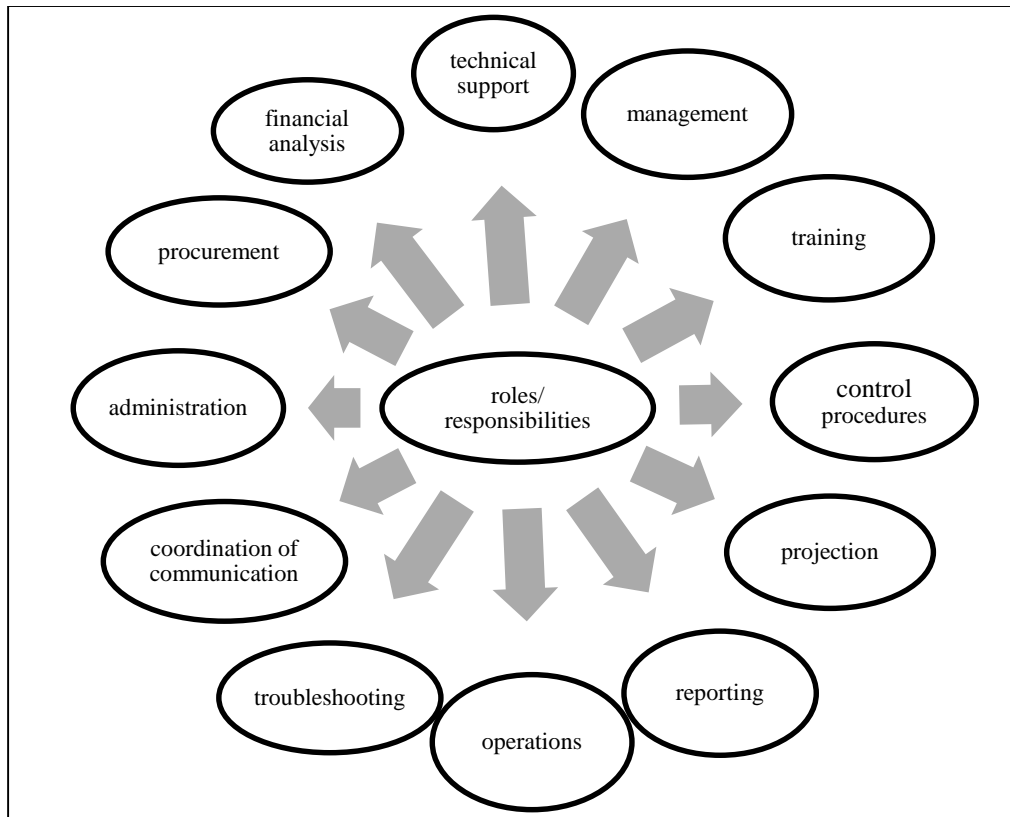


Figure 4. 1 Role and responsibilities

The respondents have a vast of roles and responsibilities that require them to collaborate on a daily basis. All the respondents have different responsibilities as shown in the figure (4.1) above. The respondents' roles mainly included: management, reporting, operations, projection, training, control and procure, troubleshooting, etc.

Respondents felt that it is important to have the views of other employees before carry out decisions. For example, the respondents from the IT division have the responsibilities of offering *technical and service support* to other departments/directorates/division within the Ministry. Thus, their task is to ensure that they render competencies to the managers who in turn deliver effective service back to the citizens. The findings also showed that in order for an organisation to perform, managers need

to enhance their performance towards the different stakeholders that are involved to carry out decisions.

4.2.2. The need to collaborate

Question Two: Based on your role, does your work entails you working with other directorates or organizations for decision-making?

Table 4. 2 The need to collaborate

Reflective writing	Participants' response to question two
Audits	<i>Respondent 1: We deal with all the departments in Finance, since we need to audit a number of things such as financial information and controls for security purposes. We work with other internal audit sections in the different O/M/As and lastly we do work with NIPAM.</i>
Tax administration	<i>Respondent 2: Yes, definitely both. Internal, being in tax administration and that is a directorate central within the department,</i>
New Projects	<i>Respondent 3: Yes, because if you look at our role we give the support that the business want. So decisions that we have to make should be based on business decisions that are based on business objectives. Basically if there is a new project that has to be brought up, the business comes with what they want we look for solutions, and present it to them and according to that we make a collaborative decision on the way forward to attain the objectives that the business is trying to achieve. So all our decisions are based on all the departments within the Ministry of Finance.</i>

Communication and information sharing	Respondent 4: <i>Communication and information sharing between individual participation in decision making is very important and I have to engage with other directorates to discuss and understand their service requirements.</i>
Update services	Respondent 5: <i>Yes, we work with office of the Prime Minister because that is where the central Service Desk is and tickets are escalated further to them when they cannot be solved by MoF service desk and also in terms of the service catalogue to update services that are still in use or retired. We also work with other Ministries that call our service desk to be assisted in regard to IFMS system problems.</i>
Projects	Respondent 6: <i>There are three main stakeholders, the most important are other OMAs, and we also get help from other organisations outside the Ministry of Finance, some bilateral and multilateral organizations in some PPP projects initiates and interact with other counterparts such as high commissioners so that we can learn from what they are doing and they learn from what we are doing and these interactions happen frequently. The other organisations are the service providers e.g. The World Bank can work on a PPP project</i>
Training needs	Respondent 7: <i>Yes, with all the departments within the Ministry. All staff members that requires training go through our office for their training needs. These training needs need to be funded, thus employees goes through our office.</i>
Allocation of funds	Respondent 8: <i>Yes, I am involved with all the departments within the Ministry and line Ministries because we manage individual budgets, expenses and revenues of our departments and allocation of funds to the votes of the line ministries.</i>

Solve disputes	Respondent 9: Yes, I work with other officials at border posts, air ports, harbours, regional offices, the business community and the public at large to dissolve disputes.
Communication	Respondent 10: Yes, we deal with different stakeholders that assists us in many ways.

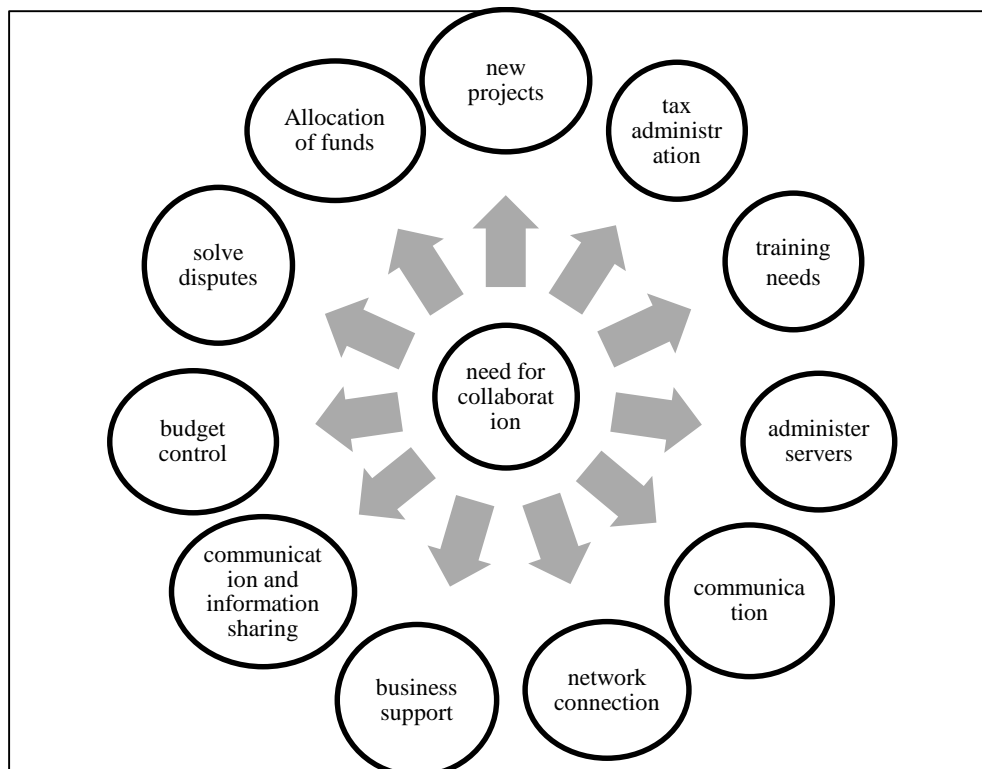


Figure 4. 2 The need to collaborate

The respondents narrated on their different views on why they need to collaborate. The respondents expressed that they worked with other departments for different reasons such as when there is a new project underway, communication and information sharing, Another respondent felt that they worked with other departments especially when there is a budget needed to be allocated across all O/M/As departments. Respondents from the IT division, felt that they worked with all departments within

MoF because of what their work entails, such as meeting the business needs of purchasing equipment or software, and troubleshooting IT issues. Other respondents expressed that they are involved in tax administration, training and audit control.

4.2.3. Stakeholders collaborated with

Question three: Could you please describe the different stakeholders you work with for decision-making?

Table 4. 3 Stakeholders collaborated with

Reflective writing	Participants' response to question three
All departments within MoF All O/M/As audit units NIPAM	<i>Respondent 1: As mentioned, we work with all directorates within MoF. We have an audit committee that is comprised with different stakeholders from NIPAM, regional councils and other O/M/As. We control and monitor the risk management and security processes.</i>
Large tax payers office (LTO) Bank of Namibia (BoN), Broadcasting Corporations (NBC) and Namibia Statistics Agency	<i>Respondent 2: I work with other department one being the Small and medium tax payers which is responsible for tax collection, and the other Large tax payers office (LTO), so I deal directly with the operation that affects all the other directorates, in a way we do this on a daily basis. And of course from an outside point of view, I deal with most of the stakeholders being external i.e. Bank of Namibia (BoN), Broadcasting Corporations (NBC), and Namibia Statistics</i>

	<i>Agency. The directorate is therefore responsible for dealing with most of the stakeholders.</i>
OPM New Point Telecom	<i>Respondent 3:</i> <i>Ministry of Finance is divided into many departments, divisions and subdivisions however two of the biggest departments that we have are Customs and Excise and Inland Revenue and other smaller ones. For Customs and Excise, we support them on their systems and Inland Revenue we support them on the tax system. So for all of the objectives that these two systems are trying to achieve or what the directorates are trying to achieve we play a very big role because we give the supporting services in terms of technology and human support as well. We work with OPM in regards to the e-mail server which is hosted by them, New Point for our customised systems and Telecom for our network lines</i>
All departments in MoF	<i>Respondent 4:</i> <i>The different departments or organizations that I collaborate with are geographically located in multiple regions and remote offices especially Customs and Inland Revenue</i>
All departments/directorates/division in Ministry of Finance OPM	<i>Respondent 5:</i> <i>Office of the Prime Minister and all directorates for troubleshooting purposes</i>

O/M/As, bilateral and multilateral organizations, high commissioners, and World Bank	<i>Respondent 6:</i> As mentioned in the previous question, its other O/M/As, bilateral and multilateral organizations, high commissioners and service providers like The World Bank
Other departments in Ministry of Finance OPM	<i>Respondent 7:</i> All departments, sections and divisions for training purposes and OPM for new policies
Other departments/directorates/divisions in MoF, BoN, commercial banks	<i>Respondent 8:</i> All departments within the Ministry, the Line Ministries and Bank of Namibia, other commercial Banks.
Airports and Border Posts	<i>Respondent 9:</i> The remote offices at all Border Posts and Airports.
Namibia Statistic Agency(NSA), The development Bank of Namibia (DBN)	<i>Respondent 10:</i> Namibia Statistic Agency, The Development Bank of Namibia (DBN).

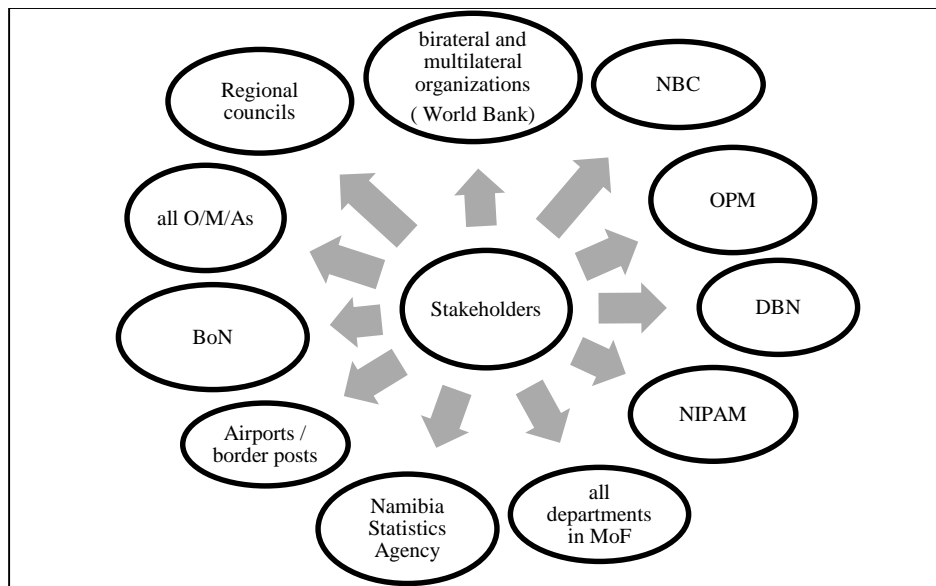


Figure 4. 3 Stakeholders collaborated with

Most of the respondents are involved in a number of collaboration with either internal or external organisations as seen from the above figure (4.3). The involvements mainly depend upon the roles, and responsibilities that the managers carry out. Managers mainly collaborate for the reason of share resources because of the expertise that the other department or organisation can offer.

4.2.4. Collaboration tools

Question four: Which collaboration tools do you use to share information either in this departments/directorate/division, other departments, and external organisations?

Table 4. 4 Collaboration tools

Reflective writing	Participants' response to question four

E-mail Face-to-face meetings	Respondent 1: Most of the communications that take place are via email and face-to-face meetings. Most of our duties requires us to physically be present to carry out our tasks. Thus, face-to-face is important.
E-mail Face-to-face meetings	Respondent 2: With the internal directorates the means of communication is mainly the use of is e-mail, because you reach many people at once and it is faster. Only when it is required that you have to write a document then it have to go through printing and distribution but that rarely happens. And also we are across the country and not everyone live in Windhoek so it is easier to reach people via email. We also make use of face-to-face meetings and discuss what needs to be discussed.
E-mail Mobile phone Face-to-face meetings Skype for Business	Respondent 3: We are testing out a new tool called Skype for business however we have not yet gone into the full testing of this new technology because of some of the challenges that we are facing but it will be one of the most operation when it comes to communication. But for now the current communication is through emails where you can send calendar invite and face-to-face meetings.
Telephone Mobile phone Face-to-face meetings E-mail Service Desk tool	Respondent 4: We use telephone, mobile phone, e-mail, face-to-face meetings and a tool embedded in the Service Desk. This tool can generate reports that can be used for documentation and meeting purposes.

E-mail Face-to-face meetings Letters/Memos	Respondent 5: E-mails most of the time depending upon the formalization of the communication sometimes you need to document a few things list them down use the most convenient method of communication against time zone. E-mail is a convenient and efficient way that is regarded as. Letters can be used to invitation government officials for meeting or training. Face- to-face meeting is also used and telephone as well.
E-mail Face-to-face meetings Telephone	Respondent 6: I mainly use e-mails, telephone and face-to-face meetings. These meetings mainly take place between top managers.
E-mail Face-to-face meetings Telephone	Respondent 7: In most cases emails, telephone calls and face-to-face meetings. We also created a WhatsApp group account for the training committee that we use to communicate important deadlines.
E-mail Telephone Face-to-face meetings Mobile phone	Respondent 8: Through the use of e-mails and telephone, mobile phone and of course face-to-face meetings
E-mail Face-to-face meetings Telephone	Respondent 9: We make use of emails, telephone, face-to-face meetings, mobile phone for emergencies purposes.
E-mail Face-to-face meetings Mobile phone	Respondent 10: Definitely e-mails for meeting schedules and telephone for follow-up and mobile phone for out of the office communication

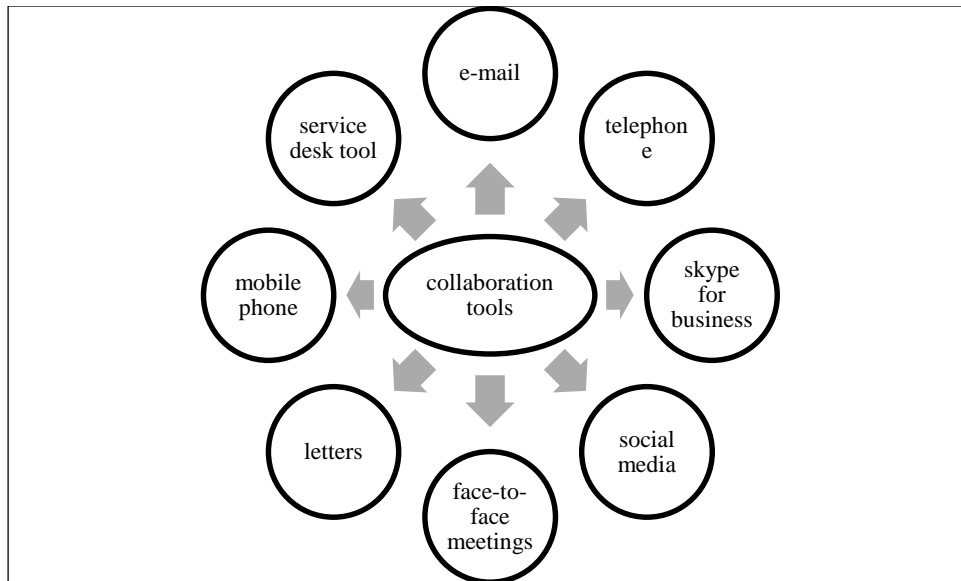


Figure 4. 4 Collaboration tools

Question five: How are you able to work with other departments, organizations or individuals regardless of their geographical locations?

This question is similar to the previous question, but it was asked to understand how the managers and supervisors collaborated with stakeholders such as employees that are geographically dispersed.

Table 4. 5 Collaboration tools for dispersed stakeholders

Reflective writing	Participants' response to question five
Telephone E-mail Letters/memos Mobile	<i>Respondent 1:</i> The current method as mentioned is via e-mail and telephone. Optionally mobile phone and letters/memos are also useful.

E-mail Telephone	Respondent 2: <i>The other thing I forgot to mention is in terms of channels of communication is that telephonic communication is very important as well. Mostly for the people in the region we mostly send them an e-mail and if they had not responded to it within a time frame then you follow up with them with a telephone call just to make sure that your communication or message has gone through, and in most cases we send a confirmation of receipt of the e-mail just to keep track if you send an e-mail so that the other user says they did not receive or read the e-mail while you've got the read and receipt.</i>
E-mail Telephone	Respondent 3: <i>I would say it is mostly telephonic, via e-mail and now the Skype for business being tested now. I believe once the Skype for Business is up it will greatly help in terms of communication because it will give the option for setting up meetings face-to-face instead of us coming together in a boardroom for a meeting. This can actually reduce the travelling costs as well</i>
Service desk tool Telephone Mobile phone	Respondent 4: <i>For the subordinates that are under me in the regions, I make use of email, telephone and mobile phone. Where other departments, organizations or individual regardless of the location, I will tend to rely on e-mail, cellphone, telephone SMS and web-application such as Service Desk</i>
E-mail Telephone Mobile phone	Respondent 5: <i>use e-mails, telephone or mobile phones for communication</i>
E-mail Telephone Face-to-face	Respondent 6: <i>Emails, telephone and face-to-face meetings. E-mail allows for more flexible response times. You can send a message one day and receive a response in a few hours or the next day</i>

E-mail Letters Internal memos	Respondent 7: <i>Mainly e-mails as this allows us to communicate with managers in the regions. Letters and memos are send as attachments to the recipient. Otherwise, is the use of telephone to explain the emails in case they do not understand the email send to them</i>
E-mail Telephone Mobile	Respondent 8: <i>The only way for us to use is the email, mainly face-to-face meetings, one-to-one or group because our work needs understanding the budget allocation and this might not be so effective in using the email.</i>
E-mail Telephone Mobile.	Respondent 9: <i>Sometimes management have to undertake field trips to border post for annual mid-review meetings to give guidance to all staff in the reason.</i>
E-mail Telephone Mobile	Respondent 10: <i>The use of telephone and emails is what we use to communicate. Mobile phones also expand your ability to communicate with distant workers or offices.</i>

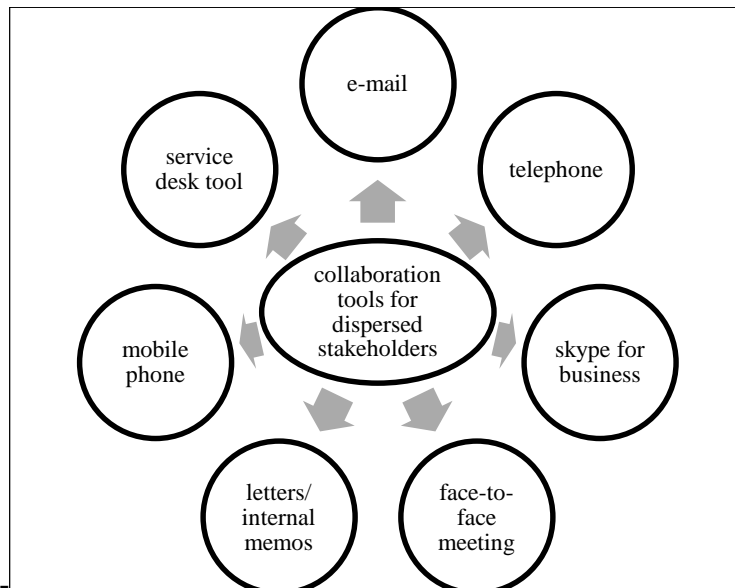


Figure 4. 5 Collaboration tools for dispersed stakeholders

The respondents used the same tools internally and externally. Tools used all depend on the availability at the time of the decision-making process. The respondents mainly used: emails, telephone, internal memos/letters and face-to-face meetings as the preferred channels of communication on a daily basis. All the respondents felt that use of email the easiest, and convenient. The respondent felt that the telephone was another most convenient after e-mails. Face-to-face meeting is also one of the most used tool for decision-making. Some respondents mention the use of mobile phone, Skype for business, social media (WhatsApp), and service desk tool.

4.2.5. Advantages of using collaboration tools

Question six: How has the use of the various technology tools helped you in the way you make decisions?

Table 4. 6 Advantages of using collaboration tools

Reflective writing	Participants' response to question six
E-mail: - Timely - reference of information	Respondent 1: <i>In terms of making decisions what technology does is that it helps for you to get information that you want in a timely manner. Information technology helps with the reference of information, for example in terms of emails communication from say January to March emails can be used to make decisions to ascertain your facts.</i>
E-mail: - can set deadlines - calendar invite	Respondent 2: <i>They have helped in a way that you get input from various managers when you need to by setting specific deadlines but the way it work is when you give proper background in your e-mail by not writing too much in the e-mail e.g. Saying I would like us to make a decision of the current statement or problem, so what are</i>

	<i>your views? So from the views we can communicate what the people view as the right solution. So you look at the consensus of what is given". When calling a meeting, I send out an email with a calendar invite where they can accept or declined and give a reason why they are declining and I can also use calendar invite</i>
Face-to-face: - expression of feelings	Respondent 3: <i>The tools make you make decisions effectively as you see what exactly the situation is by seeing especially in meetings one can express your feelings</i>
E-mail: - personal touch	Respondent 4: <i>E-mail cannot solely be the only tools to use to stay informed and make decisions, it can be a long process to work on a collaborative project by e-mail, and telephone. The service desk tool save time and cost through automated best practices process. Provide a full audit trail report showing who did what and when. It also house all information in a single system with native reporting capabilities.</i>
E-mail: -save costs	Respondent 5: <i>The use of email speeds things up and emails provide a way to double check decision and refer back to them even when you are not able to reach the other organization</i>
E-mail: -more recipients communicated to at once	Respondent 6: <i>Emails is effective in that you can communicate with more than on recipient at a time. Emails also allow one to cc to others people that will allow remember.</i>
Letters and memos	Respondent 7: <i>Mainly emails as this allows us to communicate with managers in the regions. Letters and memos are send as attachments to the recipient. Otherwise, is the use of telephone to explain the emails in case they do not understand the email send to them</i>

E-mail Face-to-face meetings	Respondent 8: <i>to use is the e-mail, mainly face-to-face meetings, one-to-one or group because our work needs understanding the budget allocation and this might not be so effective in using the email.</i>
E-mail Telephone	Respondent 9: <i>emails are used mainly and telephone</i>
E-mail	Respondent 10: <i>Emails allows for conversation that isn't time-pressured, but can serve for fast turnaround times. It also allows for the inclusion of files, such as documents or images</i>

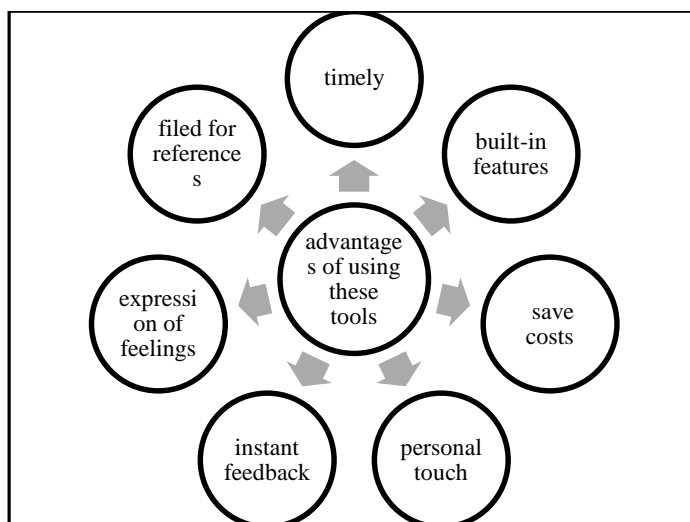


Figure 4. 6 Advantages of using collaboration tools

The respondents had a number to advantages of the collaboration tools they preferred. Respondents felt that the use of *email* is the easiest and most convenient method as it is made readily available for their use on their computers. The *telephone* was mainly used by the respondents when they needed a prompt response to carry out a decision. The respondent also strongly mentioned that the use of *face-to-face* meetings was also one of the most convenient method used especially when important decisions needed to be made and when the inputs from different stakeholders is required. Most of

the respondents made use of *internal memos* to share information. Some respondents stated that *mobile phones* were used as an alternative option in case there has not been any response to for an example an email that was perhaps disseminated. One of the respondents said the Skype of business as one of the method that they would like to make use but it's not operational yet due to some software and hardware issues. Social media such as WhatsApp group is formed between a small groups of employees that would like to share information within their departments.

4.2.6. Challenges using collaboration tools

Question seven: What are the challenges or barriers you encounter when using collaboration tools for decision making?

Table 4. 7 Challenges using collaboration tools

Reflective writing	Participants' response to question seven
Email - time consuming - no recorded evidence - miscommunication	<i>Respondent 1: Challenges when using technology for an example when you are communicating with a colleague or colleague communicating to somebody and then they forget to cc or copy most of their senior manager in the decisions that they are taking, when you find yourself in circumstances where somebody says they have done something or made a decisions but their managers where not cc or copied into an e-mail. Also in case where telephone cannot be followed was used, e.g. where someone make a decision via SMS like will say the systems will be switched off because of say a major maintenance.</i>

<p>Email</p> <ul style="list-style-type: none"> - Repetition of discussion - Time consuming - misinterpretation of message - Cold way of communicating 	<p>Respondent 2: <i>I have to do it one by one, which can be a lot of work because it can become repetition of the same discussion and it can be time-consuming as well as there are about eight deputy directors who are in the regional offices. The first one is interpretation of the true meaning of what the person intend to communication can be lost in that email, than face-to-face if I am talking to somebody I will get exactly to hear what the person is saying and also when you talk to a person it's about what they are saying but about all the emotions too and this is all missing from an email. An email is a cold way of communicating something that is made to sound good can end up sounding bad because you can't tell so a lot of meaning can be lost in an email. An email is regarded to be a short message, so when you talk chances are that you will talk a lot but when you write an email you try by all means to write two three paragraph will be lost beyond that your email will not be read it will be one of these emails that I will put aside for another day so that's another weakness or challenge of making use of emails. There is one where if you do not activate the delivery notifications then you would not know whether the email is read, you can be sitting here thinking that you have done your part waiting for the next person to respond meanwhile they have not received it, or they have been offline unless you activate all the features.</i></p>
<p>Email</p> <ul style="list-style-type: none"> - Internet access problems 	<p>Respondent 3: <i>Sometimes when using e-mails the internet access is too bad that you can't actually connect or get through which makes it very stressful.</i></p>

Email - Information overload	Respondent 4: <i>Sending edits to a documents by email is time consuming and it can be a long process to work on a project. Sometimes email services are down due to technical problems. Sometimes information are not forwarded to stakeholder on time to make decisions.</i>
Network problem	Respondent 5: <i>Difficulty of handling growing ticket volume can easily inhibit your ability to track dependencies between tickets prioritization and assignment of ticket based on staff availability and ticket severity, response time and effectiveness of ticket handling</i>
Email - Lack of personal touch	Respondent 6: <i>Telephone or letter is difficult to communicate back to multiple parties as it is time consuming. Letters need to be scanned and then email to other parties. Email outages is a big challenge because it is our main form of communication and so if they are off then it would be very inconvenient. The email server can sometimes can be off for the whole day.</i>
Email: - Delays in communication	Respondent 7: <i>nothing much only when the server is off then there is no way of communication just have to wait for the IT to fix the problem. This however delays communication of important deadlines. Alternatively, one can use the telephone to follow up.</i>
Telephone: - less personal	Respondent 8: <i>The phone is also less personal than a face-to-face meeting because people are dealing with a financial budget this may not be convenient.</i>
Emails: - Misunderstanding of missing context	Respondent 9: <i>E-mail is less personal than either face-to-face or phone. The missing context of the message may lead to misunderstandings or misinterpreted messages.</i>

Emails: - Duplication of message communicated	Respondent 10: <i>The use of emails can lead to misinterpreting the original message, in an email one may not be able to understand the reason of why the message is in the way it is this can allow incorrect or unnecessary information.</i>
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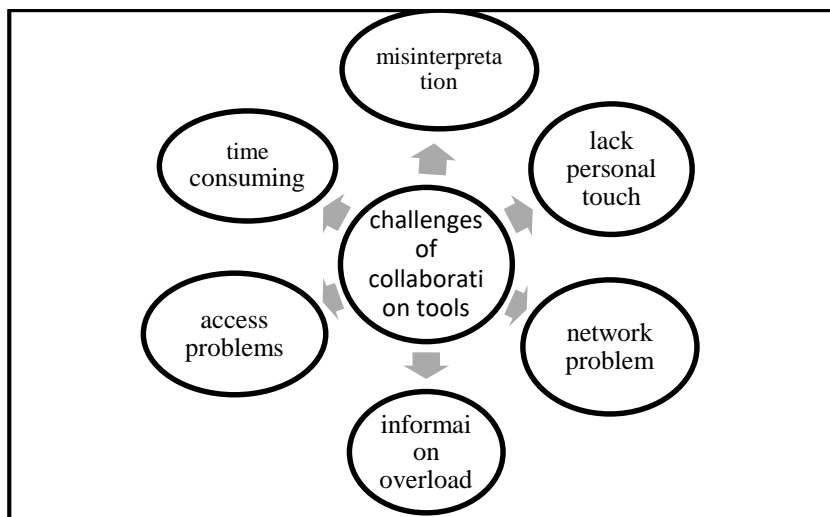


Figure 4. 7 Challenges using collaboration tools

The study found that there are a number of obstacles in using these collaboration tools. Respondents felt that there are a number of difficulties they encounter when making use of e-mails as their means of communication can lead to costly errors, and miscommunications. Respondents also felt that e-mails can be time-consuming thus causing delay in important decisions needed to be made. Other respondents felt that the use of e-mail offer some advantages the telephone actually lack the personal touch.

4.2.7. Strategies to overcome collaboration challenges

Question eight: Based on your experience, what strategies have you been using to overcome all these challenges?

Table 4. 8 Strategies used to overcome collaboration challenges

Reflective writing	Participants' response to question eight
open communication build brainstorming	<i>Respondent 1: In our experience the issue that we have with the emails that managers are not copied into key emails that have to be used or should be used in terms of making decisions, the strategy is to have open communication so that it can allow sharing of information so that information is tracked and when the decision is to be made then the information is tracked.</i>
Introduction of new software/tools	<i>Respondent 2 : The introduction of new communication software that can encourage people to share ideas such as GoToMeeting software, where you can setup your conference and there is one called Skype where you connect everybody, where you've got your screen, your speakers and you can all see each other so that is what I want to implement in that we will not be meeting on a frequent basis I believe that if we can have that and communicate that way and have meetings and talk like we are in a real boardroom it will help a lot in terms of decision making and not just communication but you have to debate on something and have a coherent discussion. I see those two as modern ways of communication or any other modern ways of communication that I have not thought about would be appreciated.</i>
log communication	<i>Respondent 3: Technology can fail us, so we basically make use of what we have at disposal which could be directly by phone instead of using the tool.</i>

allow contributions and suggestions	Respondent 4: <i>Organization should evolve with the technologies and utilize new tools to enhance the collaborative process for decision-making. This can build brainstorming for individuals or a group for each project and feedback can be given before an appropriate decision is reached.</i>
log important communication	Respondent 5: <i>try to log important communication with available tools such emails. These tools have built-in features that can assist users to keep record of all communication.</i>
log communication for feedback	Respondent 6: <i>Communication via email can be unclear sometimes, thus there is a need to communicate the outcome of a certain decision say from meeting was made. All group of people involved need to be informed.</i>
one-on-one discussions	Respondent 7: <i>As mentioned above alternately telephone, or use hard copy of an internal memos. Have one-on-one discussions can help.</i>
Share information	Respondent 8: <i>if the use of email is ineffective then I would opt to make a call to the people I need in other for me to carry on my decision making. We need to change our working habits by sharing important information.</i>
build trust with each team members	Respondent 9: <i>it is very important to find other alternative communication channels that will allow employees to build trust with each team involved.</i>

Shift tools	Respondent 10: <i>Currently I am only making use of four tools for making decisions that is emails, telephone, mobile or face-to-face meeting. So in case one is not working I just use the next one that is appropriate.</i>
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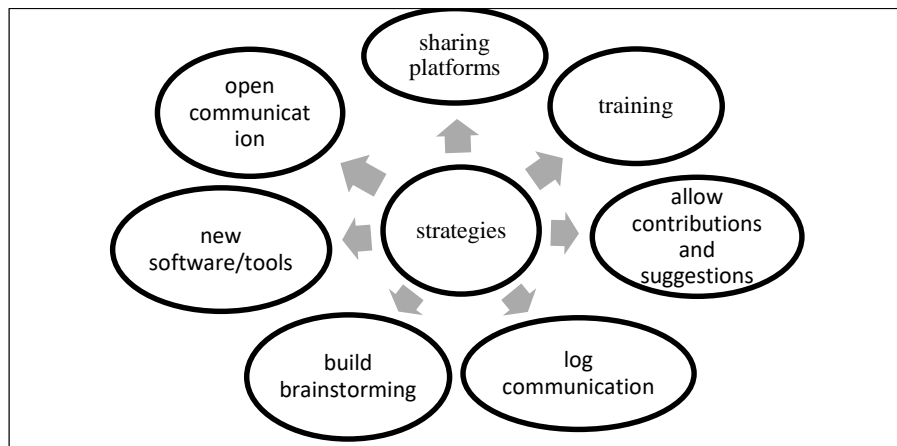


Figure 4. 8 Strategies used to overcome collaboration challenges

The respondents did not seem to have strategies to fall on, except shifting between the channels of communication available to them. However, the respondents mentioned what they would like to see to combat the current challenges. The respondents felt that they would like the introduction of new software or tools that can help make effective decisions. The respondents felt that new tools will support their information sharing, allow for open communication, build brainstorming sessions, engage by giving suggestions on the platforms, and contribute to the pending decision-making processes.

4.3. Data analysis using Activity Theory (AT) elements

Engeström (1999) stated that the work activity system comprises of components such as individual workers, their colleagues and co-workers, the conceptual models, tools and equipment they use in

their work, the rules that govern how they work, and the purpose to which members of the workplace community direct their activity. According to Nehemia-Maletzsky, Iyamu and Shaanika (2018), the use of the activity theory (AT) in a study can help to reveal the non-technical factors that can sometimes be ignored compared to technical factors. The technical factors include information systems and technologies such as types of networks and computers, and the non-technical factors can be the managers, employees and stakeholders within the work environment.

The AT was used as a lens to analyse the interaction of managers and supervisors towards collaboration tools that are available for decision making. Thus, this section will further analyse what was examined in the first part of this chapter using the six components of AT. The following classified the interactions of public sector managers (directors, deputy directors) and supervisors (chief and seniors) towards collaborative tools within their working environment using Engeström's expended activity theory model.

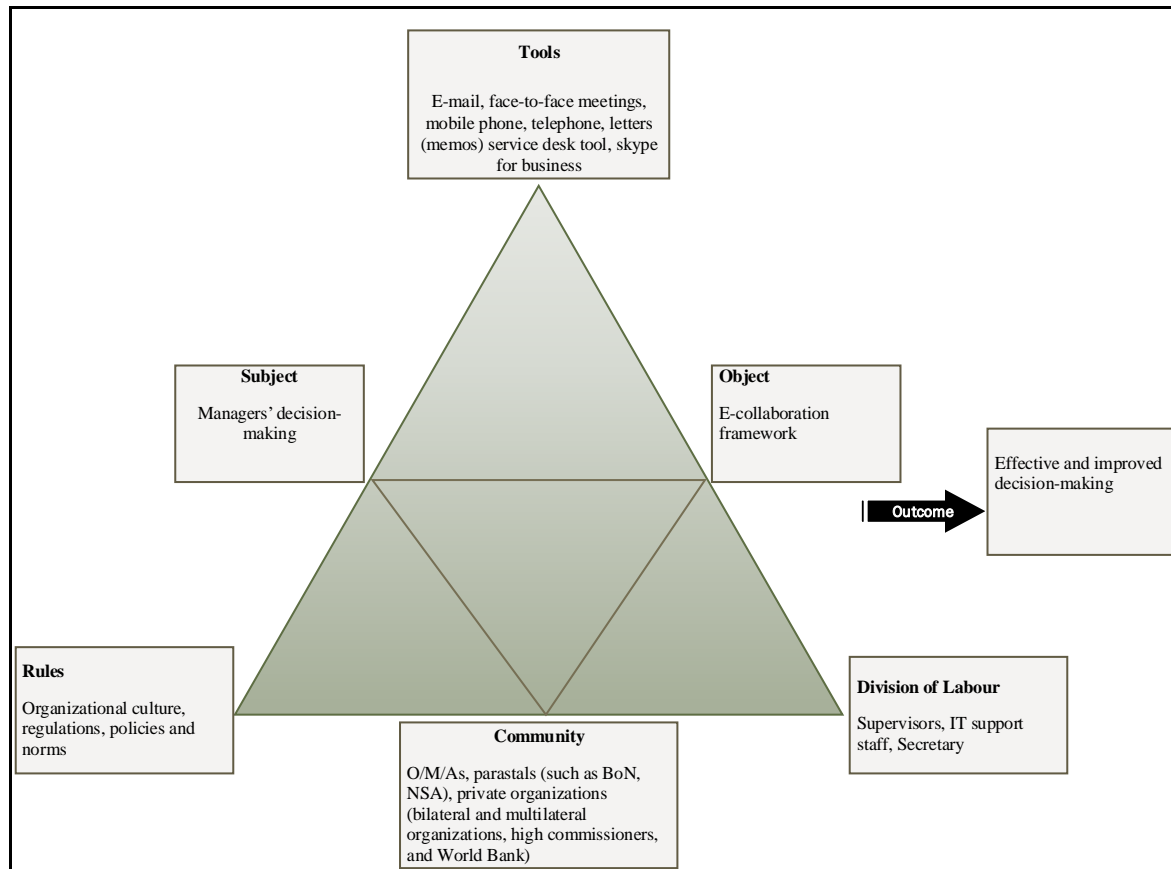


Figure 4. 9 Manager's decision-making collaboration process

4.3.1. Activity Theory: Subject

An activity system have a subject, which is an actor that can be a person, or group of people whose perspective is the focus of the analysis (Crawford & Hasan, 2006). In the context of this study the directors, deputy directors, chiefs and senior employees were the human actors under study. The actors are all involved in different decision-making processes depending on the department, directorate and division they are in. The non-technical actors are the roles and responsibilities each and every actors has to carry out. These actors have different expertise, skills and knowledge that can be shared within that working environment. Decisions within a single directorate is carried out

in a structural format, with the director being the overseer of all the decisions made. It is the responsibility of this director to take into account that he/she is reliable of every decision that he/she has accepted.

4.3.2. Activity Theory: Object

The *object* refers to the raw material or problem faced which the activity is directed, and transformed into the outcome (Crawford & Hasan, 2006). In this case, it is to ensure that the managers have the opportunity to make effective decisions within their department, directorate or division through the use of an e-collaboration framework that may be used as a solution to the current faced problem in this study. The goal of the intervention will be to transform this object into an outcome that, in this system, is to understand how managers utilise the collaboration tools. The framework provides a guideline to the managers and supervisors on what to consider when selecting the best e-collaboration tool towards achieving their objectives.

4.3.3. Activity Theory: Tools

This transformation will take place with the help of mediating instruments. The tools available to the managers include access to different resources. To transform the objects into outcome the subject need help with some instruments. In the context of the case under study the three main tools used are emails, face-to-face meetings and telephone to facilitate them with decision making. The actors use these different tools for different reasons. The email would be used especially when information such as a document is to be shared and input is needed. Face-to-face meeting is mainly used when important discussions need to be made and telephone is used for shorter conversations that does not need too much attention. Having all these non-technical factors in place allow actors to make decisions, but in this digital age some of the tools do not support the technological advancements that are needed to make effective decisions. Thus, the introduction of new e-collaboration tools would allow the actors to have improved and effective decision-making.

4.3.4. Activity Theory: Community

The community which can be considered a social system or an organisation, involves all the stakeholders that influence the manager's decision-making process. The subject which is the actors are part of a larger community, which conditions all the other elements of the system. The directors, deputy directors, chiefs and senior managers may engage in an activity, but they might be separated by distance, as in distributed offices. They might also experience other conflicts, but if they act together on a common object with a common motive over time then they will form an active community.

4.3.5. Activity Theory: Rules

Any activity system has its rules such as procedures, norms, conventions that make the members behave in a particular way. Public organisations have explicit and implicit regulations, policies and rules that are imposed on them internally and externally. In the public sector, manager's responsibilities are constrained by law, and statutory accountability within their social system. Managers set up their rules within their departments/directorates/division that need to be followed, but the managers' ethical behaviour are influenced by people that are in higher positions especially in the public sector. The public sector is ruled by a layer of hierarchies, political leadership, the organizational silos, and the lack of economic incentives which can hinder the introduction of new emerging technologies.

For example, the findings showed that there is an IT policy in place with rules and regulations on how to use internet resources within the organisation. However, the Ministry of Finance does not have rules for the tools that are in place such as e-mails. Other tools such as face-to-face meetings, mobile phones, and telephone also does not seem to have any rules or policy linked to them. Lack of e-collaborative tools in the Ministry is a problem that can hamper the final decisions of all managers.

Thus, the introducing new e-collaboration tools with procedures, policies and regulations that to facilitate manager's decision-making processes and collaborative activities of essence important to the Namibian public sector at large.

4.3.6. Activity Theory: Division of Labour

The term division of labour can refer both to hierarchical power structures within the system, and also to the way in which labour is divided within the context of the system: In other words, rules, and the division of labour define how participants are expected to behave and who is expected to do what in the achievement of the object of an activity system (Bloomfield & Nguyen, 2015). Division of labour is clearly defined, and agreed by all members within the rules of the organization. Different stakeholders such as the supervisors, IT support staff, secretary all forms part of the decision-making process by carrying out tasks according to their expertise, skills and knowledge.

All stakeholders have different roles and responsibilities that is directed towards the power and status that they have. It is important for managers to understand all stakeholders' skills and expertise, hence that when critical decisions need to be carried out they are aware of the best person to collaborate with.

4.4. Summary

This chapter presented a detailed analysis of data collected from the Ministry of Finance using semi-structured interviews, observation and documentation analysis. The analysis utilized AT and hermeneutics approach to enable the researcher to address the research questions and draw findings explained in the succeeding data interpretation chapter.

CHAPTER 5: DISCUSSION OF FINDINGS

5.1. Introduction

This chapter presented the findings resulting from the data analysis which was covered in the previous chapter. This study has been driven by the fact that the public sector organisations in Namibia are challenged, and limited to incorporating collaboration platforms that can facilitate effective decision-making in their work environment. Thus, this chapter provided a discussion of the main findings using the research objectives, and where applicable link the literature to the research outcomes.

5.2. Discussion of the findings

5.2.1. Collaboration that requires decision-making efforts

The first research objective was to assess decision-making efforts that require collaboration within the Namibian public organisations.

5.2.1.1. Roles and responsibilities

The findings showed that each of the participants were aware of what is expected of them as they clearly defined their roles and responsibilities. Findings also showed that most of the roles, and responsibilities of the participants highly dependent on the involvement of the other departments/directorates/divisions in order for them to make final decisions. One of the respondent said: *“My role is to facilitate private investments in public infrastructure investments; facilitating in writing legislations, and policies that clarify this area, we do a lot on capacity building, but most importantly we work with other government ministries in helping them with bring their infrastructure development on public service delivery projects that they want to get done with private participation from a conception stage to level of maturity”* (Respondent 6). Another participant from the IT

division said that his role in the division was to for meet the service requirements of all other departments/directorates/divisions. A participant from the training division emphasized that her role was to provide training to the employees from all the departments, directorates and divisions.

Bolfíková et al. (2010) also acknowledged that manager must have the authority, information or resources needed to make a decision. Otherwise, this could become the reasons for the failure of manager's decision-making may be that the majority of them do not include collaboration in their decision-making. Also Zaraté, Konate and Camilleri (2013) indicated that decision-making efficiency depends on the management of the managers to deal with the planning, leading, organising, and controlling the activities within their organisation. Managers need to lead with a purpose, focus on their efforts, and others' efforts on the overall shared mission, vision, objectives, and goals in line with their strategies, and values.

5.2.1.2. The need to collaborate

The findings showed that collaboration in the workplace takes place in different forms, and the types of tools selected are according the departments, directorate or division's needs. Respondents had different views on the reasons why they collaborated with other departments, directorates or division. One of the respondent asserted that *"Basically if there is a new project that has to be brought up, the business comes with what they want we look for solutions, and present it to them and according to that we make a collaborative decision on the way forward to attain the objectives that the business is trying to achieve"* (Respondent 1). Another participant felt that they work with other departments when there is information that need to be shared across all departments or to external stakeholders. A participant from the IT division, felt that they worked with all the departments to support their business needs and service requirements, e.g. the purchasing of computer equipment or software. Another participant expressed that they worked with all OMAs for budget allocation and control since the Ministry of Finance is the central institute of finances in the public sector. Participants within the

department of Inland Revenue (IRD) expressed that they worked with a lot of external stakeholders for all the tax administration and collection. The participant also asserted that their department is highly dispersed within all corners of the country making it important to collaborate for their decision-making. Collaboration can re-invigorate organizations by fully engaging employees, improving retention, to break down silos, to foster cross-functional activities and encourage better innovation. It can also help employees thrive in an ever-changing, diverse workplace (Kelly & Schaefer, 2014).

The participants showed that they used different tools in different situations to manage the various interactions. Collaboration is all about working together to accomplish a common goal. The respondents explained that collaboration is needed when a new project emerges, whereby a number of stakeholders are involved. These stakeholders interact at different levels of coordination, and communication as the essential success of the project. It is the responsibility of managers to seek input from these stakeholders that will contribute different expertise, skills, and knowledge. These stakeholders might be distributed across space, and time so there will be a need to have tools that can be used to prevent any sort of poor performance of the project.

5.2.2. Collaboration tools

The second research objectives was to identify technological collaboration tools that could be used for effective decision-making within the Namibian public organizations.

The results (see Figure 4.4 & figure 4.5) showed that there are a range of collaboration tools that were used in all of the respondents' departments/directorates/divisions. Different collaboration tools has their strengths, and weaknesses, and were used for different purposes. The following section looked at the advantages, and disadvantage managers, and supervisors experienced when using collaboration tools within their work environment.

5.2.2.2. Advantages of using collaboration tools

i. E-mails

The findings showed that the use of e-mail was the primary mode of communication within the departments, directorates or divisions, and with external stakeholders. Participants felt that communication using e-mails can offer a number of advantages:

- *Timely*: one of the participant indicated that e-mails are convenient and faster as communication took place between multiple employees at the same time while sharing the same information. The participants felt that the use of e-mails makes it possible for employees to still continue doing their work without having interruption.
- *Calendar invite*: participant felt that it reach many people at once by inviting people to your event directly from calendar, it is a faster way of sharing information.
- *Reference of information*: one participant felt that e-mail make it possible to refer to the previous communication.
- *Carbon copy*: When an e-mail is being send employees have the option of carbon copying people that are part of the communication. Ability to create meeting schedules with date and time then can be forwarded to everyone that will be part of the meetings.
- *Reduce costs*: The use of e-mails limits the use of papers, thus cutting on cost. All data can be stored into the archives or other database that might be in place for information sharing. When mangers are either on leave or out of the office for some time, then an automatic respond to incoming emails can be set.
- *Flexibility*: E-mail are flexible and has an asynchronous nature where the sender, and receiver don't have to be in the same place at the same time or even present for the communication to take place. They also cross physical, psychological, temporal, and social boundaries at an unbelievably low cost (Karodia, 2015). Participants felt that e-mail is also a better way to

schedule, and confirm meetings because everyone will have reliable, written correspondence to refer to if need be.

ii. Face-to-Face meetings

The findings showed that face-to-face interaction is another commonly used method of communication.

- Participants felt that face-to-face conversation allows people to show their true emotions making it easy for communication to flow.
- When employees are co-located, a face-to-face meeting is important to accomplish a collaborative task, enabling only synchronous communication between co-located members.
- The managers, and supervisors use face-to-face meetings to discuss and debate on issues where input is required and feedback is needed.
- Managers urged that face-to-face meeting allows them to have a personal touch that can leave a first impression of feelings, and it creates a better bond between the stakeholders. Participants are able to get exactly what they want to hear.
- Face-to-face meetings encourages brainstorming by allowing employees to open up, and share new ideas. Karodia (2015) emphasized that face-to-face communication is considered the richest tool because of its ability to give almost instantaneous/immediate feedback as well as the amount of information shared during an interaction in the form of verbal, and non-verbal cues.

iii. Telephone

- Telephone call are used by managers for a limited range of single-issue concerns.
- Telephone communication provide an answer to a concern instantly as it is very quick.

- Communication through telephone is available as most employees anytime, anywhere and you can connect to any one if you have the number of your expected person.
- The telephone is inexpensive then other collaboration tools. More sensible way to carry on a quick two-way conversation without blocking out time.

iv. Skype for Business

A respondent mentioned that skype for business is one tool that is in the pipeline for their use.

- The use of skype will allow participants in the communication to connect to the skype database by using their work e-mails as their user accounts.
- This tool has the capabilities of text, voice and video communications.
- This is a powerful tool as managers are able to connect from their desktops in their office spaces.
- Communication on this platform happens with a wide range of employees with similar interests. This will definitely cut on travelling costs and increase productivity.

v. Mobile phone

According to Pitichat (2013), mobile communication is increasingly important part of every business.

- The mobility and portability of smartphones enable employees to work more flexibly than the traditional office day.
- Managers can reply to their emails via the use of their phones and no time will be wasted by them having to reach their office in order for them to reply to the incoming emails that requires their immediate attention.
- Employees remain in contact with others in the office even when out of the office they can still be effective and productive, thus the managers are available to make and receive calls wherever they are.

- The mobile phone has the capabilities of copying the address book across all devices, thus calendars, contacts and files can be synced.
- When there is information that is need and decisions need to be carried out the managers can be reached by their mobile cutting down the need for face-to-face meetings. This create a working environment whereby decision making and communication can take place.

vi. Service Desk tool

This a tool used by the IT division to assign tickets to the technicians and assist as 1st line support to users.

- The employees log a call or e-mail the Service Desk for assistance with any IT related issues, this assist the division with effective decision making.
- The use of this tool enable managers to track the progress of the requests on their desktop.
- The tool allows for a documentation to be created once the problem is resolved. This documentation is kept as a solution sheet for similar issues that are to arise in the future.
- Reports can also be retrieved from the service desk tool for decision-making purposes.

vii. Letters/internal memos

Findings showed that the respondents used this collaboration tool mainly for external communications. This is regarded as a more formal way of communication. A letter usually contains more information than a memo. The *memorandum* is used for internal communication. Memos are forms of *internal communication* and are sent to other people within the same organization. Managers and supervisors mainly use them to communicate to their subordinates or with other departments, directorates or divisions, for instance once a request for acquiring a new computer come through the IT division to be assigned to a new employee then a memo is written. Memos are also considered to be the best for longer background pieces that require a heightened level of comprehension and understanding.

viii. Social media

One of the participant mentioned the use of WhatsApp group application. This tool is used in the department to communicate important issues that affects the department's decision-making.

5.2.2.3. Disadvantages of using collaboration tools

The third research objective was to analyse collaborative barriers that hamper managers' decision making in a Namibian public organizations.

The findings showed that the following are the challenges that managers faced using the different technological tools within the Ministry of Finance:

i. E-mails

- *Information overload:* emails send to the managers' inbox can grow at an exponential rate because of the fact that they have to be part of every decision that is to be made. The managers find it hard to go through each and every e-mail just to find the one that they need. Going through the e-mails send to find a specific one can be a challenge even with the capabilities that come with the tool.
- *Misinterpretation:* the use of e-mails as a mode of communication can lead to miscommunication and misinterpretation especially when what is being discussed involves a lot of people. The true meaning of the communication can be lost in the e-mail thus it is regarded as a cold way of communicating.
- *Time consuming:* managers find e-mails to be time consuming. Especially, when immediate attention and commitment is needed. The thought of managers having to go through e-mails one by one to search for a single e-mail can be time consuming.

- *Lack of personal touch:* E-mails lack personal touch in a sense that one's expressions are not seen.
- *Connection issues:* it is not a guarantee that technological tools will actively be available 24/7, they are bound to be offline unexpected, and thus organisations should always have some sort of backup collaboration tools in case the main used one is not available.
- *Viruses or spam:* the use of e-mails are always bound to viruses, spam and hackers.

ii. Face-to-face meetings

- *Distance:* having meetings with employees that are in dispersed office has become a challenge.
- *Time consuming:* managers have to seat in meetings for hours before a final decision is made.
- *Traveling costs:* when meetings are to take place in a different location then managers have to travel to attend the meeting. This managers have to make accommodation arrangements and pay for transport expenses.

iii. Telephone

- *Lack of body language:* participants felt that telephone is a cold way of communication since they are unable to see the facial expressions of the person they are collaborating with.
- *Office bound:* participants felt that the use of telephone are facing out. Telephone cannot be used if employees are not in the office. Participants felt that their work does not allow them to seat in their offices anymore, they are either attending the meetings out of their offices.
- *No eye contact:* participants showed that this was another drawback in using the telephone. They felt that telephone has no personal expression.

iv. Skype for Business

- *Costly*: one of the participant cited the use of Skype for Business can be costly when acquiring hardware equipment and licenses that will allow the this program to installed on all managers
- *Technical issues*: the participant also felt that there was some technical and software issues that the IT division still had to sort out.
- *Training*: this is a requirement for all that will be using the tool especially the managers who are in other geographical locations.

v. Mobile phone

- *Destructive*: mobile phone can be destructive especially when the manager is attending an important meeting that require their concentration. The capability of mobile phones to process the applications count distract employees and prevent them from doing their work.

vi. Letters/internal memos

- These form of communication may not presume privacy on issues that might be sensitive.
- Memos can be less useful if topics being discussed are complicated.
- The filing of the documents can be massive.

5.2.2. Strategies to overcome collaboration challenges

The following strategies were based on the findings, observation, and literature collected in this study. The three decision-driven collaboration enablers were used: people, process and technology that will allow public sector managers make effective decisions.

5.2.2.1. Engage through people

In order to form relationships that build and develop trust information and knowledge sharing is important in the public sector as it create a vital role in decision making. When information is shared communication become open and transparent. Engaging multiple people or teams through training and brainstorming can create fresh ideas and perspective that can bring new solutions to decision-making. Organizations are only good as employees' ability to collaborate.

5.2.2.2. Engage through process

Even though the public sector organizations continue to emphasize the values of a bureaucratic organizational culture, managers need change in the departments. The managers has the responsibilities of managing their management process by changing the way employees in their departments work and behave. This will be able to determine the extent to which the employees are willing to embrace collaboration tools. Organizations will be able to benefit from the knowledge and expertise of all the stakeholders involved no matter where they are located.

5.2.2.3.Engage through technology

As organizations are becoming globalized and employees work remotely across different time zones, technology provides the platform for interaction, giving people an arena where they can contribute, communicate, exchange ideas, and access knowledge. The availability of proper tools and technologies can promote information sharing. As technology improves, tasks that were formerly performed by human employees are now carried out by computer systems. In the future, organizations introducing these decision support technologies into the workplace must leverage the beneficial differences inherent in computer- mediated communications and mitigate the negative differences. Managers must become familiar with the strengths and limitations of the relevant technologies. The use of collaborative support systems will increase as the Web enables more

strategic alliances and as intranets become a widespread platform for group decision making (Shim, Warkentin, Courtney, Power, Sharda, & Carlsson, 2002).

5.3. Summary

The findings of the data collected were discussed and the objectives of this research have been identified. The findings has revealed that the Namibian public sector still has major challenges when it comes to the utilization of ICT especially when it comes to e-collaboration tools. More efforts are needed from the managers to incorporate these innovative ideas in order to have effective decision-making. The next chapter concluded the study and a conceptual e-collaboration framework was also presented.

CHAPTER 6: CONCLUSION, PRESENTATION OF FRAMEWORK AND RECOMMENDATION

6.1. Introduction

In this chapter, based on the empirical results and findings from this study, the researcher presented a conceptual framework to assist managers within the public sector with e-collaboration tools for decision-making. The summary of findings, conclusion and recommendations in accordance with the findings from the analysis and interpretation were also carried out in this chapter. Data were collected from document analysis and interviews provided at the site. Data analysis was performed within each case to help identify and define the collaborative relationships at each site, and then across sites to find areas in which both sites had established effective collaborative relationships with parents and community partners.

The objectives of this study were to:

1. Assess decision-making efforts that require collaboration within the Namibian public organizations.
2. Identify collaboration tools that could be used for effective decision making within the Namibian public organizations.
3. Analyse collaborative barriers that hamper managers' decision making in the Namibian public organizations.

The research approach used in this study was a qualitative research approach. The research population was managers employed within the Ministry of Finance. The number of respondents who took part in this research study were 10. Interviews were conducted using a prepared semi-structured interview schedule. The interview schedule was coded for easy analysis. The findings were presented and discussed in chapter 4, by making use of hermeneutics approach and Activity Theory. To have

a seamless and effective collaborations highly depended on a number of factors and required changes at the leadership and in the day-to-day execution of activities within OMAs.

6.2. Research overview

In **Chapter one**, the thesis provided the introduction to the research study. The research problem statement was examined, objectives of the study, significance of the study, and the limitations to the study.

Chapter two provided a review of the literature that is relevant to the decision-making efforts, current public sector collaborations, and the barriers that hinder collaboration from taking place theories and lastly theories that underpinned the study were also explained in this chapter.

Chapter three described the methodological approach that was applied in this study with a detailed description of data collection methods; the reasons why the methods of interview, and document where chosen as methods of analysis and how data were analysed. This chapter also described the case study's top management organizational sructure, with the a brief discription of each pepartments, directorates, and divisions.

Chapter four presented the data analysis by using the hermeunetic approach and AT theory as the lens of the findings from the fieldwork.

Chapter five did the discussion of the findings using the three research objectives as the guide to answer the research questions.

Chapter six a conclusion and recommendations were made. Thus chapter also presented the proposed framework.

6.3. Answers to research questions

6.3.1. Sub-research question 1

What are the decision-making efforts that require collaboration within the Namibian public organizations?

Decision-making is a significant part of day-to-day activities. When a decision needs to be carried out usually two or more people are involved, meaning that decisions become collaborative and connected. Good management is about doing things efficiently to gain the desired effectiveness in the organizations.

The public managers and supervisors need to provide roles and responsibilities to their subordinates so that they would also understand the objectives and operations of the department/directorate/division they work in. Managers and supervisors have the discretion to decide whether they want to achieve their objectives in a collaborative manner or not. Sometimes collaboration do not occur due to the fact that managers make decisions in silos whereby there would be breakage in collaboration which then brings biased decisions.

Public managers however become accustomed to the same type of activities causing them to be less motivated towards organizational changes and prefer to focus on their efforts towards the daily routine of their departments/directorate/divisions. Managers should not only look at the environment through their experiences, values and personalities but be directly involved in the operational matters as well, as this influence their strategic decisions that need to be made at a later stage.

6.3.2. Sub-research question 2

How could the technological collaboration tools be used for effective decision-making in the Namibian public organizations?

The use of technology in the workplace has become important on how employees work. Managers and supervisors use a number of inter-correlated collaborative tools such as emails, face-to-face meetings, internal memos or letters, mobile phone, telephone, sometimes WhatsApp or the service desk tool. The email and face-to-face meetings being the most commonly used tools but as technology is moving along managers cannot just solely rely on basic tools such as email to stay informed and make decisions. The use of email can become a long tedious process to use especially if a team is working on a collaborative project and communication have to be done back and forth. Face-to-face meetings requires employees to travel back and forth to attend meetings as they are dispersed thus forcing managers to make more efforts to stay in touch.

People and teams within the departments are siloed causing them to only send out information when they have completed it. However, the public sector should be encouraged and promote a culture focused on high-touch engagement and collaboration in order to work more efficiently and share information.

Public managers need to find new means of communication to enhance their collaborative process. They need to find new strategies for collaboration and plan for the deployment of tools. This will help to eliminate the wastage of investments that would need to go into these tools. Having new tools or improving on the current collaboration platforms can assist all stakeholders to improve on their decision-making processes effectively throughout the entire organization. When information is contained in a single source, more people are informed and engaged in the process, productivity increase and faster decision-making occurs. More time is also saved, work gets done more quickly, and information becomes knowledge which is more easily transferred to new employees.

It is important emphasize on the intrinsic of the collaboration tools as this will boost the willingness of participation by the managers. There are a number of potential benefits in enabling employees to interact online in new ways, rather than relying on e-mail, phone calls and face-to-face meetings.

Some technologies have always been seen as promising, such as video-conferencing, because it enables people to meet face-to-face without the need of traveling, and web conferencing, which allows people to make presentations, share and collaborate on documents and interact securely.

6.3.3. Sub-research question 3

What are the collaborative barriers and challenges that hamper managers' decision-making in the Namibian public organizations?

There are a number of collaborative challenges within the public sector. The current situation is that the Namibian public sector is expected to function with the few resources that are available to them. According to Grudinschi et al. (2015), the lack of collaborative tools can hinder the management's decision making. The current tools available do not allow public managers to accomplish their goals to their full potential. The different tools that are available, all have their advantages and drawbacks as mentioned in the previous chapter.

Research done by CISCO (2010) pointed out that the public sector face a lot of challenges as employees and citizens are highly mobile and geographically dispersed. CISCO (2010) identified four challenges that are driving the need for improved collaboration capabilities:

1. Expanding chain of activities: All public sector organizations work with outside suppliers and contractors. Working together across different geographies and organizational firewalls has now become critical.
2. User mobility: Technology advances, inter-generational work styles, and the fact that users of services are in multiple time zones, have moved “work” outside of traditional office hours and locations. Government employees and citizens are increasingly on the go and mobile. Knowing who to contact, as well as when, where, and how to reach them, is critical to success.

3. Information overload: Governments have massive amounts of data to process, prioritize, share, and act upon. Information resides not just in conventional files, but in email, voicemail, instant messages, podcasts, blogs, wikis, video portals, and more.
4. The “consumerization” of IT: To have their work world and capabilities more closely mirror capabilities they have at home, public sector employees are bringing new devices and applications into the workplace, which increase productivity, but create access privacy and security challenges for IT.

The use of e-mails was the most commonly used tool amongst the different directorates, departments and division internally and externally. However, the use of e-mails lacked a personal touch due to distance, which led to miscommunication on decisions that was to be made. This also led to missed deadlines and created conflicts amongst parties involved. E-mails also showed that they were time consuming according to the results collected from public sector managers because communication was done back and forth and it created a bulk of e-mails that needed reviews.

The managers also expressed dissatisfaction with the access to e-mails, especially when the e-mail server or internet connection was down or inaccessible. Alternatively managers used telephone and mobile phone in case the e-mails were not working. Another mostly used tool was face-to-face meetings. Managers found this tool very useful as this carried a true reflection of the expression of feelings, feedback is obtained instantly and complicated issues are more likely to be resolved through this type of collaboration.

However, there are lack of collaborative tools available for decision-making in the public sector, and the number of available tools do not fully meet all the managers’ objectives. The tools may lead to inadequate communication skills, and further leading to misinterpretation of decision-making. Public sector organisations need to introduce new e-collaboration tools within their OMAs directorates, departments, and divisions that can facilitate effective decision-making processes.

6.4. Development of the framework

In order to answer the main research aim the following framework was proposed to help Namibian public sector managers incorporate e-collaboration tools that will allow effective decision making processes. The e-collaboration framework showed a holistic view of e-collaboration adoption that incorporates four key activities:

Establishing the work environment, ascertaining the collaboration efforts, identifying the stakeholders involved and selecting the best e-collaboration tool for decision-making. In the section below, each of these activities are discussed in greater detail.

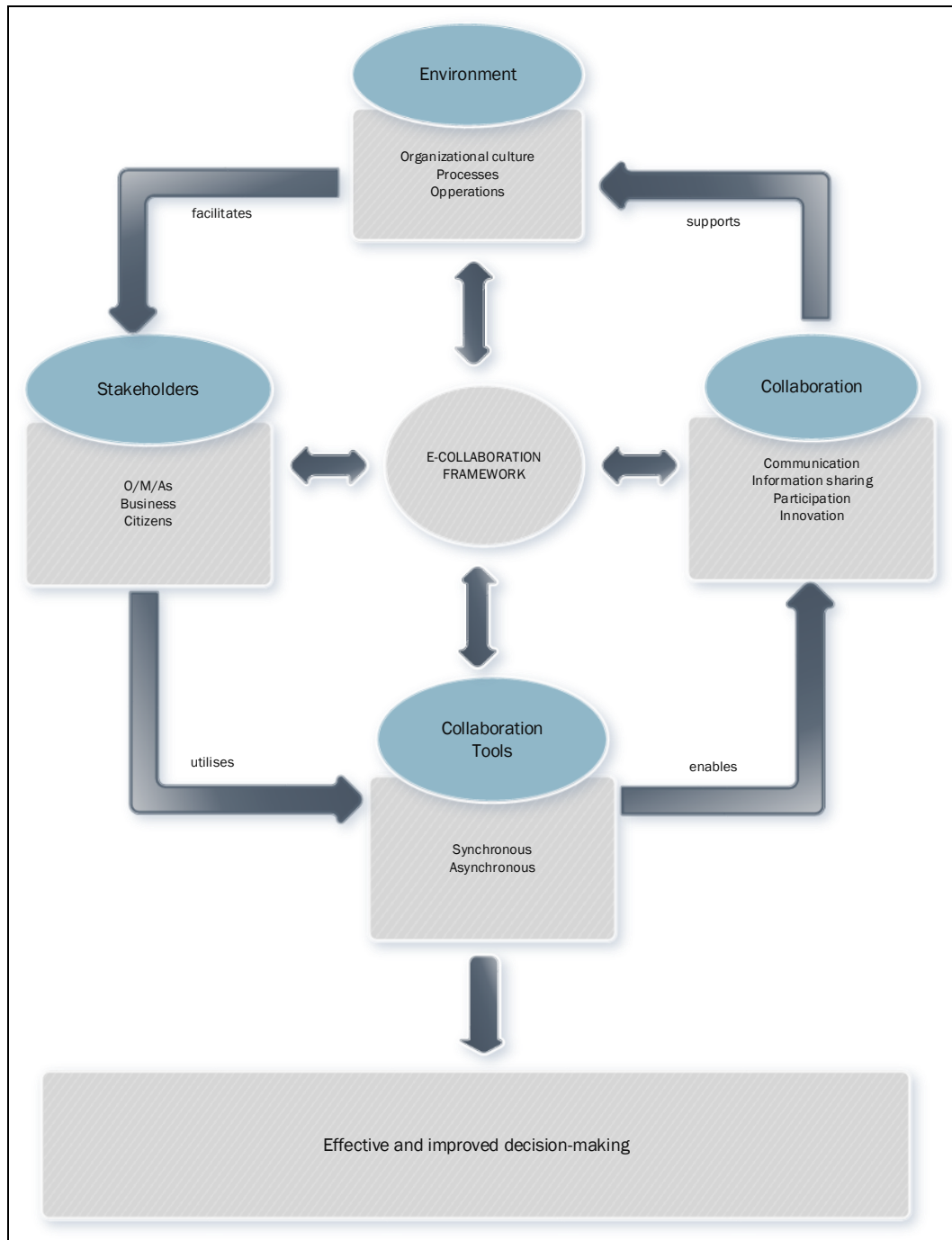


Figure 6. 1 E-Collaboration framework for decision-making within the public sector

1. Environment

1.1. Organizational culture

Public sector must foster the right organisational culture. Aligning innovation and business strategy ensures that all stakeholders have visibility on the strategy and vision of the departments. It also ensures that innovation efforts are targeted towards initiatives that organisations support and enhance the probabilities of success. Public sector organisations need to develop a culture that can constantly validate the internal objectives and external organisations to carry out the responsibilities. Managers need to have a culture where they encourage teamwork between different departments, directorates, and divisions to support the efforts that goes into the use of collaboration tools. According to Kiniti and Standing (2013) an organisational culture that supports collaboration, and knowledge sharing are enabled by the structures that are non-hierarchical and where there is democratisation of knowledge. In some organisations, sharing knowledge is not part of employee culture and knowledge are shared on a need to know basis. Trust is also considered an important aspect in building an organisational culture that supports knowledge management and collaboration.

1.2. Operations and processes

The public sector O/M/As need to find the right balance between their goals and objectives, and the ability to support collaborative work. They also need to have a clear understanding of where the O/M/A is today and where it needs to be in the future, based on their goals and objectives.

2. Collaboration

2.1. Knowledge sharing

Public sector organisations need to establish how their business objectives will be able to incorporate collaboration tools that will benefit the decision-making processes. Employees from different

departments, directorates and divisions can work in the same space to create opportunities for fresh ideas and connections. Moreover, this will breakdown silos, and individuals within the different departments can actively track innovative activities across all sections, and connect people whose experience and capability match the needs of others that are involved. Collaboration 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; it also helps private companies to innovate more effectively and to achieve their concrete goals in a more efficient way (Cankar & Petkovšek, 2013).

2.2. Communication

Collaboration enables communication across departments and geographies. Liu and Horsley (2007) pointed out that communication is an essential process in the development of group culture. The nature of communication structure defines leadership, roles and the status hierarchy within the group. Communication can take place across roles and functions, thus, the involvement of management is very significant for employees, and managers should be visible among employees regularly, especially when the organisation is very hierarchical or scattered to an extensive area geographically (Liu & Horsley, 2007).

2.3. Innovation

Serrat (2017) noted that innovation is something that is new, capable of being implemented, and has a beneficial impact towards the organisation. He further emphasised that it is not an event or activity; it is rather a concept, process, practice, and capability that defines success of an organisation. Innovation in the public sector also adds value to the society. Technology has created platforms where organisations can become innovative (Deloitte, 2010). When employees are working together and sharing information, decisions are made faster. Public innovation is about enhancing the value of procedures and services for citizens. According to Cankar and Petkovsek (2013) innovation is gaining in importance in the public sector as well, as it can improve the quality of service delivery

as well as reduce costs. Innovation is an important driver of economic progress and competitiveness in all economies. Technology enables public sector to link data, people and resources together to transform and innovate through collaborations. Buttles-Valdez, Svolou and Valdez (2010) argued that in today's global economy the following should exist in an organisation environment. Firstly, *process*, to address the business needs and the workforce and competencies required, secondly, *technology*, to address the tools and techniques used to communicate and to make the work efficient, and *people*, to bring knowledge, skills, and competencies. Bettoni et al. (2016) similarly introduced an architecture of e-collaboration system that consist of the following three elements:

People: this focused on organisational structure as an important aspect because it determines the future function of the whole system; the two main elements concentrated on are subordination and leadership. Formal subordination defines how responsibilities for different functions and processes are allocated to different organisational entities like functional units, matrix units or teams. Thus, making this an importance element for all to have participation in decision making.

Processes: the design of an e-Collaboration system should be able to support those methods of interaction among employees which implement the social network required by the people element and which at the same time are suitable for the knowledge management task of building a shared knowledge structure.

Technology: this primarily falls in as an enabler for satisfying the needs that emerge when the *people* and *process* elements have been designed; their characteristics provide the required guidelines for selecting and designing technological components. Without these premises, technology becomes easily an illusion or worse, an inhibitor within an organisation.

2.4. Participation

Collaboration can be viewed as a process. In a collaborative environment stakeholders should be able to participate and contribute. However, if the management is not motivated to try out new collaboration tools then the employees will also not be willing to use the tools. Through the use of collaboration tools employees will understand the importance of their contributions, and it will give them a purpose to fit into their organisation's strategy (Kelly & Schaefer, 2014).

3. Collaboration Tools

Advances in computing and communication technologies have allowed businesses and organisations to become more distributed and dynamic in nature. This spread and dynamism have divided important organisational entities, such as tasks, contexts, knowledge, specialization, and more important, humans, based on a variety of factors like time, geography, structure, roles, and so on. They have also changed the way organisations function, the way tasks are performed, and the way humans communicate, coordinate and cooperate (Kim, Godbole, Huang, Panchadhar, & Smari, 2004).

Munoz and Capon-Garcia (2014) emphasised that teams can engage synchronously or asynchronously to complete their work. Technology provides task support towards the team members' activities whether they are co-located or remotely connected. Collaboration technologies are exploited to overcome space and time challenges that may not be possible with face-to-face meetings, thus benefits such as the depth of information access, and group task performance effectiveness are made possible to team members. Shim, Warkentin, Courtney, Power, Sharda, and Carlsson (2002) noted that communication across physical distance is typically mediated through technology which assists both synchronous and asynchronous communication. In a nutshell, organisations use different powerful technological tools that enhance decision-making, engagements with other departments, citizens, and business.

From the literature point of view in Chapter 2 of this study a number of tools were elaborated upon. These tools could be used within the public sector to assist management carry out effective decision-making. On the same note, chapter 4 and 5 elaborated on the current tools that are available within the public sector. The conclusion from this two point of view is that the selection of the collaboration tools used depended on the availability and the willingness of management to select the most appropriate tools for their decision-making process.

4. Stakeholders

ICT use in public sector is also transforming how the citizens interact with them and how government conducts their daily operations and tasks. As part of this movement, citizens and governments themselves are looking for increased transparency, accountability and performance efficiency. Reaching these goals require for collaboration, knowledge and information sharing for effective management and provision of government services. Citizens want to provide their opinions in policy making, link themselves to governments to monitor activities and decision-making process, and demand more transparency through information sharing and government accountability (Chun, Luna-Reyes & Sandoval-Almazán, 2012).

Collaboration between public and private entities creates better and more effective public and private services (Cankar & Petkovšek, 2013). Stakeholders play important roles as advocates, sponsors, partners, and agents of change. According to Shim et al. (2009) good communication is vitally important to stakeholder management, in particular communication needs to be a two-way process. Stakeholders want to feel that their views are listened to and acted upon or to know why their advice has not been used. While many public sector organisations are felt to listen to their stakeholders, most need to do better at feeding back to stakeholders how they are acting on their views. The value-driven forces make governments to provide better decision-making capabilities and enhance better service provisions and achieve domain specific goals (Chun, Luna-Reyes & Sandoval-Almazán, 2012).

6.5. Contribution to the study

This section focused on the contributions that this study to IS research. Particularly, on the theoretical, methodological and practical contributions.

6.5.1. Theoretical contribution

This study aimed at contributing to the empirical gaps that are in literature of e-collaboration technologies specifically in developing countries. The study developed a framework that can facilitate public sector managers' decision-making. This framework is useful and feasible as it reveals something new in collaboration tools.

6.5.2. Practical contribution

This study contributed to the literature of e-collaboration technologies within the public sector. Previous research has mainly focused on e-government and collaboration in the learning sector whereas in this particular study a holistic understanding of the tools that managers utilized to facilitate their decision-making. This study concentrated on the public sector since employees are now geographically dispersed but decisions still need to be made. This study provided a strongly empirical evidence of the existence of some e-collaboration tools in the public sector.

6.5.3. Methodological contribution

The researcher gained knowledge on different aspects of research. Consequently, the researcher was able to gain on the hermeneutics approach used in qualitative data analysis. The thesis propped a conceptual framework for e-collaboration tools. Hermeneutics approach was followed to carry out the data analysis of the study. Activity Theory was also used to analyse the data.

6.6. Recommendations

Based on the findings and conclusions. There is a need for new e-collaboration tools within the public sectors' O/M/As. The following recommendations were presented:

- A greater understanding to encourage the use of new collaboration tools to management is important for decision-making.
- A requirements needs analysis is needed to help select the most appropriate collaboration tools to share, retrieved or stored information, in a timely and effective manner for decision-making.
- Training on collaboration tools may provide employees with ease to improve the public manager's decision-making.

6.7. Further research

This study was limited in several ways that were considered. This study only covered one Ministry as the case in the Namibian public sector. Collaboration tools used by top and middle management were addressed. However, the study did not contemplate on the importance of collaboration tools had when it came to private and public organisations. Hence, future works should be carried out to understand the extent to which collaboration tools facilitate the linkage between private and public organizations, to help make well-informed, timely and improved decision-making. Future researcher can also look into the development of emerging IT-enabled collaboration platforms to facilitate the sharing of ideas and solutions for new projects.

6.8. Conclusions

In conclusion, this study contributed to the growing streams of e-Collaboration tools that are promising in the public sector and have the potential for improving manager's decision-making. The

following conclusions were observed from the results of the findings. The evidence in this study suggested that e-Collaboration tools in the public sector are briefly being used to a certain extent. One of the major challenges identified was the use of the most common traditional means of collaboration tools which can hinder to facilitate the full potential of manager's decision-making. Even though there was an ongoing communication between different stakeholders it was still difficult for manager's to make well-informed effective decisions.

Collaboration efforts within an organisation is influenced by the managers' willingness to change the way collaborative activities takes place. Moreover, decision-making depends on the resources available, such as skills, knowledge and not necessary on the tools alone to make decisions. Thus, the mind-set of managers and employees need to change to innovative ideas that can incorporate new tools. This study offered the opportunity for this area of research to be explored to another level particularly in the public sector organisations.

The introduction of new collaboration tools can provide a number of advantages to organisations. Regarding making decisions, technology helps in getting information that are needed hastily and feedback is instant. Most of the tools come with built-in features that can assist in communication and decision-making. Moreover, more employees can be reached regardless of time and distance. The availability of needed information and the cut of costs, especially traveling expenditures. Thus, this study provided a strongly empirical evidence of some e-collaboration tools in the public sector.

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APPENDICES

Appendix A: permission to conduct research at Ministry of Finance

Appendix B: participant consent via e-mail

Appendix C: Research interview questions

Appendix A: Permission letter to conduct research



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19 May 2017

Dear Sir/Madam

This letter is intended to introduce Ms. Judith Munepapa a registered Master candidate at the department of Informatics, Faculty of Computing and Informatics, Namibia University of Science of Technology, Windhoek, Namibia.

She is currently conducting a study entitled "E-Collaboration Framework for Effective Decision Making in a Namibian Public Organization" towards her Master degree in Informatics.

The study is aim at enhancing Ms Munepapa understanding of collaboration that takes place amongst public organization managers for effective decision making. We hope this will enable her to significantly contribute on improving collaborative activities/functions for efficient and effective services delivery in Namibia public sector.

Kindly afford any necessary support within your organization that will enable her the opportunity to bring the study to a successful completion. Any data or information provided in this study will be kept confidential by the researcher and her supervisor.

Should you have any further enquiry in connection with this letter, please do not hesitate to contact the undersigned.

Yours sincerely,

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Appendix B: Participant consent via E-Mail

I am conducting interviews as part of a research study to increase my understanding of how Collaboration takes place amongst public organization managers for effective decision making.

As a manager you are in an ideal position to give me some valuable first-hand information from your own perspective.

The interview will take around 15-20 minutes and is very informal. Your responses to the questions will be kept confidential. Each interviewee will be referred to “respondent or participant” in the study to help ensure that personal identifiers are not revealed during the analysis and write up of findings.

Your participation will be a valuable addition to my research and findings could lead to greater public understanding of e-collaboration and the people in the field.

If you are willing to participate please suggest a day and time that suits you and if you have any questions please do not hesitate to ask.

Thank you

Kind regards

Judith Munepapa

Appendix C: Research interview questions

1. May you briefly tell me about your role and responsibility in the department/division?
2. Based on your role, does your work entails you working with other departments/directorates/divisions or external organisations during decision-making?
3. Could you please describe the different departments/directorates/divisions or organisations that you work with for decision-making?
4. Which collaboration tools do you use to share information either in this department, other departments/directorates/divisions or organisations?
5. How are you able to work with other departments/directorates/divisions or organisations regardless of their geographical locations?
6. How has the use of the various collaboration tools helped you in the way you make decisions?
7. What are the challenges you encounter when using these collaboration tools for decision-making?
8. Based on your experience, what strategies have you implemented to overcome the challenges you face when using collaboration tools?