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University of Technology

The Adoption of Virtual Teams and Virtual Technology in Human Resources Management: A South African Perspective.

by

Emmanuel Temban Tekeh

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Supervisor: Dr Ephias Ruhode

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DECLARATION

I, Emmanuel Temban Tekeh, declare that the contents of this dissertation/thesis represent my own unaided work, and that the dissertation/thesis has not previously been submitted for academic examination towards any qualification. Furthermore, it represents my own opinions and not necessarily those of the Cape Peninsula University of Technology.

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ABSTRACT

This study explores factors contributing to the slow adoption of virtual teams and virtual technology by South African organisations in Cape Town. The study adopted the Technology Organisation and Environment (TOE) framework to examine the influence of technological organisational and environmental contextual factors on organisation's adoption of virtual teams and virtual technology. Three organisations from different industries in Cape Town were chosen as a case study. Data was collected via qualitative interviews and quantitative questionnaires while content analysis and a statistics package for social sciences were used to analyse and generate results. The results indicated that all three dimensions of the TOE framework significantly either enabled or inhibited organisational adoption of virtual teams and virtual technology.

Technological contextual factors such as availability of technology were found to enable adoption while high set-up cost inhibited adoption, and perceived benefit and drawbacks either inhibited or enabled adoption due to the influence of other contextual factors. Organisational contextual factors like available resources and slacks were found to facilitate, whereas organisational competency and formal and informal linking structures impeded adoption. Management commitment, communication process, degree of centralisation, organisation size and technological competency were found to either enable or inhibit technology adoption owing to the influences of other contextual factors. Environmental contextual factors such as competition, government regulation and rapidly growing industries were found to encourage technology adoption. Lack of skilled labour was found to restrain technology adoption while industry characteristics, market structures and technology support infrastructure either enabled or inhibited organisational adoption of virtual teams and virtual technology due to the influence of other contextual factors.

These contextual factors were found to be interdependent, thus creating a complex web of connections. Therefore, no single contextual factor was found to independently contribute to the slow adoption of virtual teams and virtual technology by South African organisations in Cape Town. Although these organisations were found to have adopted some innovative virtual communication tools, none had adopted virtual teams or a specific method of working virtually. It is recommended that senior managers in these organisations examine the influence of each of the contextual factors with the aid of a conceptual map, as demonstrated in this study, prior to adopting these technologies.

Key words: Virtual teams, virtual technology, adoption, Technology-Organisation–Environment.

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DEDICATION

To my late father, Moses Tameri Tekeh

GLOSSARY

Abbreviation	Definition
ICT	Information and Communication Technology
IS	Information System
IT	Information Technology
TOE	Technology Organisation and Environment
VT	Virtual Team
CMC	Computer Mediated Communication
HRD	Human Resources Development
HRM	Human Resources Management
HR	Human Resources
CA	Content Analysis
SPSS	Statistical Package for the Social Sciences
HRIS	Human Resources Information Systems
CMAC	Computer Mediated Asynchronous Communication
DOI	Diffusion of Innovation
EDI	Electronic Data Interchange
US	United States
UTAUT	Unified Theory of Acceptance and use of Technology
TPB	Theory of Planned Behaviour
DOI	Diffusion of Innovation
TAM	Technology Acceptance Model
PEOU	Perceived Ease Of Use
BI	Behavioural Intention
PU	Perceived Usefulness
TRA	Theory of Reasonable Action
MM	Motivational Model

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CHAPTERONE
BACKGROUND AND INTRODUCTION

1.1 Introduction

Globalisation has brought about a shift in the way in which many organisations conduct their business operations. The shift from production-based to more service-related business has significantly altered the rigidity of organisational boundaries and created a new generation of knowledge workforces not bound to one physical location but dispersed around the globe. As organisations expand globally, information and communication technology (ICT) is providing the necessary technology needed to drive growth. The virtual team or virtual teaming (VT) has emerged as a suitable vehicle for many organisations to embark on this drive, providing organisations with unprecedented levels of flexibility. While organisations in developed countries are making use of virtual teams to their benefit, those in the developing world, especially in Africa are still to fully incorporate virtual teams and virtual technology as part of their organisational structures.

A review of current literature on virtual teams in South Africa indicates a lack of in-depth research in this area. Authors such as Baard and Thomas (2010) have noted that little empirical research has been conducted recently on virtual teams and the virtual working environment in South Africa. While most South African organisations seek innovative strategies to stay competitive nationally and internationally, virtual teams and virtual technology embody a feasible option for forward-thinking South African organisations to adopt as an innovative strategy to gain competitive edge. On the other hand, most of the research that has been conducted on organisation's adoption of virtual teams and virtual technology has been done from a global perspective.

Against the above background, this study seeks to understand factors affecting organisation's adoption of virtual teams and virtual technology within South Africa. The study is scoped empirically around three organisations in South Africa. These organisations are present in Cape Town where the study took place.

1.2 Background to the research problem

In the era of increasing globalisation and the surge in international trade, VT`s have become an integral part of many organisational workforces (Bullock & Klein, 2010). Earlier work by leading researchers on virtual teams indicates that the latter part of the 20th century brought a major shift in organisational work team structures. This shift has prompted most organisations to move from

centralised traditional work team structures to a more decentralised or distributed work team structure (Powell, Gavin & Piccoli, 2006).Furthermore, Powell et al.,(2006) have also noted that employees working in distributed work teams must be able to effectively communicate and collaborate with distant co-workers nationally or internationally on a regular basis. Moreover, forward-thinking organisations who adopt a virtual workforce as a competitive advancement strategy will gain considerable advantage and leverage on the benefits of virtual teaming, and hence will survive and be successful in the global business environment, and will thrive in the future (ibid).

Gressgard (2011) accentuates that the move toward virtual teams have significantly altered the limits of organisational boundaries, thus making them permeable and problematic to categorise. If the correct connections are put in place and trust is earned among virtual team members, information-intensive organisations can benefit considerably from ICTs. Bullock and Klein (2010) point out those economic challenges, such as the prolonged recession of 2008, which compel organisations to creatively find innovative ways of reducing operational cost and increase global market presence and competitiveness. As information technology (IT) advances, organisations are obliged to adopt and incorporate virtual teams as part of their organisational structures in order to enable businesses to trim and balance corporate budgets by reducing travelling costs, office building rentals and other operational costs (Earnhardt, 2009).

According to Baard and Thomas (2010) few organisations in South Africa have adopted virtual teams or a specific method of working virtually. By not adopting virtual teams and virtual technology, organisations are losing out on the opportunities that virtual teams and virtual technology offer (Bergiel, Bergiel & Balsmeier, 2008).In the global economy, organisations search for innovative ways to improve competitiveness and efficiency. Earnhardt (2009) argues that organisations who have not yet adopted virtual teams and virtual technology as a tool to achieve higher productivity, competitiveness, efficiency and lower operational cost, will become less competitive. Many organisations in South Africa do not utilise virtual teams and virtual technology to their benefit, losing the opportunities to improve their organisational competitiveness and efficiency.

1.3 Problem statement

Many organisations in South Africa do not utilise virtual teams and virtual technology to their benefit, losing the opportunities to improve organisational competitiveness and efficiency.

1.4 Aim of study

This study seeks to explore and understand why South African organisations are slow in adopting virtual teams and virtual technology

1.5 Research question

Why are South African organisations not leveraging the benefits presented by virtual teams and team technology?

1.5.1 Sub- questions

1. What are the perceived benefits and drawbacks of adopting virtual teams and virtual technology?
2. Why are South African organisations slow in adopting virtual teams and virtual technology?
3. How can South African organisations overcome inherent problems in adopting virtual teams and virtual technology?

1.6 Objectives of the study

In order to attain the aim of this study, objectives were formulated. The research questions were designed to provide direction for data gathering and analysis. To obtain in-depth information from the interviews and questionnaires, the questions were broken down into manageable sub-questions.

The objectives of this study are to:

1 Identify the perceived benefits and drawbacks of virtual teams and virtual technology to organisations and its employees.

2 Identify reasons for the low or slow adoption of virtual teams and virtual technology by South African organisations in Cape Town.

3 To identify and recommend interventions designed to overcome inherent problems in organisational adoption of virtual teams and virtual technology.

Table 1.1: Summary of research questions, sub-questions methods and objectives

Research Problem	Many organisations in South Africa do not utilise virtual teams and virtual technology to their benefit, losing the opportunities to improve organisational innovative capacity, efficiency and competitiveness.	
Research Question	Why are South African organisations not leveraging the benefits presented by virtual teams and virtual technology	
Research Sub-Questions	**Method(s)**	**Objectives**
1. What are the perceived benefits and drawbacks of adopting virtual teams?	Literature analysis	Identify the advantages and disadvantages of virtual teams.
2. Why are South African companies slow or low in adopting virtual teams and virtual technology?	Literature analysis, interviews and questionnaires.	To identify the underlying reasons for the low or slow adoption of virtual teams and virtual technology by South African companies in Cape Town.
3. How can South African organisations overcome inherent problems in virtual teams?	Literature analysis, interviews and questionnaires.	To identify and suggest training interventions designed to overcome inherent problems in virtual teams.

1.7Summary of thesis chapters

This thesis is structured as follows:

Chapter One: This chapter introduces the research topic and describes the background to the problem statement. The research problem, research question and sub-questions are discussed. The aim and objectives of the study are discussed. The methodology and design are briefly discussed.

Chapter Two: Literature review. Extensive literature review of relevant journals, books, internet resources, conference papers, magazines and other sources on organisational adoption of virtual teams and virtual technology are discussed. The selected underpinning theory is discussed, the rationale for choosing the theory over others is explained, application of selected theory in similar studies is stated and lastly, how the theoretical framework will inform and influence the manner in which the rest of the study will be performed.

Chapter Three: Research design and methodology. The selected research methodology, methods and design are stated and discussed. The case study is described. The various data

collection methods are discussed and explained. The sampling method, sample size and sampling criteria and selected samples are discussed and explained. The selected data analysis method, procedure and rationale for the selected method is discussed and explained.

Chapter Four: Data analysis. Data collected from qualitative interviews and quantitative questionnaires is analysed and interpreted using content analysis and Statistical Package for the Social Sciences (SPSS). Coding utilised and themes developed are discussed and explained. Meaning was derived from the data collected provides answers to the research question.

Chapter Five: Findings and interpretation. Samples and their characteristics are discussed. Findings and discussions highlighting positive and negative factors influencing organisational adoption of virtual teams and virtual technology are discussed and related to the literature reviewed.

Chapter Six: Conclusions and recommendations. Conclusions of the main findings obtained in the study by drawing from the results of the previous chapter are discussed. Recommendations on organisational adoption of virtual teams and virtual technology are given. Limitations of the study are discussed and personal reflections presented. Chapter Two will provide a review of literature in the area of organisational adoption of virtual teams and virtual technology.

CHAPTERTWO
LITERATURE REVIEW

2.1 Introduction

This study seeks to explain and understand why South African organisations are slow in adopting virtual teams and virtual technology. In Chapter One the problem statement, research questions and objectives of the study are stated. This chapter provides a critical review of literature relevant to the current study. In view of the consideration that this study is situated in the field of information technology adoption, general literature related to organisational adoption of virtual teams and virtual technology is examined. This literature provides context for a more critical review of the characteristics of virtual teams, advantages and disadvantages of virtual teams and virtual technology, inherent problems in virtual teams, and overcoming inherent problems in virtual teams. Likewise information technology (IT) and information systems (IS) adoption theories are presented and reviewed for their relevance to organisational adoption of information technology (IT) and to provide a context for this study to position the issues which inform it.

The contemporary nature of business conditions in the twenty-first century, as a result of globalization and the rapid advancement in ICTs, have presented many organisations with opportunities and challenges. As many organisations venture into the global market place in an effort to increase market shares and customer base, the shift in business operations from production to service based has brought about a new generation of knowledge workers who are not bound to one physical work location, but are dispersed globally. VT`s have become emerging solutions for the coordination and distribution of work in different geographical locations and time zones in a much faster and easier way. As forward thinking organisations tap into the global pool of talent and expertise in an effort to create world class virtual teams and gain competitive edge, a need exists to explore the dynamic nature of these teams.

According to Ebrahim et al., (2009), in the current competitive global business environment, virtual teams or virtual teaming embodies an emerging solution to complex organisational problems such as the need for lower operational cost and faster time-to-market for products. The concept of work teams began in the United States in the early 1960`s, but the extensive use of work teams and quality circles only started in the total quality management era .Towards the late 1980`s most organisations in the US employed self-managing or empowered existing work teams to reduce bureaucracy, improve service and lower cycle time. In the early 1990`s, organisations in the US with foreign affiliates had begun transferring the work team concept to

other continents such as Europe, Asia and Latin America in order to integrate intra-organisational operations globally. Ebrahim, et al., (2009) further assert that the latter part of the 1990`s saw the dawn of a new team process called virtual team or virtual teaming. This concept has advanced significantly since then.

Bergiel et al., (2008:99) point out that, "Organisations capable of rapidly creating teams of talented people who can respond to the needs of their customer are destined for success in today's global economy". Forward-thinking organisations that have grasped the fundamental characteristics of virtual teams or virtual teaming have become more agile and are able to compete vigorously in the global business environment. The concept of VT was not planned methodically but emerged as a result of globalisation, and as the appropriate technology to drive the concept became accessible. While IT is providing the necessary technology required to support the growth of these emerging organisational form, VT represents one such organisational forms, which has revolutionize places of work and provided organisations with exceptional levels of flexibility and readiness. As the technological foundation needed to support VT`s are currently available and developing rapidly, more successful organisations are those organised in a dynamic network system, which employ information technology as a primary enabler and can easily adjust in an ever-changing competitive business landscape(Baard & Thomas, 2010).

According to Purvanova and Bono, (2009) improvements in ICT`s within organisations, coupled with the pressure of global demand and the desire to compete in an innovative way through the accessibility to skilful resources has compelled most organisations to adopt virtual team structures. Moreover, in a continuously evolving business environment, multinational organisations operating globally can gained a competitive edge through their capability to form VT`s of skilful individual's in response to global business demands. Mogale and Sutherland (2010) assert that globalization has brought forward a new generation of skilled and knowledgeable workforce not confined in office buildings or one location but are dispersed due the shift in business operations from production-based to service driven. This change suggest that organisations are confronted with numerous challenges such as managing teams across different time zones, trust among team members, cultural differences, technological problems, knowledge sharing and leadership style etc.

2.1.1 Definition of virtual team

A review of current literature on virtual teams points out many definitions from a number of scholars. However, there is no specific definition of virtual teams generally agreed upon by all

scholars due to the complex nature of VT`s and the different interpretations. Lin, Standing & Liu (2008) define a virtual team as an “interdependent group working on a project across time and space relying on information and communication technologies”. While Ebrahim et al., (2009) define virtual teams “as groups of geographically, organizationally and / or time dispersed workers brought together by information technologies to accomplish one or more organization task”. Similarly, Mogale and Sutherland (2010) define virtual teams as “a group of people who work interdependently with shared purpose across space, time and organisation boundaries using technology to communicate and collaborate”. Although these definitions of VT`s share several fundamental features, our definition of virtual teams for the purpose of this study is drawn from Ebrahim et al.,(2009) as cited in Powel et al.,(2004) because the context of this study is best described by their definition.

2.1.2 Common characteristics of virtual teams

Virtual teams embody distinctive characteristics which make it possible to differentiate them from traditional and other team forms. These characteristics as demonstrated in Table 2.1 were found to be common to VT`s, which indicates the advancement of team work from traditional to virtual as a result of globalisation, advances in information technology and organisational demand (Ebrahim et al., 2009; Schlenkrich & Upfold, 2009; Chutnik & Grzesik, 2009). Berry (2011) further points out the following attributes of VT`s.

- Members predominantly rely on computer mediated communication (CMC) tools rather than face-to-face communication in various tasks.
- Members collectively manage their relationships across and between organisational boundaries.
- Members may be geographically dispersed.
- Members are jointly responsible for outcomes.
- Team members function interdependently, usually with a shared sense of purpose that is either given to them or constructed by the team itself.
- Virtual teams usually but not always have a definable and limited membership, and there is always awareness by team members of this shared membership. Membership may slightly change over time but the team structure remains intact

Table 2.1 Common characteristics of virtual teams

Common Criteria of Virtual Teams
Team members are physically dispersed
Members have a common purpose
Time boundaries are crossed
Communication technology is used
Diversity is present
Organisational diversity
Functional diversity
Cultural diversity
Gender diversity
Structural dynamism present
Members bring different perspectives and skills
Members are part of multiple teams
Functional boundaries are crossed
Teams perform non-routine tasks
Teams perform interrelated tasks

2.1.3Types of virtual teams

In general, many organisations tend to use different types of VT `s as an innovative, competitive and operational cost reduction strategy depending on the organisations' needs. Ebrahimet al., (2009) and Schlenkrich and Upfold (2009) differentiate various types of virtual teams as illustrated in Table 2.2

Table 2.2: Types of virtual teams
(Adapted from Ebrahim et al., 2009; Schlenkrich & Upfold, 2009)

Team type	Virtual characteristics
Networked teams	Generally consist of members within and outside the organisation who are geographically dispersed and collaborate to achieve a common organisational goal. Notably, these teams are usually made up of cross-functional members brought together and rotated on and off the team as their expertise is required.
Service teams	Consist of members spread across different time zones and distinct geographical locations who rotate so that there is always a team operating. Even though team members work independently they together perform work in continuation.
Parallel teams	Are usually formed for a short span of time to review organisational processes, potential sources of problems or exiting problems at hand and make suggestions. Unlike networked teams, these teams have distinct memberships and members usually stay intact until the desired goal is achieved.
Product or project development teams	In general are made up of experts on specific subject matters drawn from around the globe to perform a particular task involving new product development, organisation process or information system with specific quantifiable deliverables. Team member's tasks are usually non-routine with inconsistent membership and a longer life span than a parallel team.
Functional, production or work teams	Are normally formed by members who perform similar, regular and on-going work within the organisation with very clearly defined membership. Members have distinct roles and work independently to accomplish a common goal.
Action teams	Are in actual fact ad-hoc teams formed to respond to an immediate crisis and disperse after the crisis has been resolved. Membership usually extends outside organisational boundaries.
Management teams	Usually consist of managers of the same organisations working in different cities, same country, same continent or different continent. Team members mainly cooperate with each other to discuss corporate level strategies and activities.
Teleworkers	A single manager of a team at one location.
Remote team	A single manager of a team distributed across multiple locations.
Matrixed teleworker	Made up of multiple managers of a team at one location.
Matrixed Remote Teams	Consist of multiple managers across multiple remote locations.

2.2 Virtual communication tools

Computer mediated communication (CMC) in the virtual work environment has been divided into two main categories, asynchronous and synchronous communications, both employing various advanced information and communication technology tools for collaboration, communication and

conferencing. While most of these tools are either asynchronous or synchronous in nature, some of them have capabilities for both asynchronous and synchronous communication. For example, Plain Old Telephone Service (POTS) andVoice-Over Internet Protocol (VOIP) can be used for conference calls, direct calls and voice mail.

2.2.1 Asynchronous communication

According to Burgoon, Chen and Twitchell (2010) asynchronous communication is referred to as different time communication, meaning that time lapses separate messages and communication turns. Berry (2011) and Kimble (2011) point out that computer mediated asynchronous communication (CMAC) is widely used in the virtual work environment because it allows for multiple threads of concurrent themes of conversation to take place among VT members simultaneously. For example team members can contribute ideas at their convenience without the active presence of other members or being interrupted. Lin, Standing and Liu (2008) suggest that asynchronous communication in VT`s can be more effective in some circumstances because communication between VT members can take place over an unrestricted period of time. Owing to the time lapse between messages, VT members can reflect on the content of a message or communication before providing feedback. A broad range of asynchronous communication tools are available for virtual collaboration, such as email, file transfer, groupware\share services, telephone, chat platforms, SharePoint, share drives, electronic bulletin and message boards. (Refer to Table 2.3 for summary). E-mail remained the primary medium of asynchronous communication in many organisations due to the perceived ease of use, low set-up cost, sending messages and files in real time or over-time lapses and providing an extensive written record of activities. Other asynchronous communication tools are complimentary.

2.2.2 Synchronous communication

Bergiel et al., (2008) and Burgoon et al., (2010) assert that synchronous communication is a virtual communication method through which messages are exchanged within a certain time frame or in real time. This method of virtual communication requires individual or VT members, irrespective of geographical location, to be available at the same time to engage in real-time communication. Burgoon et al., (2010) further accentuate that synchronous communication is considered more interactive in the virtual work environment than asynchronous. It is thus preferred by most virtual teams as a principal mode of communication among team members. For example, synchronous collaboration tools such as instant messaging and chat, remote access and control, web conferencing, telephone, video conferencing, and blogs, are widely

used by many virtual teams as a primary mode of collaboration. (Refer to Table 2.3 for summary).

Selecting the right virtual collaboration tool can be a daunting task for many organisations due to the many collaboration tools and services available on the market. Laudon and Laudon (2014) have recommended the time/space collaboration and social tool matrix as a framework to enable organisations to choose the right virtual collaboration tools for teamwork. The time/space collaboration and social matrix framework focuses on two dimensions of collaboration problems: time and space. The time dimension centers on collaboration difficulties on a global scale in national and multinational organisations, while the space or place dimension looks at how an organisation's location inhibits collaboration regionally, nationally and on a global scale. The virtual collaboration tools discussed previously and summarized in Table 2.3 are some of the ways in which organisations can overcome the limitations of time and space. Therefore it is imperative for organisations to employ the time/space matrix in choosing the appropriate collaboration tool for virtual teamwork.

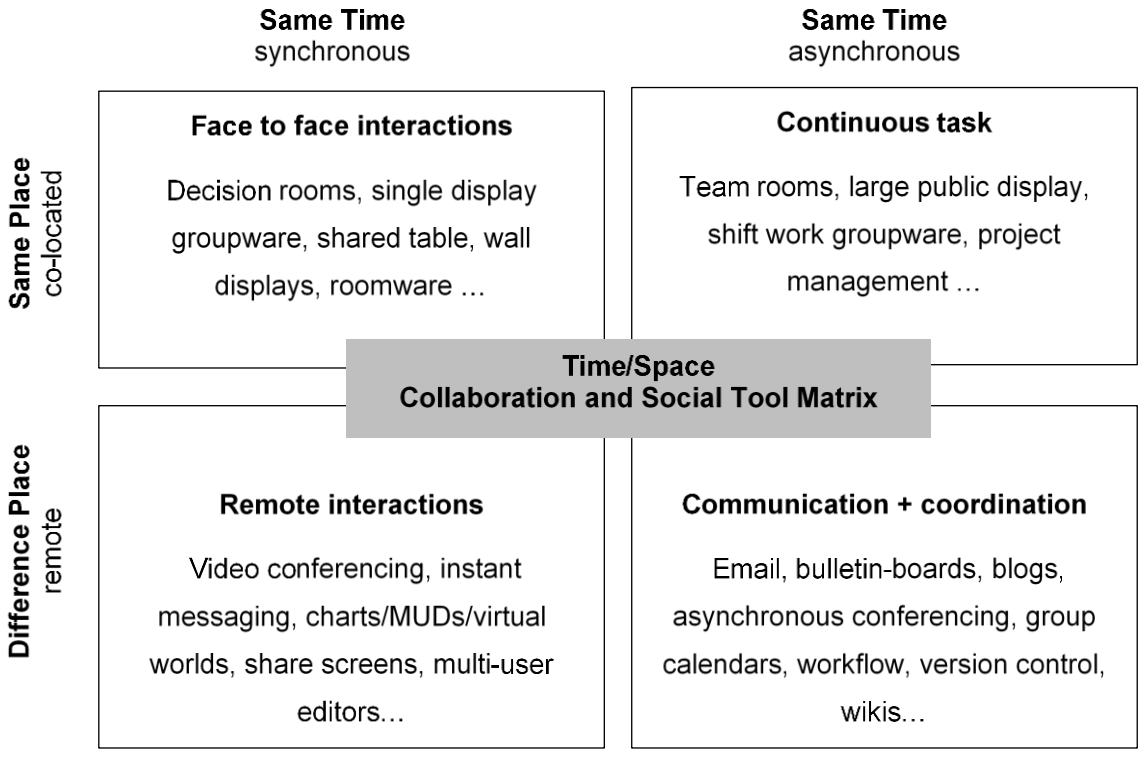


Figure 1. Time/space collaboration and social tool matrix

(Adapted from Laudon & Laudon, 2014)

Table 2.3: Virtual Communication Tools
(Adapted from Ebrahim et al., (2009, 2012); Laudon & Laudon, (2014)

Tools	Examples	Uses and Advantages	Immediacy	Sensory Modes
Email	• Many vendors and • Free applications	• Send messages or files • Cost and set-up effort vary	• Asynchronous	• Visual • Audio in attached files
Web Conferencing	• NetMeeting • WebEx • Meeting Space • GoToMeeting	• Live audio • Dynamic video • Whiteboard • Application sharing • Moderate cost and set-up effort	• Synchronous	• Visual • Unlimited graphics • Optional audio
Instant Messaging and chat	• Yahoo Messenger • MSN Messenger • AOL Instant Messenger • Skype	• Instant interaction • Less intrusive than a phone call • View who is available • Low cost • Low set-up effort	• Synchronous or • Asynchronous	• Visual • Text and Limited graphics
Telephone	• Plain Old Telephone Service(POTS) • Voice Over Internet Protocol (VOIP)	• Direct calls • Conference calls • Cost varies • Low set-up effort	• Synchronous • Asynchronous for voice mail	• Audio
File Transfer	• File Transfer Protocol (FTP) • Collaborative Websites • Intranets	• Share files of any type • Cost varies • Moderate set-up cost	• Asynchronous	• Varies with file content
Groupware/ Shared Services	• Lotus Notes • Microsoft Exchange • Novell GroupWise	• Calendars • Contact Lists • Arrange meetings • Cost and set-up effort vary	• Asynchronous	Visual
Remote Access and Control	• NetMeeting • WebEx • Remote Desktop • PC anywhere	• User controls a PC without being on-site • Cost varies • Set-up varies	• Synchronous	• Visual • Audio • Tactile

2.3Perceived benefits of virtual teams

The increase in the use of virtual teams permitting employees to work and communicate effectively in real-time around the world through CMC and ICT tools has seen a growth in popularity with most organisations incorporating virtual teams within their organisational structures. It has been noted in the literature on virtual teams that there are more advantages than drawbacks on an organisational, individual and societal level. Despite the additional complexity in creating and managing virtual teams the benefits of virtual working far outweigh the drawbacks (Bergiel et al., 2008). However, it must be noted that virtual working arrangements are not suitable for all employment types, thus organisations need to assess the suitability of virtual teams in terms of the organisations operational needs (Baard and Thomas, 2010). The main perceived organisational benefits of virtual teams and virtual technologies are discussed.

2.3.1 Cost reduction

The most significant advantage of VT`s as indicated in the literature associated with cost reduction ranges from travelling cost, office space, real estate and general operational cost (Bergiel et al.,2008; Kuruppuarachchi, 2009; Mogale and Sutherland, 2010; Heinstein, 2014).

2.3.2 Leverage global talent

VT`s provides organisations access to recruit experts, specialists, experienced employees and diverse skills from across the globe. This enables organisations to create a pool of talented employees with particular skills, experts who can easily serve on multiple organisational teams concurrently worldwide. VT`s also allow organisations to make the most of their human resources capital due to the flexible nature of these teams (Bergiel et al., 2008; Ebrahim et al., 2009; Baard & Thomas,2010).

2.3.3 Create equal opportunities in the work place

Virtual teams make it possible for organisations to employ more physically disadvantaged employees due to the flexible nature of the virtual work environment and the easier access to the virtual workplace compared to a physical office. This ease of access helps organisations to reasonably accommodate the particular needs of a range of disadvantaged employees. Furthermore, VT`s discourage age and race discrimination in the workplace because an employee’s performance management is primarily based on their productivity as opposed to other attributes. Conducting business online creates an environment that promotes equality and

equity among employees. This in turn helps organisations meet government's employment equity target. (Bergiel et al., 2008; Baard & Thomas, 2010; Lekushoff, 2012)

2.3.4 Improve work-life balance

The flexible nature of virtual teams and virtual work environment offers a feasible solution for organisations to address employee's work-life balance issues. Attracting and retaining a multigenerational workforce and the most desirable talent requires organisations to have a family-friendly culture in place that meets the lifestyle demands of a multigenerational workforce who want to add balance to their working lives, and still have a fulfilling and successful career. By adopting a lifestyle-driven VT model organisations are able to attract and retain top talent by providing them with the flexibility they require to balance work and family life. This increases employee`s job satisfaction, heightens morale, lowers absenteeism, leads to less turn-over, better customer service, decreased stress and increased productivity(Baard & Thomas, 2010; Lekushoff, 2012;Robbins & Judge, 2013).

2.3.5 Increased productivity and higher profit

The nature of virtual teams, being relatively suitable for a flatter organisation structure, eliminates or minimises unnecessary bureaucracy which slows organisational decision making. This increases VT member's autonomy, effective and rapid decision making and a higher focus on the task at hand. This in turn reduces time-to-market for products, enables organisations to respond faster to increases in competition, enables higher team effectiveness and efficiency, and decreases monitoring and control of activities, thus enhancing organisation's productivity which in turn increases the profit margin (Kuruppuarachchi, 2009; Ebrahim et al., 2009).

2.3.6 Environmentally friendly concept

Virtual working has less impact on the environment, thus offering organisations a model to reduce carbon emission levels and to conduct business operations in an environmental friendly way. Furthermore, the increase in personal vehicles has added more pressure on overburdened road infrastructure and increased pollution. Hence most employees spend more time travelling to and from work due to traffic congestion which adds to losses in productive time. "This factor is relatable in a South African context with an annual increase of 2.75% in registered vehicles in 2013" (Road Traffic Management Corporation, 2013:5). By adopting virtual teams and virtual working, organisations are able to reduce environmental pollution and contribute positively to

the society at large. (Ebrahim et al., 2009; Baard and Thomas, 2010).Table2.4 provides a summary of these perceived benefits as indicated in the literature.

Table 2.4: Benefits of virtual team Sources: (Bergiel et al., 2008; Siebdrat et al., 2009; Ebrahim et al., 2009; Kuruppuarachchi, 2009; Baard and Thomas, 2010; Mogale and Sutherland, 2010;Lekushoff , 2012; Robbins and Judge, 2013; Heistein, 2014)

Benefits of virtual team
Reduce travel time and cost
Enable the recruitment of talented employees
Promote and encourage the employment of physically disabled individuals
Reduce gender and racial discrimination in the workplace
Reduce development time for new products and time to market
Promote access to experienced and diverse skilful employees
Promote flexible work schedule and resources allocation
Encourage creativity and innovation from employees
Increase knowledge sharing and information dissemination within the organisation
Increase organisation's competitive advantage and help develop better customer satisfaction
Enhance cross-divisional and cross-functional business process interaction within the organisation
Provide more flexible working hours for employees
Provide unprecedented level of flexibility and responsiveness in organisations
Promote work- life balance
Produce a better outcome and attract better employees
Provide organisation with a platform to respond quickly to changing business environment
Reduce training expenses and promote faster learning
Promote efficiency and team effectiveness
Increase job satisfaction
Improve employee organisation citizenship
Decrease employees work stress levels
Provide employees with a greater degree of freedom
Optimise individual team member's contribution to completion of business task and accomplishing organisational goal.

2.4Inherent challenges in virtual teams

Increasingly many organisations are taking advantage of innovation in information and communication technologies by adopting virtual teams to improve business performance, efficiency and output. This is due to the growing need for lower operational cost, shorter cycle time and leveraging over global talent. Although VT`s offer organisations the desired competitive edge necessary, most organisations still face particular challenges involved in building successful virtual teams. Several studies (Bergiel et al., 2009; Ebrahim et al., 2009; Earnhardt, 2009; McCarthy, 2012; Gazor, 2012; Penarroja et al., 2013) have examined the enabling elements in successful VT`s, and although each of these studies varies in scope and design the same key elements of communication, trust, culture, technology and leadership have emerged as key enabling factors in successful virtual teams. On the other hand, these key contributing elements of successful virtual teams have also been identified in the literature as contributing factors to the failure of VT`s in the virtual work environment.

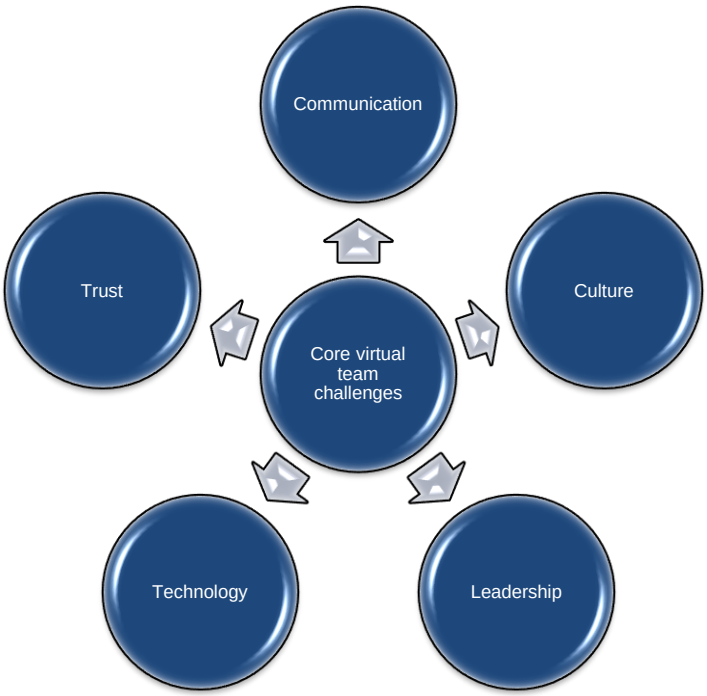


Figure 2: Inherent virtual team challenges

2.4.1Communication

It has been noted that effective communication is the backbone of every successful virtual team. While this is true to a certain degree, major problems still exist with the use of CMC among virtual team members, for example(Lin et al., 2008) found that problem solving tasks may not be

suitable for CMC in virtual teams because of the need for more substantial interaction. Schlenkrich and Upfold (2009) stress that over-reliance on CMC tools decreases the opportunities for monitoring team members and increases difficulties in interpreting knowledge with limited context because CMC reduces non-verbal cues and interpersonal affection such as tone, warmth and attentiveness, which assist in enhancing message clarity, interpretation and feedback. Moreover CMC may hinder understanding, thus complicating the transfer of knowledge among VT`s members, especially when the information is ambiguous.

Burgoon et al., (2010) noted that VT`s encounter a number of communication challenges partly due to their geographically dispersed nature and various limitations in CMC which in turn impede the team's effectiveness. Similarly, Berry (2011) and Gazor (2012) point out that absence of verbal cues in CMC such as gestures, intonation, facial expression and contextual cues can cause misunderstanding and misinterpretation among virtual team members. Despite the disadvantages of CMC in virtual working, communication remains a fundamental factor in successful virtual teams. As such good communication in VT`s develops trust while trust in turn acts as a building block for good communication. Ebrahim et al., (2012) lay emphasis on the importance of establishing a good communication process at the early stage of team formation. In order to address some of these technological challenges, researchers have suggested several guidelines which will be discussed in the next section.

2.4.2 Trust

Trust is the confidence put in a person or organisation's integrity, fairness and reliability. The concept of trust is critically important in team building, specifically in building a successful virtual team, because of limited or complete lack of individual face-to-face communication and over reliance on CMC. Thus establishing trust is a crucial component in the formation and growth of any successful virtual team (Webster and Wong 2008; Lin et al., 2008; Bergiel et al., 2008; Chutnik & Grzesik 2009; Gazor 2012; McCarthy 2012). Various dimensions of trust have been identified in the literature such as interpersonal-intergroup trust (trusting beliefs, trusting intention), cognitive trust, disposition to trust (faith in humanity), calculative trust and institutional–based trust (trust in structure instead of a person) and swift trust (Lin et al., 2008; Chutnik & Grzesik 2008; McCarthy 2012). While trust is a vital factor in the virtual work environment, building and maintaining trust is still problematic even though the individual characteristics that assist in building trust in VT`s have been well canvassed .

Chutnik and Grzesik (2009:87) state that establishing and maintaining trust in VT`s requires much more conscious effort from the team leader especially when specialist members join the team for a short period of time. Similarly, Heller et al., (2010) note that trust is often very difficult to achieve in many VT`s because most teams are assembled for a pre-determined period of time to accomplish a specific task. Mogale and Sutherland (2010) found that the lack of trust in VT`s can undermine every other precautionary measure put in place to ensure a successful virtual work environment. Trust has a range of positive effects on VT members, for example contributing time and attention to collective goals, increasing communication and information sharing among team members thus preventing geographical distance becoming psychological distance in global VT`s, and increasing team member's commitment, satisfaction, performance and retention. Gazor (2012) emphasises the importance of building trust at the formation phase of a team especially in global VT`s. Penarroja et al., (2013) share similar views as Gazor (2012), by underlining the importance of establishing team trust to reduce ambiguity, uncertainty and social perception so that cooperative and productive activities can take place in the team.

2.4.3Cultural diversity

Culture has been noted as an important issue in the virtual work environment, particularly in multicultural global and national virtual teams usually consisting of members from different nationalities and cultural backgrounds. While cultural diversity in the virtual work environment is not limited to national and linguistic diversity, it has been found to impede knowledge sharing among virtual team members due to cultural differences, which in turn affects interaction among members (Lin et al., 2008; Ebrahim et al., 2009; Gazor 2012). Cultural characteristics have been divided into two dimensions, namely invisible cultural factors (e.g. attitudes, beliefs, perceptions values etc.) and visible cultural factors (e.g. communication style, decision making style, response to conflict, etc.) which are unique cultural characteristics that help shape individuals from different countries ways of doing things.

Schlenkrich and Upfold (2009) found that the cultural background of team members in multicultural virtual teams creates different expectations in communication practices thus decreasing member's abilities in identifying with the rest of the team. They believe that cultural diversity has created a unique set of direct and indirect challenges in VT`s such as conflicting norms for decision making, communication problems with accents and fluency. For example in Western cultures communication is usually direct and explicit with obvious meaning requiring no interpretation. On the other hand, Westerners often experience misunderstanding and frustration from non-Westerners due to accents and a lack of fluency in communication which

might have an influence on team member's perceptions, competences and status of others, thus provoking personality clashes, mutual dislike, prejudice, stereotyping, ethnocentrism and hostility between virtual team members. Earlier studies suggest that status effects minimal disruption in VT interaction. However, Flammia, Cheary and Slattery (2010) accentuate that some VT members created social hierarchies within the team in an effort to establish status difference among team members.

This view is similar to that of Schlenkrich and Upfold (2009) who noted that social hierarchies in VT`s arise from differences in educational background, expertise and experience of team members. This was found to create a feeling of superiority or inferiority among team members which may lead to communication breakdown between them. They also found that decision making styles differ significantly among VT members from different cultures. Moreover, members from different organisations have different attitudes towards hierarchy and authority, for example VT members from organisations with a bureaucratic, hierarchical culture usually expect decision to be made by senior management, while team members from organisations with flatter organisational structures with an egalitarian culture are empowered to make decisions themselves. These differing decision making styles very often create disagreement among team members which might result in a conflict. In order to address some of these social and cultural challenges, researchers have suggested several guidelines which will be discussed in the next section.

2.4.4 Leadership

Bergiel et al., (2008), Chutnik and Grzesk (2010), Mogale and Sutherland (2010) and Heller et al., (2010) all agree that leadership can be described as an intricate construct which can be measured in multiple dimensions. Quality leadership engenders success in both virtual and collocated teams. While most traditional leadership principles are applicable to VT`s, a virtual team leader/manager is exposed to a unique set of challenges that may require many of the traditional leadership skills needed to manage a collocated team, plus additional skills, to be a successful leader/manager in the virtual work environment.

Mogale and Sutherland (2010) define virtual leadership as "a social influence process mediated by advanced information technologies to produce change in attitude, feeling, thinking, behaviour and /or performance of individuals groups and /or organisations". Although managing/ leading a VT can be very challenging and may necessitate innovative management methods, a virtual team leader or manager has the responsibility of selecting team members, developing the

selected individuals into a coherent and integrated work unit, setting clear goals, motivating team members, building trust among team members, establishing the right norms and behaviour, preparing team members to envisage and deal with any unexpected situations and managing conflict within the team. Many of these leadership responsibilities are difficult to execute in virtual teams and the virtual work environment due to the distributed nature of virtual teams, and other specific features of the virtual work environment such as the lack of physical observation of team members, over reliance on electronic communication, multiple time zones and cross-cultural differences, which in combination require a team leader or manager who can demonstrate the capability to deal with paradoxical situations and be able to perform multiple leadership/managerial roles simultaneously (Bergiel et al., 2008; Chutnik & Grzesk, 2009; Schlenkrich & Upfold,2009).

A review of the literature on virtual team leadership shows three main leadership theories (transformational leadership, situational leadership theory and leadership orientation frames) covering key virtual leadership skills, indicators, enablers and inhibitors for managing a successful VT. However, Mogale and Sutherland (2010) noted that the onus remains on the team leader/manager to choose the relevant leadership style applicable for the success of his or her team. Schlenkrich and Upfold (2009) emphasise that virtual leaders/managers need to have a shift in mind-set to suit their team work environment in order to be successful. Chutnik and Grzesk (2009) share Schlenkrich and Upfold's views by further stating that a virtual manager/leader needs to be able to create a clear vision for the team, communicate this vision passionately to team members, rally them behind this vision by building a coalition of believers, develop strategies to achieve this vision and clearly shape the team's culture and operating values. Heller et al., (2010) found that cultural diversity, which is often a by-product of the virtual work environment, poses more complex problems for a virtual team leader/manager because it may require different methods of communication and project strategy to deal with a geographically dispersed workforce. They also found that virtual team leaders/managers might face significant work-life balance challenges with the integration of their personal life with the demands of the team, partly due to time zone differences among team members which necessitate strategic planning, which may include late nights or early morning conference calls. Gazor (2010) notes that virtual team leaders/managers may experiences additional challenges such as communication mishaps, inefficient work processes, lack of trust among team members, lack of individual recognition, technological failures, dysfunctional conflicts, lack of project visibility and system support challenges. In order to address some of these diverse

challenges, researchers have suggested several guidelines which will be discussed in the next section.

2.4.5Technology

It has been suggested that the use of technology is the final component needed for the formation of a successful virtual team. While this is true, virtual teams would not have existed today in their present guise without the innovative technological tools available. As such, the selection and effective use of the right technology is at the core of every successful VT. Information and communication technology (ICT) has been described as a simple tool which assists humans in the transmission of information from individuals, groups, teams and organisations. However significant challenges exist in the effective adoption and implementation of information and communication technology in the virtual work environment. Several studies have examined the importance of selecting the right technology for effective communication in virtual teams and in the virtual work environment. However, even being equipped with the most sophisticated and advanced information and communication technology, the inadequate implementation of such technology has the potential to render the team ineffective if the users perspective is not taken into consideration, and internal group dynamics and external support mechanisms are not present for a team to be successful in the virtual work environment (Bergiel et al., 2008; Ebrahim et al., 2009; Flammia et al., 2010).

According to Hunsaker and Hunsaker (2008) VT leaders/managers should identify the appropriate technological needs of the team, define how and when the technology should be used to communicate in accordance with the organisation's policies and organise training for team members where necessary. Bergiel et al., (2008) further highlight that virtual team leaders/managers should ensure that team members have the right skills, hard ware, software and the necessary computer knowledge required to actively partake in team activities. Lin et al*.,* (2008) note that VT leaders/managers should determine task-technology-structure fit, thus selecting the appropriate technology suitable for various team tasks, and establish structures defined by team members. The literature on VT`s shows that information richness plays a critical role in the selection of technology by VT leaders/managers, while the implementation of technology was the greatest impediment to the effectiveness of VT`s. Hence the implementation process of technology to a certain extent determines a team's degree of effectiveness. Lin et al.,(2008) state that an organisation`s success is based on the organisation's capability to process information of appropriate richness as a way to decrease uncertainty and clarify equivocality. Uncertainty implies a lack of information whereas equivocality means ambiguity. It

is believed that a larger quantity of information can decrease uncertainty while a better quality of information can reduce equivocality. Flammia et al., (2010) share Lin et al., (2008) view by further clarifying that most communication difficulties encountered by virtual teams can be attributed to a lack of rich media. They categorise virtual communication technologies into two communication mediums, namely rich media and lean media. Lean media communication technology tools allow limited socio-emotional cues while rich media communication technology allows instant feedback, nonverbal cues and personalisation.

Chutnik and Grzesik (2009) are in agreement with the views expressed by Lin et al.,(2008) on task-technology-structure fit by pointing out that synchronous communication technology tools such as videoconferencing, phone, net meeting, instant messaging and video conference rooms are most suitable for unclear team tasks which require extra communication while asynchronous communication technology tools such as emails, share point, groupware's and scheduling software will best suit team tasks which require more documentation and storage. They further recommend that virtual team leaders/managers should consider using more synchronous communication tools at the team formation phase to assist members establish relationships and build trust. In order to address some of these challenges, researchers have suggested several guidelines which will be discuss in the next section.

2.5 Overcoming inherent challenges in virtual teams through HR interventions.

Human resource management and human resource development for VT`s and the virtual work environment has emerged as one of the most significant challenges facing the human resources function within organisations in present times. Consequently, human resources management (HRM) and human resources development (HRD) professionals worldwide are grappling with adjusting and developing current and new organisational policies and procedures to accommodate virtual teams and the virtual work environment. As many organisations increasingly face numerous challenges in the adoption/utilisation of virtual technologies and the creation of effective virtual teams, human resource management is playing a pivotal role as a catalyst in overcoming these challenges through HR intervention (Dorr & Kelly, 2011; Leonard, 2011; Mansor, Mirahsani & Saidi, 2012).

Several studies have highlighted key inherent challenges faced by organisations in the adoption, creation and utilisation of virtual teams and virtual technologies. While these challenges pose significant obstacles to the creation of effective VT`s, they are not insurmountable as such, and can be overcome through specific HRD and HRM interventions

designed to assist organisations turn these challenges into opportunities. Dorr and Kelly (2011:6-15) found that HRM and HRD professionals can foster the success of VT`s in their organisations by being actively involved in the recruitment and selection of virtual team leaders and members, ensuring that the selection of the appropriate virtual technology fits the task, provide training to virtual team members and leaders where necessary and lobby executive management support. They also suggest that effective VT`s have been found to possess the following characteristics:

- Effective HR practices,
- Executive support,
- Strong team leadership
- Well-structured teams.

According to Kuruppuarachchi (2009) inherent virtual team challenges may be exacerbated by organisational policies, particularly organisational human resources policies regarding a performance incentive, which was found to have a negative effect on a virtual team leader's ability to effectively manage their team. They further suggest that the following factors lead to successful teaming:

- HR policies which support, recognise and reward virtual team members and leaders
- Organisational culture that values diversity, team work, continuous learning and communication
- Team leaders and members who possess good verbal and listening skills
- Flexible and adoptable flat organisational structures in place of hierarchical control orientated organisational structures.
- Technologically inclined organisations with the right people trained to use these technologies.

Other scholars have suggested a range of specific HR interventions aimed at addressing key inherent challenges in virtual teams as HRM and HRD professionals seek to support their organisational work force's transition to the virtual work environment. Although HR interventions could be applied to any team in an organisational context, it must be noted that most of these HR interventions stem from a traditional or collocated team structure given the similarities and dissimilarities between VT`s and collocated teams. The following critical HR interventions have been identified and discussed.

2.5.1 Executive support

HRD and HRM professionals seek to turn top management support in developing organisational policies and culture that values innovation, communication, embraces diversity, team work and social relationships at work (thereby building trust among colleagues) and demonstrating collaboration (Dorr & Kelly, 2011; Mansor & Mirahsani, 2012).

2.5.2 Development of HR policies

HRD and HRM professionals should develop organisational human resources policies and procedures. That recognized reward and support virtual team members and leaders through HR practices. That improve VT performance, through training in skills that promote collaborative behaviours such as the ability to demonstrate appreciation of others, programme management, conflict resolution, engaging in purposeful conversation and informal community building activities such as mentoring and coaching of VT members, succession planning, promotions, recognition and continued feedback to enable members to feel connected with the organisation (Kurappuarachchi, 2010; Dorr & Kelly, 2011)

2.5.3 Developing a structured team

Selecting the right leader and members to serve on a virtual team is a critical factor which differentiates successful virtual teams from unsuccessful ones. Thus HR plays a vital role in the selection process of VT leaders and members.

- **Selection of VT leader:** The importance of leadership in virtual teams has been noted in the practitioner's literature as the number one factor that influences success in VT and the virtual work environment. Hence the selection of a skilled leader with a strong collaborative leadership style and excellent written and communication skills is an integral part of the development and performance management which is critical in creating an effective and successful virtual team. Therefore, the selection of a virtual team leader with the following competences is of utmost importance to the team's ability to effectively operate in the virtual work environment:
    - Appropriate use of technology and communication technology
    - Building and maintaining trust in the team
    - Managing a culturally diverse and cross cultural work force
    - Networking and establishing expectations, allocating resources and modelling desired behaviours

- Performance management and coaching
- Developing and adopting standard team processes
- Aiding in team members career development and transitions.
- Strong writing and communication skills (Chutnik & Grzesik, 2009; Ebrahim et al., 2009; Dorr & Kelly, 2011; Leonard, 2011; Barry, 2011)

Although the above virtual team leadership competencies are required for a VT leader to be able to effectively manage a team, these attributes can also be consciously worked on and be developed through HRM and HRD support training programmes.

- **Selection of team members:** Every team leader has the additional responsibility of selecting the right team members with suitable skills for their team. Therefore the selection of virtual team members and defining their respective roles should be a collaborative process between HRM / HRD professionals and the virtual team leader in assessing current and potential employees or candidates in contention for membership on the team, and who possess the following characteristics:
  - Methodological expertise,
  - Self-motivation,
  - Ability to tolerate ambiguity,
  - Work independently,
  - Excellent communication skills,
  - Domain expertise,
  - Self-reliance
  - A good team player (Leonard, 2011; Dorr & Kelly, 2011).

2.5.4 Selection of appropriate virtual technology

Technology task fit is not entirely the responsibility of the team leader; matching the right technology to the task. HRM and HRD professionals must consider the available technologies and the technological need of the team at the team formation phase. This process should be done in consultation with IT professionals from the information system department to assess the synchronous and asynchronous technological needs of the team. Laudon and Laudon (2014) have suggested the time/space collaboration and social tool matrix (Refer to figure 2.1) as a framework which can be used by virtual team leaders in choosing the right collaboration tools for the team and the task. This should be done in collaboration with HRD professionals to

enable them to assess the training needs and requirements of team members, if any, and to ensure that the team members are trained on how and when to use these collaboration tools. Additionally, HR needs to ensure that the team leader's technological choices and decisions comply with the organisations policies. (Hunsaker & Hunsaker, 2008; Chutnik & Grzeskin, 2009; Dorr & Kelly, 2011; Laudon & Laudon, 2014).

2.5.5 Training

The odds of forming a successful virtual team whose leader and members possess all the right skills and competences needed to be successful in the virtual work environment without any kind of training intervention is inconceivable. Thus training for VT leaders and members is a critical aspect of building a successful team. Consequently, it is vital that HRM and HRD professional provided the necessary training to the team leader and members by identifying skills gaps and training needs of the team and to ensure that the relevant training is offered to close these gaps and overcome any inherent problems (Heller et al., 2010; Dorr & Kelly, 2011).

Table 2.5: Models for virtual team training programme: sourced from Dorr and Kelly (2011)

Training Modules for Virtual Team Leaders
• Fitting the technology to the task • Setting expectations, measuring and rewarding team contributions • Coaching and mentoring virtual team members • Modelling desired virtual team behaviours (responsiveness, using groupware to share information) • Managing external relations (on-site managers, sponsors)
Training Modules for Virtual Team Members and Leaders

• **Face-to-face teambuilding session before virtual team launch**
  ○ Establish team identity
  ○ Create mission statement
  ○ Establish team norms
  ○ Build trust

• **Mastering virtual team technology**
  ○ Use of groupware
  ○ Teleconference and videoconference procedures

• **Communication skills**
  ○ Electronic etiquette
  ○ Cultural awareness
  ○ Brainstorming electronically
  ○ Decision making

- **Team management**
  - Virtual meeting logistics (synchronising schedules, setting agendas)
  - Defining roles
  - Resolving conflicts
  - Meeting milestones
  - Evaluating process and progress

This model reflects the best practices of successful virtual teams and can be used as a good starting point for training in any organisation seeking to adopt or improve existing virtual teams.

2.6 Technology adoption theories

In today's global business environment, information technology and information systems are regarded as critical tools to enhance organisation growth, productivity, competitiveness and efficiency. While this is certainly true, it is nevertheless important to understand the determinants of information technology / information system adoption and the related theoretical models.

According to Achieng and Ruhode (2013) a theory is a term used to describe a natural phenomenon in different ways. Hence this study will employ a theoretical framework to better understand technology adoption factors at organisational level. Hence the theoretical framework provides a window through which the research phenomenon in this study is viewed.

A review of literature on information technology (IT) and information systems (IS) adoption at individual and organisational level indicates that several theories and models have been used to study information technology and information system adoption. Oliveira and Martins (2011) propose that the most used theories in information technology adoption studies are the technology acceptance model (TAM), unified theory of acceptance and use of technology (UTAUT), theory of planned behaviour, (TPB), Diffusion Of Innovation (DOI) theory and technology organisation and environment (TOE) framework. Although TAM, UTAUT, TPB and DOI theories have gained prominence, most address IT adoption at individual level.

2.6.1 Technology acceptance model

Davis (1989) notes that the technology acceptance model TAM, as cited in Bradley (2012), was developed based on Ajzen and Fishbein's1980 Theory Of Reasoned action (TRA) and Fishbein and Ajzen's1975 expectancy-value theory. According to Bradley (2012) TAM employs two key variables, Perceived Usefulness (PU) and Perceived Ease Of Use (PEOU), as determinants

which influence individual users' acceptance of information technology and information systems. Another important variable of the TAM is the Behavioral Intent (BI) which predicts the desired action of users of the system. The PU variable looks at individual user's views on the usefulness of information technology and information systems and how it improves their job performance. This influences user's attitude towards the use of information technology and information systems which helps predicts the Behavioral Intention (BI) of the user. The PEOU variable describes the perceptions of individual users of information technology and information systems that the system will be easy to use. The PEOU also influences both the PU and BI of users which in turn helps determine actual usage of the system. Davies' (1989) technology acceptance model focuses primarily on information technology acceptance at the individual level. It helps explain user's acceptance of information technology and information systems through the user's unwillingness to accept available technology. For this reason, the TAM is not suitable for this study because this study focuses on information technology adoption at an individual level.

2.6.2 Unified theory of acceptance and use of technology

Venkatesh, Morris, Davis and Davis' (2003) unified theory of acceptance and use of technology (UTAUT) is an integrated theory of the eight dominant models and theories in the field of information technology acceptance research. According to Williams, Rana and Dwivedi (2012) and Venkatesh et al.,(2003) the UTAUT model was developed based on the eight dominant and competing models to provide a unified theoretical foundation to facilitate research on information technology and information system research adoption. The UTAUT integrates many of the similar constructs of the Theory of Reasonable Action (TRA), the Innovation Diffusion Theory (IDT), Social Cognitive Theory (SCT), Theory of Plan Behaviour(TPB), Technology Acceptance Model (TAM), the Model of PC Utilisation (MPCU), the Motivational Model (MM) and a model Combining the Technology Acceptance Model and the Theory of Planned Behaviour (C- TAM-TPB). The UTAUT posits that four core constructs (facilitating conditions, performance expectancy, social influence and effort expectancy) are direct determinants of information technology and information system behavioural intention and usage.

The theory further postulates that the influence of core constructs is moderated by experiences, gender, age and voluntariness of use. The UTAUT has been widely used in many information technology and information system studies which focus on individual acceptance of information technology. As such, the UTAUT is not appropriate for this study because this focuses on information technology and information system adoption at organisational level.

2.6.3 Diffusion of innovation theory

According to Chia Cua (2012:307) and Rogers (1995) diffusion of innovation (DOI) theory is a theory of "how, why and at what rate new ideas, technology and process innovation spread through cultures operating at individual and organisation levels in a society or country". The how deals with the process of innovation, the why and what provides justification for the adoption or rejection of an innovation, referring particularly to the perceived qualities of the innovation. Oliveira and Martins (2012) points out that, DOI theory suggest that innovation will diffuse through a population or social system over time via different mediums. The degree of individual's readiness to adopt innovation is generally categories in to five segments of individual innovativeness namely: innovators or early adopters, early majority (those who adopt the innovation earlier), late majority (those who adopt the innovation later) and laggards (those who adopt the innovation overtime).

On the organisational level, Arpaci et al., (2012) assert that the DOI theory propose five characteristics that affects organisation technology adoption and innovativeness ("trialability", relative advantage, observability, compatibility and complexity). However, the DOI theory excludes environmental characteristics which are important factors that affect organisation technology adoption and innovativeness. As such the DOI is limited in scope and not deemed suitable for this study. Although the DOI theory has been used in many information technology adoption and innovativeness studies at organisational level, the vast majority have combined the DOI theory with other theories such as the technology organisation framework (TOE) and institutional theory to better explain information technology adoption. For example Wang and Yang (2010) combined DOI theory with a TOE framework to study information technology adoption in manufacturing industries.

2.6.4 Technology organisation and environment framework

According to Baker (2012) and Tornatzky and Fleischer (1990), the technology organisation and environment (TOE) framework is an organisational level theory that identifies three aspects of organisational context that influences technology adoption and innovation decision. These three aspects are the technological context, organisational context and environmental context as shown in figure 2.2.

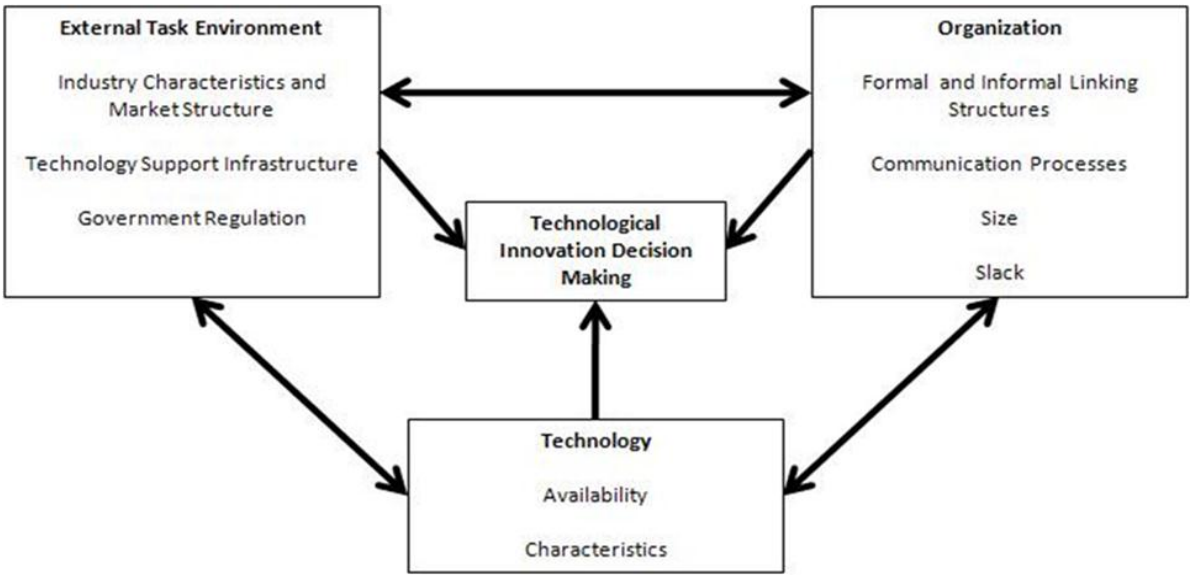


Figure 3: TOE Framework
(Adapted from Baker, 2012)

2.6.4.1 Technological context

The technological context focuses on various ways in which technological characteristics can promote or slow down the technology adoption process. This refers to all the technologies available and relevant to an organisation, including those that are already in use in the organisation and those which are available in the marketplace, but are not in use in the organisation. The current technologies in use in an organisation are extremely important in the adoption process because they set perimeters on the extent of technological change that an organisation can undertake. Advanced technologies that are available in the market place but are not currently in use in the organisation also influence the adoption process because they demarcate an organisation's limits of innovation and the manner in which technology can make it possible for them to evolve and adapt. Three categories of innovation exist outside an organisation namely:

- Those that create incremental change: refers to the introduction of new features or new versions of existing technologies. This type of change presents the very minimum amount of risk to an organisation's technology adoption process.
- Those that create synthetic change: represent the central point of moderate change, where existing technologies are combined in a novel manner to innovate.

- Those that create discontinued change: refers to a radical or significant shift from existing technologies and processes. This type of change poses significant risk to an organisation's technology adoption process.

The emphasis of the technological context relates to the operationalisation, possible realisation of benefits and current organisational adoption capabilities. This means that decision makers in organisations assess the characteristics of technological adoption in terms of potential gains (meaning the perceived benefits an organisation expects to get after adopting a new technology) and possible barriers (refers to the complexity of technological adoption and the compatibility of the technology with the organisation's exiting technological competency which can drive adoption cost)(Lee, Wang & Peng, 2009;Chong et al., 2009;Tan, Lin &Eze,2009;Troshaniet al., 2011; Ifinedo,2011;Oliveira & Martins, 2010;Arpaciet al.,2012; Baker, 2012; Ramdani, Chevers & Williams, 2013).

2.6.4.2 Organisational context

The organisational context refers to the characteristics and resources of an organisation that may facilitate or inhibit the adoption of technology. Common organisational characteristics includes intra-organisational communication process, management support, the size of the organisation, linking structures between employees (the level of centralisation, formalisation, complexity of its managerial structure), the quality of its human capital, and the amount of slack resources existing internally. This context affects an organisation's adoption and implementation of new technologies in several ways:

- Smaller organisations with a decentralised structure can be quicker than bigger organisations with a centralised structure in adopting new technologies partly due to factors such as emphasis on team work, a high degree of flexibility, adaptability and the promotion of lateral communication in addition to formal communication along reporting lines. On the other hand, bigger organisations with a higher degree of centralisation are more likely to effectively implement new advanced technologies because of financial advantages, centralised decision-making, very formal reporting structures and a well described function for every employee.
- Communication processes within an organisation can either foster or hinder the process of technology adoption in an organisation, meaning that executive management can facilitate the process by creating an organisational culture that is open to innovation and change, aligning the organisation's vision and mission to the change process,

communicating the relevance and importance of the process to the future of the organisation to employees, and rewarding innovation both formal and informally.

- Owing to financial advantage, bigger organisations in general are more likely to adopt new innovative technology than smaller organisations. Although some scholars argue that while the size of an organisation may not necessarily lead to technology adoption, the availability of specific resources within the organisation promotes technology adoption.
- The amount of slack resources available to an organisation might be useful in technological adoption but does not necessarily lead to technological advancement.
- Management support refers to the degree of commitment and support from top management toward organisational adoption of innovative technology. Top management greatly influences an organisations technology adoption decision making through the allocation of resources and implementation of the project. Hence a strong commitment from top management is a significant driving force for technology adoption.
- Organisational information technology competency refers to an organisation's capacity for information technology based innovation. Key elements of organisation information technology competency consist of existing information technology infrastructure, human information technology resources (both technical and managerial skills), and information technology /business partnerships. Organisation technology competency may directly or indirectly influence technology adoption.(Leimeister et al.,2009;Pan & Jang, 2009; Oliveira & Martins, 2009;Ramdani, Kawalek and Lorenzo, 2009; Barbosa & Musetti, 2010; Troshani et al*.,* 2011; Arpaci et al.,2012; Baker, 2012;ifinedo, 2012;Ramdaniet al.,2013; Haider and Pishdad, 2013).

2.6.4.3 Environmental context

The environmental context refers to the external environment in which an organisation conducts its business. This includes the structure of the industry, government regulations, competitors and the technology support infrastructure. These factors can provide an organisation with opportunities for technological innovation but can also present constraints on technological adoption. For example:

- Intense competition in an industry may stimulate the adoption of innovative technology. This is very significant in rapidly growing industries but not so clear cut in mature and declining industries. However, the industry in which an organisation operates to an

extent influences the organisation of innovative technology. Hence the greater the competitiveness in an industry the more likely it is that an organisation will adopt innovative technology as a strategic approach to compete in the market place.

- Government regulations can promote technological innovation in industries by raising awareness, providing training /support, encouraging technological adoption, less stringent regulation and providing funding where applicable. Inappropriate government policies can however also inhibit technological innovation.
- The availability of technological infrastructure, technical support, skilled labour and suppliers of technology services are all important requirements for innovation and technology adoption (Lacity, Khan, & Willcocks, 2009; Lee, Wang & Peng, 2009; Wang, Wang & Yang; 2010; Oliveira& Martins, 2010; Bose & Lou, 2011; Baker, 2012; Troshani et al., 2011; Arpaciet al., 2012; Haider & Pishdad, 2013).

The TOE framework has been used successfully either individually or combined with other theoretical models in several studies such as that of Oliveira and Martins (2011) that combine a TOE framework with the EDI model to explain the adoption of e-business by organisations. Wang, Wang and Yang (2010) combined DOI theory with a TOE framework to understand IT adoption in manufacturing industries, Troshani, Jerram and Hill (2011) use the TOE framework to better understand organisations adoption of human resources information systems, Bose and Luo (2011) used the TOE framework to study green IT initialisation in organisations, and Oliveira and Martins (2011) combined institutional theory with a TOE framework to study technology adoption models at organisational level. Ramdani, Chevers and Williams (2013) used the TOE framework to study human resources information system adoption in the public sector in Australia. Thus the TOE framework has been tested and validated.

Against this backdrop, this study will adopt the TOE framework as a theoretical framework underpinning this research because of the consistency of the phenomena for which the theory is defined and its appropriateness to the phenomena being studied. The TOE framework makes it possible to differentiate between intrinsic innovation characteristic organisational capabilities, motivations and broader environmental factors that impact on an organisation's adoption of innovative technology. To better understand reasons for the slow adoption of virtual teams and virtual technology by South African organisations in Cape Town, the researcher will identify factors that affect organisation's technology adoption decision making and how these factors jointly explain technology adoption in an organisation.

Finally, the above three factors (technology, organisation and environmental context) equally present opportunities and limitations for organisation's to adopt innovative technology. The above theoretical framework will enable the researcher to contextualise each of these factors independently. Manageable questions linked to each of the TOE contextual factors will be generated and posed to research participants to establish if the factor enabled or inhibited their organisation's adoption of virtual teams and virtual technology.

2.7Chapter summary

In this chapter, the empirical literature on virtual teams and virtual technology was reviewed, HR interventions were covered, IT adoption theories were discussed, the TOE framework was explained and the rationale for choosing the framework as the underpinning theory stated. The literature review on organisational adoption of virtual teams and virtual technology shapes many of the questions included in the interviews and questionnaire, particularly the TOE framework dimensions such as the technological factors, organisational factors and environmental factors. This chapter has raised questions that will be answered by the data arising from the interviews and questionnaires. Responses from participants will provide a context against which to examine and interpret the findings of this study.The following chapter describes the research methodology and design.

CHAPTER THREE
RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

The aim of this study is to explore and understand why South African organisations are slow in adopting virtual teams and virtual technology. The preceding chapters have established the aims; the literature reviewed in Chapter two provided a background to the study against which the findings of this study will be considered. Moreover, it has also established the significance of the research within the field of information technology adoption. The theoretical framework underpinning this study was established. The methodology and design employed for data collection and data analysis in this study is described and justified in this chapter as illustrated by the methodology format diagram in Figure 1 below.

Throughout the research process important decisions are made which can potentially have an effect on the nature and authenticity of the research outcome. The ownership of the organisations did not influence the sampling of the subjects. This research is not discussing the adoption levels of private versus public organisations in South Africa. The main criteria for the selection of organisations were based on the local geographical presence in South Africa. Hence the organisations considered in this research were those with a local geographical presence.

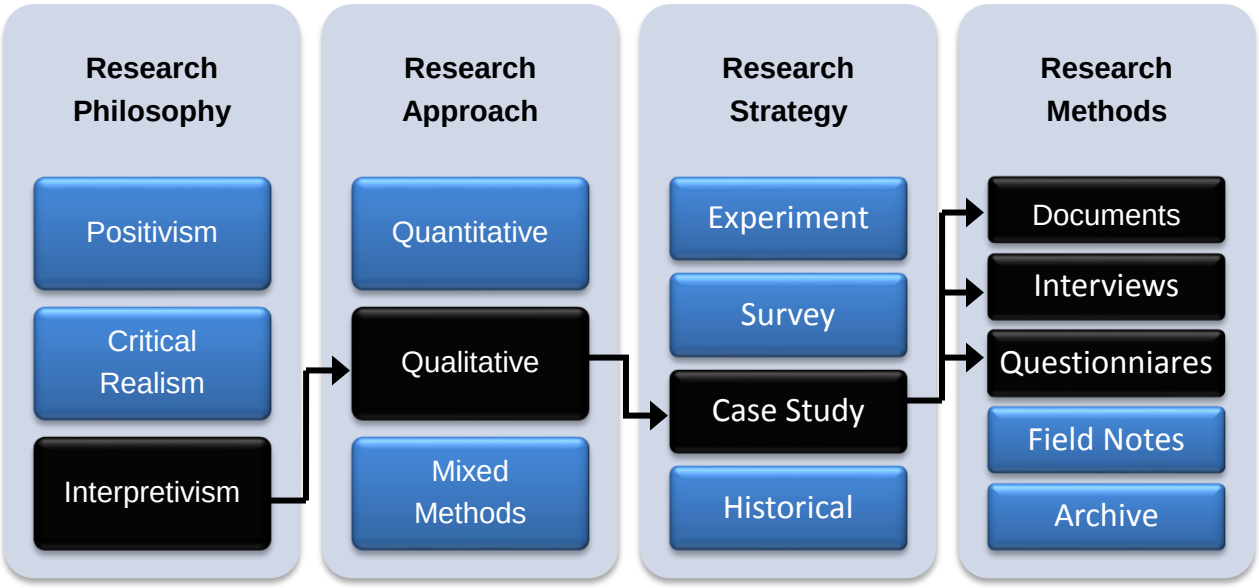


Figure 4: Methodology Format Diagram
(Adapted from Ruhode, 2015)

3.2 Research philosophy

According to Mouton (2001:49) and Wahyuni (2012) a methodology refers to a process of carrying out research within the context of a particular paradigm. This includes the underlying sets of beliefs that guide a researcher to select one set of research methods over others. Babbie and Mouton (2010) point out that “research design is a plan according to which the researcher intends to conduct the research”. This study is aligned with an interpretive research paradigm as a philosophical worldview position underpinning the research. Walsham (2006:321) states that “interpretive method of research starts from the position that our knowledge of reality, including the domain of human action, is a social construction by human actors”. Therefore the ontological perspective is concerned with the view of how one perceives reality. The epistemological position is based on how we generate understanding and make use of the knowledge that is deemed to be acceptable and valid (Wahyuni, 2012). Guba and Lincoln (2000) as cited in Creswell (2009) further state that “individuals seek understanding of the world in which they live and work, individuals develop subjective meaning of their experiences-meaning directed toward certain objects or things”.

3.3 Research approach

In line with the philosophical view underpinning this study, a qualitative research approach which employs specific methods of enquiry will be utilised. It will enable the researcher to establish reasons for the slow adoption of virtual teams and virtual technology by South African organisations in Cape Town from the thoughts and personal experiences of research participants. Flick (2008); Jackson (2008) and Creswell (2009) have all described qualitative research as a social research approach which focuses on phenomena occurring in a natural setting, and exploring and understanding the meaning individuals or groups ascribe to the phenomenon. “The process of research involves emerging questions and procedures, data typically collected in the participant’s settings, data analysis inductively building from particular to general themes, and the researcher making interpretations of the meaning of the data”. Babbie and Mouton (2010) characterised the qualitative research method as classically a detailed engagement with the object of study, a method open to multiple sources of data with flexible design features which permits the researcher to manage the research process and make changes where necessary.

3.4 Research strategy

This study will follow a qualitative case study strategy, conducted inductively moving from specific observations to broader generalisation. A mixed methods approach will be employed to collect data as discussed below. According to Kohlbacher (2009) case studies are a common method widely used in conducting qualitative inquiry in organisational studies and social sciences research. Moreover, case study research is a heterogeneous activity covering a broad range of research methods and techniques ranging from single to multiple case studies and varies in level of analysis. Babbier (2011) defines inductive reasoning as a "logical model in which general principles are developed from specific observations". Yin (2003) defines a case study as "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". Yin (2003) further suggests that "a case study design should be considered when (1) the focus of the study is to answer how and why questions (2) when the research has little control over events and cannot manipulate the behaviour of the participants involved in the study (3) when the focus of the study is on a contemporary phenomenon in a real-life situation and the researcher wants to cover the contextual conditions which they believe are relevant to the phenomenon under study (4) when the boundaries are not clear between the phenomenon and context." Table 3.1 below illustrates a situation where the case study method can be used in a study (Yin, 2003).

Table 3.1: When to make use of case studies Source: Yin (2003)

When to use a case study	Relation to this current study
When general circumstances of the phenomenon to be studied – is a contemporary phenomenon in a real life context.	This study focuses on a real life situation.
When the type of research questions generally answer "how" and "why" questions	This study asks "how" and "why" questions for the research question and sub- questions.
The extent of control over behavioural events when investigator has little or no possibility to control the events	The researcher in this study has no control over the adoption of virtual teams and virtual technology by organisations.

Yin (2003) distinguishes between three forms of case studies namely descriptive, explanatory and exploratory. A "descriptive case study presents a complete description of a phenomenon within its context", a description of how, when, where and why things happen. In line with the

aim of this study, a descriptive case study design will be used to describe and gain an in-depth understanding why South African organisations are not leveraging the benefits presented by virtual teams and virtual technology with a view to comprehend the underlying reasons for the slow adoption of virtual teams and virtual technology by these organisations, and establish how technological, organisational and environmental factors influence the adoption of innovative technology within these organisations.

3.4.1 Selection of cases

In other to gain a broader perspective from private and public sector organisations as to why South African organisations are not leveraging the benefits presented by virtual teams and virtual technology, this study will utilise a multiple case study. Yin (2003), Rule and Vaughn (2011) have noted that the choice of a multiple case study as compared to a single case study has distinctive advantages. While limitations exist, multiple case studies allow for more breadth and depth of focus, allow for comparison across cases, can accommodate methodological replication and above all the evidence from multiple case studies are very often considered compelling, hence the overall nature of the study is regarded as being more robust.

Rule et al., (2011) urge that a screening process is useful in deciding which cases to select in a multiple case study through viewing of websites, site visits, literature reviews or preliminary interviews with key participants. Hence the selection criterion of cases in this study was based on the organisation's local geographical presence in the Cape Town Metropolitan area. They also needed to be in a process of adopting or having adopted virtual teams and virtual technology. An initial site visit was to assess the suitability and relevance of each case to the research. The three cases selected had exemplary features of the phenomenon in this study. They were accessible and convenient to the researcher thus minimising possible constraints on the researcher in terms of travel expenses, time and access to the site. Other cases were not considered as suitable because they exemplified fewer or none of the above criteria.

3.4.2 Location of cases

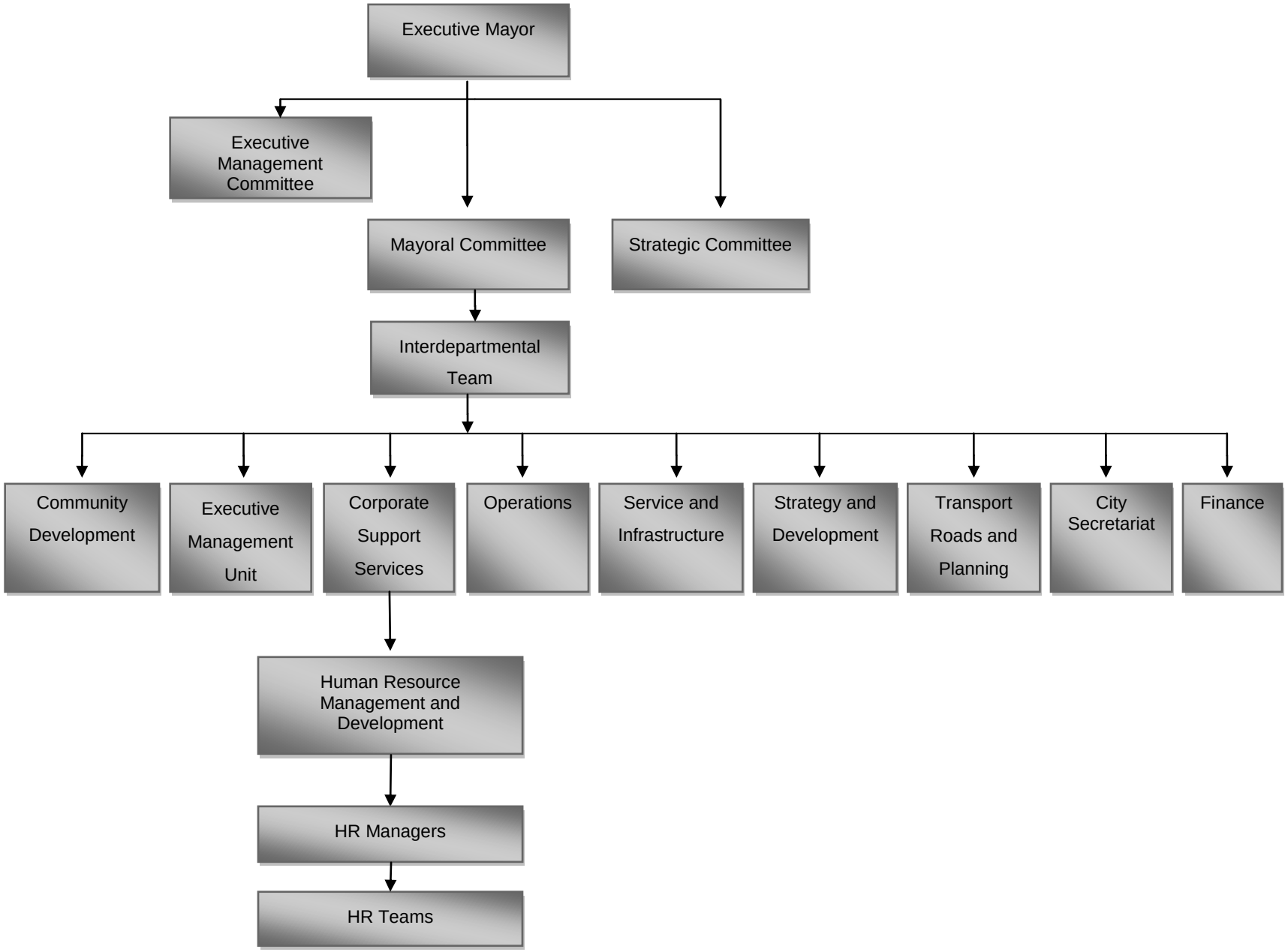
The cases selected are located in the Cape Town Metropolitan area of the Western Cape province of South Africa. The research location spans areas from the Northern suburb of Bellville to the Central Business District (CBD) of Cape Town, as shown in figure 5 below. Case 1 is situated in the CBD; cases 2 and 3 are both located in the northern suburb of Bellville. See Figure 5 below map of Cape Town metropolitan areas.

- **Case 1** is a local government institution which acts as an agent representing community interests, provides access to facilities, and serves the community with multiple offices across the Cape Town metropolitan areas. This study will be conducted at the organisation's Cape Town head office in the centre business district (CBD)
- **Case 2** is a leading life insurance company in South Africa, with offices nationwide and multiple branches in different areas of Cape Town and the Western Cape. This study will be conducted at the organisation's Cape Town head office in the northern suburb of Bellville.
- **Case 3** is a leading medical aid company in South Africa with branches spread across the country and multiple offices in different areas of Cape Town. This study will be conducted at the organisation's Cape Town head office in the northern suburb of Bellville.

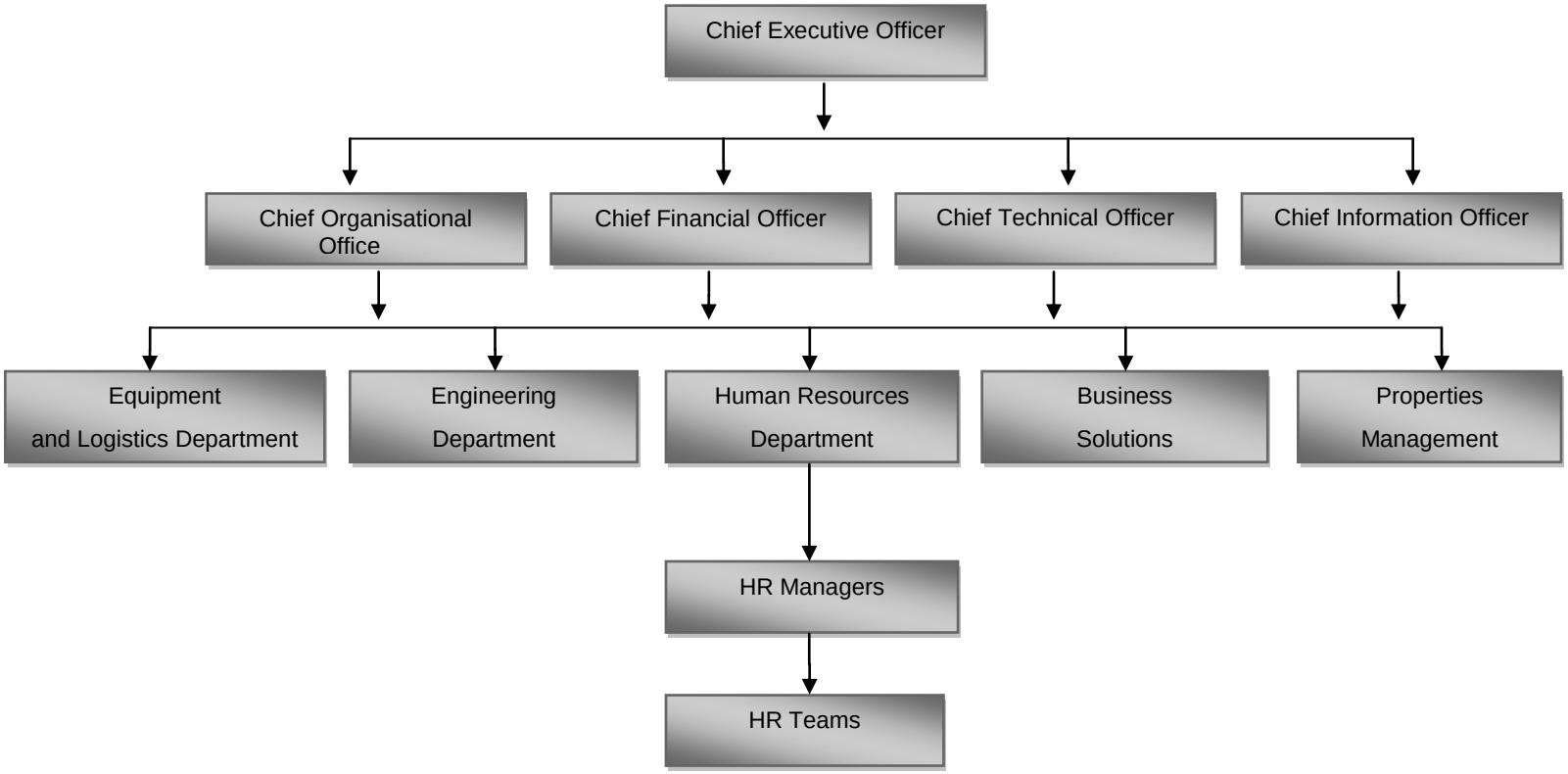
Figure 5: Cape Town Metropolitan area
(Adapted from Google map, n.d)

3.5 Unit of analysis

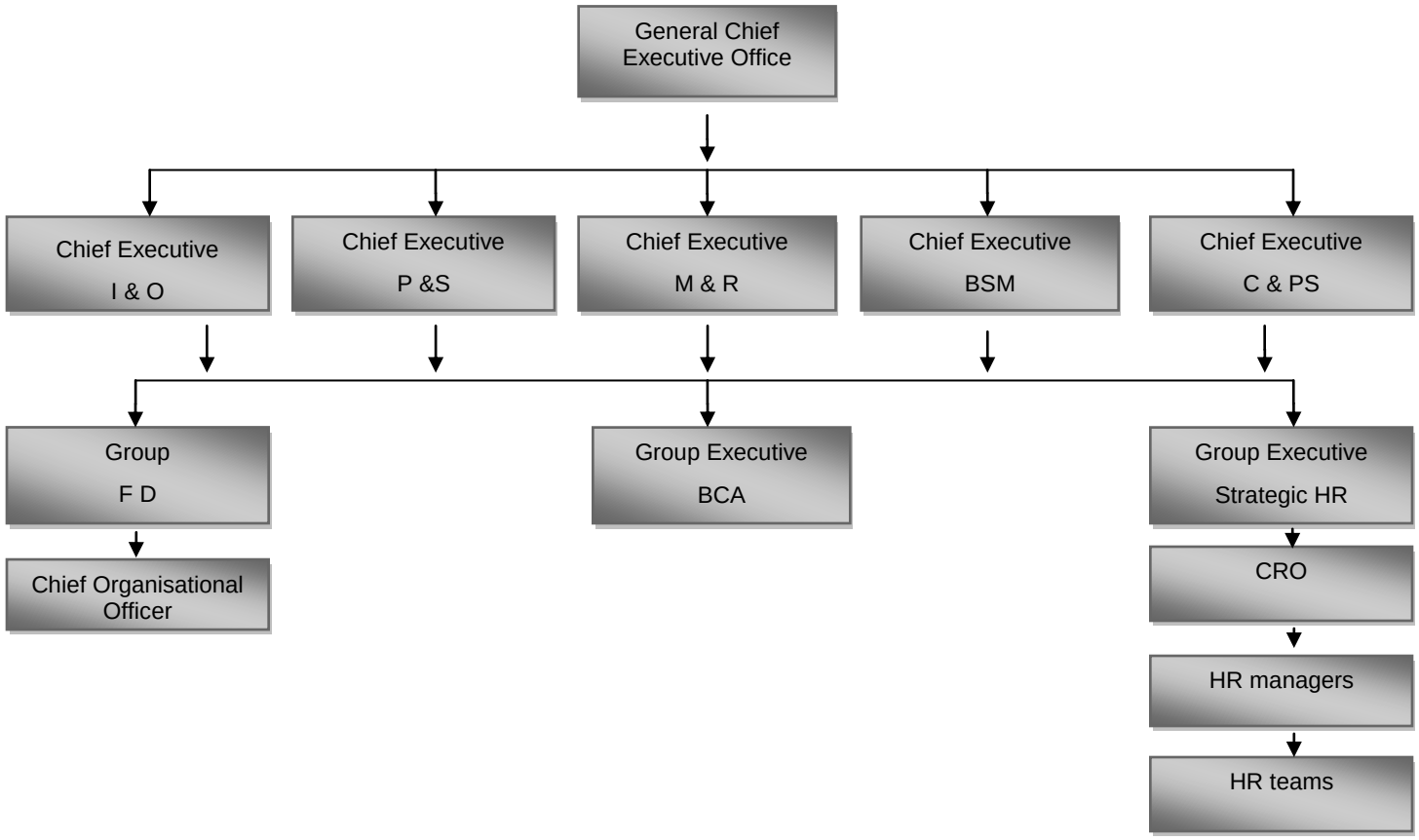
According to Babbie (2011:101) a “unit of analysis is the ‘what’ or’ whom’ being studied”. Babbie and Mouton (2010) accentuate that the unit of analysis in a case study is hardly ever isolated from or untouched by factors in the context in which it is rooted. The organisations structure diagrams below are intended to illustrate departmental boundaries around the unity of analysis. Therefore the target population for the unit of observation in each case in this study consists of individual employees in the HR department of these organisations working in virtual or co-located teams.



Case 1: Organisational Structure



Case 2: Organisational Structure



Case 3: Organisational structure

3.6 Sampling

Babbie (2004) describes sampling as a process of selecting units of observations, objects, documents and individuals for the purpose of collecting information for a study or project. The goal of sampling is to produce a representative sample of the target population in a study or project (Mouton, 2006).There are two main methods of sampling, namely probability and non-probability sampling.

3.6.1 Probability sampling

In probability sampling all members in a population have an equal chance of being selected for the sample, typically involving a random selection process such as a simple random sampling, systematic random sampling, and cluster random sampling and stratified random sampling method. A probability sampling method was not suitable for this study due to the high cost involved, the tedious and time consuming process and its unsuitability for the nature of the study and desired outcomes (Jackson, 2008).

3.6.2 Non-probability sampling

In social research non-probability sampling is often used in circumstances that do not allow for large scale probability sampling. Babbie (2011:199) points out that “non-probability sampling is any technique in which samples are selected in some way not suggested by probability theory”. The view is supported by Jackson, (2008:99) who defines non-probability sampling as a “sampling technique in which the individual members of a population do not have an equal likelihood of being selected to be a member of the sample”. Examples of non-probability sampling methods are convenience, quota, purposive or judgmental, sequential and snow ball sampling. A non-probability sampling method is suitable for this study for the following reasons: firstly due to the qualitative nature of this study, secondly, budget limitation, thirdly time constraints and fourthly workforce. Consequently purposive or judgmental sampling will be used in this study to select the unit of observation from the sample population.

3.6.2.1 Purposive or judgmental sampling

According to Babbie and Mouton (2009) purposive or judgmental sampling is a type of non-probability sampling method in which a researcher selects units to be observed based on the researcher’s judgment of the most useful, suitable and representative samples in a population. For this reason, a non-probability sampling method was employed in this study because it permitted the researcher to select forty (40) of the most suitable sample in the population who

possess the appropriate knowledge and skill, relevant to the researcher`s specific needs. A total of forty (40) human resources professionals working in virtual or co-located teams and five (5) senior managers in the human resource departments were selected from the three organisations. Figure 6 below shows the entire sample size and percentage sample in each case.

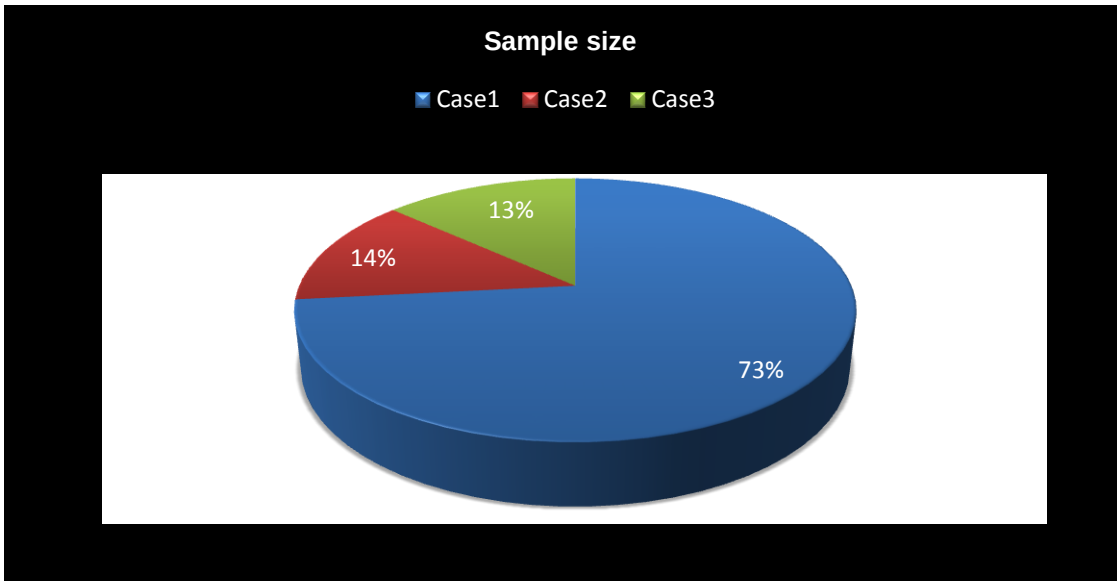


Figure 6: Sample Size

3.7 Data collection method

This study will make use of a mixed methods approach for data collection as defined by Creswell & Clark (2007:5) who state “mixed methods research is a research design with philosophical assumptions as well as methods of inquiry. As a methodology, it involves philosophical assumptions that guide the direction of the collection and analysis of data and the mixture of qualitative and quantitative approaches in many phases in the research process. As a method, it focuses on collecting, analysing, and mixing both quantitative and qualitative data in a single study or series of studies. Its central premise is that the use of quantitative and qualitative approaches in combination provides a better understanding of research problems than either approach alone”. Although several definitions of mixed methods exist, the above definition will apply in this study. Kroll and Neri (2009:34) accentuate that a combination of multiple methods of data collection in a study does not constitute a mixed method or mixed method study but a simple combination of multiple methods of data collection, for example the use of a rating scale questionnaire with categorical answers as well as open-ended questionnaires in a study does not automatically make it a mixed method study. This view is

similar to that of Creswell, Clark, Hanson and Guttmann, (2003) who emphasise that “collecting information from different sources, such as a systematic literature review and key informant interviews, does not automatically indicate a mixed methods approach. For the research to be considered a true mixed methods study there must be genuine integration of the data at one or more stages in the process of research”.

Creswell and Clark (2011) and Bulsara (2014) also noted that mixed methods data collection involves the collection of qualitative data via qualitative tools (e.g. interviews) and qualitative data via quantitative tools (e.g. questionnaires) concurrently or sequentially with equal weight or priority given in a qualitative or quantitative driven study. Mixed methods provides variation in data collection which leads to greater validity, provides answers to research questions from a multiple perspective when one methodology does not provide all the information required, ensures that there are no ‘gaps’ in the data collected and ensures that pre-existing as sumptions from the researcher are less likely. On the other hand, collecting data in a mixed method is time consuming, costly and requires certain skills. Against this backdrop, a mixed method approach was employed in this study to collect primary qualitative and quantitative data concurrently, with qualitative data carrying more weight than quantitative data. Semi-structured open-ended questionnaires were used to collect primary quantitative data. Semi-structured face-to-face interviews were conducted to collect primary qualitative data because it allows research participants to talk at length and share their in-depth views, perceptions and experiences as to why South African organisations are not leveraging the benefits presented by virtual teams and virtual technology. This approach was suitable for data collection because it enabled the researcher to obtain appropriate rich textual data and numeric data needed to provided answers to the research question, sub-questions and attain the aim of the study. Documents were collected and analysed to obtain secondary data. Table 3.2 below shows a summary of the data collected.

Table 3.2: Summary of data collected

Data collection tools	Case 1	Case 2	Case 3	Total
Interviews	3	1	1	5
Questionnaires	29	6	5	40
Document analysis	1	1	1	3

3.7.1 Interviews

Rule and Vaughn (2011) point out that the interview has long been the most popular method in qualitative research and is frequently used in qualitative case studies. Equally Babbie, (2011) defines the interview as “A data collection method encounter in which one person (an interviewer) asks questions of another (a respondent). Babbie (2011:326) further clarifies that in the qualitative interview the researcher develops a set of topics to be discussed in depth with the interviewee rather that use a set of standardised questions. In-depth interviews generally provide rich insights for exploring, identifying and understanding the interviewee’s point of view and attitude towards a particular phenomenon. They also allow greater control over the interview process, thus making it possible for the interviewer to collect supplementary information and also provide clarifications to the interviewees where applicable.

Bloom and Crabtree (2006) accentuate that open-ended semi-structured qualitative interviews are very often the sole data source for qualitative studies and are usually planned in advance at a designated time and location outside of everyday events. They are normally organised around a set of predetermined open-ended questions, with other questions arising from the conversation between the interviewer and the interviewees. Moreover, semi-structured in-depth interviews are the most widely used interviewing format for qualitative case studies and can take place either with an individual or in a group. Individual in-depth interviews permit the interviewer to deeply examine the social and personal views and opinions of the interviewee regarding a phenomenon. While group interviews typically occur in a focus group setting with several participants sharing personal knowledge, opinions and experience about a particular phenomenon. Consequently individual in-depth qualitative interviews were conducted with five (5) senior HR managers from the three cases in this study as part of primary data collection to elicit their opinions, perceptions and personal experiences in their own words why South African organisations are not leveraging the benefits presented by virtual teams and virtual technology. The interviews were recorded with a tape recorder for safekeeping and transcribed for data analysis to provide possible answers to the research question and sub-question as discussed in the first chapter.

3.7.2 Questionnaires

According to Babbie (2011) a questionnaire is “a document containing questions and other themes designed to solicit information appropriate for analysis”. Rule and Vaughn (2011) point

out that questionnaires provide a well-organised and cost effective way of collecting data from a bigger group of people simultaneously than would be possible to achieve by an interview of a focus group alone. The process involved a carefully constructed set of clear and explicit field questions. The questionnaire should be tested through a pilot trial and corrections made before the final draft is distributed to respondents. Questionnaires were useful in this study because the process allowed the respondents to complete the questionnaire in their own time. It also increased the subjects to be included in the investigation that would otherwise be excluded due to unavailability at the pre-arranged time of gathering.

3.7.2.1 Structured questionnaires

Babbie (2011:263) further makes a clear distinction between structured and unstructured questionnaires by stating that structured questionnaires are mostly closed-ended questions "in which the respondent is asked to select an answer from among a list provided by the researcher". Unstructured questionnaires are open-ended questions "which the respondent is asked to provided his or her own answers". Hence unstructured open-ended questionnaires were utilised in this study to collect primary quantitative data because of their suitability to the research in collecting relevant data needed to address the research problem and provide possible answers to the research questions presented in Chapter One. Forty (40) open-ended questionnaires were given to HR professionals in the three organisations. The aim was to obtain their views on the perceivable benefits of adopting virtual teams and virtual technology to organisations and their employees.

3.7.2.2 Document analysis

Documents belonging to case 1,case 2 and case 3 were selected and assessed before the interviews were conducted, and questionnaires distributed to enable the researcher to familiarise himself with the organisations structure and activities.

3.8 Data analysis

Data analysis and interpretation is a process which allows a researcher to construct an in-depth description of a particular setting or phenomenon from textual data through the identification of themes, and to generate explanations of thoughts and actions evident from information supplied by the research participants. Several methods of data analysis exist in qualitative research such as thematic analysis and content analysis. This study employs qualitative content analysis (CA) to analyse raw textual data collected from the open-ended face-to-face interviews and Statistical

Package for the Social Sciences (SPSS) to analyse the quantitative data collected from the open-ended unstructured questionnaires

3.8.1 Content analysis

Content Analysis (CA) is one of several research methods used in analysing textual data. This method has been widely used in many health studies such as nursing and nutritional education research. Other methods such as phenomenology, historical research, ethnography and grounded theory are also applied in qualitative data analysis. Content analysis describes a variety of analytical approaches consisting of interpretive analysis, impressionistic, intuitive and strict textual analyses. Content Analysis has been described as a technique which lies at the crossroads of qualitative and quantitative methods(Hsieh & Shannon, 2005:) which may be used with either qualitative or quantitative data in an inductive or deductive way to analyse textual data in print, verbal, or electronic format. Data utilisation in CA is usually obtained from interviews, observation, print media (manuals, books and articles), open-ended surveys, questionnaires and narrative responses. However, the choice of approach to be used in a study is determined by the purpose of the study. Furthermore qualitative content analysis is a method appropriate to analysing multifaceted phenomenon in case study research, especially when the researcher is working in an interpretive paradigm (Hsieh & Shannon, 2005; Kohlbacher, 2006; Elos & Kyngäs, 2008; Zhang & Wildemuth, 2009). Hence content analysis is appropriate for this study because it will enable the researcher to analyse participant's responses to the open-ended semi-structured interview questions.

Hsieh and Shannon (2005) defined "qualitative content analysis as a research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns". Qualitative content analysis is primarily inductive, grounding the examination of topics, themes and inferences drawn from them in the data. Moreover, qualitative content analysis samples typically consist of purposively selected textual data which can inform the research questions being studied. Furthermore, qualitative content analysis can enable a researcher to better understand the social reality of a phenomenon understudy in a subjective and scientific manner through the extraction of objective content from textual data to examine meanings, themes and patterns that may manifest in a particular text (Hsieh & Shannon, 2005;Elos & Kyngäs, 2008; Zhang & Wildemuth, 2009).

According to Hsieh and Shannon (2005) three approaches exist in qualitative content analysis, namely conventional, summative and directed.

- In a conventional content analysis approach, coding categories are derived directly from raw textual data. This approach is best suited to grounded theory development
- A summative content analysis approach involves the identification and quantification of keywords or content in a text with the goal of understanding the contextual meaning of the words.
- In a directed content analysis approach, data analysis begins with an existing theory or previous relevant research findings which provide guidance for initial codes. A distinctive value of this method is that the themes are drawn from the applied theory in a study, thus making it possible for the researcher to validate or extend the existing conceptual framework or theory.

Although all three approaches have similar preparation phases and are used to interpret meaning from the content of raw textual data, they differ in terms of the origin of codes, threat to trustworthiness and coding schemes. Similarly, Zhang and Wildemuth, (2009) accentuate that in a conventional and summative approach to qualitative content analysis, a theory may not be applicable to the study and themes may be drawn from the collected data or previous related studies. Therefore, a researcher's choice of the qualitative content analysis approach to be used in a study varies with the theoretical and substantive interests of the researcher and the type of problem being studied. The directed content analysis approach is suitable for this study because the researcher aims to identify inhibiting factors for low or slow adoption of virtual teams and virtual technology by South African organisations based on the context from the theoretical framework underpinning this study as discussed in Chapter Two. Thus the context from the theoretical framework underpinning this study becomes the themes of the content analysis for this, which can then be divided into sub-categories. The process uses inductive reasoning through the careful examination, identification, comparison of themes and categories emerging from raw textual data collected and transcribed by the researcher.

Content analysis has much strength, including the possibility of analysing a large quantity of textual data from multiple textual sources which can be analysed and utilised as corroborating evidence. Content analysis is particularly useful in analysing multifaceted phenomena, it offers researchers a flexible, pragmatic method for developing and extending knowledge of the human experience, it is often inexpensive, depending on the size of the study, compared to other

methods of data analysis, content analysis can be used to track messages overtime, measure changes or detect trends and successive content analysis on the same subject can be practicable in building databases. As with any data analysis method, content analysis has limitations such as that causal relationships between variables cannot be proven using this method, and conclusion from a content analysis study can only be generalised to the sample included in the study, depending on the nature of the study and limits to the inferences drawn. Undertaking manual content analysis can become labour intensive, especially if the material to be analysed increases or complex coding schemes are used (Hsieh & Shannon, 2005; Kohlbacher, 2006). The process of qualitative content analysis is illustrated in figure 7 below following Creswell's (2009:185) linear hierarchical approach of qualitative data analysis, building from the bottom to the top. This process is similar to that of Hsieh and Shannon, (2005) and Zhang and Wildemuth, (2009). These steps will be elaborated on in detail in Chapter Four.

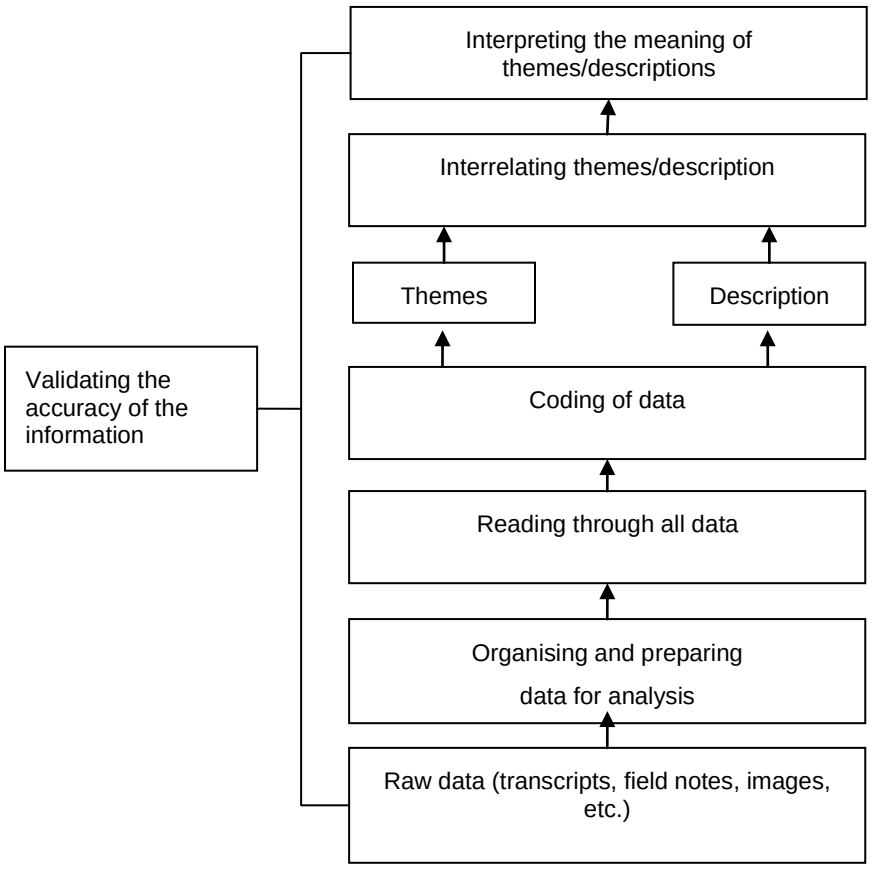


Figure 7: Content analysis steps (Adapted from Creswell, 2009)

Elos and Kyngäs, (2008:109) have noted that the researcher needs to decide at the beginning whether to analyse both the manifest content (meaning what the text is saying and often presented in categories) and the latent content (refers to what the text is talking about, such as expressions usually presented in themes). However, the decision of the researcher is usually guided by the aim and the research questions of the study. Based on the aim and research questions in this study the researcher will analyse both the manifest and latent content.

3.8.2 Content analysis trustworthiness

According to Zhang and Wildemuth, (2009:6) four criteria are used to evaluate the trustworthiness in qualitative research in relation to the procedures employed to generate the research findings. These criteria were proposed by Gubaand Lincoln, (1985) as cited in Zhang and Wildemuth, (2009) for evaluating interpretive research work. The concepts of credibility, dependability, transferability and conformability are used in qualitative research to describe and determine aspects of trustworthiness in content analysis findings. Elo and Kyngäs (2008) point out that the credibility of research findings deals with the adequate representation of the construction of the social world understudy. This entails selecting and designing appropriate data collection methods that are able to collect valid and reliable amount of data, establish clear procedures for coding and how well the categories and themes cover the data. To further increase the credibility of the research findings, the researcher needs to vividly describe the process of data analysis in great detail when reporting the research findings.

Zhang and Wildemuth, (2009:6) further state that transferability refers to the researchers ability to provide data sets and descriptions that are rich enough so that other researchers are able to make judgements about the findings. To enhance transferability, the researcher needs to provide a clear description of the phenomenon, the selection criteria of research participants, data collection methods and data analysis processes. Dependability refers to the coherence of the internal process and the way the researcher accounts for changing conditions in the phenomenon. Thus the researcher needs to maintain consistency in the research processes that lead to the research findings. Conformability refers to the extents to which the characteristics of the data, as posited by the researcher can be confirmed by others who read or review the research results. This can be attained by maintaining internal consistency in the research process such as the data, findings, interpretation and recommendations (Elo & Kyngäs, 2008; Zhang & Wildemuth, 2009).

3.9 Statistical analysis

Statistics is an ordinary language used in the numeric description of a population usually based on a sample of the population, a numerical description of some feature of a variable or variables in a sample from a larger population. According to Babbie (2011) “quantitative analysis is the numerical representation and manipulation of observations for the purpose of describing and explaining the phenomena that the observation reflects”. Babbie and Mouton, (2010) and Shell and Shell, (2011) point out that alternative computer programmes such as StatPro, SNAP, STATA and INTER-STAT exist for analysing social sciences data. However, Statistical Package for the Social Sciences (SPSS) is the most popular and important data analysis tool used in social sciences disciplines and widely used by many researchers.

Vember (2013) highlights the flexible and user-friendly nature of SPSS software features such as the two interconnected toggled windows of the data editor which allows for data screening and in turn helps to eliminate or minimise errors which may occur during data collection, data entry and data correction, thus making Statistical Package for the Social Sciences a viable option for many researchers because errors can be corrected and changes to the data set can be easily facilitated. Moreover, SPSS allows data to be presented in the following formats: box and whisker plots, graphs, histogram, stem and leaf diagrams and pie charts, etc.). Data could be presented in different forms, for example graphs, histograms, stem and leaf diagrams, box and whisker plots. For the purpose of analysing the quantitative data collected via semi-structured open-ended questionnaires in this study, SPSS will be employed to conduct statistical analysis of the questionnaires as part of the quantitative data analysis with the assistance of a qualified statistician.

3.10 Ethical consideration

In compliance with the ethics principles of the Faculty of Informatics and Design of CPUT as well as to general principles of science research, such as not manipulating the data collection process, data analysis process and the interpretations for the benefit of the researcher’s personal agenda. Ethical considerations were made in this study and this research did not breach any research ethics as such, and care was taken to observe all the ethical considerations. Letters of permission to conduct research were obtained from the three organisations in the study, and consent letters were given to all research participants which explained the purpose of the study as well as their rights before any interviews were conducted or questionnaires distributed. All participants were informed that their participation was voluntary

and any information conveyed will be strictly anonymous and no references will be made to specific individuals. The consent letter also explained that the responses will be used for academic purposes only and participants were encouraged to answer them to their satisfaction, and not under any influence whatsoever. The letter was then signed by the researcher and the research supervisor (Refer to Appendix A)

3.11 Chapter summary

This chapter has described the methodology and design used in this study. The research philosophy was discussed and inductive approach explained. The qualitative research method and the choice of qualitative case study were discussed. Semi-structured open-ended interviews and questionnaires were expanded on. The research setting was described; purposive sampling and how the participants were selected was explained. Data analysis methods were described and ethical considerations noted. The next chapter presents analysis and findings of the interviews and questionnaires with regard to the participants` thoughts with reference to the key contributing factors for the slow adoption of virtual teams and virtual technology by South African organisations.

CHAPTER FOUR
DATA ANALYSIS AND INTERPRETATION OF RESULTS

4.1 Introduction

This chapter presents data analysis and findings from data collected through qualitative interviews and questionnaires. Qualitative data was collected via semi-structured face-to-face in-depth interviews while quantitative data was collected using unstructured open-ended questionnaires. A total of forty-five (45) participants were selected from the three organisations in this study. Five (5) senior HR managers representing the three organisations agreed to be interviewed and forty (40) HR professionals from the three organisations were given an open-ended questionnaire to complete. All questions in the semi-structured interviews and the open-ended questionnaires were derived from the literature review and TOE dimensions as discussed in Chapter Two. Content analysis as discussed in Chapter Three was applied with all the various steps followed to analyse qualitative data collected from the interviews while quantitative data was analysed using Statistical Package for the Social Sciences. Each interview was recorded and transcribed. The entire data corpus consists of all qualitative and quantitative data from data sets, data items and data extracts collected via the open-ended questionnaires and semi-structured interviews.

This study sets out with the aim to explore and understand why South African organisations are slow in adopting virtual teams and virtual technology.

4.2 Research question.

The main research question in this study sought to determine: Why are South African organisations not leveraging the benefits presented by virtual teams and technology?

4.2.1 Sub-questions

The first, second and third sub-questions in this research were designed with the aim of understanding:

1. *What are the perceived benefits and drawbacks of adopting virtual teams?*
2. *Why are South African organisations slow in adopting virtual teams and virtual technology?*
3. *How can South African organisations overcome inherent problems in virtual teams?*

The questionnaires were designed to collect rich data which would provide answers to research sub-questions 1, 2 and 3 and the main research question from an HR professional and managerial perspective. The questionnaire was divided into three sections; biographical, technological perspective and perceived benefits and drawbacks (Refer to Appendix B)

- The biographical section was designed to collect biographical data such as occupational category, age, gender and educational level of the respondents.
- The technological perspective section was designed to get a general view of the respondents knowledge on Information and Communication Technologies (ICT`s), collaborative methods of communication and information exchange in an organisational context, what virtual teams and virtual technology are, and hardware and software used in the virtual work environment. The virtual communication tools currently in use at their organisations, and the various synchronous and asynchronous computer-mediated communication tools employed by participants to collaborate with colleagues within their organisations and beyond were assessed. Moreover, this section also sought to establish if respondents were part of a virtual or collocated team structure in their organisation.
- The perceived benefits and drawbacks section of the questionnaire was designed to provide answer to research sub-question one by eliciting respondent's views on the perceivable benefits and draw backs of virtual teams and virtual technology to an organisation and its employees as discussed in the literature review in Chapter Two and listed on Table 2.4
- The interview questions were designed to provide answers to research sub-questions one, two, and three and the main research question from a managerial perspective. The questions were divided into manageable questions linked to the Technology, Organisation, and Environment framework (TOE). These TOE factors demonstrate the manner in which TOE enables or inhibits an organisation's adoption of virtual teams and virtual technology and overcoming inherent problems in virtual teams.

4.3 Analysis and findings of quantitative data

A total of forty questionnaires were handed to HR professionals in the three organisations in this study to complete. Twenty nine were handed to HR professionals in **Case 1**and twenty-nine completed questionnaires were received back. Six questionnaires were handed to HR professionals in **Case 2**and six completed questionnaires were returned. Five questionnaires

were handed to HR professionals in **Case 3**and five completed questionnaires were returned. The data was captured on an Excel spread sheet and uploaded to SPSS software with the help of a qualified statistician to generate nominal, ordinal, categorical variables and percentages (Refer to Appendix C). Findings from the quantitative data analysis are discussed and presented below as follows.

4.3.1 Frequency distribution of gender

The graph below shows the gender of all HR practitioners from the three organisations who participated in this study. (See Figure 7.1)

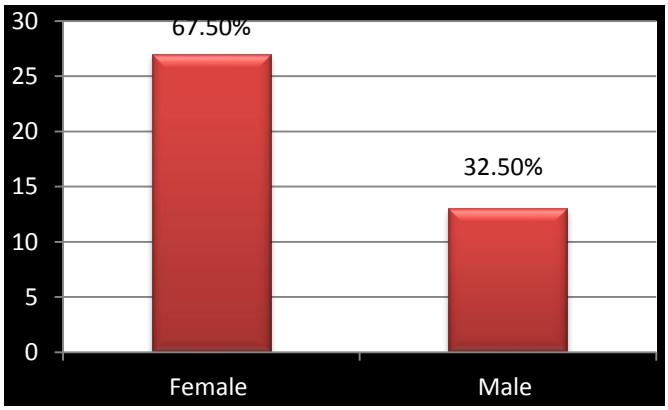


Figure 7.1: Frequency distribution of gender

The results indicate that females were the predominant gender in the sample population of the HR practitioners in all three cases with an overall average of 67.50% females and 32.50% males.

4.3.2 Age of participants

The pie chart below gives an indication of the age range of HR practitioners who participated in this study. (See Figure 7.2)

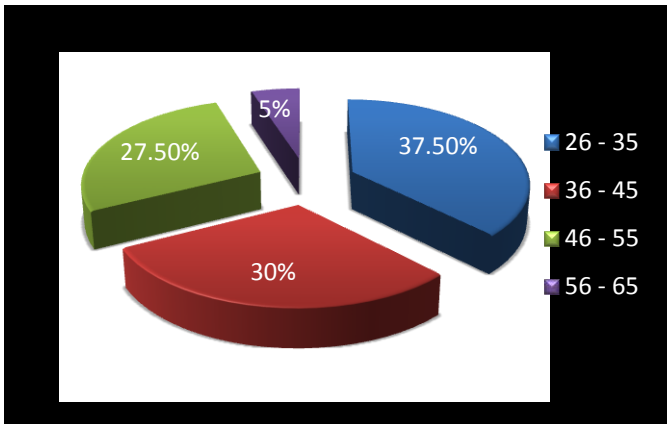


Figure 7.2: Age of participants

The results indicate that37.50% of HR practitioners who participated in this study were between the ages of 26 – 35, 30% were between the ages of 36 – 45, 27.50% were between the ages of 46 – 55 and 5% between the ages of 56 – 65.

4.3.3 Educational level of participants

The graph below shows the educational level of HR professionals who participated in this study. (See Figure 7.3)

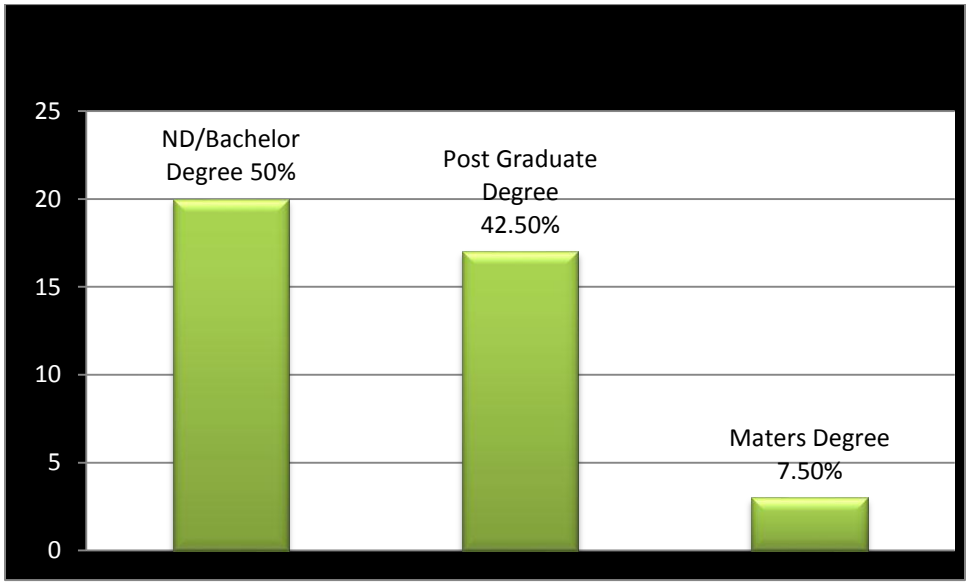


Figure 7.3: Educational levels of participants

The majority of HR professionals (50%) who participated in this study had a national diploma or bachelor degree, (42.50%) had a post graduate degree and (7.50%) had a master's degree.

4.3.4 Occupational category

In all three cases the HR professionals had a broad range of occupational categories within their respective organisations and teams. Their job titles range from HR managers, skills and development manager, recruitment and selection manager, talent manager, skills development officer, HR generalist, senior HR administrators, functional heads, senior principal professional, process efficiencies offices, and principal professional.

4.4 Findings from the technological perspective

This section of the findings focuses on the technological perspective. Questions were posed to the participants in the open-ended questionnaires relating to technology usage within their organisations. The intent was to determine the various asynchronous and synchronous virtual communication tools being used as a primary or secondary medium of communication at each organisation, and also to establish if the participants were members of a virtual or collocated team at their organisation.

The result shows that the respondents were very knowledgeable on the use of information and communication technology. They all made use of the internet on a daily basis and had internet usage policies within their organisations. They also had an extensive knowledge of virtual teams and virtual technology. They all pointed out that their organisations had suitable hardware/software tools for virtual work such as laptop computers, desktop computers, modems, internet browsers, system software, application software and programming software. They all knew what virtual collaborative tools were and pointed out that emails, video conferencing, teleconferencing, telephone, MS exchange, MSN messenger, MS LYNC, Novel GroupWise, e-newsletters, SharePoint, Intranet, Bulletin board, Skype, Internet relay chat, conference calls and other virtual collaboration tools as shown on Table 4.1 below are currently being used as primary and complimentary mediums of communication with colleagues within and outside their organisations, but that these have not replaced face-to -face meetings.

It is interesting to note that in all three cases in this study, e-mails were found to be the most often used primary asynchronous communication tool, used on a daily basis, while most synchronous communication tools were used as a complimentary medium to the primary asynchronous medium of collaboration. Additionally, all three cases had no virtual team structure in place but work predominately in co-located teams consisting of one to six members (in smaller teams) and one to ten members (in bigger teams) located in the same office building but on different floors, the same city but a different branch and the same country but in different

provinces. Moreover, collaborating with distant team members was mainly via e-mails and other asynchronous communication tools as the primary medium of collaboration, and video conferencing and other synchronous tools as complimentary mediums. On the other hand, the participants noted that none of their organisations had adopted a specific way of working virtually but made use of various virtual collaboration tools as indicated on Table 4.1 below. Therefore face-to-face meetings were still the preferred medium of collaboration with distant members.

Table 4.1: virtual collaboration tools

Virtual Communication Tools	Case 1	Case 2	Case 3
Group ware and share service	• Microsoft exchange • E-newsletters • Web CT • SharePoint • Bulletin board • Novel GroupWise	• Microsoft exchange • E-newsletters • MS LYNC • Bulletin board	• Intranet
Emails	• Emails	• Emails	• Emails
Telephone	• Traditional telephone • Conference calls • Voice over internet protocol (VOIP)	• Traditional telephone • Conference calls • Voice over internet protocol (VOIP)	• Traditional telephone • Conference calls • Voice over internet protocol (VOIP)
Web Conferencing	• Meeting space • Skype • Go to meeting	• Web x • Skype • Video calls • Video Conferencing	• Internet • Skype • Video calls • Video Conferencing
Remote access and control	• Internet relay chat (IRC) • Meeting space • PC anywhere		• Electronic Whiteboard • Meeting Space

Instant Messaging chat	• MS (LYNC) • Skype • AOL Instant Messenger • MSN Messenger • Group Blogging • LinkedIn	• Yahoo messenger • AOL Instant Messenger • MSN Messenger	
File Transfer	• Intranet • MS LYNC • Internet • Collaborative Websites • File Transfer Protocol(FTP)	• Intranet • SharePoint	

4.5 Finding of perceived benefits and challenges

On the question of perceived benefits and challenges of virtual teams and virtual technology to an organisation and its employees, this study found that the vast majority of HR professionals agreed with all of the main perceived benefits, and some the of drawbacks, of adopting virtual teams and virtual technology to an organisation and its employees as discussed in Chapter Two and listed in Table 2.4. Although a small percentage of HR professionals had differences of opinion on some of these perceived benefits and drawbacks, a significant percentage of them either strongly agree, somewhat agree or fully agree with these perceived benefits and challenges as illustrated on Table 4.2a and Table 4.2b.

Table 4.2a: Perceived benefits of adopting virtual teams and virtual technology

	Strongly Agree	Somewhat Agree	Agree	Don`t Know	Disagree	Somewhat Disagree	Strongly Disagree
1) Reduces organisation carbon footprint	38.46%	10.28%	35.90%	12.82%	2.56%	00%	00%
2) Improve work -life balance	27.50%	12.50%	45.00%	12.50%	2.50%	00%	00%
3) Reduce gender discrimination in the workplace	12.82%	5.13%	20.51%	30.77%	25.64%	2.56%	2.56%
4) Reduce racial discrimination in the work place	12.82%	5.13%	20.51%	30.77%	27.21%	2.56%	1.20%
5) Reduce travel time and cost	55.00%	22.50%	20.00%	00%	00%	00%	2.50%
6) Enable the recruitment of talented employees	12.50%	17.50%	45.00%	12.50%	12.505	00%	00%
7) Promote and encourage the employment of physically disabled individuals	17.50%	17.50%	45.00%	17.50%	2.50%	00%	00%
8) Promotes access to diverse skilful employees	15.00%	17.50%	37.50%	25.00%	2.5%	00%	2.50%
9) Promotes access to experienced employees	12.50%	20.00%	35.00%	22.50%	7.50%	2.50%	00%
10) Promote flexible work schedule and resources allocation	20.00%	30.00%	37.00%	7.50%	2.50%	00%	2.50%
11) Increase knowledge sharing and information dissemination within the organization	12.50%	40.00%	40.00%	7.50%	00%	00%	00%
12) Increased productivity	17.95%	20.51%	46.15%	15.38%	00%	00%	00%
13) Increase the organisations' competitive advantage	12.50%	35.00%	35.00%	15.00%	2.50%	00%	00%
14) Help develop better customer satisfaction	10.00%	30.00%	37.00%	17.50%	2.50%	00%	2.50%
15) Enhance cross-divisional and cross-functional business process interaction within the organisation	10.00%	20.00%	52.50%	15.00%	2.50%	00%	00%
16) Provide more flexible working hours for employees	25.00%	20.00%	42.50%	7.50%	2.50%	00%	2.50%
17) Provide unprecedented level of flexibility and responsiveness to organisations	17.50%	20.00%	45.00%	15.00%	00%	00%	2.50%

18) Attract better employees	12.50%	27.50%	32.50%	20.00%	7.50%	00%	00%
19) Provide organisation with a platform to respond quickly to a changing business environment	27.50%	17.50%	45.00%	7.50%	2.50%	00%	00%
20) Promote efficiency and team effectiveness	20.00%	20.00%	37.50%	15.00%	5.00%	2.00%	00%
21) Decrease employees work stress levels	12.50%	17.50%	32.50%	17.50%	17.50%	00%	2.50%
22) Provide employees with a greater degree of freedom	10.00%	17.50%	50.00%	10.00%	10.00%	00%	2.50%
23) Optimize individual team member's contribution in completion of business task to accomplishing organisational goal.	17.50%	25.00%	40.00%	12.50%	2.50%	2.50%	00

Table 4.2b: Challenges of adopting Virtual teams and virtual technology

	Strongly Agree	Somewhat Agree	Agree	Don`t Know	Disagree	Somewhat Disagree	Strongly Disagree
1) Ineffective communication in the absence of face-to-face communication	20.00%	17.50%	40.00%	7.50%	15.00%	00%	00%
2) Sometimes require complex technological applications.	25.00%	20.00%	45.00%	00%	10.00%	00%	00%
3) There is the need for HRD intervention because of lack of knowledge among employees about virtual teams.	17.50%	15.00%	45.00%	12.50%	7.50%	00%	2.50%
4) Decrease monitoring and control of activities	2.50%	17.50%	37.50%	17.50%	20.00%	00%	5.00%
5) Good teamwork can be a bit difficult to achieve	10.00%	5.00%	45.00%	22.50%	17.50%	00%	00%
6) Challenges in managing conflict	27.50%	17.50%	57.50%	12.50%	10.00%	00%	00%
7) Developing trust among team members is challenging	2.50%	17.50%	57.50%	12.50%	10.00%	00%	00%

	Strongly Agree	Somewhat Agree	Agree	Don`t Know	Disagree	Somewhat Disagree	Strongly Disagree
8) Difficulties establishing common ground on team tasks	5.00%	15.00%	45.00%	15.00%	20.00%	00%	00%
9) Require managing language differences	5.00%	17.50%	50.00%	5.00%	22.50%	00%	00%
10) Require managing cultural incompatibilities	5.00%	12.50%	50.00%	15.00%	17.50%	00%	00%
11) Structure may sometime not fit the organisation's operational environment	7.50%	20.00%	50.00%	12.50%	7.50%	2.50%	00%
12) Might create challenges and obstacles such as technophobia	7.50%	27.50%	42.50%	15.00%	7.50%	2.50%	00%
13) High set-up cost	17.50%	25.00%	37.50%	15.00%	5.00%	00%	00%
14) Challenges of determining the appropriate task technology fit	12.82%	12.82%	41.03%	25.64%	7.69%	00%	00%
15) Social isolation	5.13%	17.95%	38.46%	30.77%	7.69%	00%	00%

4.6Summary of Quantitative Data Analysis

The majority of the HR professionals who participated in the survey (67.50%) were female while 32.50% were male, and 37.50% of them were between the age of 26-35 years, 30% between the ages of 36-45, 27.50% were between the ages of 46-55 and 5% were between the ages of 56-65. Most of the HR professionals (50%) had a national diploma or first degree, (42.50%)had a post graduate degree and (7.5%) had a master's degree. The job title of the HR professionals who participated in this study includedHR manager, skills and development manager, recruitment and selection manager, talent manager, skills development officer, HR generalist, senior HR administrator, functional head, senior principal professional, process efficiencies officer and principal professional. All the three organisations in this study had suitable hardware and software for virtual work but had not adopted a specific method of working virtually or had virtual team structures in place. However, they all made use of various virtual communication tools to communicate / collaborate with colleagues. Asynchronous communication tools were still the ideal medium of communication / collaboration while synchronous communication tools were used as complimentary mediums, but none had completely replaced face-to-face meetings which are still widely preferred. The majority of the HR professionals were in agreement regarding the perceived benefits and drawbacks of adopting virtual teams and virtual technology.

4.7Qualitative Data Analysis

Personal face-to-face interviews were conducted with five senior HR managers from the three organisations in this study. The interviews were recorded on a tape recorder to safeguard the information. The recordings were transcribed verbatim for easy analysis. Content analysis was employed to analyse the data which was done by organising the data into themes, categories and sub-categories. The content analysis steps below were adopted from Zhang and Wildemuth, (2009), and carried out as outlined in the discussions and the tables.

4.8 Data coding and implications

4.8.1 Step 1: Organising and preparing the data.

The data preparation process entails transcribing raw data (interview tape recordings), verbatim or summative, into written text format. The five interviews conducted with the senior HR managers were recorded with a digital tape recorder. Afterwards the interviews were transcribed

verbatim into textual data, and then converted to a tabular format to facilitate the arrangement of the respondents (Refer to Appendix D).

4.8.2 Step 2: Read through all the data.

The researcher read thoroughly through the entire manifest and latent content of the textual data from the transcribed interviews to get a general sense of the information, the participant's trend of thoughts and tone of the ideas and to gain an impression of the overall depth and credibility of the data collected. The data was subsequently colour coded to assist the researcher in identifying relevant topics. (Refer to Appendix D)

4.8.3 Step 3 and 4: Data classification and coding.

The topics generated in step two in the form of a single word, a phrase, a sentence, a paragraph or an entire document should be completed and codes assigned to each theme which in turn assist in the clarification of objectives of the research and meanings extracted from the data. Themes in this study were constructed according to the dimensions of the technology organisation environment (TOE) framework discussed in the literature review in Chapter Two. TOE framework dimensions were used in the design process of the interview questions linking each question to the contextual factors.

4.8.4 Step 5: Develop categories and a coding scheme.

The purpose of creating categories is to find a way of describing the phenomenon, enhance understanding and create knowledge. Categories and a coding theme can be developed inductively from three sources (theories, the data and previous related studies). The categories and coding theme in this study were derived from the relevant theory applicable to this study or inductively from the data. Main categories were derived from the theory while sub-categories were identified inductively from the data through the data analysis process. A range of colours were used to highlight different sub-categories emerging from the data.

Table 4.3: Themes, categories, sub-categories for content analysis

Themes	Categories	Sub-categories
Technology	Availability of technology	Perceived benefits/ Drawbacks
	Characteristics	Set up cost Organisational fit
Organisation	Organisational Size	Availability of resources
	Communication process	Degree of centralization
	Formal and informal linking structures	Management commitment
	Slack	Organisational competency Technology competency
Environment	Industry characteristics and Market structure	Rapidly growing industries
		Competition
	Government regulations	Skill labour
	Technology Support Infrastructure	Suppliers of technology

Table 4.4: Themes colour coding

Themes	Colours Type
Technology	Orange
Organisation	Purple
Environment	Blue

A range of colours were used to colour code the themes as shown on Table 4.4 above. The colours assigned to each theme were used to identify single words, phrases, sentences, paragraphs or statements from the interview transcribe which describe each theme.

Table 4.5: Colour coding

Colour	Description
Green	Enabling (+)
Yellow	Enabling/Inhibiting (+-)
Red	Inhibiting (-)

As illustrated in Table 4.5 above, diverse colours were used to classify the status of each of the response. The signs positive (+), negative, (-) and positive/negative (+/-) were used to categorise the direction of various factors' influence on organisation technology adaption decision making such as enabling factors (+), Inhibiting factors (-) and enabling but occasionally inhibiting (+/-) to allow the researcher to state the implications of each of these factors as they emerge.

4.8.5 Step 6: Code all text.

Code a sample of data, check for consistency and revise coding rule as an interactive process. While new data continues to be analysed it is likely that new themes emerge. Coding rules were assessed to achieve consistence. Step four was repeated as new themes emerged from the interviews (Refer to Appendix E and Table 4.5 in steps 3; example: skilled labour, baby boomers etc.).

4.8.6 Step 7: Draw conclusions from the coded data.

"This step involves making sense of the themes or categories identified and their properties" (Zhang & Wildemuth, 2009). Implications and elaboration were drawn from the responses provided (Refer to Appendix F) All the relevant extracts from each transcript were placed under the appropriate heading on the list of final themes. The final list of themes, with associated extracts, formed the basis of the results. The themes were described and illustrated with extracts from the interviewees' accounts. These served as a true reflection of what was said during the interviews as shown in the example below.

A. Technological themes

Availability of technology / Perceived benefits and drawbacks

The interviewed candidates were generally aware of the many perceived benefits and some drawbacks of adopting virtual teams and virtual technology as discussed in Chapter Two (Table 2.4), such as the enhancement of organisational operational efficiency\HR functions like recruitment, the promotion of work-life balance, employment of people with disabilities, increased trust, reduction in organisations operational cost and so on.

For example R: (05) *"Yes, it's very difficult. It's very difficult, because I remember with the merger in the beginning, everybody travelled to learn to know each other better, to whatever, and now it's just VCs, VCs all the time. We have even got Link, that is working similar to Skype, where you just dial in and we talk to each other, we see each other, we have a conversation, whereas in the beginning I used to travel twice a week, sometimes three times a week, up, down, up, down. It takes me five hours to get there, five hours back, for one meeting".*

They argued that these perceived benefits also have drawbacks which must be taken into consideration before or during the adoption process.

For example (R: 03) "But I don't think it can just work on trust. Then you mustn't tell me that story, that you can work on trust because I guarantee you [IV laughs] if these people sit at home

and I will trust that they will work the 40 hours a week, sorry, unless you cannot measure the output you cannot work on trust".

Although interviewee's opinions differ slightly on these perceived benefits and drawbacks due to individual organisations circumstances, they all acknowledged it had or will have an impact in one way or the other. While numerous innovative tools for virtual working and virtual communication are available in the market place as shown in Table 2.3 in Chapter Two, the candidates interviewed noted the availability of technology such as Skype, Link, VCS and e-learning tools as illustrated in Table 4.1 currently in use within their organisation, but underline that lower usage, low uptake, high set-up cost and other factors contributed to the slow adoption of more innovative versions of these technologies

For example (R: 01) *"You need to find that money to invest, you need to show where the savings are going to come from, but the savings are not going to come from the capital budget. It's going to come from the operating budget".*

Characteristics/Set-up cost/Organisational fit

Most of the interviewees pointed to a lack of fit between standard organisational processes and the adoption/utilization of virtual technology within their respective organisations to the standardised nature of some of this innovative technology and the incompatibility to many standard organisation processes and HR functions which are characterised by standard departmental specifics. This view was mainly expressed by public sector interviewees.

For example (R: 02) and (R: 01) *"Especially how the city is structured. Not everything we have is technologically inclined. Yes, absolutely. We still need the manual labour in order for us to work [mobile phone rings] can I just" .R: "So, there is an inherent conservatism towards how work is structured in the city, ok?"*

Although interviewees uniformly agree that adoption and utilisation of virtual teams and virtual technology may significantly improve operational efficiency, a precautionary approach is advisable in selection and adoption of innovative technology suitable for standard organisational processes.

For example (R:01) "We tend to be quite embracing of new technology, but we do it in a very structured way, and going into virtual teams, um, starts impacting not on our use of technology, but on a whole approach to how one works, and how one works is that you would work every day, you are there for the citizen, you are in an office or you are in your workspace, wherever it happens to be, and you are expected to be there".

All interviewees equally agree that high adoption cost was a significant contributing factor to the slow or low adoption of virtual teams and virtual technology by their organisation; the cost of hardware, software, training, maintenance technology licensing fees etc.

For example (R: 01) "I mean, my sense is that the barriers to our technology here in the city are things like um, you know, if we are going to do a training course in Atlantis, Atlantis should have a big screen, then someone can sit here and deliver the training course and they have got a big screen, but a big screen is expensive. Yes. I mean, I looked at the cost of putting a screen that size into this meeting room, a smart screen, um, and it was R18, 000 or something, which for me was outside of my budget. Now, if you look at the fact that we've got over 600 workplaces, okay, we wouldn't want to install in every workplace, but if you look at the major nodes, even if you wanted to do 50, 50 x R18, 000 that's a lot of money. So the barrier to, I don't think the barrier to virtual working is the speed with which our computers function, because I think that would be a barrier just to work in, let alone virtual. You know, I don't think it's a barrier to communicating and sharing stuff. I think the barrier there is more the hardware cost".

Although all the interviewees uniformly agree that the high set-up cost of adopting virtual teams and virtual technology in general is an inhibitor, perceptions differ between interviewees from the smaller private sector organisations and those from bigger public sector organisations.

For example (R: 05) and (R: 02) "there is a lot of that already happening, so your question about the cost, I don't know if you do it on a bigger scale if that will be possibly a cost issue for us because we are technology people, almost everybody has got 3G cards, data cards, and they work that way and the company pays for it". (R: 02) "Yes, cost wise, and I think also the perception, because it's not, if you look at it really, it's not the cost, but it's a perception because we don't calculate the other costs that will add it up. It's a cost, yes, the reality of the cost, and again, the perception of that, and the mere fact that now we are not going back to the policies. We just make the decision, even before. You know, you don't try. I think we should try, and be able to take risks, and again in the city, it's a risk that's a factor. We don't want to take risks".

However, interviewees from the public sector organisations acknowledge that environmental factors such as rapid growth within their organisation have necessitated the adoption of innovative human resources information systems (HRIS), technology such as SAP, to replace older systems.

For example (R: 01) "Unless there is technology that pushes you, unless circumstances push you, you won't always go and look for that. So, with SAP we were pushed there. We had to change what we were doing, so we had to look for something".

B. Organisational themes

Organisational size/ Available resources

The size of an organisation was found to have an impact on the adoption of virtual teams and virtual technology. This is attributed to the views of the interviewees who agreed that bigger organisations are more likely to adopt innovative technology due to the size of the organisation's workforce, and availability of resources such training facilities.

For example (R: 04) "We actually do that training and development ourselves. So the business owner here, talent management, we take responsibility for that training".

However, some of the interviewees noted that bigger is not always better because of the complexity in bigger organisations.

For example (R: 01) "Another factor is because we are government, we have limited budget, and within our limited budget, to start spending money on something new, is always difficult. If there is a big push, then you motivate why you have to spend money on something new but um, going into virtual teams, you need to invest".

Organisation's human resource capability (e.g. information technology skills, communication skills and information system expertise) was found to be a major area of skills shortage, particularly pronounced in public sector organisations, thus training was considered by all interviewees as vital in achieving a sustainable human resources capability.

For example (R: 03) "They will definitely (be) needing training, we are training the people, they are not allowed to use our systems until they have been trained and assessed, then we profile them. We will not give them the system to operate on if they are not trained. So we have put in place a proper training system".

Communication processes / Degree of centralisation

The degree of centralisation was found to be both an enabler and an inhibitor as pointed out by the interviewees who stated that major decisions such as the adoption of virtual teams and virtual technology are made at higher hierarchical levels in their organisations. This was particularly pronounced in public sector organisations with a more bureaucratic organisational

structure and a centralised decision making process than their private sector counterparts who for the most part have a flatter organisational structure.

For example (R: 04) "The city is a bureaucratic structure and it's all about hierarchy and delegations. So that's not, you know, systemically that's how the city is actually set up". (R: 05) "No, no, we are much more flat, and we also have a matrix model. So, you will have your line manager you are reporting to but you are supporting various other functions and people. So, anybody can ask you anything".

However, some public sector interviewees indicated that at departmental level, structures are a little flatter but reiterated that the bureaucratic and centralised decision making nature of the organisation has created a deep-rooted red tape culture.

For example (R: 01) "Well, I've got a very flat structure. I've got about nine people who report to me. No, the organisation has got a pretty flat structure, the city. We worked hard on that. We've tried to flatten it as much as we can. The bureaucracy comes with the decision making".

Although interviewees had slight differences in opinion on this question all agreed that organisational structures have an impact on the organisation's adoption of innovative technology.

For example (R: 03) Oh yes, and if you asked me if a flat structure is more effective than a bureaucratic structure I can say yes, far more. But in terms of virtual technology, it will make, it can still work. I mean, it will be a bit more steps, but it can still.

Formal and informal linking structures / management support

An interesting finding in this study was that all interviewees acknowledge that management support was critical in an organisation's adoption of virtual teams and virtual technology. However, they stress that the lack of executive management support and lack of informal linking structures within their respective organisations was a key contributing factor to the low or slow adoption of virtual teams and virtual technology.

For example (R:02 "the fact that now we are working in the political environment, that police environment, the city manager must first approve this, that's why I'm talking about the bureaucracy. I am the manager, the first line manager, which is level three. Um, my director, who is level two, must approve that. The ED who is level one must approve that, the city manager must approve that, the main core member must approve that, and then the council must approve. Can you see that? "

One unanticipated finding was that executive management in both the public and private sector organisations in this study were predominantly “baby boomers”, as pointed out by the interviewees.

For example (R: 05) “So um, which technology is supporting, but I think the biggest barrier at the moment is that it is that generation, what is it, the baby boomers, in that level, that come through 30 years of work. That’s how they worked 30 years ago, that is the biggest resistance”

However, interviewees consistently argued that the “baby boomers” generation in senior management were partially to blame for slow or low adoption of innovative technology because they are decision makers and represent a source of support and funding which is vital for the adoption of virtual teams and virtual technology by an organisation.

For example (R: 05) “You can still understand it from the previous generations that are not IT minded.

I think it is, if you ask my view, it is most of the managers are your previous generation that used to work eight to five, and if you are not here before eight, you're actually not working enough. If I leave the office at five or six and you already left, how you can leave, we have got so much work to do. So, they haven't made that switch that a person can still work”

(R: 04) “So I think probably, I don’t think there is a lack of will; I don’t think there is a lack of understanding what such technology could mean for the organisation. I think it is more restraints such as um, funding [coughs]. Not all our sites for example are set up at this stage um, that people, that there are even computers and stuff. I mean, it’s a process. It’s rolling it out across the city”

There was agreement among interviewees that management support and funding were of fundamental importance in organisations adoption of virtual teams and virtual technology, thus making it an enable/ inhibitor.

Slacks/ Organisational competency /Technology competency

The availability of slack resources was found to have a positive impact on organisations ability to adopt innovative technology but did not automatically lead to the adoption of virtual teams and virtual technology by the organisations in this study due to other compounding factors.

For example(R: 01) “We tend to be quite embracing of new technology, but we do it in a very structured way, and going into virtual teams, um, starts impacting not on our use of technology, but on a whole approach to how one works, and how one works is that you would work every

day, you are there for the citizen, you are in an office or you are in your workspace, wherever it happens to be, and you are expected to be there. Virtual teams presuppose something quite different. It's actually challenging that nature of work".

Interviewees acknowledge that their organisations human capital has got the fundamental skills to utilize virtual technology but noted that continuous training is needed to achieve organisational competence.

For example (R: 04) "Then um, in terms of our training issues, and we are increasingly making use of e-learning, so um, both within the city and for example with, with our tertiary partners. So for example the people who have to go on the MFM competency training um, and you know, need to do this like at university, Stellenbosch or whatever, they have made available all different kinds of learning um, possibilities, including e-learning and telematics, etc".

Interviewees also stated that their organisations had adoption some form of innovative technology but usage within the organisation was still low particularly in public sector organisations.

For example (R: 01) "We have it, but it's minimal. Its use is low. Will show you, but its use is low. That's the concern around it, and that's why, you know, I say that there is slow take-up, and I know for myself, I don't make extensive use of this. But I would expect younger people to, and I don't think they are. I don't know, maybe they are, maybe I'm wrong. [IV laughs] Maybe I'm wrong. Oh damn, I'm doing something very stupid".

C. Environmental themes

Industry characteristics/ Market structures/ Competition/ Rapidly growing industries

Industry characteristics and market structure was found to be both an inhibitor and enabler in an organisations adoption of virtual teams and virtual technology, particularly in the private sector due to strong competition in a rapidly growing industry. However, the public sector interviewees noted that their organisations had adopted various virtual collaboration tools but have not adopted a specific method of working virtually.

For example (R: 05) "Yes, it's very difficult. It's very difficult, because I remember with the merger in the beginning, everybody travelled to learn to know each other better, to whatever, and now it's just VCs, VCs all the time. We have even got Link, that is working similar to Skype, where you just dial in and we talk to each other, we see each other, we have a conversation,

whereas in the beginning I used to travel twice a week, sometimes three times a week, up, down, up, down. It takes me five hours to get there, five hours back, for one meeting".

Public sector interviewees share similar views but stated that circumstances had push their organisation to adopt SAP (an innovative human resources management system) and other virtual collaboration tools.

For example (R: 01) "Unless there is technology that pushes you, unless circumstances push you, you won't always go and look for that. So, with SAP we were pushed there. We had to change what we were doing, so we had to look for something" and (R: 03) "You are right, and it has already affected us. We have all got a type of Skype, they call it Link. Now, we will, instead of meeting, we will Skype people and we will sit in talk with a person in Johannesburg. We will have interviews via Skype. So we set up a room, and we will all sit from our side there, the applicant will sit on the other side and we will interview him. We can see the applicant, we can interview him. We don't have to fly the applicant down and pay for all sorts of accommodation costs and flight costs. Yes, and we've got e-learning, so instead of everybody coming to a class, we can say to him log onto the system, the e-learning is loaded, you can see it there. I must run".

Technology support infrastructure / Supplier of technology

The unstable nature of the available technological support infrastructure was found to have a negative impact on organisation adoption and utilisation of virtual teams and virtual technology as stated by interviewees.

For Example (R: 03) "No, not yet. Not yet. The problem with uh, South Africa is what they call the last mile, Yes, they talk about the last mile, and that is you've got a fantastic cable from Europe to Africa, our sea cable, Seacom. It has got a very big bandwidth for Internet. In South Africa ourselves, we have got broadband running down the streets everywhere, but between your street in front of your house and your house and your study, you've got only two options. There is either a post office line or a 3G line. That's your option. That's the last mile"

Although various suppliers of technological services are available, the interviewees pointed out that the unreliable nature of supplier's network poses significant challenges to organisations utilisation of these technologies.

For example (R: 05) "I think it's not as stable as we want it, um, and, but I think even MTN, we have got a contract with MTN. They drop us at times, at critical times. Um, and we have to provide a service to the entire organisation of 16,000 people, and call centres and businesses.

So that's not even our own staff working from home, it is people out there. So, if you work from home and the technology um, fails you, you can actually get in your car and come to work if you have too".

(R: 02) 'Yes. I think also the network, our system needs to be in place, because I remember I had an interview with one of the service providers and we couldn't hear the person, we couldn't even see. So again, the environment should also be able to accommodate that. Um, let's say you set up the meeting now, you all, I mean, you set up everything, and then on that day, the network is down, technology. So our system also is not 100%. We have some challenges".

All interviewees agreed that technological support infrastructure needs to be improved for suppliers of technology to provide a reliable service in other to encourage the continuously adoption and utilisation of innovative technology by organisations.

Government regulation/ Skilled labour

Interviewee`s were not aware of any existing government laws or regulations which restrain organisation adoption of innovative technology. However, some public sector interviewees noted that the conservative and political nature of public sector organisations has drawbacks.

For example (R: 02) "Bureaucracy, and the fact that now we are working in the political environment, we have to make sure that people are around"

(R: 01) "We are a government organisation, and by its nature, government organisations tend to be conservative, okay, um, conservative financially, conservative in taking up new things"

Equally important as noted by the interviewees was the problem of the shortage of appropriate skills.

For example (R: 05) "I think we have got a massive skills problem in the country. We have got certain um, individuals that are flooding the market with skills that we don't need, and there are others that we have got a massive shortage."

Interviewees also noted that their organisations had invested in training and development programmes to minimise the effect of skills shortages on the organisations ability to adopt and utilise innovative technology.

For Example (R: 03) "*You know, that's the foundational skills that we have, is they come in with cellphones, um, and with their own emails. If people can figure out how to go online and get an email address and use email but the IT department runs continuous training they do it in conjunction with HR, but we don't do the training.*"

4.8.7 Step 8: Report your methods of findings.

Zhang and Wildemuth, (2009) recommend that the researcher should report practices concerning the coding process supported by the descriptions and interpretations to provide the reader with an understanding of the phenomenon understudy.

Data coding was based on the Technology Organisation and Environmental (TOE) dimensions as discussed in Chapter Two. Themes and categories were derived from the theory while sub-categories further emerged from the data, and as data analysis continues as content analysis the steps outlined above were repeated. Different colours were used to determined implications of responses and supplementary description. Response and implications were classified using the following colours: Red was used to highlight paragraphs, words and sentences with inhibiting factors as mentioned by interviewees. Green was used to highlight paragraphs, words and sentences with enabling factors as mentioned by interviewees. Yellow was used to highlight paragraphs, words and sentences where the interviewee's was not too sure if the factor was an enabler or inhibitor or if the factor can be interpreted as being enabling but occasionally inhibiting (Refer to Appendix G). The sign shown next to each of the contextual factors on TOE framework (Figure 8 below) indicates the direction of influence of the contextual factor on an organisations adoption of virtual teams and virtual technology as derived from the results of our

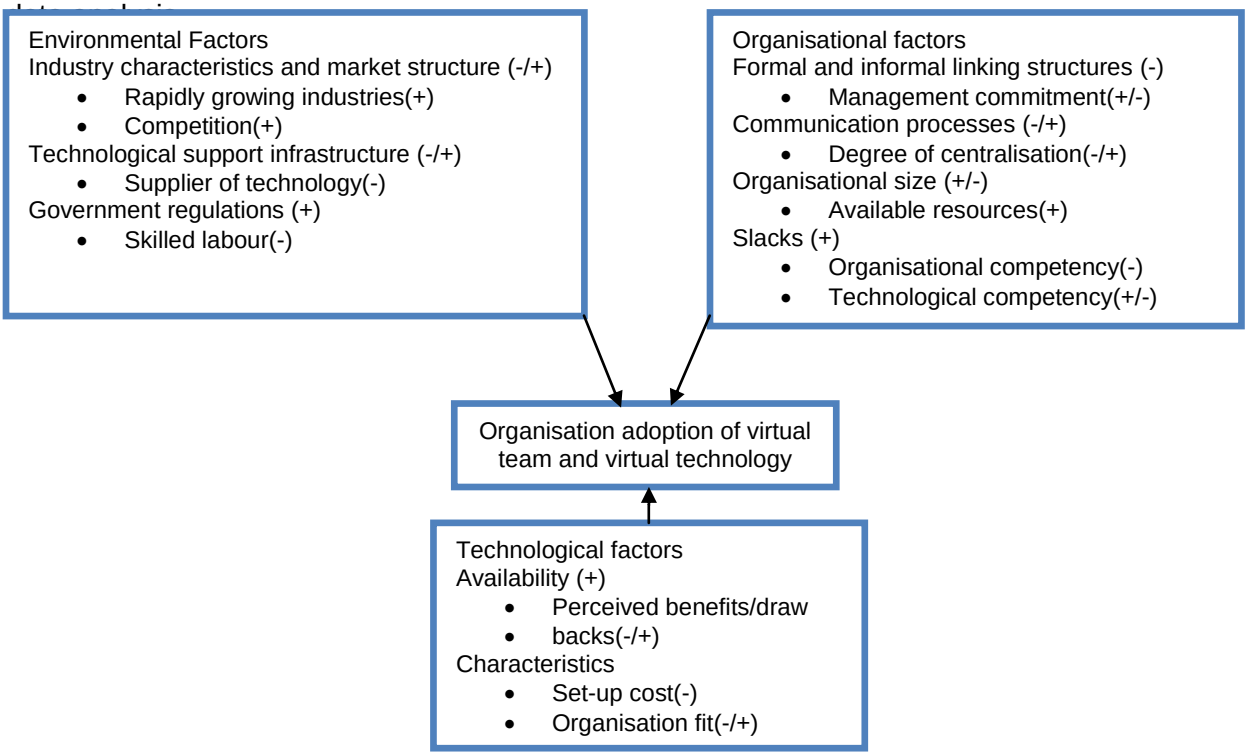


Figure 8: Enabling and inhibiting factors on organisational adoption of virtual teams and virtual technology. A case study of South African organizations

The contextual factors discussed in the preceding section and represented in Figure 8 above stem from the results of data analysis of the cases in this study which seek to explore and understand why South African organisations in Cape Town are slow in adopting virtual teams and virtual technology. On top of their inhibiting and enabling impact, these contextual factors were found to be interdependent, thus creating a multifaceted web of connections which influence on organisations adoption of virtual teams and virtual technology as discussed below and summarised with the aid of a conceptual map adopted from Troshani et al., (2011). The idea behind the conceptual map as shown below (in Figure 8.1) was to demonstrate how these contextual factors interrelate with each other.

Technological factors

The technological section of the interview focused on the TOE factors in (Figure 8) above. Interviewees were asked questions relating to these technological factors to established if there were enabling or inhibiting or can be interpreted as being enabling but occasionally inhibiting an organisation adoption of virtual team and virtual technology. It was found that technological factors such as perceived benefits, availability of technology, organisation fit, vendor support, affordability, compatibility and operational efficiency can positively impact on an organisations adoption of virtual teams and virtual technology, thus creating a credible business case to gain management support and commitment in the organisations adoption of innovative technology. While high set-up cost, incompatibility of technology with standard organisations processes, licensing fees, hardware and software cost, training and maintenance cost were found to have a negative impact on organisational adoption of virtual teams and virtual technology, especially in bigger organisations, hence creating an overt effect on management support and commitment (Refer to Figure 8.1) below.

Organisation factors

The organisations section of the interviews as shown in Figure 4.4above looked at organisation size, availability of resources, communication process, degree of centralisation, formal and informal linking structures, management commitment, slack, organisation competency and technology competency. As shown on the conceptual map (Figure 8.1) below, organisation size had a positive impact on the organisations ability to adopt virtual teams and virtual technology due to the availability of resources. However, the degree of centralisation was found to have a negative and a positive effect on the organisations adoption of innovative technology, particularly in bigger organisations with bureaucratic structures and centralised decision making.

The degree of centralisation was also found to have an impact on management support and commitment. Organisations human resources capability was found to have a negative effect on their ability to adopt innovative technology but could be enhanced through training and vendor support thus positively impacting on organisation technology competency.

Environmental factors

The environmental section of the interviews as shown in Figure 8 above focused on the impact of environmental factors on organisations adoption of virtual teams and virtual technology. Industry characteristics and market structure was found to have a positive and negative effect on organisational adoption of virtual teams and virtual technology, particularly in small organisations due to competition in rapidly growing industries. Government regulation was found to have a positive impact on organisations adoption of innovative technology, thus increasing management commitment and support. However, a shortage of appropriate skills and unreliable suppliers of technology had negative effects on organisations adoption of virtual teams and virtual technology as illustrated on the conceptual map below (Refer to Figure 8.1).

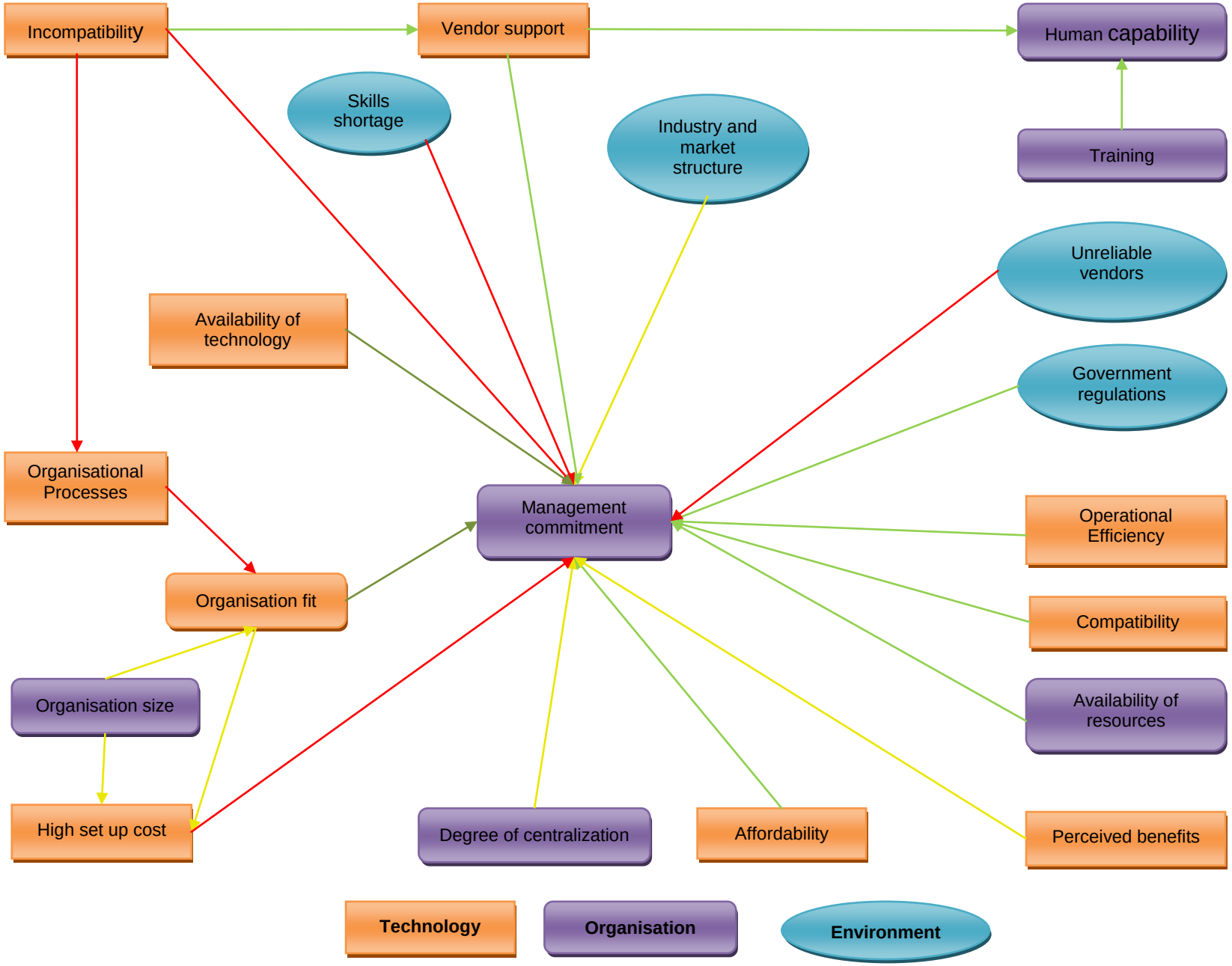


Figure 8.1: Interactions among contextual factors impacting organisation adoption of virtual team and virtual technology, case study of South African organisations

4.5 Document analysis

Documents were reviewed to established organisations structures and activities. The documents reviewed consisted primarily of organisational structure diagrams to find out if the organisations had a bureaucratic or flat organisation structure.

4.6 Summary of Qualitative Data Analysis

Qualitative data was transcribed verbatim, content analysis employed, and themes, categories and sub-categories were derived from the theory (TOE) while new ones emerged from the data during content analysis, such as “baby boomers”. The interviewees noted technological factors such as perceived benefits/drawback and organisational fit as both an enabling and inhibiting factor, availability of technology was found to be an enabler and set-up cost was found to be an inhibitor. Organisational factors like organisational culture, formal and informal linking structures, and organisational competency were denoted as inhibiting factors whereas slacks and availability of resources were found to be enablers. Management commitment, communication processes, degree of centralisation, organisation size and technological competency were found to be both an enabling and inhibiting factor depending on the circumstances. Environmental factors such as shortage of skilled labour and suppliers of technology were found to be inhibitors, while regulatory compliance, competition, rapidly growing industries and government regulations were found to be enablers. Industry characteristics and market structure, successful adoption and technological support infrastructure were found to either be an enabling or inhibiting factor depending on the circumstances. These factors were also found to interact with each other thus creating a complex interconnected web as shown in the conceptual map.

4.7 Chapter summary

This chapter has presented a summary of the findings of the qualitative interviews and findings of the quantitative questionnaires. It also reports the background information provided by the interviewees. It has described the interviewee’s thoughts about reasons for the slow adoption of virtual teams and virtual technology by South African organisations in Cape Town and their responses to the various questions linked to the TOE framework contextual factors. It has further indicated some of the key contextual factors that interviewees believed contributed to the slow adoption. The following chapter will discuss the findings and interpretation of the data analysis and contrast it with the literature reviewed in Chapter Two.

CHAPTER FIVE
FINDINGS AND DISCUSSIONS

5.1 Introduction

This study sets out with the aim of exploring and understanding why South African organisations are slow in adopting virtual teams and virtual technology. The research began by examining the context of the research. To further the arguments in the context of this research, a comprehensive literature review with great emphasis on the Technology, Organisation and Environment (TOE) framework helped to develop a more specific set of research questions which needed to be answered to fulfil the aim of the study. Chapter Three looked at the appropriate methodology and design suitable for the selection of research cases, research participants, data collection tools and data analysis methods needed to provide answers to the research questions and objectives and to attain the aim of the study. Analysis and findings of participant's thoughts and key contributing factors to the slow adoption of virtual teams and virtual technology by South African organisations were covered in Chapter Four. This chapter presents the findings and interpretation of the results presented in the preceding chapter through the examination of key themes. The implication and significance of these findings will be compared to the literature reviewed in Chapter Two. It specifically examined interviewees` thoughts on how these themes have influenced the slow adoption of virtual teams and virtual technology by South African organisations.

The findings are linked to the theoretical framework which assisted in contextualising each factor independently. This highlighted the dependency of contextual factors which led to the conceptual map that was used and the emergent conceptual map that helps to illustrate how gaps in the interdependency of contextual factors in the theory are bridged.

5.2 Themes developed

The themes employed in the data analysis were adopted from the Technology Organisation and Environment framework TOE as reported on in the literature, while other sub-themes emerged from the data analysis.

5.2.1 Technological context

The technological context focuses on various contextual factors and the ways in which they enable or inhibit an organisation's adoption of technology, such as the availability of technology, characteristics, perceived benefits/ drawbacks, set-up cost and organisational fit. The emphasis

of the technological context relates to the operationalisation, possible realisation of benefits and current organisational adoption capabilities. This means that decision makers in organisations assess the characteristics of technological adoption in terms of potential gains (meaning the benefits an organisation expects to get after adopting a new technology) and possible barriers (refers to the complexity of technological adoption and the compatibility of the technology with the organisation exiting technological competency) (Tan, Lin & Eze, 2009; Troshani et al., 2011 & Arpaci et al., 2012; Baker, 2012). Participants in this study were asked manageable questions linked to technological context factors in both the interviews and the questionnaires (Refer to Appendix C and E) and the objective was to determine if these contextual factors enabled or inhibited their organisation's adoption of virtual teams and virtual technology.

5.2.2 Organisational context

The organisational context refers to the characteristics and resources of an organisation that may enable or inhibit the adoption of innovative technology. Common organisational characteristics such as formal and informal linking structures, management commitment, organisational culture, communication processes, degree of centralisation, organisational size, availability of resources, slacks, organisational competency and technological competency. These organisational context factors can either enable or inhibit an organisation's adoption and implementation of new technologies in several ways (Barbosa & Musetti, 2010; Troshani et al., 2011; Arpaci et al., 2012; Baker, 2012).Questions were posed to participants in the qualitative interviews (Refer to Appendix E) to find out if these factors were enabling or inhibiting their organisation's adoption of virtual teams and virtual technology.

5.2.3 Environmental context

The environmental context looks at the external environments in which an organisation conducts its business and how external environmental factors such as industry characteristics and market structure, technological support infrastructure, government regulations, rapidly growing industries, competition, supplier of technology and skilled labour influence it. These factors can provide an organisation with opportunities for technological innovation but can also present constraints on technological adoption (Oliveira & Martins, 2010; Baker, 2012; Troshani et al., 2011; Arpaci et al., 2012). Participants in the qualitative interviews were asked questions related to these environmental factors (Refer to Appendix E). The aim was to establish if these environmental contextual factors were enabling or inhibiting the organisations adoption of virtual teams and virtual technology.

5.3 Findings technological context

5.3.1 Perceived benefits and drawbacks

This study found that the perceived organisational benefits and drawbacks of adopting virtual team and virtual technology either enable or inhibit organisations ability to adopt virtual teams and virtual technology. This emerged from findings of the qualitative interviews with participants and supported by findings from the quantitative questionnaires. All participants generally agreed with most of the many perceived benefits and drawbacks of adopting virtual teams and virtual technology to an organisation and its employees. However, some participants had mixed views on some of these perceived benefits and drawbacks, stating that individual organisational circumstances and other contextual factors need to be taken into consideration. Nonetheless, they all acknowledged that the adoption of virtual teams and virtual technology by organisations would have an impact in one way or the other. This finding corroborates a great deal of other previous work in this field by Bergiel et al.,(2008); Siebdrat et al.,(2009); Ebrahim et al.,(2009); Kuruppuarachchi, (2009); Baard and Thomas, (2010); Mogale and Sutherland,(2010); Lekushoff,(2012); Robbins et al., (2013) and Heistein (2014), who have all extensively examined the perceived organisational benefits and drawbacks of virtual teams and virtual technology. They noted that perceived benefits significantly influence organisations adoption of innovative information and communication technology (ICT) and other related information systems (IS) technologies, including virtual teams and virtual technology, while the perceived drawbacks impede organisational technological adoption decision making.

5.3.2Availability of technology

The results of this study show that the availability of technology was considered an enabling factor in organisations adoption of virtual teams and virtual technology. This view was widely shared by all research participants in the qualitative interviews and substantiated by findings from participants in the quantitative questionnaires who noted that some of the numerous innovative tools for virtual collaborations and virtual working available in the marketplace were currently in use within their organisations, but stress that low usage, low uptake, high set-up cost and other interrelated contextual factors contributed to slow adoption of more innovative versions of these technologies by their organisations. This is significant because the availability of technology promotes its adoption by organisations. However, decision makers in organisations also need to take other contextual factors into account prior to adoption. This finding is in agreement with Ebrahim et al., (2009) who stated that the availability of innovative

technology promotes organisational adoption of virtual teams but that high set-up cost and other factors contribute to a slow up-take in developing countries.

5.3.3Set-up cost

An important finding in this study was that high set-up cost significantly inhibited organisations ability to adopt virtual teams and virtual technology This was highlighted by all participants in the qualitative interviews but perceptions on adoption cost differ between participants from bigger organisations and those from smaller organisations on the cost of adopting virtual teams and virtual technology by their respective organisations. Even so, they all uniformly agreed that high set-up cost was indeed one of the main contributing factors along with other contextual factors for slow adoption of virtual team and virtual technology. The implications of these shows that set-up cost greatly contributes to an organisation's decision to adopt virtual teams and virtual technology. These results match those observed in earlier studies by Wen, et al.,(2009); & Wang et al., (2010), who established that the cost of hardware, software, consultancy support, installation, support infrastructure and other related cost significantly contributed to the high set-up and implementation cost of adopting innovative technology. In the same way Troshani et al.,(2011)found that high set-up cost negatively affect organisations adoption of innovative technology.

5.3.4 Organisation fit

The results of this study show that technology organisation fit sometimes inhibited organisations adoption of innovative technologies including virtual teams and virtual technology. These views were stated by interview participants who pointed to a lack of compatibility between standard organisational processes and practices with most innovative information systems and related technologies including virtual teams and virtual technology. Participants expressed concern that the standardised nature of some innovative technology and their incompatibility to standard organisational processes including human resources management functions which are characterised by standard departmental specifics. Nonetheless, they all acknowledge that the adoption and utilisation of virtual teams and virtual technology may significantly improve operational efficiency. However, they' recommended a precautionary approach in the selection and adoption of innovative technology compatible with standard organisational processes, existing information technology (IT) infrastructure and needs of the organisation. This finding further supports the idea of Lin et al.,(2008) who suggested that virtual team leaders /managers should determine task-technology-structure fit first, thus selecting the appropriate technology

suitable for various team tasks. Similarly, Wang et al.,(2010) found that organisation's existing technologies, information and communication technology infrastructure compatibility with innovative technology positively influences adoption.

5.4 Findings organisational context

5.4.1 Formal and informal linking structures

The lack of informal linking structures between employees in these organisations was found to be an inhibiting factor in these organisations adoption of virtual teams and virtual technology. This was pointed out by interview participants who noted that the bureaucratic nature, hierarchy and formal chain of command structure within their organisations created a lack of informal linking structures among employees, thus impairing the organisations ability to adopt virtual teams and virtual technology. This finding contradicts previous research done by Baker (2012) who found that the presence of informal linking agents within an organisation such as boundary spanners and product champions promotes organisation's adoption of innovative technology. Bose and Lou (2011) found that product champion support was critical to facilitate the adoption of new technology in organisations by providing the necessary drive and effort to initiate the adoption.

5.4.2 Management commitment

The lack management commitment was found to have an enabling and inhibiting effect on these organisations adoption of virtual teams and virtual technology .Participants noted that management commitment was key to their organisation's adoption of innovative technologies including virtual teams and virtual technology, but stress that the lack of executive management support within their organisations and other contextual factors such as the absence of informal linking structures systems and the degree of centralisation has significantly contributed to the low or slow adoption of virtual teams, virtual technology and other related information system technologies by their organisations. This corroborates Pan and Jang (2008) who found the greater the support from top management the easier it is for the organisation to adopt innovative technology and overcome any difficulties and complications encountered during the adoption process. Similarly Lacity et al.,(2009) and Dong et al.,(2009) also concluded that top managerial support is key in orchestrating organisation's adoption of innovative technology and aligning it with business strategies and organisation processes.

In the same way, Dorr and Kelly (2011) suggested that HRM and HRD professionals can become product champions and foster the success of VT`s in their organisations by being actively involved in the recruitment and selection of virtual team leaders and members, ensuring that the selection of the appropriate virtual technology fits the task, provide training to virtual team members and leaders where necessary and lobby executive management support. Equally Ifinedo, (2011) found that technology acceptance levels were higher in organisations with higher management support and commitment. Conversely Ifinedo, (2011) also found that organisations with low or complete lack of top management support, technology acceptance tend to be placed on the back-burner in terms of organisation priorities. Ramdani et al.,(2013) noted that top management support was a critical factor in organisational adoption of information and communication technology (ICT) in small and medium size enterprises.

5.4.3 Communication processes

The influence of organisational communication process was found to have both an enabling and inhibiting effects on these organisations adoption of virtual team and virtual technology. This was reported by participants who emphasize that the bureaucratic organisation structure, centralize decision making system and other organisational contextual factors such as the degree of centralization within their organisations impaired informal intra-organisation communication process which drives innovation. Oliveira and Martins (2010) affirm that bigger organisations with multiple levels of bureaucracy can impede technological adoption decision making process. Similarly, Baker (2012) also suggested that communication processes within the organisational context can promote or inhibit innovation.

5.4.4 Degree of centralisation

It is interesting to note that the degree of centralisation of the organisations in this study was found to have an enabling and inhibiting impact on their ability to adopt virtual teams and virtual technology. This emerged from the interviews with participants who pointed out that major technological adoption decisions such as the adoption of virtual teams, virtual technology and other related information systems technologies are made at higher hierarchical levels in their organisations. It was also indicated that departmental level structures were a little flatter but the bureaucratic and centralised decision-making nature of these organisations and other organisational contextual factors created a deep-rooted “red tape” culture which discourages lateral communication among employees. The findings observed in this study reflect those of previous studies such as that of Troshani et al., (2011) who found that the degree of

centralisation impacted the extent to which management committed to support organisation technological adoption.

5.4.5 Organisation size

The size of an organisation was found to either enable or inhibit the adoption of virtual teams and virtual technology. This was the response from interview participants, who noted that the availability of resources in bigger organisations and other contextual factors facilitates the adoption of various innovative technologies including virtual teams, but stress that their organisation had not yet adopted virtual teams or a specific method of working virtually. Participants also noted that complexities within their organisation such as incompatibility of technology with existing organisational processes and organisation fit had impeded its ability to adopt virtual teams. Although their organisations had adopted various innovative virtual communication tools and other interrelated Information Systems (IS), usage within the organisation was still very low due to other contextual factors. In accordance with the current findings, previous studies by Pan and Jang (2008) found that bigger organisations are more likely to adopt advanced information technology and other related information system (IS) technologies because of the availability of resources and their ability to undertake more risks. Equally Oliveira and Martins (2010) noted that larger organisations are more likely to undertake technological innovation due to the availability of funds and faster capture of economies of scale. They also pointed out that the multiple layers of bureaucracy in larger organisations can impede the decision-making process of adopting innovative technology. However, Barbosa and Musetti, (2010) demonstrated that larger organisations were more likely to adopt and utilise innovative technology due to their greater scale of operations. Conversely, Ramdani et al., (2013) found that organisation size was a critical factor in the adoption of Information and Communication Technology (ICT) and other interrelated Information Systems (IS) technologies in small and medium size organisations. However, they also noted that, although bigger organisations have more resources to invest in the adoption of innovative technology, some smaller organisations were found to be able to manage their business operations without the need to adopt these technologies.

5.4.6 Availability of resources

The current study found that the availability of resources in organisations promotes the adoption of virtual teams and virtual technology. Interview participants pointed out that the availability of particular resources such as internal training facilities in their organisation and other contextual

factors had enabled their organisation to adopt innovative virtual communication tools, advanced Human Resources Information Systems (HRIS), and other interrelated Information Systems (IS) technologies. However, senior management's unwillingness to commit more resources contributed to the slow adoption rate. These findings concur with Chong et al., (2009) who recommended that organisations adopting innovative Information and Communication Technology (ICT) and other interrelated advanced information systems should be ready to commit the necessary technical and financial resources for successful implementation. Ifinedo (2011) suggests that the lack of financial resources is a distinguishing factor which differentiates small and medium size enterprise ability to adopt innovative technology from bigger organisations. Baker (2012) also postulates that the availability of specific resources within an organisation facilitated the adoption of innovative technology.

5.4.7 Slacks

The amount of slack resources available internally to an organisation was found to enable organisational adoption of virtual teams and virtual technology. Participants indicated that the availability of slack resources within their organisation had encouraged the organisation's adoption of various innovative virtual communication tools, human resources information systems and other related technologies, but not virtual teams. These findings differ from Baker (2012) who stated that innovation can take place in an organisation in the absence of slack resources but stresses that the presence of slack resources in an organisation may not necessarily lead to technology innovation in the organisation. However, Ramdani et al., (2013) found that small and medium size organisations without sufficient technological and financial resources are likely unable to adopt innovative technologies.

5.4.8 Organisational competency

The result of this study shows that organisational competences inhibit the ability to adopt virtual teams and virtual technology. Interview participants pointed out that the quality of their organisation's human resources, its capability and other contextual factors contributed to the slow adoption of virtual teams and virtual technology. Although the human resources within these organisations had the fundamental skills to work in virtual teams and utilise virtual technology, participants stress the need for continuous training, vendor support and that other strategic human resources interventions are required to strengthen the organisations human capability. These results agree with Ifinedo (2012) who notes that organisations tend to postpone innovative technology adoption due to a lack of knowledge and expertise. The findings

further corroborate the ideas of Heller et al., (2010) and Dorr and Kelly (2011), who suggest that the odds of forming a successful virtual team whose leader and members possess all the right skills and competences needed to be successful in the virtual work environment without any kind of training intervention, is inconceivable. Thus training for VT leaders and members is a critical aspect of building a successful team. Consequently, it is vital that HRM and HRD professionals provide the necessary training to the team leader and members by identifying skills gaps and training needs of the team, and to ensure that the relevant training is offered to close these gaps and overcome any inherent problems. They also agree with Oliveira and Martins (2009) who found that the presence of skilled labour in an organisation increases its ability to adopt and make use of innovative technology.

5.4.9 Technological competency

It is interesting to note that in all three cases in this study, the availability of the necessary resources required for technology adoption, such as existing technology in use, infrastructure, equipment, technical skills and other contextual factors in these organisations enable or inhibit the adoption of virtual teams and virtual technology. Interviewees stated that their organisations had adopted some form of innovative technology but noted that usage within the organisation was still low due to other contextual factors. Leimeister et al., (2009) found that the indirect effects of organisation technology competency on willingness to invest in innovative information system (IS) and other related technologies differed from one country to another. The present findings seem to be consistent with Ramdani et al.,(2013)who noted that the existing technology in an organisation and prior information and communication technology (ICT) experience influences organisational adoption of future innovative technologies. In the same way, Ifinedo (2011) advises that the more technological innovation knowledge an organisation has the more likely it will adopt innovative technologies.

5.5 Finding environmental context

5.5.1 Industry characteristics and market structure

The industry and market area in which an organisation chooses to conduct its business was found to have an enabling or inhibiting effect on its ability to adopt virtual teams and virtual technology. Interview participants from the private sector noted that industry pressure, such as competition in the sector and other contextual factors had compelled their organisation to adopt innovative technology. Similarly public sector interviewees noted that industry life cycle had forced their organisations to adopt innovative technology. These findings further support those

of Chong et al., (2009) who found that market trends in different industries were an important external environmental factor in organisation technology innovation. Barbosa and Musetti, (2010) suggested that organisation profile had no relation to the adoption of innovative technology ,but stress that organisations in service orientated business are more predisposed to adopting innovative technologies than manufacturing industries.

5.5.2 Rapidly growing industries

This study found that market trends in rapidly growing industries had enabled these organisations' adoption of innovative technology. This emerges from interviews with participants who noted that strong growth and competitive pressure in the industry and other related contextual factors had made it a strategic necessity for the organisation to adopt various innovative virtual collaboration tools to compete in the marketplace, but not virtual teams or a specific method of working virtually. The findings observed in this study mirror those of the previous studies by Baker (2012) who suggested that organisations in rapidly growing industries are more likely to adopt innovative technology than others. Similarly, Ramdani et al., (2013) found that the industry in which an organisation conducts its business is a significant factor in its adoption of innovative technology.

5.5.3 Competition

The result of this study shows that competition from rival organisations within the industry was a significant driver for organisations adoption of innovative technology. Participants stated that intense competition, growth in the industry and other contextual factors had changed the industry structure and competitive landscape, thus the organisation had to adopt innovative technology to counter the effect and leverage new ways to outperform rival organisations. These findings corroborate previous findings in the literature such as that of Oliveira and Martins (2010) who suggested that competitive pressure in industry is a powerful driver of information and communication technology adoption. Wang et al., (2010) stated that competitive pressure in industry is a good stimulator for technology adoption. In the same wayRamdaniet al., (2013) noted that competition in industry is generally perceived to positively influence an organisation's adoption of information and communication technology. However, earlier studies by (Pan & Jang, 2008) found that competitive pressure in certain industries does not have any significant direct effect on the organisation's decision to adopt innovation information technology. Chong et al., (2009) and Wang et al., (2010) concluded that competitive pressure was not huge in some industries previously, thus contradicting findings from earlier studies. On the other hand, intense

competition and trading partner's pressure in the current business environment has compelled many organisations to adopt innovative technologies to stay competitive.

5.5.4 Technological support infrastructure

The availability of technological support infrastructure was found to enable or inhibit organisation's adoption of virtual teams and virtual technology. Participants emphasise that the unstable nature of available technological support infrastructure and other contextual factors such as unreliable suppliers contributed to organisations slow adoption of virtual teams, virtual technology and other innovative technologies. This finding corroborates Baker (2012) who noted that the availability of technological support infrastructure impacts organisational adoption of innovative technology. Similarly Haider and Pishdad (2013) found that changes to an organisations technical support infrastructure will have a positive effect on the whole organisation and its operational environment.

5.5.5 Suppliers of technology

The absence of reliable technology service providers was found to inhibit these organisations adoption of virtual teams and virtual technology. Participants acknowledge the availability of various suppliers of technology related services but underline that the unreliable nature of supplier's network poses significant challenges to the organisations adoption and utilisation of virtual teams /virtual technology. Baker (2012) suggests that the availability of consultants and suppliers of technology services foster technology adoption. Equally, Ifinedo(2011) noted that suppliers of information system technology and other related technologies have been found to be an important factor in organisations adoption of these technologies.However,Ramdaniet al., (2009) contend this position but Ifinedo (2011) recapitulate that technology suppliers can act as change agents during organisations adoption of information system technology and other related innovative technologies, especially for organisations lacking in-house information technology expertise.

5.5.6 Government regulations

Results of this study indicate that government regulatory support was found to be an enabling factor in organisations adoption of virtual teams and virtual technology. Research participants indicated that they were not aware of any existing government regulations prohibiting organisational adoption of innovative technology, but stated that various government programmes aimed at promoting organisations carbon footprint reduction had encouraged the

organisational adoption of various innovative virtual collaboration tools and human resources management information systems. This finding supports previous research by Bose and Luo, (2011) and Troshani et al., (2011) who all suggest that government support by way of related legislation and regulatory compliance as well as incentives for the adoption of green information technology can encourage organisational adoption of innovative technology and promote environmentally-friendly business practices. Similarly, Oliveira and Martins, (2009) and Baker, (2010) accentuate that the regulatory environment can either have a beneficiary or adverse effect on an organisation's adoption of innovative technology.

5.5.7Skilled labour

The findings of this study revealed that the shortage of skilled labour can significantly inhibit organisations adoption of virtual teams and virtual technology. Interview participants stress that the lack of internal information and communication technology expertise and the scarcity of ICT expertise in the job market had hindered the organisational adoption of virtual teams, virtual technology and other related information systems technologies. This finding corroborates the ideas of Oliveira and Martins, (2009) who suggested that the presence of skilled labour in an organisation enhances the organisations ability to adopt and utilise innovative information technology. This view is supported by Ramdani et al., (2013) who found that the lack of in-house information and communication technology expertise may make organisations adoption of innovative technology seem complicated and not easy to implement.

5.6 Unexpected outcome

One unanticipated finding was that most of the senior managers in these organisations were mainly "baby boomers". Participants had mixed views on whether the "baby boomers" in senior management were partially to blame or entirely responsible for the low or slow adoption of virtual teams and virtual technology by their organisations, as the "baby boomers" in senior management are decision makers in their organisations and represent a source of support and funding vital for the adoption and implementation of innovative technology. It was difficult to establish, based on participant's views solely, if the lack of encouragement, involvement, eagerness, and motivation was exclusively a phenomenon allied to the "baby boomers" in senior management or inclusive of other generation's in senior management. Although previous studies such as Wang et al., (2010); Troshani et al.,(2011); Ifinedo, (2011) and Ramdani et al.,(2013) all found that top management support and commitment was critical in organisational adoption of innovative technology. Most viewed top management from a general perspective,

and none determined if top management consisted of “baby boomers” or any other generation and the consequent effect on organisations technological adoption decision making. Contrary to expectations, it was also found that none of these organisations had adopted virtual teams or specific methods of working virtually. However, they had adopted various innovative virtual communication tools including advanced human resource information systems, but usage within these organisations was still too low. By not adopting virtual teams or a specific method of working virtually, these organisations are unable to fully leverage on the perceived benefits of virtual teams to the organisation and its employees. In accordance with the present results are previous studies such as that of Baard and Thomas, (2010) who found that very few organisations in South Africa had implemented a particular form of teleworking. Similarly Earnhardt (2009) found that organisations who have not yet adopted virtual teams and virtual technology as a method to achieve higher productivity, competitiveness, efficiency and lower operational cost will become less competitive.

5.7 Chapter summary

This chapter addressed the themes developed, analysed and interpreted from the findings presented in the preceding chapter. It examined the importance and significance of each of the themes influences on the slow adoption of virtual teams and virtual technology by South African organisations. This was done against the backdrop of literature in the area of organisational adoption of information technology as discussed in Chapter Two. It is evident from the findings that none of these organisations had adopted virtual teams or a specific method of working virtually. Although they had adopted various innovative virtual communication tools, usage within the organisations was still very low. It was also found that each of the TOE framework contextual factors were interdependent of each other. The following chapter draws a conclusion and recommendations arising from these findings.

CHAPTER SIX
CONCLUSION AND RECOMMENDATIONS

6.1Introduction

In the previous chapters the study highlighted the advances needed to promote the adoption of virtual teams and virtual technology. From relevant studies in literature a theory emerged that depicted the relationship between organisational, technological and environmental aspects. This model is an inclusive approach that incorporates both practical aspects and theoretical rigors needed to produce relevant outcomes. To this end the analysis points to the interdependency of technological, organisational and environmental contextual factors. The emergent concept map illustrates how these factors influence the adoption of virtual team technology. For organisations to remain competitive and improve efficiencies, the concept map would contribute guidelines for managers to consider when adopting virtual teams and virtual technology. The relevance of the study is therefore on both a practical and theoretical level, where the concept map guides organisations but can also be used to further the TOE framework. The conclusions that are presented in this chapter provide answers to the research questions and put forward recommendations for senior managers in organisations to consider when adopting virtual teams and virtual technology.

The aim of this study was to explore and understand why South Africa organisations are slow in adopting virtual teams and virtual technology. The objectives of the research were as follows:

- Identify the perceived benefits and drawbacks of virtual teams and virtual technology to organisations and their employees.
- Identify reasons for the low or slow adoption of virtual teams and virtual technology by South African organisations.
- To identify and recommend training interventions designed to overcome inherent problems in organisational adoption of virtual teams and virtual technology.

The first objective was attained from findings of participant's thoughts on the perceived benefits and drawbacks of virtual teams and virtual technology to organisations and their employees. Their understanding of these perceived benefits and drawbacks concur with those addressed in the literature, thus indicating their awareness and support for organisational adoption of virtual team and virtual technology. The influences of other contributing factors restrained these

organisations from adopting virtual teams and virtual technology. Further findings indicated that technological, organisational and environmental factors all contributed to the slow or low adoption of virtual teams and virtual technology by South African organisations. These factors acted interdependently, thus creating inherent problems for organisations adoption of virtual teams and virtual technology. However, specific interventions as identified in the literature are suggested to address problems.

6.2 Recommendation

To improve the slow adoption rate of virtual teams and virtual technology in South African organisations, the following recommendations based on the findings of this study are presented to HRM for consideration.

- HR managers should lobby for executive management support and commitment to encourage the adoption and utilisation of these technologies in their organisations to enhance business operations.
- HR managers to ensure that change management programmes be put in place to build a multi-generational management team consisting of “generation X”, “generation Y” and “baby boomers”.
- HR managers should commit more resources towards training and coaching of employees. This will enable them to acquire the knowledge and expertise needed to build the organisation’s human resources capability and facilitate the adoption, implementation and utilisation of innovative technologies, including virtual teams and virtual technology.
- HR managers should create partnerships with technology vendors to provide the necessary support before and during organisation’s adoption of innovative technologies including virtual teams and virtual technology.
- HR managers should lobby support from government agencies to improve existing technology support infrastructure and create legislation that provides incentives for organisations carbon footprint reductions through the adoption of innovation technology or green IT.

6.3 Research significance

This research has built on previous studies in the field of information technology adoption at organisational level. While many studies on organisational adoption of information technology and information systems have been widely conducted in theory and practice, very few exist in a South African context. As such, this study contributes to the existing body of knowledge on organisations adoption of virtual teams and virtual technology in a South African context, which is a very under-researched field. The findings of this study further demonstrate that the technology organisation and environmental framework is indeed a robust tool for predicting technology adoption at organisational level. This study provides useful insights into organisations adoption of virtual teams and virtual technology. It identifies possible barriers to organisational technology adoption and recommends possible interventions to overcome these barriers.

6.4 Limitations and suggestions for further study

There are several limitations to this study. Firstly, the study focused on three organisations in two industries only, with a small sample size. Consequently, it will be interesting to see whether organisations in other sectors are influenced by similar factors. The study covered a limited geographical area and as such the research findings cannot be generalised for the whole of South Africa. It only focuses on virtual teams and virtual technology adoption and not its implementation. As with any information technology adoption model, the possibility exists that other important factors might not have been included in the framework. Therefore these findings need to be interpreted with caution. In this way the present study provides the basis for further research on the current topic. Such research could include a comparative study on private versus public sector organisations adoption of virtual teams and virtual technology, with firm emphasis on adoption factors. Further studies with more focus on the influences of “baby boomers” on organisational technology adoption decision making is therefore suggested. Such study could look at management support and commitment from “baby boomers” in executive management.

6.5 Conclusion

Organisations adoption of virtual teams and virtual technology is without a doubt affected by the technological, organisational and environmental context within and outside the organisation. Against this reality, the TOE framework provided a useful tool to explore factors influencing the slow adoption of virtual teams and virtual technology by South African organisations in Cape

Town. The objectives of this study formulated at the beginning of the research were achieved and the reasons for the slow adoption of virtual teams and virtual technology by South African organisations were explored. The study examined how technological, organisational and environmental factors contributed to the slow adoption of virtual teams and virtual technology by South African organisations. Contextual technology and environmental factors enable or inhibit organisations adoption of innovative technology.

These factors facilitated organisations technology adoption processes if well thought-out prior to an organisation adopting innovative technology. Conversely these factors hamper organisations technology adoption processes if moderately considered. However, these contextual factors were not independent but interdependent of each other. As such the conceptual map in this study provides senior managers in organisations with an effective self-evaluation mechanism to access their organisation's readiness before adopting innovative information technology and information systems, including virtual teams and virtual technology. This provides a useful insight for industry leaders wishing to comprehend some of the reasons for the slow adoption of virtual teams, virtual technology and other interrelated technologies by South African organisations. Additionally, this study will provide senior managers with a comprehensive understanding of critical areas of concern in the adoption of innovative technologies, including virtual teams and virtual technology.

6.6 Personal reflection

The researcher was sincerely enriched by this study. My understanding of organisation's technological adoption factors was deeply enhanced during the literature review process. Although the study started off with the aim of exploring and understanding reasons for the slow or low adoption of virtual teams and virtual technology by South African organisations, the bulk of empirical literature focused on organisational technology adoption in Europe, Asia and America, with very scant literature on organisational technology adoption in a South African context. This further adds to the relevance of the study. Research participants provided relevant data which assisted the researcher to determine reasons for the slow adoption of virtual teams and virtual technology. It was encouraging to discover that most of these organisations had adopted various virtual communication tools. Conversely, it was disconcerting to discover that none of these organisations had adopted virtual teams or virtual technology or a specific method of working virtually. However, the amount of enthusiasm emanating from these organisations to adopt innovative technology was encouraging, even though numerous challenges exist. While the researcher would have desired the participation of more organisations in the study, it was

disappointing to note the lack of interest from most of those approached. On the other hand the researcher is grateful to those who participated and contributed to the body of knowledge.

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APPENDICES

Appendix A: Permission Letters

MMI HOLDINGS

I, **Ilse Coetzee** in my capacity as **Head of HR- ITS** give consent in principle to allow **Emmanuel Temban Tekeh**, a student at the Cape Peninsula University of Technology, to collect data in this company as part of his M Tech (IT) research. The student has explained to me the nature of his/her research and the nature of the data to be collected.

These consent in no way commits any individual staff member to participate in the research, and it is expected that the student will get explicit consent from any participants. I reserve the right to withdraw this permission at some future time.

In addition, the company's name may or may not be used as indicated below. (Tick as appropriate.)

	Thesis	Conference paper	Journal article	Research poster
Yes				
No	x	x	x	x

Ilse Coetzee

4 June 2014

MMI Holdings Limited
268 West Avenue, Centurion, 0157 PO Box 7400, Centurion, 0046, South Africa
T +27 (0)12 671 8911 F +27 (0)12 675 3911 E info@mmiholdings.com www.mmiholdings.com

PERMISSION TO CONDUCT RESEARCH STUDY: MR EMMANUEL TEMBAN TEKEH

Personal/Mr Le Roes x

Faizel Brown 11:04 AM (2 hours ago)

to me, Achmat, Keith, Carol, Justine, Fritz

Dear Mr Tekeh

I refer to emails in the above regard.

The City Manager, Mr Ebrahim, has approved your request to conduct research at the City of Cape Town, subject to:

1. informed consent being obtained from individual City participants, who have the right to decline to participate if they so wish;

2. research questionnaires being structured so that City participants are not expected to take longer than 20 minutes to complete them;

3. interviews with individual City participants being restricted to 45 minutes, unless otherwise agreed by the Director to whom the employee reports;

4. Mr Tekeh acknowledging that this permission to undertake research does not give him access to the City's SAP or other systems;

5. a copy of the final thesis being provided to the Director: Human Resources and the Director: Development Information & GIS; and

6. Mr Tekeh acknowledging that this permission to undertake research may be withdrawn at any time.

Can you please indicate your acceptance of these conditions and can you please liaise directly with Council's Director: Human Resources, Ms Justine Quince, regarding further arrangements.

Yours faithfully

Faizel Brown
Office Manager to the City Manager
City of Cape Town

Tel: +27214005030
Fax: +27214189009
faizel.brown@capetown.gov.za

I, **Charlene Snyders**, in my capacity as **Human Resources Generalist** at **Equra Health Trust** give consent in principle to allow **Emmanuel Temban Tekeh,** a student at the Cape Peninsula University of Technology, to collect data in this company as part of his/her M Tech (IT) research. The student has explained to me the nature of his/her research and the nature of the data to be collected.

These consent in no way commits any individual staff member to participate in the research, and it is expected that the student will get explicit consent from any participants. I reserve the right to withdraw this permission at some future time.

In addition, the company's name may or may not be used as indicated below. (Tick as appropriate.)

	Thesis	Conference paper	Journal article	Research poster
Yes				
No	x	x	x	x

Charlene Snyders

25 October 2013

Appendix B: Consent letter and example of questionnaire

(5)

Cape Peninsula University of Technology

The Cape Peninsula University of Technology

FID Research Ethics Committee (REC) – **ETHICS CONSENT FOR RESEARCH PARTICIPATION FORM**

In order to meet the requirements of the university's Higher Degrees Committee (HDC) the student must get consent to collect data from organisations which they have identified as potential sources of data.

- Where applicable mark relevant boxes ☐ with an **x** = ☒
- Replace red text with further description if needed or delete if not.
- Delete grey descriptor text.

For further clarification on this matter please contact either the supervisor(s), or the Faculty Research Ethics Committee secretary (Ms V Naidoo) at 021 469 1012 or naidoove@cput.ac.za.

1: Applicant / Researcher:	Title, name & surname: Mr Emmanuel Temban Tekeh	Masters	x ☐	Doctorate	☐	Non Diploma Purposes	☐
Office Telephone:	Cell: 0848 755 672	e-mail: etekeh @ gmail.com					
Student/Staff Number: 204103592	Start and proposed end of Study: 10 May 2013 to 20 December 2014						

2: Supervisor/ Project leader (if applicable):	Title, name & surname: Dr Ephias Ruhode	
Office Telephone: 021 460 3284	Cell: 072 802 6329	e-mail: RuhodeE@cput.ac.za

3: Project , Thesis, Article Title: as per HDC 1.1

The role of human resources in enhancing organisational innovation and competitiveness through virtual team technology.

4: Project Description and procedures:

The research aim to explore why South African organisations are not adopting virtual team and virtual technologies, thus bringing organisational benefits and potential benefits to their employees.

5: Confidentiality

I have received assurance from the researcher that the information I will share will remain strictly confidential. I understand that the contents will be used only for MTech thesis, journal article etc and that my confidentiality will be protected by pseudonyms etc.

6: Anonymity

Anonymity will be protected as noted below.

7: Conservation of data

The data collected will be kept in a secure manner e.g. digitally recorded interviews will be encrypted and kept in a password controlled environment. Note: original data or a copy of the data should be kept for audit purposes).

8:Voluntary Participation:

I am under no obligation to participate and if I choose to participate, I can withdraw from the study at any time and/or refuse to answer any questions, without suffering any negative consequences. If I choose to withdraw, all data gathered until the time of withdrawal will destroyed.

9: Informed and Continuous Consent

Permission has been gained from all participants in this study. If permission cannot be granted from the individual because of age, ability or other circumstances written permission will be sourced from the appropriate gatekeeper. If language or culture differs considerably a relevant assistant researcher is required to gain consent. (Informed implies the subject is fully aware of the nature of the study)

10. Conflict of interest

There is no conflict of interest (including financial gain, vested interest etc.) likely to result from my participation.

11: Additional consent: I make the following stipulations (please tick as appropriate):

	In thesis	In research publications	Both	Neither
My image may be used:				
My name may be used:				
My exact words may be				
Any other (stipulate):				

12: Notes:

Acceptance: I, ... From (company / organization).....

Agree to participate in the above research study conducted by Mr Emmanuel Tekeh of the Faculty of Informatics and Design at the Cape Peninsula University of Technology, which research is under the supervision of Dr Ruhode.

If I have any questions about the study, I may contact the researcher or the supervisor. If I have any questions regarding the ethical conduct of this study, I may contact the secretary of the Faculty Research Ethics Committee at 021 469 1012, or email naidoove@cput.ac.za

Participant's signature: _____ Date: _____

Researcher's signature: _____ Date: _____

Supervisors signature: _____ Date: _____

Biographical Data

Occupational Category (Please mark with an x)

Occupational Category / Level	
Executive and Senior Management	
Management(Managers and Functional Heads)	
Senior / Principal Professionals	X
Other (Please specify)	

Age (Please mark with an x)

Age of Respondents	
26 - 35	
36 - 45	
46 - 55	
56 – 65	X
65 and over	

Gender (Please mark with an x)

Gender of Respondents	
Male	X
Female	

Highest Educational Qualification (Please mark with an x)

Qualification	
Diploma / First Degree	
Post Graduate Degree	X
Masters Degree	
Doctorate Degree	

Trigger your thoughts.

Collaboration refers to methods of communication and information exchange in an organisation between colleagues and other departments (e.g. via Intranet, Internet, telephone, chat rooms etc.). ICTs refer to information and communication technologies (example of ICTs tools Laptops and computers, intranet, internet, interactive whiteboard etc.)

How do you collaborate with colleagues and other employees within and outside your organisation on work related issues, projects and research?		
Please mark with an x	**Yes**	**No**
Do you make use of the internet at work? If Yes what do you use it for in particular? RESEARCH ..... If No why?	X	
Does your organisation have an internet usage policy?	X	
Do you know what information and communication tools are in an organizational context?	X	
Do you use information and communication technology tools in your organisation to communicate?	X	
Do you know what virtual technology is?		X
Do you know what virtual teams are?		X
Do you think South Africa has the appropriate telecommunication infrastructure to support the virtual work environment? If No why?		
Do you think the cost of high speed internet connection (e.g. ADSL, Broadband, and Bandwidth etc.) is too expensive in South Africa for many organisations to adopt virtual technologies and virtual working as a viable option?	X	
Does your organisation have the appropriate hardware (e.g. laptops, desktops, modems, video cards .etc.) to support virtual work and virtual technology?	X	
Does your organisation have the appropriate software (e.g. internet browser, system software, application software programming software) to support virtual work and virtual technology?	X	
Are emails the primary medium of communication in your organisation? If No, what other form of communication does your company invest in?	X	
Have emails replaced physical meetings in your organisation? How often do you then meet face to face? Very often | Not often | Most often | Not at all		
Because of the need to communicate primarily via information and communication technology, as an HR practitioner, do you think the selection of virtual team members should overemphasize technical skills and underemphasize interpersonal skills? **OR**		
Do you think identifying virtual team members who have a healthy balance of technical and interpersonal skills?	X	

Technological Perspective.

Computer mediated communication is divided into synchronous and asynchronous modes. In synchronous communication, all participants can collaborate simultaneously. In asynchronous communication there are time constraints on communication messages and responses between participants.

Please refer to the table and answer the following questions. Mark the box with an x should you / your department be using it and list other examples were necessary.

Tools for virtual teams	Examples of Asynchronous collaboration tools
Group ware and Shared services	☐ Lotus Notes ☑ Microsoft Exchange ☑ Novell GroupWise ☐ E-news Letters ☐ Blackboard ☑ Bulletin board ☑ WebCT
File Transfer	☐ File Transfer Protocol(FTP) ☐ Collaborative Websites ☑ Intranet ☑ Internet
Emails	☐ Numerous vendors and free applications ☑ E-Mails
Telephone	☐ Voice Over Internet Protocol (VOIP)
Instant Messaging and Chat	☐ Yahoo Messenger ☐ MSN Messenger ☑ AOL Instant Messenger ☐ Skype ☐ Group Blogging

- What kind of asynchronous computer mediated communication tools are there in your organization?
  .....
  .....
- Which of these tools do you currently use the most to collaborate with team members and colleagues within your organization?
  NOVELL GROUP WISE, INTRANET, E-MAILS
  .....
  .....
- How often do you use this tool to collaborate?

Very often	Not often	Most often	Not at all
		X	

- Which of these tools do you use to collaborate with people outside your organization?
  E-MAILS, NOVELL GROUP WISE
  .....
  .....
- Is this tool used to compliment other synchronous collaboration tools? Or as a primary medium of collaboration inside or outside your organization? PRIMARY MEDIUM
  .....
  .....

Please refer to the table and answer the following questions. Mark the box with an x should you / your department be using it and list other examples were necessary.	
Tools for virtual teams	**Examples of Synchronous collaboration tools**
Web Conferencing	☐ NetMeeting ☐ WebEx ☑ Meeting Space ☑ Go To Meeting ☐ Skype
Remote Access and Control	☐ pcAnywhere ☐ NetMeeting ☐ WebEx ☐ Meeting Space ☐ Go To Meeting ☐ Electronic Whiteboarding ☐ Internet Relay Chat (IRC)
Telephone	☐ Plain Old Telephone ☐ Service(POTS).Direct calls or Conference calls
Instant Messaging and Chat	☐ Yahoo Messenger ☐ MSN Messenger ☐ AOL Instant Messenger ☐ Skype

- What kind of synchronous collaborative communication tools are there in your organization?
  .....
  .....
- Which of these tools do you currently use the most to collaborate with team members and colleagues within your organization? MEETING SPACE & GO TO MEETING
  .....
  .....
- Is this tool used to compliment other Asynchronous collaboration tools? Or as a primary medium of collaboration inside or outside your organization? PRIMARY MEDIUM
  .....
  .....
- How often do you use this tool to collaborate?

Very often	Not often	Most often	Not at all
	X		

- How many hours do you spend a week working virtually? Not face to face 80% OF 8 HR DAY
  .....
- How many hours do you spend a week working on team tasks (as opposed to other duties)? 50% OF 40 HR WEEK
  .....
- How many members are there in your team? 3
  .....
- Are all the members on your team in one location? If not how many locations are there? YES
  .....
- How much time do you require to travel via car, train or bus to meet team members in the same city? N/A
  .....

	Please tick the appropriate boxes indicating your agreement to the following as benefits of utilizing virtual teams and virtual technology.	Strongly Agree	Somewhat Agree	Agree	Don't Know	Disagree	Somewhat Disagree	Strongly Disagree
		1	2	3	4	5	6	7
1	Reduces organization carbon footprint	✓						
2	Improve Work Life Balance	✓						
3	Reduce gender discrimination in the workplace	✓						
4	Reduce racial discrimination in the work place	✓						
5	Reduce travel time and cost	✓						
6	Enable the recruitment of talented employees		✓					
7	Promote and encourage the employment of physically disabled individuals	✓						
8	Promotes access to diverse skillful employee	✓						
9	Promotes access to experienced employees	✓						
10	Promote flexible work schedule and resources allocation		✓					
11	Increase knowledge sharing and information dissemination within the organization	✓						
12	Increase Productivity	✓						
13	Increase the organizations' competitive advantage	✓						
14	Help develop better customer satisfaction	✓						
15	Enhance cross-divisional and cross-functional business process interaction within the organisation	✓						
16	Provide more flexible working hours for employees	✓						
17	Provide unprecedented level of flexibility and responsiveness to organizations	✓						
18	Attract better employees	✓						
19	Provide organisation with a platform to response quickly to changing business environment	✓						
20	Promote efficiency and team effectiveness	✓						
21	Decrease employees work stress levels	✓						
22	Provide employees with a greater degree of freedom	✓						
23	Optimize individual team member's contribution in completion of business task to accomplishing organizational goal.	✓						

- Please list any other perceivable advantage of virtual team or virtual technology not mention above?

.....

.....

.....

	Please tick the appropriate boxes indicating your agreement to the following as drawbacks of utilizing a virtual team and virtual technology.	Strongly Agree	Somewhat Agree	Agree	Don't Know	Disagree	Somewhat Disagree	Strongly Disagree
		1	2	3	4	5	6	7
1	Ineffective communication in the absence of face to face communication		✓					
2	Sometimes require complex technological applications.	✓						
3	There is the need for HRD intervention because of lack of knowledge among employees about virtual teams.	✓						
4	Decrease monitoring and control of activities		✓					
5	Good teamwork can be a bit difficult to achieve					✓		
6	Challenges in managing conflict					✓		
7	Developing trust among team members is challenging					✓		
8	Difficulties establishing common grounds on team task					✓		
9	Require managing language differences					✓		
10	Require managing cultural incompatibilities					✓		
11	Structure may sometime not fit the organisation operational environment					✓		
12	Might create challenges and obstacles like technophobia			✓				
13	High set up cost					✓		
14	Challenges of determining the appropriate task technology fit					✓		
15	Social isolation					✓		

- Please list any other drawbacks of virtual team or virtual technology not mention above?

.....

.....

.....

Appendix C: Example of statistical analysis

3/24/2015

Dataset C:\@Data\Research\CPUT Mtech\TekehEmmanuel\Data

Frequency Distribution of Q1
OccCat

Q1	Count	Cumulative Count	Percent	Cumulative Percent
2 Man	2	2	5.00%	5.00%
3 Senior	17	19	42.50%	47.50%
4 Other	21	40	52.50%	100.00%

Frequency Distribution of Q2
Age

Q2	Count	Cumulative Count	Percent	Cumulative Percent
1 26_35	15	15	37.50%	37.50%
2 36_45	12	27	30.00%	67.50%
3 46_55	11	38	27.50%	95.00%
4 56_65	2	40	5.00%	100.00%

Frequency Distribution of Q3
Gender

Q3	Count	Cumulative Count	Percent	Cumulative Percent
F	27	27	67.50%	67.50%
M	13	40	32.50%	100.00%

Frequency Distribution of Q4
Educ

Q4	Count	Cumulative Count	Percent	Cumulative Percent
1 Dipl_Bdegree	20	20	50.00%	50.00%
2 PGDegree	17	37	42.50%	92.50%
3 Masters	3	40	7.50%	100.00%

Frequency Distribution of Q6_01
Carb Footp

Q6_01	Count	Cumulative Count	Percent	Cumulative Percent
1 Strong Agree	15	15	38.46%	38.46%
2 SomewhatAgree	4	19	10.26%	48.72%
3 Agree	14	33	35.90%	84.62%
4 Don'tKnow	5	38	12.82%	97.44%
5 Disagree	1	39	2.56%	100.00%

Frequency Distribution of Q6_02
WorkLife

Q6_02	Count	Cumulative Count	Percent	Cumulative Percent

1 Strong Agree	11	11	27.50%	27.50%
2 SomewhatAgree	5	16	12.50%	40.00%
3 Agree	18	34	45.00%	85.00%
4 Don'tKnow	5	39	12.50%	97.50%
5 Disagree	1	40	2.50%	100.00%

Frequency Distribution of Q6_03
Gender Discrimination

Q6_03	Count	Cumulative Count	Percent	Cumulative Percent
1 Strong Agree	5	5	12.82%	12.82%
2 SomewhatAgree	2	7	5.13%	17.95%
3 Agree	8	15	20.51%	38.46%
4 Don'tKnow	12	27	30.77%	69.23%
5 Disagree	10	37	25.64%	94.87%
6 SomewhatDisag	1	38	2.56%	97.44%
7 StronglyDisagree	1	39	2.56%	100.00%

Frequency Distribution of Q6_4
Racial Discrimination

Q6_4	Count	Cumulative Count	Percent	Cumulative Percent
1 Strong Agree	5	5	12.82%	12.82%
2 SomewhatAgree	2	7	5.13%	17.95%
3 Agree	8	15	20.51%	38.46%
4 Don'tKnow	12	27	30.77%	69.23%
5 Disagree	11	38	28.21%	97.44%
7 StronglyDisagree	1	39	2.56%	100.00%

Frequency Distribution of Q6_5
Travel Cost

Q6_5	Count	Cumulative Count	Percent	Cumulative Percent
1 Strong Agree	22	22	55.00%	55.00%
2 SomewhatAgree	9	31	22.50%	77.50%
3 Agree	8	39	20.00%	97.50%
7 StronglyDisagree	1	40	2.50%	100.00%

Frequency Distribution of Q6_6
Talented Employees

Q6_6	Count	Cumulative Count	Percent	Cumulative Percent
1 Strong Agree	5	5	12.50%	12.50%
2 SomewhatAgree	7	12	17.50%	30.00%
3 Agree	18	30	45.00%	75.00%
4 Don'tKnow	5	35	12.50%	87.50%
5 Disagree	5	40	12.50%	100.00%

Frequency Distribution of Q6_7
Physical Disabled

Q6_7	Count	Cumulative Count	Percent	Cumulative Percent
1 Strong Agree	7	7	17.50%	17.50%
2 SomewhatAgree	7	14	17.50%	35.00%
3 Agree	18	32	45.00%	80.00%
4 Don'tKnow	7	39	17.50%	97.50%
5 Disagree	1	40	2.50%	100.00%

Frequency Distribution of Q6_8
Skillful Employee

Q6_8	Count	Cumulative Count	Percent	Cumulative Percent
1 Strong Agree	6	6	15.00%	15.00%
2 SomewhatAgree	7	13	17.50%	32.50%
3 Agree	15	28	37.50%	70.00%
4 Don'tKnow	10	38	25.00%	95.00%
5 Disagree	1	39	2.50%	97.50%
7 StronglyDisagree	1	40	2.50%	100.00%

Frequency Distribution of Q6_9
Experienced Employees

Q6_9	Count	Cumulative Count	Percent	Cumulative Percent
1 Strong Agree	5	5	12.50%	12.50%
2 SomewhatAgree	8	13	20.00%	32.50%
3 Agree	14	27	35.00%	67.50%
4 Don'tKnow	9	36	22.50%	90.00%
5 Disagree	3	39	7.50%	97.50%
6 SomewhatDisag	1	40	2.50%	100.00%

Frequency Distribution of Q6_10
Flexible Work

Q6_10	Count	Cumulative Count	Percent	Cumulative Percent
1 Strong Agree	8	8	20.00%	20.00%
2 SomewhatAgree	12	20	30.00%	50.00%
3 Agree	15	35	37.50%	87.50%
4 Don'tKnow	3	38	7.50%	95.00%
5 Disagree	1	39	2.50%	97.50%
7 StronglyDisagree	1	40	2.50%	100.00%

Frequency Distribution of Q6_11
Information Sharing

Q6_11	Count	Cumulative Count	Percent	Cumulative Percent
1 Strong Agree	5	5	12.50%	12.50%
2 SomewhatAgree	16	21	40.00%	52.50%
3 Agree	16	37	40.00%	92.50%
4 Don'tKnow	3	40	7.50%	100.00%

Frequency Distribution of Q6_12
Productivity

Q6_12	Count	Cumulative Count	Percent	Cumulative Percent
1 Strong Agree	7	7	17.95%	17.95%
2 SomewhatAgree	8	15	20.51%	38.46%
3 Agree	18	33	46.15%	84.62%
4 Don'tKnow	6	39	15.38%	100.00%

Frequency Distribution of Q6_13
Competitive Advantage

Q6_13	Count	Cumulative Count	Percent	Cumulative Percent
1 Strong Agree	5	5	12.50%	12.50%
2 SomewhatAgree	14	19	35.00%	47.50%
3 Agree	14	33	35.00%	82.50%
4 Don'tKnow	6	39	15.00%	97.50%
5 Disagree	1	40	2.50%	100.00%

Frequency Distribution of Q_14
Customer Satisfaction

Q_14	Count	Cumulative Count	Percent	Cumulative Percent
1 Strong Agree	4	4	10.00%	10.00%
2 SomewhatAgree	12	16	30.00%	40.00%
3 Agree	15	31	37.50%	77.50%
4 Don'tKnow	7	38	17.50%	95.00%
5 Disagree	1	39	2.50%	97.50%
7 StronglyDisagree	1	40	2.50%	100.00%

Frequency Distribution of Q6_15
Cross Divisional

Q6_15	Count	Cumulative Count	Percent	Cumulative Percent
1 Strong Agree	4	4	10.00%	10.00%
2 SomewhatAgree	8	12	20.00%	30.00%
3 Agree	21	33	52.50%	82.50%
4 Don'tKnow	6	39	15.00%	97.50%
5 Disagree	1	40	2.50%	100.00%

Frequency Distribution of Q6_16
Flexible Working

Q6_16	Count	Cumulative Count	Percent	Cumulative Percent
1 Strong Agree	10	10	25.00%	25.00%
2 SomewhatAgree	8	18	20.00%	45.00%
3 Agree	17	35	42.50%	87.50%
4 Don'tKnow	3	38	7.50%	95.00%
5 Disagree	1	39	2.50%	97.50%
7 StronglyDisagree	1	40	2.50%	100.00%

Frequency Distribution of Q6_17
Flexibility

Q6_17	Count	Cumulative Count	Percent	Cumulative Percent
1 Strong Agree	7	7	17.50%	17.50%
2 SomewhatAgree	8	15	20.00%	37.50%
3 Agree	18	33	45.00%	82.50%
4 Don'tKnow	6	39	15.00%	97.50%
7 StronglyDisagree	1	40	2.50%	100.00%

Frequency Distribution of Q6_18
Better Employees

Q6_18	Count	Cumulative Count	Percent	Cumulative Percent
1 Strong Agree	5	5	12.50%	12.50%
2 SomewhatAgree	11	16	27.50%	40.00%
3 Agree	13	29	32.50%	72.50%
4 Don'tKnow	8	37	20.00%	92.50%
5 Disagree	3	40	7.50%	100.00%

Frequency Distribution of Q6_19
Business Enviroment

Q6_19	Count	Cumulative Count	Percent	Cumulative Percent
1 Strong Agree	11	11	27.50%	27.50%
2 SomewhatAgree	7	18	17.50%	45.00%
3 Agree	18	36	45.00%	90.00%
4 Don'tKnow	3	39	7.50%	97.50%
5 Disagree	1	40	2.50%	100.00%

Frequency Distribution of Q6_20
Team Effectiveness

Q6_20	Count	Cumulative Count	Percent	Cumulative Percent
1 Strong Agree	8	8	20.00%	20.00%
2 SomewhatAgree	8	16	20.00%	40.00%
3 Agree	15	31	37.50%	77.50%
4 Don'tKnow	6	37	15.00%	92.50%
5 Disagree	2	39	5.00%	97.50%
6 SomewhatDisag	1	40	2.50%	100.00%

Frequency Distribution of Q6_21
Work Stress

Q6_21	Count	Cumulative Count	Percent	Cumulative Percent
1 Strong Agree	5	5	12.50%	12.50%
2 SomewhatAgree	7	12	17.50%	30.00%
3 Agree	13	25	32.50%	62.50%
4 Don'tKnow	7	32	17.50%	80.00%

Appendix D: Example interview transcript and transcript colour coding

Interview: Transcript (05)
Date: 09.12.2014
Venue: Head Office
Interviewee: Female Interviewee (FI)
Interviewer: Emmanuel Tekeh (IV)

FI Now, there are two sides for me. The one is um, flexible working hours and technology in itself, because technology, especially communication networks like cell phone, social media, all that kind of stuff supports us currently to have a more flexible work environment. So, I think that is there, and I am responsible for HR in the IT environment, so that makes it more, and also I have got that connection closer with HR and IT.

IV Oh, yes.

FI So um, the reality is there are certain burning issues in terms of IT, because we are not IT development, we are IT infrastructure. So we don't programme, we do the infrastructure, so it's email and the networks and those kind of things. So there are, because you have got also now more pressure on having a 24/7 service, you need people to work, and we are looking at things like India, people from India that can support certain things at night while we are sleeping, which is almost forcing this while virtual thing.

So, but I also don't know what the resistance is. I think it is, if you ask my view, it is most of the managers are your previous generation that used to work eight to five, and if you are not here before eight, you're actually not working enough. If I leave the office at five or six and you already left, how can you leave, we have got so much work to do. So, they haven't made that switch, that a person can still work. I mean, I leave here early sometimes because I have to pick up my daughter, but the moment I park there and wait for her, I carry on with my emails. Tonight when they go to sleep, I carry on working.

So um, which technology is supporting, but I think the biggest barrier at the moment is that it is that generation, what is it, the baby boomers, in that level, that come through 30 years of work. That's how they worked 30 years ago. That is the biggest resistance. They see work as if I see you, you work, if I don't see you, you don't work. So that is a mind set change that needs to happen. I think the technology is there to support it, that people can work from home more often, and we are going to try that in our division through innovation.

We have just launched a whole innovation programme where we are opening it up, and exactly your question, is what we are going to post um, on the website. We have got a platform running there, innovation, so we are saying how do we um, allow people to work more flexible to ensure a better work life balance, but still take accountability for what we have to develop.

So um, and if we get feedback on that, it will only possibly run early next year, then I will give you um, feedback on that. You can arrange with Frazanah to get feedback on that, because we are going to actually ask the people, and I think if you ask the younger generations, they will give you a lot of input.

IV That's quite interesting. I'm glad you raise that point, because the reason why I had a survey, specifically part of the survey, the research attracted a question in such a way, there is something called technophobia. That was to address most of the organisations that have a multigenerational workforce in South Africa. So you have your younger generation, and then you have the baby boomers who have been there for years, and some have technophobia, some won't have technophobia. So, it's difficult to sort of determine if there is a problem or not.

So I have structured this part of the question, and getting it out to professionals so I can get an opinion based on individuals to see. Some people who responded I think thought there was a problem, which there is a bit of a problem. Uh, it's not a challenge that cannot be overcome. It can be, possibly. However, in a South African context, do you think we have the appropriate uh, telecom infrastructure to support a virtual work environment?

FI I think it's not as stable as we want it, um, and, but I think even MTN, we have got a contract with MTN. They drop us at times, at critical times. Um, and we have to provide a service to the entire organisation of 16,000 people, and call centres and businesses. So that's not even our own staff working from home, it is people out there. So, if you work from home and the technology um, fails you, you can actually get in your car and come to work if you have to.

Um, so I think, I think we've got the infrastructure. There are various means of getting stuff done. You can still work, you don't have to be connected right now. Some of the techies need to, and I think that's why they still go into the office, because they may find that it is not that reliable, so they rather go into the office, but it is interesting for me as well because I sit in an IT environment. You can still understand it from the previous generations that are not IT minded. This is IT people who are saying it, that we need to be more flexible and all, but yet if they walk around and the office is empty at four, they've got a problem with it. Where are the people? Why are they not working?

So, I think the other side of the coin is there are always people taking chances, so you have to manage between that and still, and that's why our question is um, set in such a way that, how do we ensure flexible working hours, how do we support a proper work life balance, but still have accountability. So I think if we keep them accountable, so whenever they do it, that's their problem.

IV That is one of the downsides of the virtual working environment, accountability. Because of that lack of face to face, um, you cannot control people that much. However, the intervention that can be put in place, and to evaluate people's contribution to the overall team work. So you would say overall we have a reasonable telecom infrastructure that can support a virtual work environment?

FI Yes.

IV Now, the next point would be, the literature points out that the high costs of broadband makes it unattractive for organisations to look at adopting virtual technologies, or moving to the virtual environment. They think it's not very feasible because of the costs of broadband and the speed of Internet is slow. We are still running on ADSL, while other countries are running on optic fibre networks. So, do you think that is also part of the problem?

FI With us it's not really because we um, provide them with 3G cards. They work at home in any case, we give it to them, because a lot of our um, standby and overtime work over weekends is more to virtual. So there is at least a success story on that. So, because you are on standby, it's not scheduled overtime. It is standby in case the system falls over. So if you are on standby this week, you must ensure you have got a cell phone, you have got a data card, and if they call you at two o'clock at night, you switch on and fix the problem via phone and via laptop from home. You don't have to drive in.

So, there is a lot of that already happening, so your question about the cost, I don't know if you do it on a bigger scale if that will be possibly a cost issue for us because we are technology people, almost everybody has got 3G cards, data cards, and they work that way and the company pays for it.

IV So from your organisational standpoint, the cost, the setup cost is not much of a problem because you are already in the virtual work environment, you are venturing in there. The reason why I ask that question, because I am looking at, as far as innovation goes, I am looking at the public and the private sector too. It's a completely different scenario. Um, my next question was going to be obviously if you are already in there, it means you would have adopted a flat organisational structure as opposed to a multi-layered bureaucratic structure.

FI No, no, we are much more flat, and we also have a matrix model. So, you will have your line manager you are reporting to but you are supporting various other functions and people. So, anybody can ask you anything, yes.

IV Okay. Um, coming back to your point of the executive, the senior management, do you think it's a general South African organisational culture that people, senior management, because of that whole generation still have that preference of face to face, waking up in the morning, shower, sit in traffic for two hours and then come to work, sit in traffic back, go home, and go and work.

FI I don't want to generalise, but I think a big portion is still the culture. I can see it, I am working very flexible, um, because I had to, um, and I'm not just talking flexible in terms of you can work from seven till three, or eight till five or whatever, and I know people working in the city centre does a lot of that, um, and also in Pretoria where there is lots of traffic, they do that kind of flexible.

But what I learn was when I came here, I worked for a new CIO that was very innovative and thought out of the box in the way he works. I took over the HR function, and there was no HR function, I actually had to set up an HR function. The first thing that I was hit with is recruitment, appointment vacancies. This person has left and, you know, everything is urgent. So if you do recruitment, you actually don't get to anything else, and I walked out to Tygervalley one day, and I saw a person that worked in our recruitment department that had a baby. I thought you know, she can help me with that position

that's critical, and I phoned her. I said I'll pay you per hour, just come in and deal with this vacancy.

After, it must be ten years now, more than ten years, she is still working for me as an as and when contractor. If there is a lot of recruitment she works a lot, if there is a little, there's a little, if she doesn't work for three months, she doesn't work for three months. So that for me is true flexibility, but I don't think everybody thinks that way. The benefit of that is to get a skill for a specific job. If I don't need for recruitment, I find another skill for change management because I'm in a change process, and I pay for that. But I see more and more companies are adopting that.

IV That's what virtual work is all about because it gives you, it provides you with that flexibility to tap into specific skills and do a specific project, and then that's it.

FI So, you do this, it's seasonal.

IV Yes. However, it was also highlighted in the literature that a lot of organisations, specifically those that are unionised are concerned about job losses. What are your views on that?

FI Just a question about, concern about job losses?

IV Yes, that model of work, virtual work would lead to job losses.

FI I think it could, um, but I think people, and now we are away from managers again, and executives, people, resources, staff need to also change their mind-set to say, and I had a discussion with someone the other day, and people are retiring earlier and earlier because of the need and the pressures and the government pressures on BEE and all this kind of stuff, people have to retire at 50 where they wanted to work till 60.

I said to someone the other day, but don't keep on thinking you have to find another job, because where are you going to find one at 50, being a white male or a white female? So, change that. I said draw up a short CV with all your skills, you have got years of experience, tell people, with a covering letter, that you have taken early retirement, you have got these skills to offer per hour, and now that person is working constantly.

She has to say no for some work because two days at Mutual, three days here, but that is a mind-set again in staff perspective. You don't have to sit without work because you can't find a permanent job. People get stuck in this thing, I have to find a permanent job. So, I think if they can change that mind-set, which is also virtual, because they become the pool of skills that companies pull off when they need it.

IV Yes. That said, is there also a bit of a problem, because the literature points out that South Africa has a problem of a lack of skilled people to work in such an environment. People are not technologically inclined. Um, the educational system sends out graduates with not proper skills, and they get into industry, and suddenly somebody has never worked in such an environment and is not exposed to this, and then they have to work with all this stuff, and technology becomes a problem. Do you think that's a bit of a challenge?

FI I think we have got a massive skills problem in the country. We have got certain, um, individuals that are flooding the market with skills that we don't need, and there are

others that we have got a massive shortage of. Um, and I think a big untapped pool is this pool of people who retire early, who just think okay, then I'm not going to work and I'm going to do my garden, and we should actually try and tap into those people. Even if it's three months a year that they work, still, they work for three months, um, and it can be in the form of mentorship etc, where they are working and transferring skills, because we are getting rid of lots of experience, and we don't actually realise how much skills we are getting rid of.

IV Oh yes, yes, yes. Okay. In line with that, the literature, the questions which were based on literature or other research for academics who don't have to do all this research to see where the gaps are, they also highlighted HR policies. Some organisation HR policy doesn't encourage some of those things. Some of the HR policies are not inclined to innovation. They are just sort of stagnated policies that have been there for eternity. It doesn't even get reviewed, and so in light of that, it hampers the organisation's ability to be a forward thinking organisation. What do you think about that?

FI I definitely think so. When we merged now with Momentum, it's Metropolitan Momentum, we deliberately got rid of all policies. So we don't even use the word policy, we say guidelines. Things that are policies are like leave policies that you get, how much leave do you get, but we used to have an attendance policy that says you have to be at work between 8:00 and 8:30, you have to be here between 16:00 and 16:30, otherwise you have to contact your manager etc, and I think those things do hamper, I agree. But we are really trying to steer away from that and not force people to do anything.

UF Hello, good morning. What would you like? Are you guys all right?

FI Nothing for me thanks, dankie. So um, yes, it's important that you look at your policies.

IV Oh, okay.

FI Sorry, can I just answer this one?

IV That's fine. Okay, as one of the benefits that were highlighted specifically in the South African context, do you think the virtual working environment promotes the employment of people with disability? A lot of organisations complain that if we had to employ this disabled person, it means that we need to build a new toilet for this guy, we need to change the whole layout of this office. Do you think it's a challenge?

FI I think it may hamper, but because we are a big organisation, we take that into consideration when we do buildings and enhance buildings and change buildings. So, I don't think for us it's a problem, because all of our stuff is already aligned to cater for disabilities. I think what is a bigger hamper is the environment the person is working in, the people, the culture is not always acceptable to that person, and not because they don't want to, because they don't know how to. You know, how do we deal with this guy next to me that's blind, or um, and I think we need to prepare people more for that.

So I find more we don't have a problem getting them, we don't have a problem with changing stuff, it all changed years ago already, but we do have a problem keeping them. So either the manager or the staff with the people um, needs to be more prepared on how do we deal with this individual amongst us.

IV Okay. Generally speaking, um, generally speaking, would you say that technology provides a tool whereby you don't necessarily need to get this person to come and have an office, but the person can work from home, provided the organisation is willing to provide the person with the necessary needs in terms of technology and stuff?

FI You can do that, and I know we don't have call centres ourselves, but I know they are looking at that specifically for a call centre environment, because you can sit from anywhere and answer phones, yes.

IV Yes, you can do that from home if the organisation is open to promoting the employment of people with disability, which will require a little bit of, just a little bit of setup.

FI It could be more or less it's only the bandwidth and the network connections. There is the same whether they sit in the office or at home.

IV Okay, um, one more thing that was highlighted that I picked up in the literature was government regulations. Is there any that you know of that sort of prevent companies from moving into this whole virtual space, and that restricts that?

FI No, I don't think so.

IV That promotes that.

FI The... I don't think that promotes it either. I think there is nothing that I can think that is hampering it, um, except I don't know how you would apply the health and safety policy if something, because here if I fall down the stairs I can claim from the company, but if I do it at home, then what? Do I say I was working when I fell down the stairs? How do you prove that, etc? So, I don't know. I think some of them don't make provision for that. Government policies could make provision for it, but I don't know of any policies that are actually preventing it.

IV The point you just raised actually clashes between that, between organisational uh, HR policies and government policy in terms of the health and safety act. So, if your organisation, if your policy doesn't state that if you are injured at home, how would you determine if you were working when you were injured and you claim from the government, there is a bit of a conflict going on there. It doesn't align with each other. So, as part of the literature, it was raised that um, the organisations first have to have a policy in place that makes provision for that, and the if such a thing should happen, then you take it forward with government.

FI I don't think they have even thought of that. I am just thinking of it now as we speak, but I don't know, maybe you need to speak to the guys that are responsible for health and safety and those kind of things.

IV That question was raised specifically because of the employment of people with disability. Somebody alluded to the fact that what if this guy gets injured at home, who is going to pay for that, and it was a little bit of a debate. If you are going to employ somebody like this and they are working from home, you are not, that lack of face to face, it's a virtual working environment, lack of face to face, you cannot see this person, you are not there to supervise them all the time, but of course they are working, and if they do get injured and that provision is not made, then they cannot claim from the

government. So is the organisational policy restricting it, or is it the government restricting it?

FI Yes, I don't know. I think at the moment our policies will be a restriction because it doesn't make provision for when you get injured at home.

IV So you would say that um, it has to start from the organisation having made provision.

FI Yes, and basically review all your policies to see if it, if it's a hindering factor in that.

IV Okay, thank you. One last thing. Now, the recruitment and selection of um, team members, a virtual team leader and people to work in a virtual team, some people lay more emphasis on soft skills, some people lay more emphasis on interpersonal skills. So, what would you say is important, what would you look for if you had to recruit people to work, or if you have recruited people to work on a virtual team or to lead a virtual team, because it's completely something different to be a manager and seeing people and policing people. This is different, where an ICT acts as a medium, that enabler to communicate between you and the next person, and even if you are using communication, Skype and all those other software tools where you can see me, but because of the lack of facial, it's pixels, pixels come together so you cannot see the expression. So, what would you say?

FI I think it will be different for the team leader than the um, than the team members. The team leader obviously needs to have very strong leadership skills, and not management skills. Um, I'm not saying not management skills, but you can't manage people if you are a strong manager who wants to manage output, you are going to be frustrated. So, if it's a team leader I am looking for, I'm looking for someone with strong self-awareness, leadership skills, and then accountability to get stuff done.

If I am looking for a team member, it's also accountability, because you can't do this if it's people that are actually slack that need to be managed. A skilled person, so it's someone that really brings skills to the party. I can't train the person, so it's a skilled person who takes accountability, self-awareness, um, yes, emotional intelligence, but I think for me it depends on what you do. If I think of an IT environment, they don't interact a lot with other people. So the key skill is plugging cables into networks. If the person has got the skill, I have assessed him, he can do it, I phone him, I say between eight and ten, that building, do this stuff, um, I think it can work.

So, it's more of a skill. It's obviously a qualified, experienced person, because you don't have the luxury of team members that you can call on from, unless you do it also virtually, um, which you obviously need to do, but you can't train someone. You can't have a trainee in that position, you can't have a development person in that division. So, I think the biggest thing for me would be skilled, experienced people.

IV Oh okay. Now, considering that the government is promoting equity, clearly it's a problem that they have to address issues with previously disadvantaged people and you have to comply with this government regulations, it is a reality that at some point you are going to employ people who don't have the knowledge skills. So, what role do you think HRD would play in that context?

FI I think, I really think that people who we need to develop need to spend more time at the office or with someone who is taking responsibility for the development of that person. So, whether that is off site or at work, but that person is a mentor, that person needs to work with someone, maybe someone else in the virtual team, someone needs to take responsibility for them until they are experienced and can work on their own. So, I'm not saying it's not, you can overcome it, but I wouldn't put a person that is not experienced straight into a virtual team. I wouldn't do that, because now you are given an instruction or a request and you don't know how to do it, who do you ask? I think that will be a challenge.

IV It is actually a challenge.

FI That will be a challenge, unless you have got a virtual team that works together for a while already, that works well. So, we say okay, I am allocating this one to you, like we're doing now, we've got a whole learnership [sic] programme. So you agree you will take this person as a mentor, you sit with him on a Monday morning or whatever, we come into the office, you agree time slots, and then he goes away or he works with you or whatever. There must be a whole plan, until you have got the person experienced so that he can work on his own. But I don't think it's an easy thing to do in a virtual team.

IV Which is one of the challenges from an HR perspective, where the actual literature actually speaks about that and about career development as succession planning, and how do you reward and promote people in such an environment where it is difficult to do performance appraisal.

FI I just think we are still far away from having people working in virtual teams full time, 100% of the time. I think there is always a place for being at the office, having meetings, um, we deal with clients, we need to see the clients. Um, so if you could have, if we can move, instead of having no virtual teams, from no virtual teams to 100% of the time they are working in virtual teams, I think we need to have a middle road where we say 50% of the time we need to be at the office. So, we all need to be there Monday mornings eight till ten for a meeting.

Um, in the IT environment you may be able to, and call centres and those kind of things, you may be able to work almost 1200% from another place, but most of the others, I mean, if I take HR people, I just got the call now from Pretoria that they are sitting with. I could have taken the call at home, but you need to sit with the individual, you need to give the individual feedback, you need to coach the individual. Sometimes they are upset, they want to see an HR person. So I don't think HR people can work from home full time.

IV Okay. Um, but you do agree that certain tasks, the main problem was technology task feeds because certain tasks were not suitable for technology, it will still require face to face, while others are much more suitable for technology. However, um, would you generalise, would you conclude the same that a combination of face to face, traditional co-located team, and a little bit of virtualness [sic] combined together is what we are doing?

FI I think we should promote that more, because it is almost taking small, eat the elephant piece by piece, promoting small steps and then what we spoke about in the beginning, this culture of thinking people are not working when I can't see them, will

change. It will gradually change because they will see I am actually getting more done, because I know sometimes I just have to remove myself from this building. I go to Willowbridge and I sit there and work. So, if I just have quietness for an hour and get through my mails, which I can't do sometimes during the day, I just don't get to it because there are people walking in all the time, asking questions, etc.

So um, there is a place for it and there is a place not for it, and I think your question about developing people, that needs to have a little bit more face to face. Whether that face to face is on site at the building or off site with an individual, it doesn't matter. It just needs to happen a bit more face to face.

IV That is quite important, the literature highlights that at the formation phase of a virtual team, it's very similar like a co-located team. There has to be that whole process, forming, that we meet together the first time. If it's not possible in a virtual, a global multinational virtual team where people sit in different countries and different time zones, there are always soft ways that you can meet, just to see them, so everybody gets to see each other. At least you have an idea that this is how this person looks, it is quite important. It is quite important, what are saying. Yes, I suppose I have covered everything in half an hour.

FI That's good.

IV I just have to go and transcribe the tape. Well, thanks for seeing me.

FI It's a pleasure. When do you have to get your stuff in?

IV Um, the data collection has been a very difficult process, getting organisations to buy into the process of research. It's something that I find very difficult. People are not open to the idea of research, and policies are generated through this research. When people propose, people come up with new ideas and back it up with research, it's not just a plan, it's backed up by a lot of research. So it was difficult finding, I would have graduated next year in April, but I think it will only be in September because this data collection process, I struggled to get the companies first.

When I finally got the companies, I understand people have busy schedules, and then you have to try and get people to discuss. So then there are reviews, so next year September I should be done.

FI Okay. At least you are getting there. Sometimes it feels for a person like it's holding you back, but in another five years from now, you're going to not worry whether it was April or September. So, you just carry on and you finish [laughs].

IV Well, it's my contribution to the knowledge. This is a very unknown research field in a South African context, and it's important that we address this issue. A lot of multinational corporations that are based in South Africa are reaping the benefits of virtual work and a virtual work environment. It is difficult for the academic fraternity to understand why are organisations not tapping into this. People are constantly complaining about the structure, but they are simply need to work from home.

There is an alternative way of doing this, and you can be skilled people, there is a lot of options that you can look at. So, part of this is just to see where people's perceptions are. It would be nice if I actually look at it broadly, however narrow it down to a specific

department or organisation, but I cannot generalise my findings because of the very nature of the research.

FI Yes, and I think it is really person specific. You may find that in one department it works perfectly, and I think it comes from the top. If that head is open to it and flexible, Frazanah would say to me I'm not coming in tomorrow, I've got to finish this, that and that, I say just tell me what you are going to do, it's fine, you don't have to come in, because she gets so much more done if she sits at home and she does it. Um, but then I would at other times say to her listen, you can't be out of the office for five days in a row. You are doing a planning session, you are going to Durban, you are going to Cape Town, there are people here that need to see you.

So, from our perspective we need to balance that, and that's why I say, if you can first training it 50/50, 70/30, see that it works, then you can gradually, and you can also see who you can do it with.

IV I guess we are getting there. One of the questions that I posed in my survey was to know how often people to travel to meet team members in different Provinces in the country, and how many of them are on the team. The idea was to get that information, numeric values, and then put it in a formula that will give me a value to determine the degree of virtuality to see where we stand, where your organisations stands, and where its heading to. For me to say this is the degree of virtuality of this organisation, I need to be able to quantify that numeric value.

FI Yes, it's very difficult. It's very difficult, because I remember with the merger in the beginning, everybody travelled to learn to know each other better, to whatever, and now it's just VCs, VCs all the time. We have even got Link, that is working similar to Skype, where you just dial in and we talk to each other, we see each other, we have a conversation, whereas in the beginning I used to travel twice a week, sometimes three times a week, up, down, up, down. It takes me five hours to get there, five hours back, for one meeting.

IV Precisely, and that hampers the quality of your life.

FI No, but I can actually work via phone. I don't even have to see him anymore because I know what he looks like, and we can sort it out quickly.

IV Precisely.

FI But you need to first get that. You can't ever take that away, that relationship and the connection and understanding, the trust of what the person can do and what they can't.

IV That is a key word, trust, and that is something that is being highlighted over and over – lack of trust. Trust needs to be established. Just seeing somebody, seeing you, I never met you, but you gave me approval. So unless trust is established, it makes open room.

FI Because trust is different levels. The one is I need to ensure that you can work, on that level.

IV Oh, yes.

FI You can do the work. Then I don't have to see you. Then the other part of trust is I need to know that you are not going to charge me for 30 hours if you only worked ten.

IV Oh, yes [chuckles].

FI So once that, and that's why I use this this woman as an example, that she is working for me over so many years, because I never had to doubt what she was doing. She would say, these are the positions I filled, these are the interviews. I said I don't want all the details, it's fine. I know you did it.

IV That trust is there. That trust has already been established. That is the main thing, trust and communication and technology.

FI But it wouldn't have worked immediately. It wouldn't have worked if she said from the beginning she is working from home.

IV Yes, it has to be established first at the beginning of the whole process. Oh, okay.

FI Okay, thank you.

IV Would you like a copy? Would you like to see the article when I am done?

FI I would, yes. Frazanah did say that we would get it.

IV Yes, I will publish it, I will send it to the HR publications to publish it, if they would be interested to publish it. However, every person that participates, I will send them a copy of my article. The thesis is a big document, so I will just get an abstract of the whole thing.

FI Yes, please, I would love that. Thank you very much.

IV It will be interesting to see what it is all about, and the findings.

FI What all the other feedback is. I would love that.

IV It's going to be interesting getting views from public and private.

FI I can think the more you speak to people the more the picture gets put together, the puzzle. Good luck with all the work you still need to do.

IV Thanks.

FI I'm sure you will be successful.

[End of sound file and interview 00:36:59]

Appendix E: Example of text coding

Qualitative data analysis: Implications of interviews

Questions	Themes	Categories and Sub-categories	Responses and colour coding implications
	Technology		Question: Q, follow-up question: FQ, Response: R
Q: Do you think the adoption of virtual teams and virtual technology can contribute towards job losses? Q: Are you aware of the perceived benefits of adopting virtual teams and virtual technology? Q: Do you think the virtual work environment promotes employment of disable people? Q: Is trust a problem within your organisation? Q: Do you think the adoption of virtual teams and virtual technology by an organisation may cut down its operational cost? Q: Do the adoption of virtual teams and virtual technology by organisation will promote work life balancing?		• Availability of technology • Perceived benefits & Draw backs	R: "So I think, okay, that's one aspect is that we are local, and virtual teams, organisations that are National or International um, are predisposed towards looking for those kinds of solutions upfront, because you don't want to fly people around"...(01) R: "Yes, okay. I think for me it will not be job loss. It will just, also working smart"...(02) R: "Yes, it's very difficult. It's very difficult, because I remember with the merger in the beginning, everybody travelled to learn to know each other better, to whatever, and now it's just VCs, VCs all the time. We have even got Link, that is working similar to Skype, where you just dial in and we talk to each other, we see each other, we have a conversation, whereas in the beginning I used to travel twice a week, sometimes three times a week, up, down, up, down. It takes me five hours to get there, five hours back for one meeting"...(05) R: "You are right, and it has already affected us. We have all got a type of Skype, they call it Link. Now, we will, instead of meeting, we will Skype people and we will sit in talk with a person in Johannesburg. We will have interviews via Skype. So we set up a room, and we will all sit from our side there, the applicant will sit on the other side and we will interview him. We can see the applicant, we can interview him. We don't have to fly the applicant down and pay for all sorts of accommodation costs and flight costs. Yes, and we've got e-learning, so instead of everybody coming to a class, we can say to him log onto the system, the e-learning is loaded, you can see it there. I must run"...(03) R: " I think it may hamper, but because we are a big organisation, we take that into consideration when we do buildings and enhance buildings and change buildings. So, I don't think for us it's a problem, because all of our stuff is already aligned to cater for disabilities. I think what is a bigger hamper is the environment, the person is working in, the people, the cultures is not always acceptable to that person, and not because they don't want to, because they don't know how to. You know, how do we deal with this guy next to me that's blind, or um, and I think we need to prepare people more for that"...(05) R: "Trust factor is a key"...(04) R: "Because trust is different levels. The one is I need to ensure that you can work, on that level. You can do the work. Then I don't have to see you. Then the other part of trust is I need to know that you are not going to charge me for 30 hours if you only worked ten"...(05) R: "But I don't think it can just work on trust. Then you mustn't tell me that story, that you can work on trust because I guarantee you [IV laughs] if these people sit at home and I will trust that they will work the 40 hours a week, sorry, unless you cannot measure the output you cannot work on trust"...(003)

			R: "You need to find that money to invest, you need to show where the savings are going to come from, but the savings are not going to come from the capital budget. It's going to come from the operating budget"...(01) R: "Yes, and effectiveness. Cost and the utilisation, the effectiveness of it"...(03) R: "So, I think the other side of the coin is there are always people taking chances, so you have to manage between that and still, and that's why our question is um, set in such a way that, how do we ensure flexible working hours, how do we support a proper work life balance, but still have accountability. So I think if we keep them accountable, so whenever they do it, that's their problem"...(05) R: "I don't think that gives work life balance, just by the way. No, it doesn't at all. With a cell phone, a 3G and a laptop, you never stop working"...(04). R: "We do have that. Um, in addition to email, we have Link where you can communicate with someone via your computer, you can talk to them, you can share your desktop with them. Um, IT uses it extensively. So if you've got an IT problem, the IT person doesn't come here, they first look at your desktop and they take over your desktop to see if they can fix it from somewhere else. And that same technology is sometimes used for virtual meetings, where someone sits, you know, where five people sit in five different offices and they can all come online together on your laptop, you know, and communicate via voice and via screen"...(01) R: "Well, I'll tell you where the biggest support will come for this, is from the green side, creating a green city. That's where the biggest support would come. You know, I've had meetings with people around creating the green city. They pulled me in because it was HR, and they looked at options but for me, looking at virtual teams is a very different way of achieving the same end."...(01). R: "I've never thought about that. No [laughs]. When IT, when I phone IT and I say fix my computer and they come and they say okay, give me access, I give them access. I don't give them my password. They can come and sit in my office and I will walk out and they will work on my system. They can come on and, bok, usually I sit and watch what they do, so I can see what they are doing. The only time I get anxious is when I've got a new computer and I want to make sure they've copied all my old stuff onto my new computer [IV laughs]. Have you copied it all? Don't clean that one till you... [laughs]. So no, IT guys I trust"...(01)
Q: What Factors contribute towards the slow or low adaption to virtual technology? Q: Do you think the cost of adopting virtual teams and virtual technology contribute towards the slow adaption innovative technology by South African organisations? FQ: What about the cost of bandwidth? Q: What about technological task fit within your		• Characteristics • Set up cost • Organisational fit	R: " Yes, cost wise, and I think also the perception, because it's not, if you look at it really, it's not the cost, but it's a perception because we don't calculate the other costs that will add it up. It's a cost, yes, the reality of the cost, and again, the perception of that, and the mere fact that now we are not going back to the policies. We just make the decision, even before. You know, you don't try. I think we should try, and be able to take risks, and again in the city, it's a risk that's a factor. We don't want to take risks"...(02) R: "We are a government organisation, and by its nature, government organisations tend to be conservative, okay, um, conservative financially, conservative in taking up new things" ...(01) R: "I just think we are still far away from having people working in virtual teams full time, 100% of the

organisation?			time. I think there is always a place for being at the office, having meetings, um, we deal with clients, we need to see the clients. Um, so if you could have, if we can move, instead of having no virtual teams, from no virtual teams to 100% of the time they are working in virtual teams, I think we need to have a middle road where we say 50% of the time we need to be at the office. So, we all need to be there Monday mornings eight till ten for a meeting"...(05) R: " there is a lot of that already happening, so your question about the cost, I don't know if you do it on a bigger scale if that will be possibly a cost issue for us because we are technology people, almost everybody has got 3G cards, data cards, and they work that way and the company pays for it"...(05) R: "So we've got the facilities, but the applicant doesn't. But we have used, we have used those kind of facilities, for example, successfully. We had a, teleconference, or a conference with a professor at the University of Bath in England, and we managed, you our whole team and we could communicate and see each other and all the rest of it and interact. So I think it's definitely something which is on the increase. I think probably the thing that is slowing it down is possibly funding, budget, because technology is expensive. Um, and then also to make sure that all our sites are actually set up to be able to accommodate um, that level of technology"...(04) R: "So you say we spend money there and we'll save money there, but the problem is we need money there to spend money there. Does that make sense?"...(01) R: "So, if you are asking why we're not there now, um, a lot of us had technology on our laptop for um, virtual meetings, but most of us don't use it, okay. Um, and as I say, all these reasons I have given you are the reasons why, and then the final big one is that many of the people who would use it are of a generation that are not used to using something like that"...(01) R: "Especially how the city is structured. Not everything we have is technologically inclined. Yes, absolutely. We still need the manual labour in order for us to [mobile phone rings] can I just"...(02) R: "So there are those kinds of innovative things that we do, but if you look at them, they are based on the current experience and skills of the people who are involved in those projects. So whether you do workflow, business workflow via computer or whether you do it via a paper process, is not very different. It is very different at one level, but it's logically not very different. But whether you stop having face to face meetings and you start talking through your computer, that's a shift"...(01) R: "I mean, my sense is that the barriers to our technology here in the city are things like um, you know, if we are going to do a training course in Atlantis, Atlantis should have a big screen, then someone can sit here and deliver the training course and they have got a big screen, but a big screen is expensive. Yes. I mean, I looked at the cost of putting a screen that size into this meeting room, a smart screen, um, and it was R18,000 or something, which for me was outside of my budget. Now, if you look at the fact that we've got over 600 workplaces, okay, we wouldn't want to install in every workplace, but if you look at the major nodes, even if you wanted to do 50, 50 x R18,000 that's a lot of money. So the barrier to, I don't think the barrier to virtual working is the speed with which our computers function, because I think that would be a barrier just to work in, let alone virtual. You know, I don't think it's a barrier to communicating and sharing stuff. I think the barrier there is more the hardware"...(01)

			R: "We tend to be quite embracing of new technology, but we do it in a very structured way, and going into virtual teams, um, starts impacting not on our use of technology, but on a whole approach to how one works, and how one works is that you would work every day, you are there for the citizen, you are in an office or you are in your workspace, wherever it happens to be, and you are expected to be there. Virtual teams presuppose something quite different. It's actually challenging that nature of work." ...(01) R: "Unless there is technology that pushes you, unless circumstances push you, you won't always go and look for that. So, with SAP we were pushed there. We had to change what we were doing, so we had to look for something"...(01). R: "Another factor is because we are government, we have limited budget, and within our limited budget, to start spending money on something new, is always difficult. If there is a big push, then you motivate why you have to spend money on something new but um, going into virtual teams, you need to invest"...(01). R:"So, there is an inherent conservatism towards how work is structured, ok? So, while we are very embracing of all sorts of things around technology, so for example our use of SAP is one of the most extensive, not just in South Africa, but internationally. So it's not as though we are scared of technology, it's not as though we are scared of doing new things and doing things different like you know fingerprint clocking devices. We are first in government, I think, making sure that everyone records their time via a fingerprint. But the point is that everyone has to record their time"...(01).

Appendix F: Example of Implication of coded data

Qualitative data analysis: Implications of interviews

Questions	Themes	Categories and Sub-categories	Responses and colour coding implications
	Technology		Question: Q, follow-up question: FQ, Response: R
Q: Do you think the adoption of virtual teams and virtual technology can contribute towards job losses? Q: Are you aware of the perceived benefits of adopting virtual teams and virtual technology? Q: Do you think the virtual work environment promotes employment of disable people? Q: Is trust a problem within your organisation? Q: Do you think the adoption of virtual teams and virtual technology by an organisation may cut down its operational cost? Q: Do the adoption of virtual teams and virtual technology by organisation will promote work life balancing?		• Availability of technology • Perceived benefits & Draw backs	R: "so I think, okay, that's one aspect is that we are local and virtual teams, organisations that are National or international um, are predisposed towards looking for those kinds of solutions upfront, because you don't want to fly people around"...(01) R: "Yes, okay. I think for me it will not be job loss. It will just, also working smart"...(02) R: "Yes, it's very difficult. It's very difficult, because I remember with the merger in the beginning, everybody travelled to learn to know each other better, to whatever, and now it's just VCs, VCs all the time. We have even got Link, that is working similar to Skype, where you just dial in and we talk to each other, we see each other, we have a conversation, whereas in the beginning I used to travel twice a week, sometimes three times a week, up, down, up, down. It takes me five hours to get there, five hours back for one meeting"...(05) R: "You are right, and it has already affected us. We have all got a type of Skype, they call it Link. Now, we will, instead of meeting, we will Skype people and we will sit in talk with a person in Johannesburg. We will have interviews via Skype. So we set up a room, and we will all sit from our side there, the applicant will sit on the other side and we will interview him. We can see the applicant, we can interview him. We don't have to fly the applicant down and pay for all sorts of accommodation costs and flight costs. Yes, and we've got e-learning, so instead of everybody coming to a class, we can say to him log onto the system, the e-learning is loaded, you can see it there. I must run"...(03) R: " I think it may hamper, but because we are a big organisation, we take that into consideration when we do buildings and enhance buildings and change buildings. So, I don't think for us it's a problem, because all of our stuff is already aligned to cater for disabilities. I think what is a bigger hamper is the environment the person is working in, the people, the culture is not always acceptable to that person, and not because they don't want to, because they don't know how to. You know, how do we deal with this guy next to me that's blind, or um, and I think we need to prepare people more for that"...(05) R: "Trust factor is a key"...(04) R: "Because trust is different levels. The one is I need to ensure that you can work, on that level. You can do the work. Then I don't have to see you. Then the other part of trust is I need to know that you are not going to charge me for 30 hours if you only worked ten"...(05) R: "But I don't think it can just work on trust. Then you mustn't tell me that story, that you can work on trust because I guarantee you [IV laughs] if these people sit at home and I will trust that they will work the 40 hours a week, sorry, unless you cannot measure the output you cannot work on trust"...(003)

			R: "You need to find that money to invest, you need to show where the savings are going to come from, but the savings are not going to come from the capital budget. It's going to come from the operating budget"...(01) R: "Yes, and effectiveness. Cost and the utilisation, the effectiveness of it"...(03) R: "So, I think the other side of the coin is there are always people taking chances, so you have to manage between that and still, and that's why our question is um, set in such a way that, how do we ensure flexible working hours, how do we support a proper work life balance, but still have accountability. So I think if we keep them accountable, so whenever they do it, that's their problem"...(05) R: "I don't think that gives work life balance, just by the way. No, it doesn't at all. With a cell phone, a 3G and a laptop, you never stop working"...(04). R: "We do have that. Um, in addition to email, we have Link where you can communicate with someone via your computer, you can talk to them, you can share your desktop with them. Um, IT uses it extensively. So if you've got an IT problem, the IT person doesn't come here, they first look at your desktop and they take over your desktop to see if they can fix it from somewhere else. And that same technology is sometimes used for virtual meetings, where someone sits, you know, where five people sit in five different offices and they can all come online together on your laptop, you know, and communicate via voice and via screen"...(01) R: "Well, I'll tell you where the biggest support will come for this, is from the green side, creating a green city. That's where the biggest support would come. You know, I've had meetings with people around creating the green city. They pulled me in because it was HR, and they looked at options but for me, looking at virtual teams is a very different way of achieving the same end."...(01). R: "I've never thought about that. No [laughs]. When IT, when I phone IT and I say fix my computer and they come and they say okay, give me access, I give them access. I don't give them my password. They can come and sit in my office and I will walk out and they will work on my system. They can come on and, look, usually I sit and watch what they do, so I can see what they are doing. The only time I get anxious is when I've got a new computer and I want to make sure they've copied all my old stuff onto my new computer [IV laughs]. Have you copied it all? Don't clean that one till you... [laughs]. So no, IT guys I trust"...(01)
Q: What Factors contribute towards the slow or low adaption to virtual technology? Q: Do you think the cost of adopting virtual teams and virtual technology contribute towards the slow adaption innovative technology by South African organisations? FQ: What about the cost of bandwidth? Q: What about technological task fit within your		• Characteristics • Set up cost • Organisational fit	R: " Yes, cost wise, and I think also the perception, because it's not, if you look at it really, it's not the cost, but it's a perception because we don't calculate the other costs that will add it up. It's a cost, yes, the reality of the cost, and again, the perception of that, and the mere fact that now we are not going back to the policies. We just make the decision, even before. You know, you don't try, I think we should try, and be able to take risks, and again in the city, it's a risk that's a factor. We don't want to take risks"...(02) R: "We are a government organisation, and by its nature, government organisations tend to be conservative, okay, um, conservative financially, conservative in taking up new things" ...(01) R: "I just think we are still far away from having people working in virtual teams full time, 100% of the

organisation?			time. I think there is always a place for being at the office, having meetings, um, we deal with clients, we need to see the clients. Um, so if you could have, if we can move, instead of having no virtual teams, from no virtual teams to 100% of the time they are working in virtual teams, I think we need to have a middle road where we say 50% of the time we need to be at the office. So, we all need to be there Monday mornings eight till ten for a meeting"...(05) R: " there is a lot of that already happening, so your question about the cost, I don't know if you do it on a bigger scale if that will be possibly a cost issue for us because we are technology people, almost everybody has got 3G cards, data cards, and they work that way and the company pays for it"...(05) R: "So we've got the facilities, but the applicant doesn't. But we have used, we have used those kind of facilities, for example, successfully. We had a, teleconference, or a conference with a professor at the University of Bath in England, and we managed, you our whole team and we could communicate and see each other and all the rest of it and interact. So I think it's definitely something which is on the increase. I think probably the thing that is slowing it down is possibly funding, budget, because technology is expensive. Um, and then also to make sure that all our sites are actually set up to be able to accommodate um, that level of technology"...(04) R: "So you say we spend money there and we'll save money there, but the problem is we need money there to spend money there. Does that make sense?"...(01) R: "So, if you are asking why we're not there now, um, a lot of us had technology on our laptop for um, virtual meetings, but most of us don't use it, okay. Um, and as I say, all these reasons I have given you are the reasons why, and then the final big one is that many of the people who would use it are of a generation that are not used to using something like that"...(01) R: "Especially how the city is structured. Not everything we have is technologically inclined. Yes, absolutely. We still need the manual labour in order for us to [mobile phone rings] can I just"...(02) R: "So there are those kinds of innovative things that we do, but if you look at them, they are based on the current experience and skills of the people who are involved in those projects. So whether you do workflow, business workflow via computer or whether you do it via a paper process, is not very different. It is very different at one level, but it's logically not very different. But whether you stop having face to face meetings and you start talking through your computer, that's a shift"...(01) R: "I mean, my sense is that the barriers to our technology here in the city are things like um, you know, if we are going to do a training course in Atlantis, Atlantis should have a big screen, then someone can sit here and deliver the training course and they have got a big screen, but a big screen is expensive. Yes. I mean, I looked at the cost of putting a screen that size into this meeting room, a smart screen, um, and it was R18,000 or something, which for me was outside of my budget. Now, if you look at the fact that we've got over 600 workplaces, okay, we wouldn't want to install in every workplace, but if you look at the major nodes, even if you wanted to do 50, 50 x R18,000 that's a lot of money. So the barrier to, I don't think the barrier to virtual working is the speed with which our computers function, because I think that would be a barrier just to work in, let alone virtual. You know, I don't think it's a barrier to communicating and sharing stuff. I think the barrier there is more the hardware"...(01)

			R: "We tend to be quite embracing of new technology, but we do it in a very structured way, and going into virtual teams, um, starts impacting not on our use of technology, but on a whole approach to how one works, and how one works is that you would work every day, you are there for the citizen, you are in an office or you are in your workspace, wherever it happens to be, and you are expected to be there. Virtual teams presuppose something quite different. It's actually challenging that nature of work." ...(01) R: "Unless there is technology that pushes you, unless circumstances push you, you won't always go and look for that. So, with SAP we were pushed there. We had to change what we were doing, so we had to look for something"...(01). R: "Another factor is because we are government, we have limited budget, and within our limited budget, to start spending money on something new, is always difficult. If there is a big push, then you motivate why you have to spend money on something new but um, going into virtual teams, you need to invest"...(01). R:"So, there is an inherent conservatism towards how work is structured, ok? So, while we are very embracing of all sorts of things around technology, so for example our use of SAP is one of the most extensive, not just in South Africa, but internationally. So it's not as though we are scared of technology, it's not as though we are scared of doing new things and doing things different like you know fingerprint clocking devices. We are first in government, I think, making sure that everyone records their time via a fingerprint. But the point is that everyone has to record their time"...(01).

Appendix G: Example of Implication and elaboration from data coding.

Qualitative data analysis: Implications and elaboration of interviews

Questions	Themes	Sub-themes	R: Responses	Implications and elaborations
Follow-up question: FQ,	**Technology**			
Q: Do you think the adoption of virtual teams and virtual technology can contribute towards job losses? Q: Are you aware of the perceived benefits of adopting virtual teams and virtual technology? Q: Do you think the virtual work environment promotes employment of disable people? Q: Is trust a problem within your organisation? Q: Do you think the adoption of virtual teams and virtual technology by an organisation may cut down its operational cost? Q: Do the adoption of virtual teams and virtual technology by organisation will promote work life balancing?		• Availability of technology • Perceived benefits & Draw backs	R: "So I think, okay, that's one aspect is that we are local, and virtual teams, organisations that are National or international um, are predisposed towards looking for those kinds of solutions upfront, because you don't want to fly people around"...(01) R: "Yes, okay. I think for me it will not be job loss. It will just, also working smart"...(02) R: "Yes, it's very difficult. It's very difficult, because I remember with the merger in the beginning, everybody travelled to learn to know each other better, to whatever, and now it's just VCs, VCs all the time. We have even got Link, that is working similar to Skype, where you just dial in and we talk to each other, we see each other, we have a conversation, whereas in the beginning I used to travel twice a week, sometimes three times a week, up, down, up, down. It takes me five hours to get there, five hours back, for one meeting"...(05) R: "You are right, and it has already affected us. We have all got a type of Skype, they call it Link. Now, we will, instead of meeting we will Skype people and we will sit in talk with a person in Johannesburg. We will have interviews via Skype. So we set up a room, and we will all sit from our side there, the applicant will sit on the other side and we will interview him. We can see the applicant, we can interview him. We don't have to fly the applicant down and pay for all sorts of accommodation costs and flight costs. Yes, and we've got e-learning, so instead of everybody coming to a class, we can say to him log onto the system, the e-learning is loaded, you can see it there, I must run"...(03) R: " I think it may hamper, but because we are a big organisation, we take that into consideration when we do buildings and enhance buildings and change buildings. So, I don't think for us it's a problem, because all of our stuff is already aligned to cater for disabilities. I think what is a bigger hamper is the environment the	The interviewed candidates were generally aware of the many perceived benefits and some drawbacks of adopting virtual team and virtual technology as discuss in chapter two Table 2.4 such as the enhancement of organisational operational efficiency \ HR functions like recruitment, the promotion of work life balance, employment of people with disabilities, increase trust, reduction in organisations operational cost etc. For example R :(05) "Yes, it's very difficult. It's very difficult, because I remember with the merger in the beginning, everybody travelled to learn to know each other better, to whatever, and now it's just VCs, VCs all the time. We have even got Link, that is working similar to Skype, where you just dial in and we talk to each other, we see each other, we have a conversation, whereas in the beginning I used to travel twice a week, sometimes three times a week, up, down, up, down. It takes me five hours to get there, five hours back, for one meeting". But argued that these perceived benefits also a have draw backs which must be taking in to considerations before or during the adoption process. For example (R:03) "But I don't think it can just work on trust. Then you mustn't tell me that story, that you can work on trust because I guarantee you [IV laughs] if these people sit at home and I will trust that they will work the 40 hours a week, sorry, unless you cannot measure the output you cannot work on trust". Although interviewee's opinions differ slightly on the perceived benefits and drawbacks due to individual organisations circumstances, They all acknowledged it had or will have an impact in one way or the other. While numerous innovative tools for virtual working and virtual communication are available in the market place as shown in Table 2.3 in chapter two, the candidates interviewed noted the availability of technology such as skype, link, vcs and e-learning tools as illustrated in Table 4.1 are currently in use within their organisation but underline lower usage,

			person is working in, the people, the culture is not always acceptable to that person, and not because they don't want to, because they don't know how to. You know, how do we deal with this guy next to me that's blind, or um, and I think we need to prepare people more for that"...(05) R: "Trust factor is a key"...(04) R: "Because trust is different levels. The one is I need to ensure that you can work, on that level. You can do the work. Then I don't have to see you. Then the other part of trust is I need to know that you are not going to charge me for 30 hours if you only worked ten"...(05) R: "But I don't think it can just work on trust. Then you mustn't tell me that story, that you can work on trust because I guarantee you [IV laughs] if these people sit at home and I will trust that they will work the 40 hours a week, sorry, unless you cannot measure the output you cannot work on trust"...(03) R: "You need to find that money to invest, you need to show where the savings are going to come from, but the savings are not going to come from the capital budget. It's going to come from the operating budget"...(01) R: "Yes, and effectiveness. Cost and the utilisation, the effectiveness of it"...(03) R: "So, I think the other side of the coin is there are always people taking chances, so you have to manage between that and still, and that's why our question is um, set in such a way that, how do we ensure flexible working hours, how do we support a proper work life balance, but still have accountability. So I think if we keep them accountable, so whenever they do it, that's their problem"...(05) R: "I don't think that gives work life balance, just by the way. No, it doesn't at all. With a cell phone, a 3G and a laptop, you never stop working"...(04). R: "We do have that. Um, in addition to email, we have Link where you can communicate with someone via your computer, you can talk to them, you can share your desktop with them. Um, IT uses it extensively. So if you've got an IT problem, the IT person doesn't come here, they first look at your desktop and they take over your desktop to see if they can fix it from somewhere else. And that same technology is sometimes used for virtual meetings, where	low uptake, high set up cost and other factors contributed to the slow adoption of more innovative versions of these technologies for example (R: 01) "You need to find that money to invest, you need to show where the savings are going to come from, but the savings are not going to come from the capital budget. It's going to come from the operating budget".

			someone sits, you know, where five people sit in five different offices and they can all come online together on your laptop, you know, and communicate via voice and via screen"...(01) R: "Well, I'll tell you where the biggest support will come for this, is from the green side, creating a green city. That's where the biggest support would come. You know, I've had meetings with people around creating the green city. They pulled me in because it was HR, and they looked at options but for me, looking at virtual teams is a very different way of achieving the same end."...(01). R: "I've never thought about that. No [laughs]. When IT, when I phone IT and I say fix my computer and they come and they say okay, give me access, I give them access. I don't give them my password. They can come and sit in my office and I will walk out and they will work on my system. They can come on and, look, usually I sit and watch what they do, so I can see what they are doing. The only time I get anxious is when I've got a new computer and I want to make sure they've copied all my old stuff onto my new computer [IV laughs]. Have you copied it all? Don't clean that one till you... [laughs]. So no, IT guys I trust"...(01)	
Q: Do you think the cost of adopting virtual teams and virtual technology contribute towards the slow adaption innovative technology by South African organisations? FQ: What about the cost of bandwidth? Q: What about technological task fit within your organisation?		• Characteristics • Set up cost • Organisational fit	R: " Yes, cost wise, and I think also the perception, because it's not, if you look at it really, it's not the cost, but it's a perception because we don't calculate the other costs that will add it up. It's a cost, yes, the reality of the cost, and again, the perception of that and the mere fact that now we are not going back to the policies. We just make the decision, even before. You know, you don't try. I think we should try, and be able to take risks, and again in the city. It's a risk that's a factor. We don't want to take risks"...(02) R: "We are a government organisation, and by its nature, government organisations tend to be conservative, okay, um, conservative financially, conservative in taking up new things" ...(01) R: "I just think we are still far away from having people working in virtual teams full time, 100% of the time. I think there is always a place for being at the office, having meetings, um, we deal with clients, we need to see the clients. Um, so if you could have, if we can move, instead of having no virtual teams, from no virtual teams to 100% of the time they are working in virtual teams, I think we need to have a middle road where we say 50% of the time we need to be at the office. So, we all need to be there Monday	Most of the interviewees pointed a lack of fit between standard organisational processes and the adoption / utilization of virtual technology within their respective organisation to the standardized nature of some this innovative technology and their incompatibility to many standard organisation processes and HR functions which are characterized by standard departmental specifics. This view was mainly express by public sector interviewees. For example (R: 02) and (R: 01) "Especially how the city is structured. Not everything we have is technologically inclined. Yes, absolutely. We still need the manual labour in order for us to work [mobile phone rings] can I just" R:"So, there is an inherent conservatism towards how work is structured in the city ok?" although, the interviewees uniformly agree that adoption and utilization of virtual teams and virtual technology may significantly improve operational efficiency, a precautionary approach is advisable in selection and adoption of innovative technology suitable for standard organisational processes. For example (R:01) "We tend to be quite embracing of new technology, but we do it in a very structured way, and going into virtual teams, um, starts impacting not on our use of

			mornings eight till ten for a meeting"...(05) R: " there is a lot of that already happening, so your question about the cost, I don't know if you do it on a bigger scale if that will be possibly a cost issue for us because we are technology people, almost everybody has got 3G cards, data cards, and they work that way and the company pays for it"...(05) R: "So we've got the facilities, but the applicant doesn't. But we have used, we have used those kind of facilities, for example, successfully. We had a, teleconference, or a conference with a professor at the University of Bath in England, and we managed, you our whole team and we could communicate and see each other and all the rest of it and interact. So I think it's definitely something which is on the increase. I think probably the thing that is slowing it down is possibly funding, budget, because technology is expensive. Um, and then also to make sure that all our sites are actually set up to be able to accommodate um, that level of technology"...(04) R: "So you say we spend money there and we'll save money there, but the problem is we need money there to spend money there. Does that make sense?"...(01) R: "So. If you are asking why we're not there now, um, a lot of us had technology on our laptop for um, virtual meetings, but most of us don't use it, okay. Um, and as I say, all those reasons I have given you are the reasons why, and then the final big one is that many of the people who would use it are of a generation that are not used to using something like that"...(01) R: "Especially how the city is structured. Not everything we have is technologically inclined. Yes, absolutely. We still need the manual labour in order for us to work [mobile phone rings] can I just"...(02) R: "So there are those kinds of innovative things that we do, but if you look at them, they are based on the current experience and skills of the people who are involved in those projects. So whether you do workflow, business workflow via computer or whether you do it via a paper process, is not very different. It is very different at one level, but it's logically not very different. But whether you stop having face to face meetings and you start talking through your computer, that's a shift"...(01) R: "I mean, my sense is that the barriers to our technology here in the city are things like um, you know, if we are going to do a	technology, but on a whole approach to how one works, and how one works is that you would work every day, you are there for the citizen, you are in an office or you are in your workspace, wherever it happens to be, and you are expected to be there"..... All interviewees equally agree that high adoption cost was a significant contributing factor to the slow or low adoption of virtual team and virtual technology by their organisation. The cost of hardware, software, training, maintenance technology licensing fees etc. For example (R: 01) "I mean, my sense is that the barriers to our technology here in the city are things like um, you know, if we are going to do a training course in Atlantis, Atlantis should have a big screen, then someone can sit here and deliver the training course and they have got a big screen, but a big screen is expensive. Yes. I mean, I looked at the cost of putting a screen that size into this meeting room, a smart screen, um, and it was R18,000 or something, which for me was outside of my budget. Now, if you look at the fact that we've got over 600 workplaces, okay, we wouldn't want to install in every workplace, but if you look at the major nodes, even if you wanted to do 50, 50 x R18,000 that's a lot of money. So the barrier to, I don't think the barrier to virtual working is the speed with which our computers function, because I think that would be a barrier just to work in, let alone virtual. You know, I don't think it's a barrier to communicating and sharing stuff. I think the barrier there is more the hardware cost". Although all the interviewees uniformly agree that high set up cost of adopting virtual teams and virtual technology in general is an inhibitor, perceptions differ between interviewees from the smaller private sector organisations and thus from bigger public sector organisation. For example (R: 05) and (R: 02) "there is a lot of that already happening, so your question about the cost, I don't know if you do it on a bigger scale if that will be possibly a cost issue for us because we are technology people, almost everybody has got 3G cards, data cards, and they work that way and the company pays for it". (R: 02) "Yes, cost wise, and I think also the perception, because it's not, if you look at it really, it's not the cost, but it's a perception because we don't calculate the other costs that will add it up. It's a cost, yes, the reality of the cost, and again, the perception of that, and the mere fact that now we are not going back to the

			training course in Atlantis, Atlantis should have a big screen, then someone can sit here and deliver the training course and they have got a big screen, but a big screen is expensive. Yes. I mean, I looked at the cost of putting a screen that size into this meeting room, a smart screen, um, and it was R18,000 or something, which for me was outside of my budget. Now, if you look at the fact that we've got over 600 workplaces, okay, we wouldn't want to install in every workplace, but if you look at the major nodes, even if you wanted to do 50, 50 x R18,000 that's a lot of money. So the barrier to, I don't think the barrier to virtual working is the speed with which our computers function, because I think that would be a barrier just to work in, let alone virtual. You know, I don't think it's a barrier to communicating and sharing stuff. I think the barrier there is more the hardware cost"...(01) R: "We tend to be quite embracing of new technology, but we do it in a very structured way, and going into virtual teams, um, starts impacting not on our use of technology, but on a whole approach to how one works, and how one works is that you would work every day, you are there for the citizen, you are in an office or you are in your workspace, wherever it happens to be, and you are expected to be there. Virtual teams presuppose something quite different. It's actually challenging that nature of work."...(01) R: "Unless there is technology that pushes you, unless circumstances push you, you won't always go and look for that. So, with SAP we were pushed there. We had to change what we were doing, so we had to look for something"...(01). R: "Another factor is because we are government, we have limited budget, and within our limited budget, to start spending money on something new, is always difficult. If there is a big push, then you motivate why you have to spend money on something new but um, going into virtual teams, you need to invest"...(01). R:"So, there is an inherent conservatism towards how work is structured, ok? So, while we are very embracing of all sorts of things around technology, so for example our use of SAP is one of the most extensive, not just in South Africa, but internationally. So it's not as though we are scared of technology, it's not as though we are scared of doing new things and doing things different like you know fingerprint clocking devices. We are first in government, I think, making sure that everyone records their time via a fingerprint. But the point is that everyone has to record their time"...(01).	policies. We just make the decision, even before. You know, you don't try. I think we should try, and be able to take risks, and again in the city, it's a risk that's a factor. We don't want to take risks". However, Interviewees from the public sector organisation acknowledge that environmental factors such as the Rapid growth within their organisation has necessitated the adoption of innovative human resources information systems (HRIS) technology like (SAP) to replace existing older systems. For example (R: 01) "Unless there is technology that pushes you, unless circumstances push you, you won't always go and look for that. So, with SAP we were pushed there. We had to change what we were doing, so we had to look for something".