



**FACTORS THAT AFFECT DIGITAL TRANSFORMATION IN THE
TELECOMMUNICATION INDUSTRY**

by

DANIEL ARNOLDUS PRETORIUS

Thesis submitted in fulfilment of the requirements of the degree

MTech: Business Information Systems

In the Faculty Business and Management Science

At the Cape Peninsula University of Technology

Supervisor: Dr AC de la Harpe

Cape Town Campus

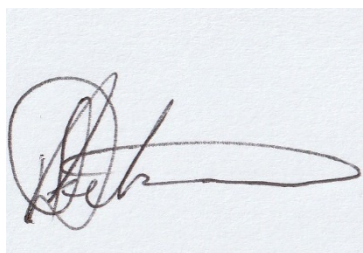
September 2019

CPUT copyright information

The thesis may not be published either in part (in scholarly, scientific or technical journals), or as a whole (as a monograph), unless permission has been obtained from the University

DECLARATION

I, Daniel Arnoldus Pretorius, declare that the contents of this thesis represent my own unaided work and that the 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.

A handwritten signature in black ink on a light blue background. The signature is stylized, starting with a large circular flourish, followed by several loops and a long horizontal tail.

Signature

2019-09-01

Date

EDITOR'S CERTIFICATE

19 November 2019

DANIE ARNOLD PRETORIUS

Faculty of Business Information Systems
Cape Peninsula University of Technology
Cape Town

RE: CERTIFICATE - TECHNICAL EDITING AND PROOFREADING OF MASTER'S THESIS

I, the undersigned, herewith certify that the technical editing and proofreading of the MTech thesis of Danie Pretorius, entitled "*FACTORS THAT AFFECT DIGITAL TRANSFORMATION IN THE TELECOMMUNICATION INDUSTRY*", has been conducted and concluded.

The finalised thesis was submitted to Danie on 19 November 2019 and cc'd to Prof André de la Harpe.

Sincerely



Professor Annelie Jordaan
DTech: Information Technology
Ph: 065 990 3713

Member: SATI 1003347



South African Translators' Institute (SATI)

ABSTRACT

The internet, mobile communication, social media, and other digital services have integrated so much into our daily lives and businesses alike. Companies facing digital transformation experience this as exceptionally challenging. While there are several studies that state the importance of digital transformation and how it influences current and future businesses, there is little academic literature available on factors that affect the success or failure of digital transformation in companies. It is unclear what factors affect digital transformation in an established telecommunications company. The aim of this study was therefore to explore the factors that affect digital transformation in a telecommunications company in South Africa, and to what extent.

One primary research question was posed, namely: "What factors affect digital transformation in a telecommunications company in South Africa?" To answer the question, a study was conducted at a telecommunications company in South Africa.

The researcher adopted a subjective ontological and interpretivist epistemological stance, as the data collected from the participants' perspective were interpreted to make claims about the truth, and because there are many ways of looking at the phenomena. An inductive approach was selected to enable the researcher to gain in-depth insight into the views and perspective of factors that influence digital transformation in the specific company. The explorative research strategy was used to gain an understanding of the underlying views, reasons, opinions, and thoughts of the 15 participants by means of semi-structured interviews. The participants were made aware that they do not have to answer any question if they are uncomfortable, and they could withdraw their answers at any time. The data collected were transcribed, summarised, and categorised to provide a clear understanding of the data. For this study, 36 findings were identified. From this research, it was inter alia concluded that successful digital transformation of companies depends on how Management drives digital transformation, and the benefits of new digital technologies should be carefully considered when planning to implement digital transformation.

Keywords: Digital transformation, digitalisation, Internet of Things, social media, Big Data, digital disruption

ACKNOWLEDGEMENTS

I would like to thank God for the Grace and courage throughout my research journey.

I further wish to thank:

- Dr André de la Harpe, my supervisor, for his diligent responsiveness, guidance, and encouragement
- The Telkom Group CEO for the permission to conduct my research at Telkom Group
- My family for their prayers and encouragement
- The reviewers, for their comments and guidance during the proposal and the thesis
- Every individual who supported me throughout the duration of my study

TABLE OF CONTENTS

DECLARATION	II
EDITOR'S CERTIFICATE	IV
TURNITIN REPORT	ERROR! BOOKMARK NOT DEFINED.
ABSTRACT	V
ACKNOWLEDGEMENTS	VI
LIST OF FIGURES	XI
LIST OF TABLES	XII
GLOSSARY	XIII
DEFINITIONS AND CLARIFICATION OF BASIC TERMS	XIV
1. CHAPTER ONE: INTRODUCTION	1
1.1 Introduction	1
1.2 Background to the research problem	2
1.3 Statement of the research problem	3
1.4 Research problem.....	3
1.5 Research aim.....	4
1.6 Research objectives.....	4
1.6.1 Objective 1	4
1.6.2 Objective 2.....	4
1.6.3 Objective 3.....	4
1.6.4 Objective 4.....	4
1.7 Research methodology	4
1.7.1 Research philosophy	5
1.7.2 Research approach.....	5
1.7.3 Research strategy.....	5
1.7.3.1 Explorative/case study	5
1.7.3.2 Qualitative.....	6
1.7.4 Unit of analysis	6
1.7.5 Unit of observation.....	7
1.7.6 Data collection	7
1.7.7 Sampling.....	7
1.7.8 Data analysis	7
1.7.9 Ethical consideration.....	8
1.8 Conceptual Framework.....	8
1.9 Delineation of the research	8
1.10 Findings	9
1.11 Conclusion.....	9

1.12	Recommendation.....	10
1.13	Contribution of the research.....	10
1.14	Summary	10
1.15	Outline of thesis structure	11
2.	CHAPTER TWO: LITERATURE REVIEW.....	12
2.1	Introduction.....	12
2.2	Definitions.....	13
2.3	The concept of digital transformation	14
2.4	Importance of digital transformation	15
2.5	Digital capabilities and transformation.....	15
2.6	Digital transformation and the organisation	16
2.7	Digital transformation and leadership.....	18
2.8	Digitalisation challenges	20
2.8.1	Leadership challenges	23
2.8.2	Skills challenges	23
2.8.3	The innovator's dilemma.....	23
2.8.4	The IT challenge	24
2.8.4.1	IT systems	24
2.8.4.2	Data security.....	24
2.8.5	Technology	24
2.8.6	Governments	24
2.8.7	The customers.....	24
2.9	Summary	25
3.	CHAPTER THREE: RESEARCH METHODOLOGY.....	26
3.1	Introduction.....	26
3.2	Research philosophy	27
3.2.1	Ontology	27
3.2.2	Epistemology	28
3.3	Research approach.....	29
3.3.1	Deductive approach.....	29
3.3.2	Inductive approach.....	30
3.4	Research strategy.....	30
3.4.1	Case study.....	30
3.4.2	Unit of analysis	31
3.4.3	Unit of observation.....	31
3.4.4	Sampling.....	32
3.5	Data collection	32
3.5.1	Interviews	32

3.6	Data analysis	33
3.7	Trustworthiness	33
3.7.1	Credibility	34
3.7.2	Transferability	34
3.7.3	Conformability	34
3.7.4	Reflexivity	34
3.8	Ethics.....	34
3.9	Summary	35
4.	CHAPTER FOUR: ANALYSIS AND FINDINGS	37
4.1	Introduction	37
4.2	The case.....	38
4.3	The participants	39
4.4	Analysis	40
4.5	Findings	41
4.5.1	Summary of the findings	56
4.6	Development of categories and themes	60
4.7	Themes.....	63
4.8	Summary	64
5.	CHAPTER FIVE: DISCUSSION.....	66
5.1	Introduction	66
5.2	The themes.....	66
5.2.1	Theme 1: Customer Experience.....	66
5.2.2	Theme 2: Digital Transformation.....	67
5.2.3	Theme 3: Management.....	69
5.2.4	Theme 4: Organisational Strategy.....	71
5.2.5	Theme 5: Technology	72
5.3	Summary	73
6.	CHAPTER SIX: CONCLUSIONS, RECOMMENDATIONS AND REFLECTIONS .	75
6.1	Introduction	75
6.2	Research question answered.....	75
6.3	Aim of the study addressed.....	76
6.4	Recommendation.....	76
6.5	Reflection.....	77
6.6	Conclusion.....	78
6.7	Summary of the study	78
6.8	Summary	79
	REFERENCE LIST	81
	APPENDIX A: CONSENT FORM.....	87

APPENDIX B: PARTICIPANT CONSENT LETTER.....	88
APPENDIX C: INTERVIEW GUIDE TEMPLATE.....	91
APPENDIX D1: INTERVIEW TRANSCRIPTIONS P1	92
APPENDIX D2: INTERVIEW TRANSCRIPTIONS P2	98
APPENDIX D3: INTERVIEW TRANSCRIPTIONS P3	105
APPENDIX D4: INTERVIEW TRANSCRIPTIONS P4	110
APPENDIX D5: INTERVIEW TRANSCRIPTIONS P5	114
APPENDIX D6: INTERVIEW TRANSCRIPTIONS P6	121
APPENDIX D7: INTERVIEW TRANSCRIPTIONS P7	128
APPENDIX D8: INTERVIEW TRANSCRIPTIONS P8	132
APPENDIX D9: INTERVIEW TRANSCRIPTIONS P9	136
APPENDIX D10: INTERVIEW TRANSCRIPTIONS P10	142
APPENDIX D11: INTERVIEW TRANSCRIPTIONS P11	147
APPENDIX D12: INTERVIEW TRANSCRIPTIONS P12	151
APPENDIX D13: INTERVIEW TRANSCRIPTIONS P13	156
APPENDIX D14: INTERVIEW TRANSCRIPTIONS P14	161
APPENDIX D15: INTERVIEW TRANSCRIPTIONS P15	167
APPENDIX E: EXAMPLE OF ANALYSIS OF INTERVIEW DATA.....	172

LIST OF FIGURES

Figure 1.1: The flow for Chapter One.....	1
Figure 1.2: Coceptual framework.....	8
Figure 2.1: The flow for Chapter Two.....	12
Figure 3.1: The flow for Chapter Three	26
Figure 3.2: Research onion.....	27
Figure 4.1: The flow for Chapter Four	37
Figure 4.2: Telkom SA SOC Limited's organisational structure	39
Figure 4.3: Extracting data from transcriptions based on phrases and keywords	41
Figure 4.4: Extract from analysis (creating a summary from responses).....	41
Figure 5.1: The flow for Chapter Five.....	66
Figure 6.1: The flow for Chapter Six.....	75

LIST OF TABLES

Table 1.1: Research problem, RQ, RSQs, methods, and objectives	3
Table 2.1: Some definitions of digital transformation	13
Table 2.2: Some categorised challenges of managing digital transformation	21
Table 3.1: Aspects of epistemology	29
Table 4.1: Participants' business unit, job title and years of experience	39
Table 4.2: Findings for RSQ 1.1	57
Table 4.3: Findings for RSQ 1.2	57
Table 4.4: Findings for RSQ 1.3	58
Table 4.5: Findings for RSQ 1.4	59
Table 4.6: Example extract from analysis (creating themes from the findings and categories for IQ 1.3.1)	61
Table 4.7: Summary of findings (36), categories (21) and themes (5)	61
Table 4.8: Themes per research question	64

GLOSSARY

Abbreviation	Full Word / Term
IP	Internet Protocol
IS	Information Systems
ISO	International Standardisation Organisation
IT	Information Technology
KPI	Key Performance Indicator
BU	Business Unit
IoT	Internet of Things
NPS	Net Promoter Score
SMACIT	Social, Mobile, Analytics, Cloud and Internet of Things [IoT]
IM	Instant Messaging
DT	Digital Transformation

DEFINITIONS AND CLARIFICATION OF BASIC TERMS

Word/Term	Definition
Digitalisation	Digitalisation focuses on potential changes in the processes beyond mere change of paper or analogue to digital of existing processes and forms (Mergel et al., 2019:12).
Digitisation	Digitisation is the transition from analogue to digital services with the same functionality and producing a technological channel of functionality (Mergel et al., 2019:12).
Governance	“The way something is controlled and management as the act of controlling” (O’Neill, 2014:343).
Digital business strategy	“Organisational strategy formulated and executed by leveraging digital resources to create differential value” (Bharadwaj et al., 2013:472).
Digital strategy	“A digital strategy is the strategic form of digitisation intentions of companies. The short and mid-term objectives are to create new or to maintain competitive advantages. Within the digital strategy, digital technologies and methods are applied to products, services, processes, and business models. In order to develop a digital strategy, the company and its environment have to be analysed as a basis for several future scenarios. The digital strategy consists of a vision, mission, strategic objectives, strategic success factors, values, and measures.” (Schallmo et al., 2018:3).
Outsourcing	“Assigning that part of work that was formerly done inside the organisation to be now performed by an external organisation.” (Sohail, 2011:370).

CHAPTER ONE: INTRODUCTION

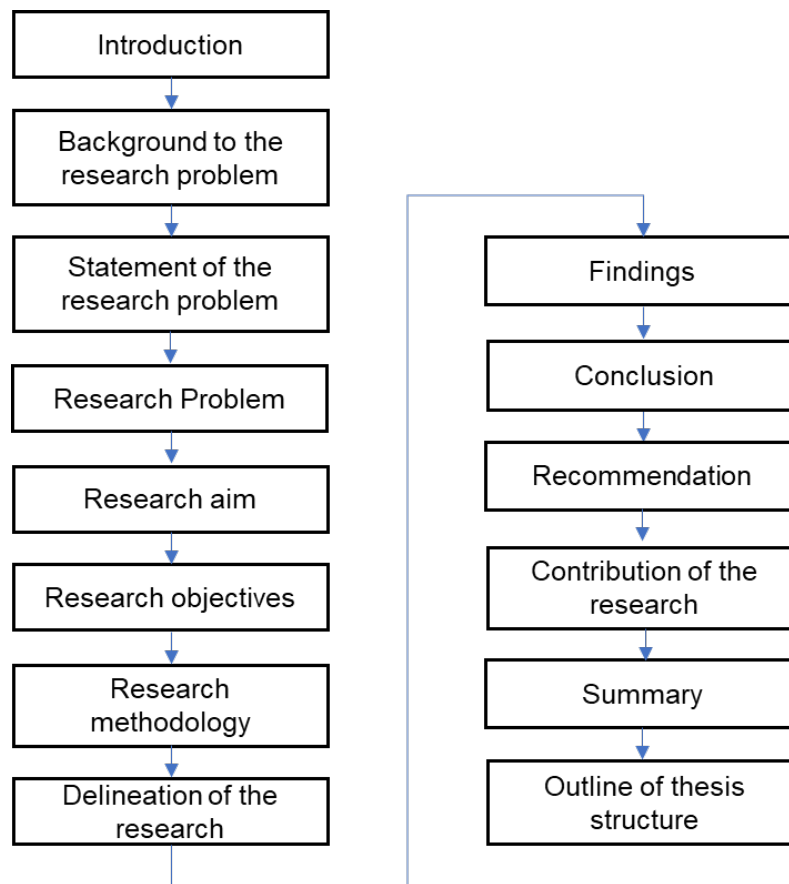


Figure 1.1: The flow for Chapter One

1.1 Introduction

The internet, mobile communication, social media, and other digital services have integrated so much into our daily lives and businesses alike. The internet of things (IoT), Big Data (BD), data analytics (DA), artificial intelligence (AI), and software are changing the world fast and continuously. Many businesses are feeling the pressure to change in order to meet customer demand and stay competitive due to emerging markets and digital technologies (Hartl & Hess, 2017; Porter & Heppelmann, 2014; Westerman et al., 2011).

For the transformation of companies to succeed, these companies need to think differently, look differently and take a hard look at their business processes and models. They need to be bold enough to alter their approaches where required. In light of this, it is also understandable that there are various factors that are and will affect the way companies perceive digital transformation (Davenport & Westerman, 2018). Therefore, the aim of this study was to explore the factors that affect digital transformation (DT) in a telecommunications company in South Africa, and to what extent.

1.2 Background to the research problem

The digital business models of new pioneering businesses place the traditional market-leading enterprises under pressure. If businesses want to avoid being replaced by Uber, Airbnb and Netflix type of companies, these traditional business models will have to change and be more vigilant than ever before (Abolhassan, 2017). Digital transformation can be defined as “the use of new digital technologies that enable major business improvements and influence all aspects of customers” (Reis et al., 2018:418).

According to Westerman et al. (2011), company performance can slow the process of digital transformation. If companies do not experience pain, the perceived risk of change may not be realised by many executives. For the transformation of companies to succeed, these companies need people who think digitally, look different at business processes and models from the normal perspective, and are bold enough to alter their approaches. There are various factors affecting the way companies perceive digital transformation (Davenport & Westerman, 2018). Selecting the correct partner, stability, agility and quality are factors that affect digital transformation according to Abolhassan (2017). In addition, the involvement of IT managers in the implementation of scalable, reliable, and affordable alternatives, and ensuring security and simplicity of systems will make companies able to realise the benefits of digital transformation. Business strategies and model re-alignment for the future will affect the competitive position and a drive for innovation in businesses (Abolhassan, 2017).

According to Henriette et al. (2016), digital transformation involves changes in the business model of the company affecting resources, operational culture, and processes, and represents important strategic decisions. Therefore, digital transformation raises a number of important issues, which may be the object of investigation. Zomer et al. (2018) state that research in digital transformation has mostly been supported in practice with various industry reports, but academic literature is still in its early stages and a limited number of studies exists on DT. Kutzner et al. (2018) argue that a well-accepted definition for digital transformation is lacking and that only a few studies attempt to explain the concept of digital transformation. The research of Liere-Netheler et al. (2018) shows a gap in the sociotechnical perception research of digital transformation. Mergel et al. (2019) posit that digital transformation is broader than the mere transition of processes and services to digital, and research therefore needs to expand into the holistic approach of DT.

Despite several studies that state the importance of digital transformation and how it influences current and future businesses, there is little academic literature available on factors affecting the success or failure of digital transformation in companies.

1.3 Statement of the research problem

Companies facing digital transformation experience the creation of strategies for DT as exceptionally challenging (Heavin & Power, 2018; Kane et al., 2018). Kane et al. (2018) note that established companies believe their past successes will carry them into the future. However, digital technologies are changing the competitive landscape, and factors of past successes may not be the same as those of the future. Digital transformation can solve some problems, but it also creates new problems (Heavin & Power, 2018). Westerman et al. (2014) argue that the focus on new technologies may steer companies in the wrong direction and miss the point of digital transformation, as digital is not the steering factor, but the transformation is. While several studies state the importance of digital transformation and how it influences current and future businesses (Abolhassan, 2017), there is little academic literature available on the factors affecting the success or failure of digital transformation in companies, particularly in the telecommunications industry (Mergel et al., 2019; Liere-Netheler et al., 2018; Zomer et al., 2018; Henriette et al., 2016).

It is unclear what factors affect digital transformation in an established telecommunications company in South Africa.

1.4 Research problem

Table 1.1: Research problem, RQ, RSQs, methods, and objectives

Research problem	It is unclear what factors affect digital transformation in an established telecommunications company in South Africa	
Research question (RQ)	What factors affect digital transformation in a telecommunications company in South Africa?	
Research sub-questions (RSQs)	Research method(s)	Objectives
RSQ 1.1: What technology factors affect digital transformation?	Case study and interviews	To determine what technology factors play a role in digital transformation strategies of the company
RSQ 1.2: What management factors affect digital transformation?	Case study and interviews	To examine the role that managers play in digital transformation
RSQ 1.3: What corporate culture factors affect digital transformation?	Case study and interviews	To determine the challenges that companies face when considering a digital transformation strategy
RSQ 1.4: How do these factors affect digital transformation in the company?	Case study and interviews	To determine how these factors affect digital transformation in the company

1.5 Research aim

Researchers conduct research with different aims, for example, to describe, explore, evaluate, explain, or predict phenomena (Neuman, 2014). The aim of this study was to explore the factors that affect digital transformation in a telecommunications company in South Africa, and to what extent.

1.6 Research objectives

1.6.1 Objective 1

To determine what technology factors play a role in digital transformation strategies of the company

1.6.2 Objective 2

To examine the role that managers play in digital transformation

1.6.3 Objective 3

To determine the challenges that companies face when considering a digital transformation strategy

1.6.4 Objective 4

To determine how these factors affect digital transformation in the company

1.7 Research methodology

The research design and methods followed are discussed in chapter Three. For this study, an inductive approach was chosen to enable the researcher to gain an in-depth insight into the views and perspective of factors that have an effect on digital transformation in the respective company. The ontological stance for the research was subjectivism as the researcher was part of the research and viewed the world from his own perspective (Saunders et al., 2019). An interpretivist epistemological stance was adopted, as the researcher interpreted the data collected from the interviewees in order to make claims about the truth. The research strategy was exploratory and conducted as a case study.

Data were collected by way of interviews using semi-structured questionnaires guided by an interview guide (Appendix C). Non-random, purposive, and convenient sampling was done. The unit of analysis was Telkom SA SOC Limited (referred to as the Telkom Group), specifically the business units and subsidiary concerned with telecommunications operations, which are the core of the company's operations. The unit of observation was the individual participants (15) from the IT department And Business Strategy and Marketing departments in the Core telecommunication business units and subsidiary, namely Telkom Commercial, BCX, and OpenServe

within the Telkom Group. Interviews were transcribed and returned to the participants to validate the correctness of the intent and content of the transcribed interview. Data have been analysed by summarising, categorising, and applying a thematic analysis.

1.7.1 Research philosophy

According to Saunders et al. (2019:133) ontology refers to “assumptions about the nature of reality”. Neuman (2014:94) identifies two ontology positions: realists and nominalists, where realists (objective ontology) assume that the “real world” is not dependent on humans and their understanding thereof to exist, and nominalists (subjective ontology) assume that humans have their own view of reality. A subjective ontological stance is followed as the researcher sees himself within the real world and is part of the case used for the research.

Neuman (2014:95) describes epistemology as “the issue of how we know the world around us or what makes a claim about it true”. Neuman (2014) recognises three epistemology approaches: positivism that adopts a realist position, interpretivism or phenomenology that explains there are multiple ways of looking at things, and the critical theory tradition that is a combination of positivism and interpretivism. The research adopted an interpretivist epistemological stance since the researcher had to interpret the data collected from the interviewees to make claims about the truth.

1.7.2 Research approach

When conducting research, the researcher can follow one of two research approaches, inductive or deductive research (Neuman, 2014). The inductive approach is based on the development and creation of meaningful data from collected data, in order to establish patterns and interrelations for the creation of a new theory or an existing theory. This theory is used to address the research question. Inductive research searches for patterns, similarities and regularities in the data in order to get to a conclusion and at the end to answer the research question (Saunders et al., 2019).

For this study, an inductive approach was chosen to enable the researcher to gain an in-depth insight into the views and perspective of the participants on factors having an effect on digital transformation in the respective company.

1.7.3 Research strategy

1.7.3.1 Explorative/case study

This research was based on an exploratory strategy, as the intent was not to offer a solution to the research problem (Saunders et al., 2007). Exploratory research provides a better and deeper insight into the problem and becomes visible towards

the end of the research process. In addition to this, exploratory research may also uncover new pathways to topics that have not yet been explored. Exploratory research relies on primary and secondary research techniques. The primary research techniques may include informal qualitative approaches or formal qualitative techniques.

1.7.3.2 Qualitative

“To answer some research questions, we cannot skim across the surface. We must dig deep to get a complete understanding of the phenomenon we are studying. In qualitative research, we do indeed dig deep: We collect numerous forms of data and examine them from various angles to construct a rich and meaningful picture of a complex, multifaceted situation” (Leedy & Ormrod, 2001:147).

According to Leedy and Ormrod (2001), all qualitative research studies have two things in common. Firstly, they focus on phenomena that occur in their natural settings and secondly, they study these phenomena in all their complexity. This kind of research, therefore, recognises that the issues being studied have many dimensions and layers, and seeks to portray these issues in multifaceted forms.

A qualitative research method is actually a form of explorative research and is used to gain an understanding of underlying views, reasons, opinions, and thoughts. A qualitative research method was selected for this study. The research attempted to gain insight into the factors affecting digital transformation and obtain a deeper understanding of why this is happening. A qualitative research method was selected for a deeper insight into the understanding of digital transformation.

The case study was selected as research strategy. According to Yin (2006), a case study should be used when the researcher conducts research to answer ‘how’ and ‘why’ questions where the researcher has no influence on the answers or behaviour of the participants. The company selected is within the telecommunications industry.

1.7.4 Unit of analysis

Phelan (2011) describes the unit of analysis as the source from where the researcher obtains the required information to answer the research questions, while Bengtsson (2016) describes it as the sample that is used to conduct the research, and what the researcher is seeking to elucidate by the study. For this research, the unit of analysis was identified to be Telkom SA SOC Limited (referred to as Telkom Group).

1.7.5 Unit of observation

The unit of observation was the individual participants (15) from the IT department and Business Strategy and Marketing departments in the Core telecommunications business units and subsidiary, namely Telkom Commercial, BCX, and OpenServe within the Telkom Group.

Non-random, convenience and purposive sampling was conducted to obtain the 15 participants.

1.7.6 Data collection

Neuman (2014) identifies several methods to collect data, including the analysis of existing documents, observations, interviews, and semi-structured questionnaires. For this investigation, data collection was done by means of interviews with semi-structured questionnaires using an interview guide (Appendix C). The interview was based on 15 open-ended questions and the duration of each interview was between 30 and 45 minutes. All interviews were audio-recorded, thereby allowing the researcher to concentrate and focus on the person being interviewed. The interview was then transcribed by the researcher. Once transcribed, the transcriptions were given to the participants to validate the correctness and content thereof.

1.7.7 Sampling

Fifteen (15) participants in the telecommunications company were interviewed. Of these, nine (9) participants have years of experience in the company. Participants have been chosen for diversity and knowledge on the subject matter. The participants included a Chief Group Executive (1), Managing and Chief Executives (6), the Head of Architecture (1), the Head of Business Excellence and Operational Effectiveness (1), Executives (3), operations staff (1) who conducted internal research, and finally, a solution (1), and an enterprise (1) architect. The sample brought insight into the problem from different angles.

1.7.8 Data analysis

Neuman (2014) identifies two data analysis techniques, known as qualitative and quantitative data analysis. This research made use of both techniques. Once the data collection process was completed, as stated earlier, the interviews were transcribed and presented to the participants for the correctness and content of the transcriptions in order to determine the validity of the transcriptions. The researcher applied a thematic analysis to the interviews. Code words with similar meanings and connotations were extracted from the transcriptions (Appendix C). The findings were summarised, categorised and the put through the thematic process (Appendix E).

1.7.9 Ethical consideration

Resnik (2015:1) describes ethics as “norms for conduct that distinguish between acceptable and unacceptable behaviour”. Throughout the research process, the researcher acted with integrity and adhered to the required and recommended ethical principles and standards essential to this research.

The researcher is aware of the ethics related to the potential stakeholders of the research. For this study, various ethical principles were considered. Consent was obtained from Top Management (Appendix A) as well as from each participant for data collection purposes. Although the researcher received consent from Telkom and participants, no data will be published without the organisation’s permission.

Before the interview, the participants were made aware that they do not have to answer any question if they are uncomfortable and can withdraw their answers at any time. Participants were also ensured that the data collected from them would not be discussed with other colleagues.

1.8 Conceptual Framework

A conceptual framework is a skeletal structure of justification. It includes the reason for adopting certain ideas and serve as a guid for collecting data in the study. Figure 1.2 presents the framework in exploring the factors that affect digital transformation.

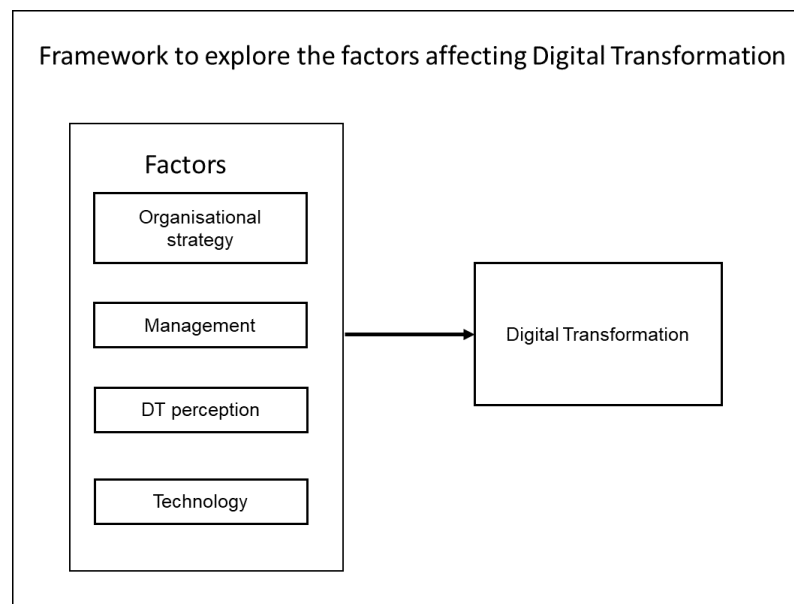


Figure 1.2: Coceptual framework

1.9 Delineation of the research

The researcher used a case study of business units and subsidiary within the Telkom Group of South Africa. All other organisations acting as service providers, mobile and

line dealers as well as business selling telecommunication products are excluded from this study.

1.10 Findings

Thirty-six (36) findings are formulated in Chapter Four, based on the analysis of interview answers collected during the research process. From these 36 findings, six (6) headline findings were identified.

Headline finding 1: Digital technologies should enable the company to reach its business goals by creating new revenue streams and making smarter decisions, but it is not utilised to that extent

Headline finding 2: Management needs to play a pivotal role in the digital transformation, but they are not always involved

Headline finding 3: Customer culture, requirements, and efficiency are not used as drivers for digital transformation

Headline finding 4: There are many definitions of digital transformation within the company

Headline finding 5: Digital transformation is seen as challenging the status quo, exploiting the latest digital technologies, transforming the way business is done, whereby an organisation can then create new products and services

Headline finding 6: It is acknowledged that digital transformation is very important to the company to remain relevant and competitive in the current economic environment

1.11 Conclusion

The successful digital transformation of companies depends on how Management drives digital transformation, sets a clear strategy, and has governance in place. The benefits of new digital technologies should be carefully considered when planning to implement. The company does not have a common understanding of what digital transformation means or is. Due to the emerging pace of new technologies, a skills gap is created as companies experience a challenge to acquire these skills related to utilise the capabilities of these new technologies.

1.12 Recommendation

Management needs to drive digital transformation, and has a clear digital transformation strategy and governance in place. Since efficiency is an important driver of the company, it should be incorporated in the digital transformation strategy to benefit from the capabilities that digital technologies provide, and impact from government and regulatory bodies should be carefully considered. Lastly, but most importantly, a common understanding of what digital transformation means to the company should be formulated and incorporated in the vision of the company.

The following digital transformation definition is proposed by the researcher:

Digital transformation can be defined as the use of technology to improve performance or reach of enterprises radically, and to enable major business improvements (such as enhancing customer experience, streamlining operations or creating new services, as well as redefining completely new business models and business culture) in an ever-evolving digital economy.

1.13 Contribution of the research

The research may improve the understanding of DT and make the challenges that companies experience when planning and implementing a digital transformation strategy, more visible.

1.14 Summary

Many businesses are feeling the pressure to change in order to meet customer demands and needs and to stay competitive in emerging markets and due to digital technologies. In Chapter One, a broad overview is given of the problem statement, stating, "It is unclear what factors affect digital transformation in an established telecommunications company in South Africa", followed by the research question, "What factors affect digital transformation in a telecommunications company in South Africa?". The main research question is expanded on by formulating research sub-questions and the methodology used to answer the question. The aim of this study was to explore the factors that affect digital transformation in a telecommunications company in South Africa, and to what extent.

For this study, an inductive approach was chosen. A case study research strategy at a communications company in South Africa was followed. The data were collected using semi-structured questionnaires, followed by the data analysis methods of summarising, categorising, and thematic analysis. An explanation of the ethics that were applied while conducting the research was given. Six (6) headline findings are presented and the chapter concludes with the delineation and contribution of the research. An outline of the thesis is given in 1.15.

1.15 Outline of thesis structure

Chapter One

This chapter covers the introduction of the study, which includes a general introduction as well as the research problem, aim, assumptions, design, contribution, and ethical considerations.

Chapter Two

This chapter covers the literature review, which includes the concept of digital transformation, DT and the organisation, digital capabilities and digital transformation, DT and management, and obstacles perceived.

Chapter Three

This chapter covers the research methodology, research approach, research strategy, data collection, data analysis, data validation, and ethical considerations.

Chapter Four

This chapter covers the results and findings, outlined under each sub-research question.

Chapter Five

This chapter covers a detailed discussion of the themes in relation to the research sub-questions.

Chapter Six

This chapter covers the conclusion and recommendations of the study.

The next chapter (Two) is the literature review, which includes the concept of digital transformation, DT and the organisation, digital capabilities and digital transformation, DT and management, and obstacles perceived are discussed. This is followed by Chapter Three, that covers the research methodology approach, research strategy, data collection, data analysis, data validation, and ethical considerations. In Chapter Four, the findings and results are outlined followed by the discussion of the derived themes. Finally, Chapter Six presents the conclusion and recommendation of the study.

CHAPTER TWO: LITERATURE REVIEW

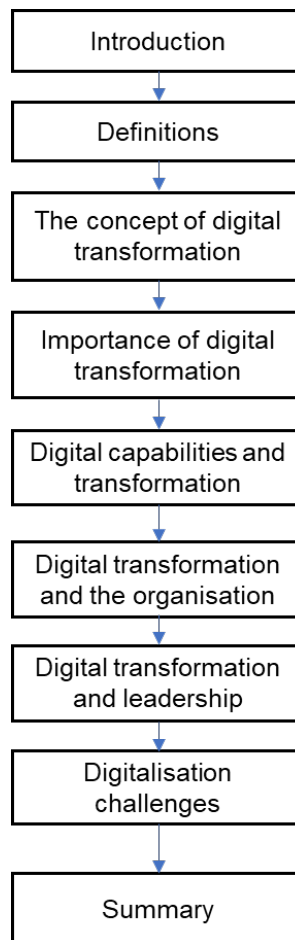


Figure 2.1: The flow for Chapter Two

2.1 Introduction

The development of the telecommunications profession has never been as confusing as it is these days. Depending on the size and type of a company as well as the market, paths to the future differ, although, common by all communicators, companies must find their own answers and way of how they deal with digital transformation (Klewes et al., 2017).

The literature review is based on the keywords and key concepts derived from the title, problem statement, research questions, and aim of the study. Online databases of the Cape Peninsula University of Technology library were used to search for relevant literature, including Google Scholar, EBSCOhost, Scopus, and Emerald. This chapter is presented as follows: i) definitions; ii) the concept of digital transformation; iii) importance of digital transformation; iv) digital transformation and the organisation;

v) digital capabilities and transformation; vi) digital transformation and management; vii) digitalisation challenges; and viii) a summary of the literature review (Figure 2.1).

2.2 Definitions

There are many definitions (Table 2.1) of digital transformation.

Table 2.1: Some definitions of digital transformation (DT)

Author(s)	Definition(s)
Stolterman and Fors (2004:689)	“DT can be understood as the changes that the digital technology causes or influences in all aspects of human life.”
Westerman et al. (2011:5)	“DT is defined as the use of technology to improve the performance or reach of enterprises radically.”
Fitzgerald et al. (2013:2)	“DT is defined as the use of new digital technologies (social media, mobile, analytics, or embedded devices) to enable major business improvements (such as enhancing customer experience, streamlining operations, or creating new business models).”
Brown et al. (2014:165)	“DT encompasses everything from the cultural and organisational changes required to the related use of new digital technologies in order to enable major improvements such as enhancing user services, streamlining operations, and creating entirely new services.”
Mazzone (2014:8)	“DT is the deliberate and on-going digital evolution of a company, business model, idea process, or methodology, both strategically and tactically.”
Solis and Littleton (2017:7)	“The investment in and development of new technologies, mindsets, and business and operational models to improve work and competitiveness and deliver new and relevant value for customers and employees in an ever-evolving digital economy.”
Mergel et al. (2019:12)	“DT is a holistic effort to revise core processes and services of government beyond the traditional digitisation efforts. It evolves along a continuum of transition from analogue to digital to a full-stack review of policies, current processes, and user needs and results in a complete revision of the existing and the creation of new digital services. The outcome of digital transformation efforts focuses among others on the satisfaction of user needs, new forms of service delivery, and the expansion of the user base.”

Definitions date back to 2004 and include many aspects. For example, Stolterman and Fors (2004:689) define digital transformation as “the changes that digital technology causes or influences in all aspects of human life”. This is a wide definition and is more impact orientated on human life with no reference to the impact that it would have on the organisation and therefore not really defining the concept. Westerman et al. (2011:5) define digital transformation a bit more specific, referring to the use of technology as “the use of technology to radically improve performance or reach of enterprises”. Fitzgerald et al. (2013) also refer to technology, and actually

to specific technologies that have an impact on business improvements, specifying some of the business areas.

The definition of Brown et al. (2014:165) is more comprehensive in terms of the impact on the organisation by defining digital transformation as:

“...containing everything from organisational changes and organisational culture, to the use of new digital technologies in order for it to improve itself in various organisational areas. Some of these organisational areas can be defined as enhancing user services and experience, streamlining business operations or creating new services, as well as redefining completely new business models”.

Mazzone (2014) only refers to the on-going digital evolution of a company with not much detail around that, where Solis and Littleton (2017:7) refer to digital transformation as an investment in “new technologies, mindsets, and business and operational models to improve work and competitiveness and deliver new and relevant value for customers and employees in an ever-evolving digital economy”. The holistic approach of Mergel et al. (2019) to digital transformation refers specifically to governments, but does touch on a variety of areas of impact, and also refers to the focus of the outcome of digital transformation.

This study is based on the digital transformation definition of Fitzgerald et al. (2013) and Brown et al.(2014), because of the comprehensive outline on technologies that have business impact, and defining the business areas where improvement can be considered. These definitions are not industry specific as some of the other definitions like for instance the definition from Mergel et al. (2019) that refers to governments specifically.

2.3 The concept of digital transformation

Digital transformation, digitisation, and digitalisation are sometimes used interchangeably to refer to digital transformation. Mergel et al. (2019) make the following differentiation:

- i) **Digitisation:** The transformation from analogue to digital services with exactly the same functionality and maintaining this functionality
- ii) **Digitalisation:** The focus is on changes in the processes which is beyond the transition of paper and/or analogue to digital of existing processes
- iii) **Digital transformation:** Highlights the transformation of the culture and the organisation in order to have a better form of outcome

Based on the definitions in section 2.2, the impact of digital transformation is more far reaching than depicted by digitisation and digitalisation. As stated by Mergel et al. (2019), the holistic effort is beyond traditional digitisation and may result in the complete revision of products and service currently on offer.

2.4 Importance of digital transformation

Adapting to an ever-increasingly digital market and taking advantage of all the digital technologies available to improve operations are important goals for almost every business. Still, only a few companies have made the fundamental changes their leadership deems necessary to make, to achieve these goals (Kane et al., 2017). According to Hartl and Hess (2017), digital transformation is more than just the digitalisation of products and services, and companies need to reposition themselves with regard to their industry and value proposition. Hartl and Hess (2017) furthermore opine that organisations need to transform and restructure, because of the speed that technologies change due to technology innovation, in order to survive in the disrupted business world.

According to Loonam et al. (2018), for traditional organisations to be successful in digital transformation, they will need to learn from digitally matured companies. Also noted by Reis et al. (2018) is that the fourth industrial revolution (4IR) focuses on end-to-end automation and integration of systems. Digital transformation will still be experienced due to its connection with the industries. For a company to stay in the rat race of business demands, agility and speed in all the business areas, it should harness the benefits of digital transformation by creating new service and products (Abolhassan, 2017).

2.5 Digital capabilities and transformation

The fast and wide explosion of digital technologies can be attributed to people's expectations and behavioural changes, as well as how people adapt to new technologies, what they want, and the way they want to communicate with one another (Schreckling & Steiger, 2017). Bharadwaj et al. (2013) note that during the last decade, huge improvements have been made in the information, communication, and connectivity technologies, unveiling new capabilities. This can be seen as new and old companies taking advantage of these new capabilities to change their business model and infrastructure to adapt to the new digital era. According to Schreckling and Steiger (2017), digitalisation is driven and enabled by digital technology with the likes of social media, mobile computing, analytics or Big Data, cloud computing, the IoT, cyber-physical systems (CPS), cyber-human systems (CHS), and cyber security.

Digital transformation is characterised by the use of new technologies to enable remarkable business developments (Fitzgerald et al., 2013). Digital transformation can be seen as an unavoidable opportunity for a company's business development, as opposed to being merely an emerging trend. By introducing digital technologies, companies can achieve their business goals, because digital innovation can help matured companies to move into new areas and thus improve their existing business (Nylé & Holmström, 2015). According to Châlons and Dufft (2017), IT innovation has enabled drastic new developments of process and value chains, which affected the structures and relations of existing industries and enabled new value opportunities.

Devices such as smartphones, tablets for mobility and social media have enabled digital transformation. The volume of data generated by these devices has grown exponentially, and requires powerful business analytics to process the information, and businesses can take full advantage of this (Berman, 2012). According to Westerman et al. (2014), companies that succeed in digital transformation use digital technologies to transform their customer experience, operational processes, and business models. The key here is how well the company can gather customer information, or put customer data at the heart of the company. For this, Big Data will have a fundamental role in capturing valuable data as more devices become connected (Teague, 2017). Digital technologies have an impact on all organisations. These organisations constantly evaluate their products and services as well as their entire operations (Heavin & Power, 2018). Kane et al. (2017) also found that companies successful in their digital transformation through utilising new technologies are the ones that keep track of how others are using digital technologies and then change their digital strategy accordingly.

There is general consensus that digital transformation allows firms to speed up decisions that otherwise might be slowed down due to information flowing up and down the hierarchy through multiple layers of management areas (Bharadwaj et al., 2013).

2.6 Digital transformation and the organisation

Digital technologies create very complex innovation challenges, which lead to organisational changes and changes in the structures of entire businesses. Therefore, new ways of how to implement information technologies in order to promote innovation for business development need to be applied (Bharadwaj et al., 2013). For companies to be successful in their digital transformation process, they need to embrace new organisational structures and processes that will empower their employees to jointly experiment with new technologies and deliver integrated

products and services to their customers (Sebastian et al., 2017). Henriette et al. (2016) found that digital transformations involve profound business model changes, which may occur in processes and operational procedures or culture. However, Kane et al. (2017) found that companies with a clear digital strategy are likely to stand out from the crowd because strategy is the biggest driver of digitally mature companies.

Matt et al. (2015) identify four dimensions of digital transformation strategies: i) the use of technologies; ii) changes in the company's value creation; iii) structural changes regarding the organisational set up within the company; iv) and financial aspects. According to Hartl and Hess (2017), a company will only be successful in digital transformation if they are willing to change.

Loonam et al. (2018) found that their case studies reveal three approaches when an organisation introduces digital transformation. These approaches are as follows: i) a digital culture needs to be nurtured; ii) it is critical to have a clear understanding of what is required to deliver on a digital transformation project; iii) and the focus needs to be on the organisation rather than the technology in delivering in digital transformation.

According to Heavin and Power (2018), digital transformation is often regarded as the solution to organisational challenges, which will improve the efficiency and effectiveness of the organisation. While the utilisation of new technologies is important and significant for digital transformation, the focus of the company should be on innovation, creating new business models, and considering new strategies and agile methodologies in order to master digital transformation (Kane et al., 2015).

McKendrick (2017) agrees and states that digital transformation does not only mean adopting stacks of technologies but also making fundamental changes to the company's culture. For companies to be successful in their digital transformation journey, they need to embrace new organisational structures and processes that empower their employees to interact with new technologies and deliver integrated products and services to their customers (Sebastian et al., 2017). Berman (2012) found that companies with the strategy of integrating the digital and physical components of their operations are able to transform their business models successfully and that these companies normally focus on two different activities:

- i) Enhancing their customer value proposition
- ii) Changing their operations by utilising digital technologies for better customer experience

Hartl and Hess (2017) identified twelve organisation cultural values as crucial to the success of digital transformation in an organisation:

- i) **Openness towards change:** The organisation's susceptibility to new ideas and willingness to accept, implement, and promote change
- ii) **Customer centricity:** The organisation's ability to promote customer excellence by producing products and services with the focus on customer requirements and continuously adapting to customer needs
- iii) **Innovation:** The organisation's ability to promote innovation to enable growth
- iv) **Agility:** The organisation's willingness to adopt agile methodology to enable the organisation be reactive and flexible to change
- v) **Willingness to learn:** The organisation's pursuit of a learning culture and acquiring new skills and knowledge to advance the organisation
- vi) **Trust:** Refers to the trust between the organisation, its management and its employees, as well as its external partners
- vii) **Entrepreneurship:** The organisation's ability to empower its employees and leadership to take responsibility and to be proactive and responsible
- viii) **Tolerance towards failure:** The organisation's attitude to a degree of failure, allowing mistakes to be made in support of learning from its failures
- ix) **Communication:** The organisation's intention to build a communication network to share information and knowledge
- x) **Risk affinity:** The organisation's flexibility to make decisions and taking risks in uncertain times
- xi) **Participation:** The organisation's support of a democratic decision making process
- xii) **Cooperation:** The organisation's ability to promote teamwork and collaboration between these teams across functional areas and external parties

Digital transformation needs to start within the context of cultural values. Organisations need to be innovative and forward thinking. This needs leadership and quality management to manage the changes that have to take place during the digital transformation process.

2.7 Digital transformation and leadership

One of the most important requirements of a digital transformation strategy is leaders and employees with an understanding of digital technologies. Leaders need to understand what skillset is required for the success of the company's digital transformation (Hoberg et al., 2015). In addition, Loonam et al. (2018) expand on the requirements of leadership capabilities, stating that in order to be able to deliver on

digital transformation, the management should be conscious of the perspectives of customer-centric, strategic-centric, organisational-centric, and technology-centric views.

Küing (2017) emphasises the importance of strong leadership necessary for digital transformation. As digital transformation has progressed, leadership requirements have changed. Leaders need to be open to suggestion from others and have an open mindset in what needs to be done and what is required to improve. The open minds to new ideas from, for example, employee initiatives and the focus on the development and improvement of employee experience are important in the journey towards digital transformation (Dery et al., 2017).

The successful digital transformation of companies depends on how Management drives the digital transformation strategy (Kane et al., 2015; Westerman et al., 2014). A strong top management structure is essential for digital transformation. They need to lead the company into the future and have strong leadership capabilities. Leadership is about vision, engagement, governance, and technology. Studies have shown that the leadership role in digital transformation is essential (Sawy et al., 2016; Kane et al., 2015).

According to Singh and Hess (2017), change management, inspirational skills and IT competence should be some of the key skills of digital leaders. Kane et al. (2018) state that the key traits of effective digital leadership should focus on enabling the organisation through vision and purpose, creating space for experimentation, empowering people to be innovative, and getting people to collaborate across silos.

Digital governance should not be overlooked as ineffective governance creates wasteful and missed opportunities, making digital transformation an expensive journey or project. Digital governance requires Top Management's conscious engagement (Westerman et al., 2014).

Bjärfors et al. (2019) identify the following barriers that impede the success of a company's digital transformation:

- i) Not being able to acknowledge the importance of communicating the digital vision or transformation strategy sufficiently: This would water down the organisation's vision to a mere document with no meaning or direction
- ii) Not providing the necessary knowledge through education to operational management in IT and digital tools: This makes management less effective to

- lead the company in its digital transformation process, reducing the ability towards succeeding in the long run of the business
- iii) Lack of having standards and processes in place to use the digital tools when working with subcontractors: This can lead to digital tools not being used, which in turn deflates the transformational pace for the organisation
 - iv) Missing the opportunity to attract leadership talent from other industries, which may have a fresh look and different perspective in solving business problems with digital solutions to promote growth

IT teams need to develop a strategic vision and support business with their business needs (Teague, 2017). The IT and business relationship are crucial and needs to be strengthened if a company wants to survive. It may take a lot of work and replatforming, but it is essential that business and IT have a strong relationship (Westerman et al., 2014). Vision sets the direction, but engagement with employees makes it happen. To engage employees is to connect with them in every possible way, and to give them a voice. A wider conversation needs to be encouraged and new ways of doing business need to be fostered.

2.8 Digitalisation challenges

In this section, the following is discussed: i) leadership and transformation; ii) skills challenges; iii) the innovator's dilemma; iv) IT challenges; v) technology; vi) governments; vii) and the customer.

Digital transformation is a complex process, and therefore a good understanding of what the challenges are is needed by companies. It is difficult for companies to be innovative due to social pressure that forces employees to do merely what is told by leaders (Scheer, 2017). Digitisation has a huge impact on the economy and society in a various ways, including various business factors that affect how business is conducted (Schreckling & Steiger, 2017).

Piccinini et al. (2015) identify the following challenges of managing digital transformation (Table 2.2).

Table 2.2: Some categorised challenges of managing digital transformation (adopted from Piccinini et al., 2015:10)

Categories	Challenges
Digital ecosystems	<ul style="list-style-type: none"> • “Competing with an expanding range of new rivals and non-industry rivals and entrants (e.g. Google, Apple)” • “Working towards the convergence of physical infrastructures (transportation) and digital infrastructures (connectivity), and identifying new cross-industry structures” • “Building complementary partnerships among different ecosystem players (business and IT) to design new business models” • “Bridging gaps between previously separated business units and ecosystem players to create new digital value” • “Improving information flows and exchange between business ecosystem partners to enable a seamless customer experience”
Digital innovation constraints	<ul style="list-style-type: none"> • “Ensuring IT security in the adoption and implementation of digital technologies” • “Dealing with regulatory uncertainty and regional restrictions concerning digital innovation” • “Resolving legal/regulatory issues around automated activities and eliminating concerns (e.g. security, safety)”
Digital product innovation	<ul style="list-style-type: none"> • “Embedding the kinds of experiences people have with digital technologies in products” • “Designing human-to-machine interfaces that enable a seamless consumer experience” • “Embedding digital content and services into products (the car) while considering cost efficiency, but without compromising safety and security” • “Developing industry-wide technology standards that enable integrated customer services and a seamless experience” • “Achieving breakthroughs in the development and deployment of key (generative) digital technologies” • “Creating and capturing new value for customers from mobile sensors and real-time data streams (‘Big Data’)”
Digital business model innovation	<ul style="list-style-type: none"> • “Rethinking the incumbent’s role and resource composition (e.g. from automotive manufacturer to mobility services provider)” • “Designing new business models with valuable propositions through digital innovation” • “Transforming the value creation structure to achieve greater agility for digital innovation” • “Creating valuable new digital products and services that customers are willing to pay for despite on-going profitability of old model (selling cars)” • “Building an integrated (end-to-end) platform for mobility services and other unforeseen opportunities”
Digital knowledge integration	<ul style="list-style-type: none"> • “Understanding and catering to quickly changing consumer needs and expectations that are shaped by digital technologies” • “Acquiring and integrating critical know-how and patenting innovations” • “Attracting new talent that is able to integrate digital technology expertise with business know-how” • “Integrating IT know-how and creative problem solving into research and development activities”

Categories	Challenges
IT transformation	<ul style="list-style-type: none"> • “Designing new governance and incentive structures to exploit new digital technologies in order to innovate consumer experience” • “Encouraging employees to develop a digital mindset in order to increase the acceptance and use of digital technologies in everyday work and processes” • “Leveraging new affordances of digital technologies to improve internal communication and coordination” • “Rethinking the role of IT inside the organisation from providing services to the business, to creating value for heterogeneous customer demands” • “Redesigning the relationship between IT and the business as IT becomes an integral part of the business model (new leadership roles, changed responsibilities)” • “Transforming legacy enterprise architecture into a modular, loosely coupled architecture that can be connected seamlessly with new digital technologies”
Digital agility	<ul style="list-style-type: none"> • “Switching to agile methodology in projects” • “Implementing a start-up mentality (e.g. fail often, fail early, trial and error) in a large organisation that exhibits resistance to innovation”
Digital ambidexterity	<ul style="list-style-type: none"> • “Balancing agility—to accommodate the short lifecycle of digital technology innovation—with stability—to accommodate the long lifecycle of traditional product innovation (e.g. the car)” • “Aligning new, significant short-term digital technology investments with long-term strategic business planning and digital capability development in times of high uncertainty” • “Balancing customised digital services that provide added value by leveraging customers’ personal data with data security and privacy” • “Combining digital innovation philosophy (experimental, market learning) with manufacturing philosophy (planned, finished at time of market introduction)”

Piccinini et al. (2015) identified 35 challenges and grouped them into eight (8) different categories (Table 2.2). In the category for digital ecosystems, some of the challenges relate to the appearance of new technologies, causing companies to compete with technology companies that have better knowledge about these new digital technologies. The challenge is primarily to identify strategic partners. With the category of digital innovation constraint, challenges are in the form of restrictions due to IT security when adopting digital technologies as well as the regulatory concerns with new technologies. The digital product innovation challenges relate to the implementation of digital technologies, especially where the customer experience needs to be enhanced and cost needs to be kept to a minimum. The digital business model innovation category presents challenges in current business models as completely new business models required in order to create new digital products and service that customers would be willing to pay for. Digital knowledge integration relate to challenges in terms of understanding what the customer wants and how to cater for the ever-changing needs of the customer, and lure new talent with the knowledge and expertise in digital technologies.

IT transformation challenges relate to the focus on the IT department, where IT needs to be able to serve the internal customers as well as the external customer, and therefore become part of the business. In the category of digital agility, the challenges point to the fact that large companies find it difficult to implement an agile methodology. Finally, digital ambidexterity encapsulated challenges of handling traditional business activities as well as the fast-appearing new business activities.

2.8.1 Leadership challenges

According to Abolhassan (2017), for companies to be ready for the future, their IT managers will need to be innovative and implement solutions that are affordable, simple, secure, reliable and scalable. Only then will companies be successful in their digital transformation. One of the main challenges that companies experience is the inability of their leadership to embrace the opportunities presented by digital transformation (Zomer et al., 2018).

2.8.2 Skills challenges

Digital transformation has found its way into companies, and cross-functional knowledge is becoming a major issue for DT in companies. The lack of digital talent is a challenge as these digital skills are difficult to find (Hoberg, et al., 2015). Nair (2019) agrees, and adds that the pace at which technologies progress as well as the inability of companies to update the skills of their employees, will result in an out-dated skillset within the company.

2.8.3 The innovator's dilemma

The “innovator’s dilemma”, a phenomenon described by Christensen (2013), is a significant obstacle for digitalisation in successful companies. It refers to how successful companies try to defend their products and services out of desperation against newer technologies. Managers are afraid to change business models, as they might lose their authority if they introduce a new business models and with that new technologies. If they have been successful so far based on their current skills and experience, they might lose their positions and for that matter their jobs to make space for the new knowledgeable experts of the new era. For this reason, matured companies are usually not willing to embrace disruptive digitalisation and therefore tend to be cautious in their approach towards new ways of doing things and utilising new technologies. According to Tiersky (2017), one of the challenges of digital transformation is organisational resistance to change. For 85-90% of people, change means pain in the sense of uncertainty and the challenge to their future. Châlons and Dufft (2017) point out that in the digital age, it is becoming now more essential for companies to change their culture to harness innovation. Companies will need to

change the way they do business and therefore need new ways to collaborate, and for leadership to think different.

2.8.4 The IT challenge

2.8.4.1 IT systems

According to Teague (2017), companies are challenged by the IT systems they have, and adding to the challenges is the way that legacy systems are integrated over years within large companies, making the IT environment rigid and hard to manage. Abolhassan (2017) argues that the bigger the impact IT has on the company, the more reliant the company becomes on its IT systems to be successful.

2.8.4.2 Data security

Arguments that are raised about the lack of data security provided by new technologies are often highlighted when new avenues are sought after to create new processes and business models (Teague, 2017). Abolhassan (2017) argues that in order for companies to be sure their IT security is of good quality, they need to make sure that their technology partners are proactive in anticipating any IT security issues.

2.8.5 Technology

According to Davenport and Westerman (2018), digital is not something you can buy and plug into your organisation, as it is multi-faceted and diffused and does not merely involve technology. Digital transformation is an on-going process, which requires fundamental investment in skills, projects, infrastructure, and sometimes cleaning up IT systems. Kane et al. (2017) note that although technology plays an important role in digital transformation it is not everything. Yet, many companies still struggle to leverage technology to their advantage.

2.8.6 Governments

The majority of governments are obstacles to digital transformation, as they tend to move slowly to update laws and defend existing ways of business instead of promoting new ways of conducting business (Scheer, 2017).

2.8.7 The customers

The time taken to respond to customer service requests through Twitter, Facebook and other social media platforms could mean that customers would move away from companies perceiving it as being unresponsive with the new reality era (Bharadwaj et al., 2013). Châlons and Dufft (2017) also note that customer experience has become a major factor for companies to stay competitive. Customers have now more power than ever before, due to the information available at their fingertips, regarding for example products and services.

In addition, Tiersky (2017) indicates that one of the top challenges to digital transformation in the enterprise is the ineffective way that companies gather and leverage customer data.

2.9 Summary

The development of the telecommunications profession has never been as confusing as it is today. The literature review is based on the keywords and key concepts derived from the title, problem statement, research questions, and aim of the study. Several definitions were given for digital transformation, outlining the different perspectives of DT. Some important aspects of digital transformation were highlighted, with some factors including digital capabilities and organisational challenges highlighted.

The next chapter (Three) discusses the research methodology followed in this research, which includes the research philosophy, research approach, research strategy, data collection techniques, and how the data were analysed.

CHAPTER THREE: RESEARCH METHODOLOGY

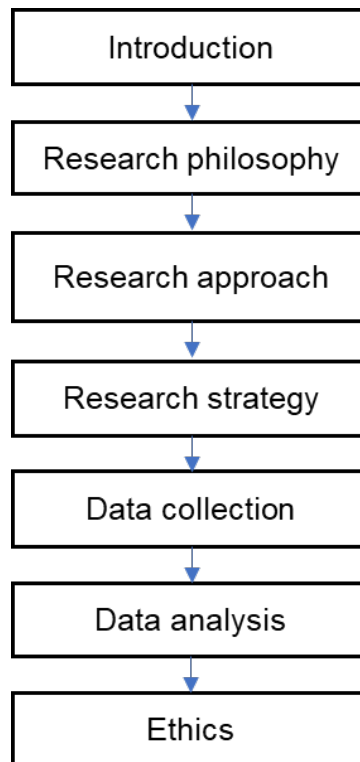


Figure 3.1: The flow for Chapter Three

3.1 Introduction

According to Wilson (2014:3), research can be defined as “a step by step process that involves the collecting, recording, analysing and interpreting of information”. Myers (2013:6) defines research as “an original investigation undertaken in order to contribute to knowledge and understanding a particular field”. The researcher explains the research methodology with reference to Figures 3.1 and 3.2.

According to Hyland (2016), any research design can be used to answer any research question. In this study, the research questions are:

RQ: What factors affect digital transformation in a telecommunications company in South Africa?

The aim of this study was to explore the factors that affect digital transformation in a telecommunications company in South Africa, and to what extent.

The research onion has been developed by Saunders et al. (2012) in order to simplify the steps to be followed by the researcher when deciding on the appropriate methodology. It starts with the research philosophy in the outer ring, or layer. This creates the entry point for the research approach, which is adopted in the second

layer. In the third layer, the research strategy options are presented from which the researcher needs to select. In the fourth layer, the time horizon is identified. The fifth layer represents the stage where the data collection and analysis methodology resides. The benefits of the research onion are that it creates a better understanding of the stages that follows the different methods of data collection and analysis.

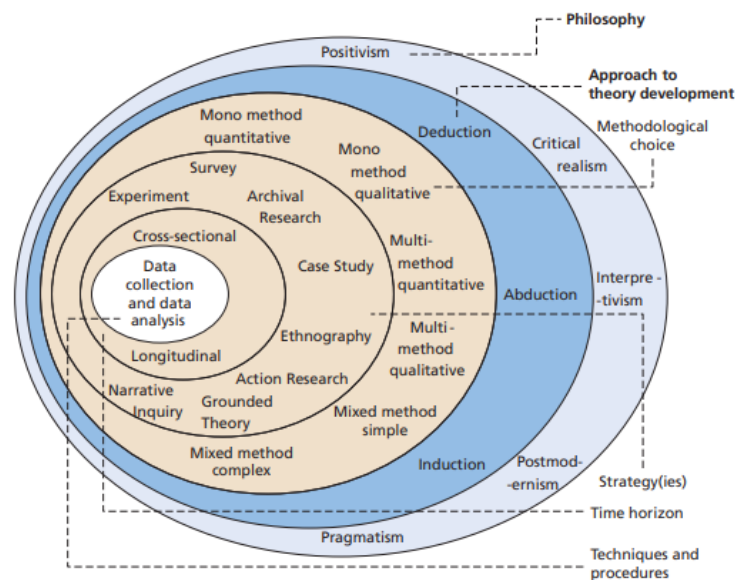


Figure 3.2: Research onion (Saunders et al., 2019:130)

3.2 Research philosophy

A research philosophy refers to the set of beliefs which are concerned with the nature of the reality being investigated (Bryman, 2016). It is regarded as the underlying definition of the nature of knowledge. Research philosophies can have different goals of research and on the way that it might be used to achieve these goals (Goddard & Melville, 2004). Therefore, understanding the selected research philosophy can help explain the inherited assumptions of the research process, and in what way these assumptions are appropriate for the adopted methodology. The research philosophy can broadly be presented as the ontology and epistemology of research. In sections 3.2.1 and 3.2.2, these concepts are discussed.

3.2.1 Ontology

Ontology refers to assumptions about the nature of reality. Ontology determines how you see the world of business and management, hence your choice of what to research for your project (Saunders et al., 2019). The questions of ontology are concerned with the nature of social entities and it deals with the nature of reality (Bryman, 2016). Ontology is a system of belief that displays the interpretation of an

individual about what is fact. Therefore, ontology can be associated with the question of whether social entities should be seen as objective or subjective. Accordingly, objectivism (or positivism) and subjectivism (interpretivism) can be specified as two important aspects of ontology.

Objectivism “portrays the position that social entities exist in reality external to social actors concerned with their existence” (Saunders et al., 2009:110). Alternatively, objectivism “is an ontological position that asserts that social phenomena and their meanings have an existence that is independent of social actors” (Bryman, 2016:29).

The subjectivist ontological stance is followed in this research, as all participants had their own view of the phenomenon that was investigated (Saunders et al., 2009).

3.2.2 Epistemology

Epistemology (Figure 3.2) is the branch of research philosophy that deals with the sources of knowledge. Epistemology is specifically concerned with the possibilities, nature, sources, and limitations of knowledge in the field of study. Alternatively, epistemology can be defined as the study of “the criteria by which we can know what does and does not constitute warranted or scientific knowledge” (Hallebone & Priest, 2009:181). Wilson (2014) states that interpretivism is the epistemology that takes on a subjective approach and indicates that researchers interact with the social world in order to examine the phenomenon. Thus, epistemology is focussed on what is known to be true.

Table 3.1 describes the important aspects of epistemology of the main research philosophies related to business research. According to Wilson (2014), pragmatism does not take a specific epistemological stance; instead, the research question as well as the research problem is the centre of the research. When you are unable to decide between positivism and interpretivism, pragmatism would be the obvious choice.

Myers (2013) explains that a positivist research stance assumes the reality is distant from the researcher and the tools used. The paradigm is all about testing theories in order to understand a phenomenon. Positivism is usually associated with quantitative research.

The realism research philosophy relies on the idea of being independent of reality from the human mind. This philosophy is based on the assumption of a scientific approach to the development of knowledge. According to Wilson (2014),

interpretivism is an epistemology that supports the view that the researcher is part of the social world being researched.

Table 3.1: Aspects of epistemology (Adapted from Saunders et al., 2009:119)

Research philosophy	Epistemology: The researcher's view of what constitutes acceptable knowledge
Pragmatism	"Either or both observable phenomena and subjective meanings can provide acceptable knowledge that is dependent on the research question. The focus is on practical applied research, integrating different perspectives to help interpret the data."
Positivism	"Only observable phenomena can provide credible data and facts. The focus is on causality and law-like generalisations, reducing phenomena to simplest elements."
Realism	"Observable phenomena provide credible data and facts. Insufficient data means inaccuracies in sensations (direct realism). Alternatively, phenomena create sensations, which are open to misinterpretation (critical realism). The focus is on explaining within a context or contexts."
Interpretivism	"Subjective meanings and social phenomena; the focus is on the details of the situation, a reality behind these details, subjective meanings, motivating actions."

The researcher adopted an interpretivist epistemological stance since the researcher is interpreting the data collected from the interviewees' perspective to make claims about the truth and because there are many ways of looking at the phenomena.

3.3 Research approach

Two types of approaches are outlined here: the deductive and the inductive approach.

3.3.1 Deductive approach

The deductive approach develops the hypothesis based on existing theory and then creates the research approach to test the hypothesis (Silverman, 2013). This approach may be appropriate for a research project that is concerned whether the observed phenomena have the same outcome as a previous research (Wiles et al., 2011). A deductive approach may be considered for the positivist approach, which allows the creation of hypotheses and the statistical testing of expected results to an accepted level of probability (Snieder & Larner, 2009). However, the deductive approach may also be used with qualitative research techniques, although in these cases the expectations might be derived through hypothesis testing (Saunders et al., 2019). A deductive approach can be characterised as the development of a general theory towards a specific theory. In this case, the general theory is first established and then the specific knowledge gained from the research is tested against it (Kothari, 2004).

3.3.2 Inductive approach

The inductive approach is characterised as a move from the specific theory to the general theory (Bryman & Bell, 2011). In this approach, the observations are the starting point where the researcher studies for patterns in the data (Beiske, 2007). In this approach, there is no framework, and the focus therefore is formed after the data have been collected (Flick, 2011). This may be seen as the point at which new theories are created, but it may also be true that as the data are analysed, it may fit into an existing theory (Bryman & Bell, 2011). This method is more commonly used in qualitative research, of where the theory is still being developed, could be beneficial, because the potential risk of the researcher being influenced during the data collection stage may be reduced (Bryman & Bell, 2011). Interviews are conducted regarding specific phenomena and then the data may be studied for patterns between the different respondents (Flick, 2011). However, this approach may also be used with great efficiency within positivist methodologies, where the data are first analysed and then studied for patterns so that it can be used to generate results.

For this study, an inductive approach was chosen to enable the researcher to gain in-depth insight into the views and perspective of factors that have an effect on digital transformation in the respective company. The findings can contribute towards the body of knowledge and assist in building a digital transformation theory.

3.4 Research strategy

The research strategy focuses on how the researcher will carry out the research (Saunders et al., 2019). The strategy can be a number of different approaches, such as experimental research, action research, case study research, interviews, surveys, or a systematic literature review.

3.4.1 Case study

Case studies can be seen as one way of conducting research (Yin, 2006) and are used to answer 'why' and 'how' research questions (Phelan, 2011). Dubé and Paré (2001:25) state that "case study represents a valuable research method, with distinctive characteristics that make it ideal for many types of investigations in our field, but it must be executed with due care". Shakir (2002) refers to the importance of case study research because of its ability to satisfy the need for relevance in IS research where research findings can be applied in practice. Through case study research, the researcher becomes part of the world of practice, even if the researcher's role is only that of an observer. Researchers can capture the knowledge of practitioners to develop theories from it (Cepeda & Martin, 2005). Case studies in business research can be divided into three categories: explanatory, descriptive and exploratory.

This research is based on an exploratory strategy, as it does not intend to offer a solution to the research problem but to provide a better and deeper insight into the problem, which may become visible towards the end of the research process. In addition, it may also uncover new pathways to the topics that have not yet been explored previously. The case used in this research is a large Telco company with many subsidiary companies. For details of the case study, see sections 3.4.2, 3.4.3, 3.4.4, and 4.4.

3.4.2 Unit of analysis

Phelan (2011) describes the unit of analysis as the source from where the researcher obtains the required information to answer the research questions. Bengtsson (2016) describes the unit of analysis as the sample that is used for the research, and what the researcher is trying to explain with the study. For this research, the unit of analysis is Telkom SA SOC Limited (referred to as the Telkom Group) and specifically the business units (OpenServe and Telkom Commercial) and a subsidiary (BCX) concerned with telecommunications operations, which are the core of the company's operations.

3.4.3 Unit of observation

The unit of observation is the individual participants (15) from the IT, Marketing and Business Strategy departments in the Core telecommunication business units and the subsidiaries Telkom Commercial, BCX, and OpenServe within the Telkom Group. The sample chosen for this research are non-random, purposively and conveniently selected. It is made up of the following:

- i) Group Chief Strategy Officer, concerned with the strategy of the Group
- ii) Chief Information Officers' (2) perceptions of digital transformation in the business units
- iii) Managing Executives (2) concerned with product and service development, customer engagement and business processes
- iv) Chief Technology and Systems Officer concerned with the technologies and systems of OpenServe
- v) Head Business Excellence and Operational Effectiveness concerned with operational effectiveness and excellence
- vi) Head Enterprise Architecture concerned with the architecture of the Telkom Group
- vii) Chief Software Officer concerned with the software solutions of BCX
- viii) Solution and Enterprise Architects (2) involved with the solution architecture of the company
- ix) Executives (3) involved in the strategy

- x) One (1) individual who has been involved in internal digital transformation research

3.4.4 Sampling

A sample is “the segment of the population that is selected for investigation” (Bryman, 2016:174). In quantitative research, the size of the sample and the way that it is selected can be used to determine the reliability of the results of the study. In qualitative research, the characteristics of the sample are also important, but much smaller samples may be used. Of the 15 participants selected, nine (9) participants have years of experience in the Group at large and therefore have extensive knowledge in the operation and strategy of the company. Participants have been chosen for diversity and information-rich knowledge on the subject matter. The participants included Chief Group Executives, Managing and Chief Executives, Head of Architecture, Head Business Excellence and Operational Effectiveness, Executives and operational staff selected to do internal research, and Solution and Enterprise Architects who brought insight from different angles (section 4.3).

3.5 Data collection

There are many methods of how data can be collected and used for a case study research strategy (Henning et al., 2004). For this study, data were collected by means of a semi-structured questionnaire using an interview guide (Appendix C) to ensure and maintain the direction of the interview. Interviews were selected as a method of data collection because of the rich and in-depth knowledge of the interviewees (Henning et al., 2004).

The data collection process was executed as follows: Permission (Appendix A) was obtained from the group CEO of Telkom SA SOC Limited to conduct research at the organisation. Once approval was received from the Group Chief Executive, participants were contacted via email to inform them of the research and inquired if they would be willing to take part in the research. Several declined for personal reasons, while 15 accepted. All participants were made aware of the ethics as indicated on an individual consent form that needed to be signed by each participant.

3.5.1 Interviews

The interview technique has been selected as a data collection method because it is a qualitative research technique used on a small number of respondents to explore their views on the particular subject matter (Boyce & Neale, 2006). As already mentioned, interviews were conducted using semi-structured questionnaires. Participants were asked if they are comfortable with being recorded during the

interview (data collection) process and all 15 participants agreed. The interviews were recorded with the permission of the participants and an hour was scheduled with the individual participants for the interviews. Once the data collection process was completed, the researcher started transcribing all the interviews (Appendix D).

3.6 Data analysis

Data analysis focuses on breaking the data down into smaller pieces to make sense to the researcher. Methods that can be used for the analysis include the transcribing of recordings and thematic analysis to make data understandable (Myers, 2013). Bengtsson (2016:9) defines the analysis of data as “a research technique for the objective, systematic and quantitative description of the manifest content of communication”.

Qualitative content analysis can be used for analysing data collected during interviews (Laudel & Glaser, 2014). The data can then be transcribed into text format, which makes it easier for analysis (Obalola & Adeloju, 2012). The individual transcribed interviews were then respectively mailed to the individual participants. Participants then had the opportunity to confirm the correctness of the transcription as well as the intent of the content. The participants were free to change any meaning that was not what the participant intended to be or to withdraw the interview from the research. Bengtsson (2016) explains that the method used for the analysis process does not really matter, as all the analysis processes are reducing the amount of data collected, categorising the data, or giving a better understanding of the data.

The researcher made use of qualitative content analysis as the data were collected in the form of words. Data collected during the interview process were transcribed into text format and kept in raw format. All data collected were then coded, summarised, and categorised to provide the researcher with a better understanding of the data in order to obtain findings and to develop themes (Section 4.4; Figures 4.3 and 4.4; Appendix E).

3.7 Trustworthiness

Trustworthiness refers to the question “Can the findings be trusted?”. In other words, can the data be validated and is it reliable. This can be done by following the criteria of credibility, transferability, dependability, confirmability and reflexivity (Korstjens & Moser, 2018).

3.7.1 Credibility

Credibility refers to the confidence that can be placed on the truth of the research findings (Korstjens & Moser, 2018). The researcher used the member check strategy by mailing the transcriptions after completion to the interviewees for validation.

3.7.2 Transferability

Transferability refers to the degree that the results can be generalised (Korstjens & Moser, 2018). As many similarities were found to the literature (discussed in chapter 5), it becomes evident that the findings do not only apply to the case but also to other companies. Therefore, the results can be used as a basis for further studies.

3.7.3 Conformability

Conformability refers to the ability of the researcher to confirm that the guidelines of qualitative research were followed (Korstjens & Moser, 2018). Conformability is determined by verifying the coherence of the research. The supervisor assisted with confirmation of the authenticity which includes data, findings, interpretations, and recommendations.

3.7.4 Reflexivity

Reflexivity refers to how the researcher self-reflects on how he/she influences the study with his/her own assumptions (Korstjens & Moser, 2018). To ensure the validity and reliability of the study, the researcher kept as neutral as possible in collecting and analysing the data, interpreting the results, and making recommendations.

3.8 Ethics

Resnik (2015:1) defines ethics as the “norms of conduct that distinguish between acceptable and unacceptable behaviour”. Ethical norms can be adopted at home, school, church or any social environment during childhood and as people mature. Ethical principles include honesty, plagiarism, informed consent, and permission to publish (Myers, 2013). According to Resnik (2015), when people think about ethics, they immediately think about what is right or wrong. Bengtsson (2016) states that from the beginning to end of the research process, ethics must always be taken into consideration.

All participants involved in the study should be informed of what the study is about and must be ensured that all information collected during the interview process will be seen as confidential. This was ensured by emailing a consent letter explaining the research and conditions of the research to the potential participants (Appendix B). The participants were informed of their right to withdraw their data at any time. Many

attempts have been made to determine the effectiveness of ethics (Obalola & Adelopo, 2012) as ethical norms ensure responsibility to the public (Resnik, 2015).

Resnik (2015) identifies the following ethical principles:

- i) **Honesty:** The researchers must report all their findings honestly and not falsify or fabricate data. This was done by giving the participants the transcribed interviews to validate the content of the interviews
- ii) **Integrity:** Adhere to all promises and agreements made, also to interviewees or participants. This was done by giving the participants the transcribed interviews to validate the integrity of the transcriptions
- iii) **Openness:** The researchers should be open to any criticism or ideas that may arise
- iv) **Confidentiality:** The researchers should protect confidential data at all times. This was done by storing the data in a safe place and anonymising the participants by giving a code to each of them
- v) **Animal care:** If animals are used in the research, they must be protected and cared for. No animals were used in the research

For this study, various ethical principles were considered. Consent was obtained from Top Management (Appendix A) as well as from each participant for data collection purposes. Although the researcher received consent from Telkom and participants, no data will be published without the organisation's permission.

Before the interview, the participants were made aware that they do not have to answer any question if they are uncomfortable and can withdraw their answers at any time. Participants were also ensured that the data collected from them would not be discussed with other colleagues.

Data collected during the literature review as well as the data collection process will not be falsified or fabricated, and all contributors will be recognised. Data collected will be kept for any enquiries that may arise in the future and the researcher will ensure that all the results/findings based on the data collected are honest.

3.9 Summary

The methodology focuses on how research is conducted, and how knowledge is gained or the different ways of collecting data. In Chapter Three, the researcher discussed the research methodology followed throughout the research process, which included the research philosophy, research approach, research strategy, data collection techniques, and how the data were analysed.

The chapter started with explaining research philosophy, followed by ontology and epistemology. For this study, a subjective ontological stance was followed, as all participants of the research had their own view of the phenomenon that was investigated, while an interpretivist epistemology was adopted, as there are multiple ways of looking at the phenomena under investigation.

When conducting research or investigating phenomena, several approaches or methods can be followed, including a mixed-methods, qualitative, or quantitative approach. Qualitative research is a synonym for inductive and exploratory research. With qualitative research, there is more than one way of understanding or explaining a phenomenon or the truth. Qualitative research can include action research, case study research, grounded theory, and semiotics, which can be seen as text-based. For this research, an exploratory case study was adopted as it can be used to answer 'how' and 'what' research questions.

For the case study, a non-random, purposive, and convenient sample was used. The sample consisted of 15 professionals working in strategic areas of the company, and the selection of the sample was based on the availability of participants as well as their willingness to participate.

In order to collect data from the 15 participants, permission was first obtained from the Group CEO, which allowed the research to be conducted at the organisation. Data were collected by means of interviews conducted using semi-structured questionnaires. Once all data were collected from the 15 participants, it was analysed. The researcher made use of qualitative content analysis, as data were in the form of words. All data collected were summarised, organised, and categorised to provide the researcher with a better understanding of the data and the development of themes. The chapter ended with a discussion on ethics, being considered from the beginning to the end of the research process.

In the next chapter (Four), the information of the case used for the research is discussed together with the data analysis the findings that were formulated.

CHAPTER FOUR: ANALYSIS AND FINDINGS

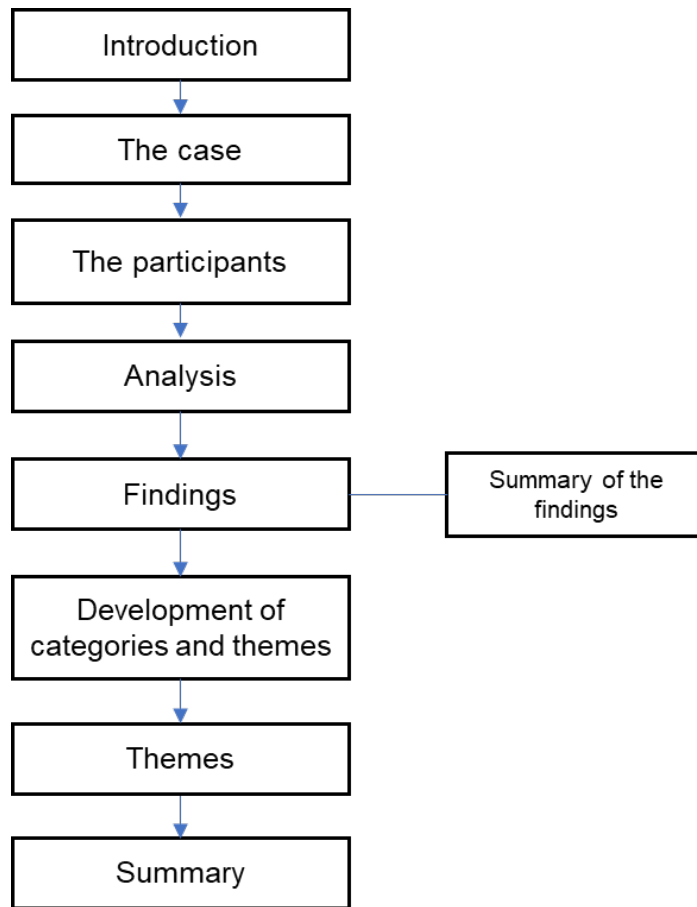


Figure 4.1: The flow for Chapter Four

4.1 Introduction

In this chapter, the analysis and results of the case used in the research are discussed. This chapter elaborates on the interviews conducted during the research process and findings formulated based on the analysis of the 15 participants' answers. For the convenience of the reader, the problem statement, key research questions, and the aim of the study are stated below.

Problem statement: It is unclear what factors affect digital transformation in an established telecommunications company in South Africa.

Research question: What factors affect digital transformation in a telecommunications company in South Africa?

Aim of the study: To explore the factors that affect digital transformation in a telecommunications company in South Africa, and to what extent.

In the next sections, the case and the findings are discussed. The chapter ends with a summary of the findings and the themes developed from the findings.

4.2 The case

Telkom SA SOC Limited is one of the major Information and Communications Technology (ICT) providers in South Africa. The Group came to existence when the Department of Posts and Telecommunications was divided to form two state owned companies named Telkom SA SOC Limited and the South African Post Office Limited, while the Department of Post and telecommunications remained. Telkom opened its National Network Operations Centre (NNOC) in 2004, which is the heart of its networks, co-coordinating all network operations all over the country from a central point. Telkom also launched its data operations centre called Cybernest in 2009.

Telkom's mission is to connect people seamlessly to a better life. With its headquarters in Centurion, it hosts about 18,286 employees nationwide. Telkom is a semi-privatised, 39% state-owned enterprise. Telkom has grown by connecting about 2.5 million premises with its fibre network through its network business unit OpenServe and increased its mobile subscriber base to about 5.2 million subscribers in 2018. They offer business, residential and payphone customers a wide range of services and products, including:

- i) Fixed-line voice services with calling plans
- ii) Fixed-line equipment on rental or on sale including PABX, telephone instruments, modems laptops, etc.
- iii) Broadband solutions, which include fibre and copper networks, enabling high-speed internet connectivity provided by OpenServe's interconnected networks
- iv) Fixed-line data services, from domestic to international data transmission services as well as related information type services
- v) Data operations centre that provides services like e-commerce, email, hosting, data storage and security services
- vi) W-CDMA (Wideband Code Division Multiple Access), a next-generation network over which fixed voice and data services are provided, as well as nomadic voice services
- vii) Mobile communication services, which include voice and data services, and mobile handset sales
- viii) The ICT services include cloud, infrastructure and workspace services, as well as global service integration management, and hardware and network equipment sales through its business entity BCX.

Telkom Group’s organisational structure (Figure 4.2) includes the following business units:

- i) Telkom Consumer (business unit), which includes both fixed and mobile broadband services as well as voice technology
- ii) OpenServe (business unit), which is at the heart of connectivity and has successfully built and run high-speed broadband networks that link banking systems, hospitals and schools
- iii) BCX (owned subsidiary), which is Africa’s premier digital solutions partner, helping enterprises to future-proof their business

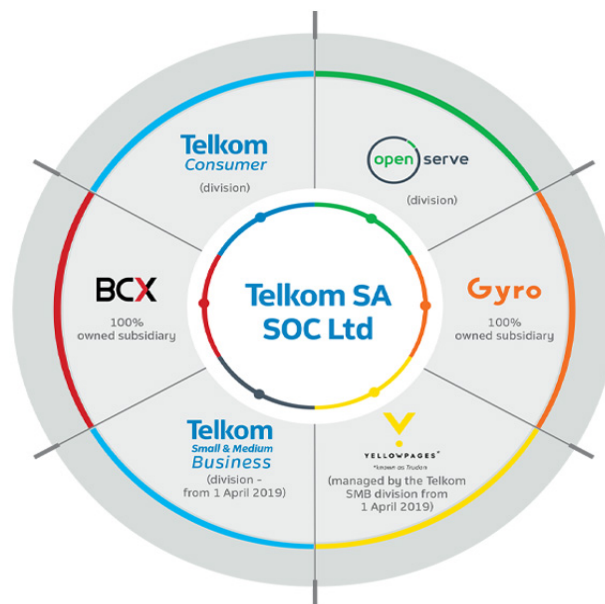


Figure 4.2: Telkom SA SOC Limited’s organisational structure

For the purpose of this research, the focus is on the core operations business units and subsidiary, namely OpenServe, Telkom Consumer, and BCX as the core telecommunications operations of the Telkom Group.

4.3 The participants

To be able to answer the research questions, 15 participants were interviewed (section 3.4.4; Table 4.1).

Table 4.1: Participants’ business unit, job title and years of experience

Code	Business Unit	Position	Years in Telkom Group
P1	OpenServe	Chief Technology and Systems Officer	10+

P2	BCX	Head Business Excellence & Operational Effectiveness	1,5
P3	Telkom Commercial	Managing Executive Marketing Product Development	10+
P4	OpenServe	Executive – Integrated Business Planning & Performance	10+
P5	Telkom Corporate	Head Enterprise Architecture	7
P6	OpenServe	Chief Information Officer	1,5
P7	Telkom Corporate	Enterprise Architect and Digital transformation Consultant	10+
P8	BCX	Chief Software Officer	10+
P9	OpenServe	Operational Specialist, Integrated Network Planning, Southern Region (Researcher Digital Transformation for OpenServe)	10+
P10	OpenServe	Executive – Business Integration (BI)	10+
P11	Telkom Group	Executive – Strategy	6 months
P12	Telkom Group	Group Chief Strategy and Business Transformation	10+
P13	Telkom Corporate	Solution Architect	10+
P14	Telkom Corporate	Chief Information Officer	10+
P15	Telkom Commercial	Managing Executive Marketing	7

Most of the participants have years of experience in the company and extensive knowledge on the subject. Participants were chosen for diversity and knowledge on the subject matter. For example, most of the participants have been working for more than ten years in the company. The participants included a Chief Group Executive, two (2) Managing Executives, three (3) Executives, a Solution Architect, and three (3) Operations staff that were selected to do internal research. Consent to collect data from the employees was obtained from the Group Chief Executive Officer of Telkom SA SOC Ltd (Appendix A).

4.4 Analysis

Categories were developed (Appendices E) from the findings. From the categories, themes for discussion were identified. This section is presented in such a way that the research question (RQ), research sub-questions (RSQs), and interview questions (IQs) are linked. After each interview question, the findings are presented.

Figures 4.3 and 4.4 depict an extract of a transcribed interview (Appendix D2; Appendix D9; Appendix D11). It shows how word phrases and keywords were identified from participants P2, P9, and P11's responses to the interview question and

populated in the analysis sheet (Appendix E). Each participant's statement and responses were analysed and phrases extracted that best describe the statement. Some phrases were summarised, for instance, "change manual process to digital process" was summarised to "automate".

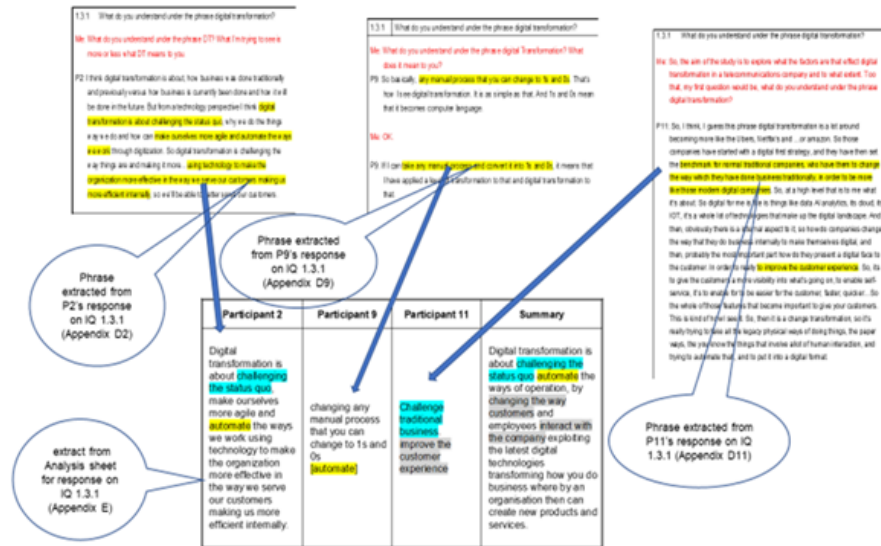


Figure 4.3: Extracting data from transcriptions based on phrases and keywords

Participant 2	Participant 9	Participant 11	Summary
Digital transformation is about challenging the status quo , make ourselves more agile and automate The ways we work using technology to make the organization more effective in the way we serve our customers making us more efficient internally.	changing any manual process that you can change to 1s and 0s automate	Challenge traditional business , improve the customer experience	Digital transformation is about challenging the status quo automate the ways of operation, by changing the way customers and employees interact with the company exploiting the latest digital technologies transforming how you do business where by an organisation then can create new products and services.

Figure 4.4: Extract from analysis (creating a summary from responses)

4.5 Findings

In the following section, the participants' responses that have been collected during the research process are discussed. Based on the answers of the 15 participants, findings have been drawn for each interview question. As stated in section 3.6, interviews have been transcribed, coded (keywords and phrases), and summarised (Figures 4.3 and 4.4).

RSQ 1.1: What technology factors affect digital transformation?

IQ 1.1.1: What impact do new technologies (such as social media, IM, AI, data analytics or Big Data, IoT) have on business improvement in the company?

Although some did not indicate the significance of the impact of digital technologies, six (6) of the participants agreed that the impact is huge. P9 stated that,

“The big impact... is the proliferation of information in that it gives you insights into stuff that you never knew existed... [It is] an impact on your top line, or had an impact on your bottom line, add an impact on you customer retention, or grew your business exponentially, that is the big impact that these type of technologies will have” (Appendix D9).

P12 agreed:

“It does have a huge impact... in different ways because, in order to retain your customers, you will need all of those things, you need to implement and use it in order to retain your customers. ...So it is very important that you use these technologies in interacting with your customers and to improve the services that you actually provide to them” (Appendix D12).

P7 and P11 disagreed and said that it was relatively small and the company was only starting to use these technologies. P7 said that, “It has an impact, but not so much in the Telkom Group. There is untapped potential, especially when we look at Big Data” (Appendix D7). P11 stated that, “We are starting to use it, but I would say the impact is still relatively small” (Appendix D11). P1 felt that data analytics is key: “There are great things we can do with it, and so Big Data and analytics form a key part for us” (Appendix D1). P3 agreed that it helps the company to understand the customer better. P3 and P8 also pointed out that the company needs to embrace these technologies. P10 indicated that it could assist in decision making. P14 opined that it is important to leverage off these technologies to reach the customer base. P5 stated that these technologies would help to serve the customer better, and, according to P3, help to know the customer better. P2 argued that these technologies could be used as a business improvement imperative to make the company more efficient.

P4 categorically stated that,

“We have derived several efficiencies from our operational as a result of the implementation of digital technologies. Massive reduction in our cost to serve as a result of the intelligence that Big Data are giving us to do intelligent dispatches. Instant communication [messaging] provides instant feedback So, major efficiency improvement” (Appendix D4).

P15 pointed out that the company is not really using AI to its advantage and that if the social media is not managed, it will threaten the survival of the company, as people are experiencing their feelings towards a company openly on social media.

Finding 1: Although new technologies can have a huge impact on the way it can be leveraged to reach the company's customer base, it is not utilised effectively in the company

Finding 2: New technologies are not embraced for insights into customer expectations and needs, and are not used to improve customer service

Finding 3: New technologies such as data analytics, although acknowledged as being crucial, are not used in the company

IQ 1.1.2: What role do digital technologies play in the company's digital transformation strategy to achieve its business goals?

P3, P6, and P7 indicated that digital technologies play an important role, as it is adding value. P7 pointed out that, "Digital technology does play an immense role in a digital transformation strategy... It's about adding value and creating those new products that we can sell and generate new revenue" (Appendix D7). For P2 and P4, it is more about how it can make the company more efficient and effective to reduce cost. P2 said the following:

"When we improve the way we communicate, we make ourselves efficient and effective; we reduce cost in the organisation. Because now, traditionally and typically I don't have to wait three days for you to read your email, or don't have to fly to Cape Town, to have a meeting with you" (Appendix D2).

To P6 and P9, the role of new technology should be that of an enabler – to enable the company to reach its business goals. However, P10 pointed out, "Your strategy becomes broader than just operating in your traditional landscape" (Appendix D10). According to P4, the role of digital technologies is also to improve the customer experience: "So a major part of our business is to improve the cost to serve, and secondly to improve the customer experience" (Appendix D4). For P5, the focus is on customer intimacy and making smarter business decisions, which, according to P8, should drive the company to consider new capabilities. P2 added:

"I think if you have the right digital technologies in the organisation, you can use those technologies, and I think it achieves the businesses goals... maximising the use of the technology to drive transformation in the organisation to improve the way we work to improve the way we communicate" (Appendix D2).

Finding 4: Although digital technologies are seen as playing an important role, it is not used to improve the way the organisation operates and communicates

Finding 5: Digital technologies should enable the company to reach its business goals by creating new revenue streams and making smarter decisions, but it is not utilised to that extent

Finding 6: It is acknowledged that digital technology can improve customer experience

Finding 7: Digital technologies are not used to drive efficiency and effectiveness to reduce the cost to the company

IQ 1.1.3: What technology factors play a role in digital transformation strategies of the company?

Many factors were identified that could play a role in the digital transformation of the company. For P4 and P7, integration and interaction between systems have an impact, but P2 opined that the current or technical landscape of the organisation and availability of the right skills are the main factors. P5 stated that infrastructure and how it is made up plays a role in the company's DT strategy: "Your infrastructure and how it is made up and the rules and everything need to talk to that digital capability" (Appendix D5). P8 and P9 viewed the enabling capability of the technology as important. P3 argued that,

"The biggest challenges [are] the more established conventional type of systems you have in place, it's more difficult to drive digital transformation than... a smaller company that is starting up new and are able to... start with a completely different way of doing business and structuring their systems. Conventional big customer databases and systems that you have are really very difficult to transform. This [surely] is much more difficult to be able to just be very flexible in terms of how you transform and connect and integrate" (Appendix D3).

P10 added that the technology should be agile to adapt to changing business and IT has to adhere to open standards. P10 further stated that, "Technology platforms that you choose have to be agile, it has to adapt to a changing business, it has to adhere to open standards because your echo systems are much wider now... technologies that can change and adapt as the business changes" (Appendix D10). P14 argued that technology should enable the business to achieve a business need or goal.

Finding 8: There is a lack of appropriate skills for the digital transformation process

Finding 9: Technology factors such as flexibility, agility, the ability to adapt to changing business needs, being able to adhere to open standards, the technical landscape of the organisation, and the capabilities of the technology are important

IQ 1.1.4: What is the impact of legacy systems and technology on the digital transformation drive?

Of the 15 participants, eight (8) agreed that legacy systems have a huge impact on the digital transformation drive. P2 and P6 pointed out that companies' failure to transition due to Management being stuck in their old ways of doing things, may be a culture issue. P2 stated that,

“It is probably one of the biggest inhibitors of digital transformation... and organisations need to have a plan, to transition or decommission old legacy systems and migrate to the newer technologies. And it does not have to have a big bang approach, it can be done incrementally, phased over time... Companies fail to want to transition to the new way of working and they are stuck in their old ways, legacy systems, old culture, bad leadership or maybe not bad leadership but not the right leadership to drive transformation in the organisation” (Appendix D2).

P6 said that, “Legacy becomes legacy when you ensure the system adapts to what you believe is the right way of working and you keep those ways of working for the last 20 years” (Appendix D6). P1, P9, and P7 thought there is still a place for legacy systems as it still has strong revenue streams, and that the challenge is how to integrate the old and the new. P13 explained:

“Legacy systems have no impact... Digital transformation mostly augments legacy systems and technologies, and in some cases, it results in the replacement of a legacy system or technology, but with the advent of new middleware and implementation approaches it should become almost insignificant because it is very easy to integrate to your legacy systems... What is significant, is to change the thinking of the people from old type of technology thinking, to new type of technology thinking” (Appendix D13).

According to P3 and P10, the fact that the company's assets remain in the legacy systems due to a huge customer base, makes it a significant task to transform. P15 added that, “The legacy systems are right now what's killing us... The legacy systems will determine whether we can go forward or not, and how we build on top of that legacy system” (Appendix D15).

Finding 10: Legacy systems have a negative impact on the transformation drive, but they remain an asset and are therefore difficult to replace

Finding 11: Complexity in terms of how legacy systems are integrated into other systems is a stumbling block

IQ 1.2.1: What role does Management play to drive the digital transformation of the company?

Seven (7) of the 15 participants agreed that the role of Management is important. P1 and P3 noted that Top Management should set a clear vision of what they want to achieve and drive it from the top. P1 further stated that, "It is critical to set a clear vision of what it is that we want to achieve... [and] to really unpack what that journey should be" (Appendix D1). P4, P12 and P13 highlighted that Management should drive digital transformation from the top as they need to show intent from their side. P5, P9 and P14 agreed that Management should lead digital transformation in what is driving value and what is best for the customer. P9 stated that, "Become a champion of it [digital transformation], understand it and the impact it has on the company" (Appendix D9). P2 and P3 elaborated by saying that Management needs to create space for digital transformation and strategy, and support and encourage it up to implementation; they also need to measure the organisation in terms of its execution. According to P6, P7, and P10, Management needs to set the digital transformation strategy and drive it. In P6's own words:

"It is important for Management to understand, acknowledge, and then live it. Enable decisions that help transform a company... Management has to play a huge role from top to bottom. Top Management has to set the strategy or at least the drivers. Top Management [has] to invest in enabling Middle Management to execute the digital transformation. As Top Management, it is my job to ensure that we set the guideline of digital transformation... The real drivers are the Middle Management who play both worlds of management and a specialist and I need to enable those, and that is the role of Management" (Appendix D6).

P12 explained: "The role of Management is to drive digital transformation... They play a huge role. Unless Management embraces it... it is not going to happen" (Appendix D12).

Finding 12: Management needs to play a pivotal role in the digital transformation, but they are not always involved

Finding 13: Management is not leading from the top and does not challenge the status quo

IQ 1.2.2: What efforts have been made to empower employees to drive the digital transformation of the company in terms of reskilling, development, and way of work?

P5, P6, P10, and P11 pointed out that the company has the initiative to develop a programme with Wits University to develop a digital skill. However, P1 indicated that this is still limited and in a planning stage and not fully developed: “It is something we are planning right now... we have started with a workforce management system actually digitising the technicians in the field” (Appendix D1). To the contrary, according to P2, P7, P8, P13, and P15, not enough effort has been put into reskilling employees to deal with digital transformation. P15 stated, “I don’t believe that a lot of effort has been made... done nothing in reskilling in a digital environment... because we are unclear where we are going with digital transformation, then what do you reskill on and how do you work differently” (Appendix D15). P10 and P12 indicated that there is an effort called “We think code”, which is an academy sponsored and supported by Telkom that use students to assist with some initiatives for digital transformation. P12 said: “I mean the company supports a couple of things in terms of, you know, we think code, where we take on 300 interns to kind of skill them to be able to perform in a digital world... [We] collaborate with universities” (Appendix D12). In addition, according to P3, P6 and P9, appointments from outside the company, collaborating with companies outside the group, is a way to bring skills in that might have a new and fresh approach. Furthermore, “...bringing new talent. New talent is not restricted by old ways of thinking. But it is about pulling those two forces together, where the guys can start learning from each other” (P9, Appendix D9).

Finding 14: The company is partnered with higher education institutions in an attempt to develop a digital programme for employees

Finding 15: The company is not optimising the outsourced partnership to its full extend

Finding 16: Reskilling of employees is not a priority

IQ 1.2.3: What are the main drivers for digital transformation?

The majority (9) of the participants agreed that customer culture, customer need and customer requirement are the drivers for digital transformation. P9, P11, P12, P13,

P14, and P15 felt that efficiency should be the main driver for digital transformation. As P13 put it, “Do it faster... do it better... do it cheaper” (Appendix D13).

P14 said,

“It is probably effectiveness and efficiencies that drive companies generally. Because if you are not efficient and effective, it means that there are leakages somewhere in your business, that you lose your competitive advantage if someone else does it and you don’t do it. So, it’s about staying ahead and probably and ensuring that you transform in relation and in line with your customer’s needs. You do not transform for the sake of transformation, but you transform to achieve what your customer needs and your business needs to grow” (Appendix D14).

P5, P7, P12, and P13 added that digital capabilities or technologies are also key drivers. P7 stated:

“Technology definitely, and then the skills utilise that technology... The technology and the skills, and then obviously the funding and the resources, which is quite constraining at this stage. Another driver for digital transformation is mindset, as I said with the skills, but also the cultures that you have in an organisation and our research may way [sic] around the culture although we did not explicitly call it culture. And the culture can be quite a barrier” (Appendix D7).

P4 pointed out that, “The amount of information currently available and the way it is packaged in” (Appendix D4), might be valuable for digital transformation. P8 stated, “the availability of vast amounts of data, and all of the technology that has become available in the fourth industrial revolution... So, the first driver is technology, the second driver is data and then also the third driver is the evolution of who our customers are” (Appendix D8). According to P1, “People demand more data and want to pay less... Drive down our cost, make us much more lean [sic] and efficient... the customer requirement is absolutely the driver here” (Appendix D1).

Finding 17: Customer culture, requirements, and efficiency are not used as drivers for digital transformation

Finding 18: Digital capabilities are secondary drivers for digital transformation

Finding 19: The company is not cost-efficient

IQ 1.3.1: What do you understand under the phrase digital transformation?

P8 defined DT as follows: “Digital transformation is really transforming the entire business to be able to use the mechanism that is now becoming available in the fourth

industrial revolution to expand, to evolve, to grow, to be more” (Appendix D8). However, P10 viewed it as, “Exploiting the latest digital technologies and practices to create a digital operating model whereby an organisation then can create new products and services” (Appendix D10). P2, P6, P7, and P14 identified DT as the automation of processes or the way of work or certain actions. P15 added:

“So, there’s a digital transformation which takes you from a manual thing to a digital process. So a lot of what we do is not digital at all, for example, application form. If you apply for a Telkom line, it is still manual, nothing is digital as in end-to-end process. Digital transformation for me, takes out any form of human intervention, so it takes a manual process, where many bodies used to be attached to it and it makes it end-to-end digital, with the same output or a better output, and done in an eighth of the time. That’s how it should be” (Appendix D15).

P2 also pointed out that digital transformation is about challenging the status quo, using technology to make the organisation more effective in how it serves the customer. In the same way, P3, P12, and P14 added that digital transformation changes the way people interact with the company. For P9, DT is as simple as, “Any manual process that you can change to 1s and 0s. That is how I see digital transformation. It is as simple as that. And 1s and 0s mean that it becomes computer language” (Appendix D9). For P6 and P7, DT also speeds up processes to be faster in delivering service. P7 elaborated by saying it is also the ability to collect data and analyse it. For P5, digital transformation is, “Using digital capability to transform how you do your business... to transform your business model... to enter into new markets” (Appendix D5). For P1, digital transformation means how digital telecommunication and digital record keeping is used with tools such as Big Data and AI to create a better process.

Finding 20: There are many definitions of digital transformation within the company

Finding 21: Digital transformation is seen as challenging the status quo, exploiting the latest digital technologies, transforming the way business is done, whereby an organisation can then create new products and services

IQ 1.3.2: What challenges does the company face in term of organisational changes and organisational culture when driving digital transformation?

According to P3, P7, P1, P12, and P15 culture is a big challenge. P1 stated:

“Digital transformation, the success of it really hinges on the culture, so it is actually the biggest thing, and by culture, I am talking about people’s, I think, openness to embrace new technology, I think their capability in embracing new

technology. So, are they actually able to start working in new ways, and then I think very important in this is something we will have to deal with going forward in that. Most companies driving digital transformation have to deal with the fact that we probably will be 'more lean' [sic] and require less people. So, I think the combination of those three things alone, is a big riddle we need to solve yet, and that's what I think. That is why a lot of organisations actually struggle, because it is to understand how to start that process, and how to plot that out over 3 or 4 or 5 years. It is not straightforward" (Appendix D1).

P2 highlighted that, "The organisation's culture is that of old school thinking" (Appendix D2), and P12 elaborated by saying that employees perceive DT as a threat, as it is taking them out of their comfort zone. P5 indicated the following: "It is resistance to change and fear of the unknown" (Appendix D5). P10 and P14 pointed to DT causing potential job losses and thus creating resistance, and that it needs to be managed. Also noted by P9 and P6 is that skillsets are changing, and that there is a shortage in new required skillsets. P12 said:

"There is a skills component, ok, even if people say yes, we like it, we want to do it, ok, but we don't have the skills... The point I just want to make, it's a new skillset that you have to develop, and a lot of people don't have the aptitude or attitude to do it. So these are some challenges" (Appendix D12).

Noted by P8 and P9 is that a mindset change is required. P8 elaborated:

"So, our big challenges as an organisation are to change our mindset to see that the whole digitalisation economy is a customer driver economy. We can't force a customer to interact with us, by putting a process out there, they will choose how and when and if to interact, and if we understand that we will transcend many businesses but the challenge to get the mindset right to start thinking that it's a customer driver economy that we are moving towards" (Appendix D8).

According to P4, the biggest problem of digital transformation is the security aspect because of the amount of data and the potential threat to unauthorised access to the data. P5 also added that there might be technical challenges due to technical compatibility issue between systems.

P5 explained that,

"Because if you look at technology and how far it has advanced, also from a pure platform and architecture perspective, you know, and then moving to digital offerings is also a challenge. So, you'll find that you have legacy applications that are like 14 years old, that were built even before relational databases came into being, so there is no normalisation, so data quality is a huge challenge. Then you need to move this thing to this new dynamic platform. Then you find that you don't have compatibility. So, there is also that technical challenge or

technical compatibility as well, to get these kinds of things to work” (Appendix D5).

P12 added that,

“There are also some challenges around that I would call legacy systems. So even if you say we want to embrace digital transformation, the problem is that some of our systems and processes are legacy. I am talking about billions of Rand have been invested in that. And to change that to state-of-the-art new digital systems and processes cost you billions again. And time...and skills that you don't have” (Appendix D12).

P13 also stated that the company's “organisational change management is not geared for digital transformation” (Appendix D13). Lastly, P1 mentioned that the company's multi-generational environment might also be a potential organisational challenge.

Finding 22: The culture in the company is a challenge that digital transformation hinges on and employees view digital transformation as a threat

Finding 23: The skillsets needed for digital transformation in the company are lacking, and many employees do not have the aptitude or attitude to acquire these skills

Finding 24: The company's multi-generational systems may also be a potential organisational challenge due to technical compatibility challenges between systems and legacy systems

IQ 1.3.3: What is the importance of cross-collaboration between IT and business?

Almost every participant highlighted the importance of cross-collaboration between IT and business. According to six (6) of the 15 participants, it is important that IT needs to be driven by business or the strategy be set by business and IT to be the enabler making it happen and deliver according to what the business needs are. As pointed out by P10, “The sole purpose of IT existing is to enable business. So, if whatever you are doing in IT is not enabling a business process or allowing business to create a new process or a new product, then you are doing technology for technology sake. IT and business alignment is critical” (Appendix D10). Therefore, as P9 explained:

“It has always been important and you can never underestimate it, and certainly with digital... If you are not aligned between business and IT, no matter what you do, you [are] never going to see the true benefit of it... You have to tie business with transformation. And as we get more intelligent with technology, as we get more intelligent around how digitisation happens and becomes this

digitisation economy, the more and more you actually need for business and IT to become more closely aligned with each other” (Appendix D9).

P5 and P13 pointed out that collective ownership should be critical. As P13 highlighted:

“The cross-collaboration is a little bit different in digital transformation because is it not an IT vs. a business type of thing. It is like the two is merging rather than the two being separate and have a cross-collaboration. So I think the better approach to collaboration is actually thinking how to merge the two aspects, because IT now becomes the business, so IT must be in business and business must be IT” (Appendix D13).

From P2’s perspective, the business needs to understand IT, and IT needs to lead. P6 noted that:

“This is the biggest Achilles heel that I ever had, and all businesses go through [it]... Reality is, we are in the business of IT and if you look at it in perspective all business KPI’s of revenue better cost should apply to us as well, and as soon as you do that, IT behaves like business and that gap reduces... This is one of the biggest challenges” (Appendix D6).

Finding 25: There is little collaboration between IT and business

Finding 26: Business is not the driver towards digital transformation

IQ 1.3.4: What is the company's strategy towards digital transformation?

According to seven (7) of the 15 participants, there is not a clearly articulated digital transformation strategy in the company. As stated by P5, “I would not say there is a clear digital transformation strategy. I know that there are elements of digitisation that we are introducing in different spaces. But in terms of a clearly articulated digital transformation strategy...” (Appendix D5) and articulated by P8: “At the moment the company strategy is not completely clear” (Appendix D8). P12 believed that it is strategically important to embrace digital transformation. P13 explained that, “Digital is the way to go, but I think what we realise, there is more to it to that just to put down the technology. So, we very more selectively [are] looking at digital transformation, where does it make sense, where will it actually bring benefits” (Appendix D13). According to P10, the focus is on efficiency and getting into other market areas, but according to P14:

“In broad terms it is a journey that essentially drives towards [a] paperless business model or operational model, or operations model when you deal with your customer. Automate as far as possible along the line of automation and robotics, use analytics to understand your customer better, because that is the big advantage digital transacting brings to you... It is about also retaining your

customer, which is where the analytics come in, where you understand your customer and then you sell and develop products and services that he wants” (Appendix D14).

Finding 27: There is not a clearly articulated digital transformation strategy in the company, although a digital transformation strategy is important

Finding 28: The focus of the company is not on digital transformation, but more on efficiency, essentially driving towards a paperless business model, and using analytics to retain customers through secondary benefits

IQ 1.4.1: How do government and regulatory bodies affect the decision making of a digital transformation strategy?

The belief is that government and regulatory bodies affect the decision making of a digital transformation strategy, although two (2) participants (P13 and P15) indicated that it does not affect the company. P15 stated that, “I do not think that they will impact on us very much, but I think we need to become stronger when dealing with regulatory bodies” (Appendix D15). According to P13,

“As far as decision making for digital transformation is concerned, I don’t think government or regulatory affect it that much... We still have to comply with government and regulatory legislation as with any IT solution, for example with POPI, you still need to comply to that, but the decision making of digital transformation is for me purely affected by the business benefits that we realise from it” (Appendix D13).

P2 argued that government and regulatory bodies could impede digital transformation to some extent, therefore the idea would be to remain ahead of the curve and factor in potential regulatory requirements. The reason for this is that some of the participants (P7, P9, P11, P12, and P14) felt that government and regulatory bodies are slow with putting policies in place, and that there could be an absence of regulations for some of the digital concepts. P14 stated that, “Government will lag behind, because IT move light years ahead, compared to government’s snail pace. So, it is important, but I think it is also accepted that government will probably get there, it won’t get there before business does” (Appendix D12). P7 said the following: “But government and regulatory bodies definitely have an influence on it, and I think they are putting policies in place that might be a bit slow, but if you speed it up, if you put in more constraining policies you might get a bigger resistance from the population” (Appendix D7). According to P12, “If regulatory authorities don’t give your certainty, that when you make those investments, you will not be able to recover it, ok, then you

are hesitant to make those investments” (Appendix D12). P6 highlighted that government regulation with regard to labour is causing skilled labour to exit the country, and they therefore are creating a bigger gap.

Finding 29: Government and regulatory bodies affect the decision making of a digital transformation strategy and could impede digital transformation to some extent

Finding 30: Government and regulatory bodies are slow with putting policies in place and there could be an absence of regulations on some of the digital concepts

IQ 1.4.2: How does the company apply governance to ensure its digital strategy stays on track?

According to eight (8) of 15 participants, no governance for digital transformation is in place. As said by P1: “I don’t think we have any, there is no concrete plan in place yet, on how we need to move forward from an overall strategy, so it’s, so the governance is not in place yet. But it needs to be put in place going forward” (Appendix D1).

P13 stated:

“At present, the governance specifically for digital strategy is very much on an ad hoc basis, but there are efforts to formalise this, so we have already identified digital as a domain in its own, which means that it will get a strategy and there will be roadmaps and implementations principals, measures and procedures defined for it etc. It is formalising as this stage” (Appendix D13).

According to P12, “It is embedded in the business... It is embedded in the vision of the company” (Appendix D12). P14 referred to the company’s IT governance currently being used, which aligns with King IV recommendations. According to P8, “Governance is now slowly getting attention. I see there is now a presentation that is specifically on IT governance that has gone to Exco. I don’t know if that has been approved as yet, because I haven’t seen the structures happening and being actively operated yet” (Appendix D12).

Finding 31: No clear governance is in place, as the digital transformation strategy is still not clearly articulated

IQ 1.4.3: How important is digital transformation to the company?

Eight (8) of the 15 participants expressed that digital transformation is extremely important for the company to remain relevant and competitive in the current economic environment. P9 stated:

“Because it has to change the way we service our customers. It’s got [to] change the way we engage with our customers, it’s got to change our solution sets to our customers. So, right from engagement to how we service to the new solution, we take to our customers. We have... If we do not embrace digital transformation and all elements and all the various sectors and opportunities that the digital world brings to us, we may lose relevance for the customer. So, for us to stay relevant for the customer we got be focus on that” (Appendix D9).

According to P10, “It actually determines our relevance in the market. If we are not able to transform and become relevant then we will become obsolete. So, we need to remain relevant, we provide some of the key building blocks of enabling digitalisation” (Appendix D10). P3 emphasised that:

“[I] think it is extremely important. And also think it is extremely important that you get it right, you know, in terms of being able to get the end benefit... I think that is even more important that it is driven from a business point of view and not from a technology systems point of view” (Appendix D10).

P4 indicated that the importance of digital transformation to the company: “[Because] our customers are also moving into the digital area, we need to provide them with the capability” (Appendix D4). According to P5, it “drives your cost significantly down... More efficient in terms of how you operate because of the automation that comes from digital capability... You can tap into markets...that were...not possible” (Appendix D5).

Finding 32: It is acknowledged that digital transformation is very important to the company to remain relevant and competitive in the current economic environment

IQ 1.4.4: How does the company use new technologies to enhance its value creation?

P4, P5, P6, P10, P11, and P13 stated that the company uses new technologies to improve its customer experience. As P6 as stated, “Value creation is customer experience. I think technologies as they evolve will continuously create value” (Appendix D6). In addition, P10 explained the following:

“It allows you to streamline your business using these technologies to speed up delivery to your customer. For your value creation in aspect is then, you are

able to reduce cost, you have a quicker time to serve your customer and that creates the customer experience which is the value” (Appendix D10).

P2 opined that the organisation is looking new ways to innovate in improving connectivity and integration between connectivity and IT, and according to P4, new technologies will improve cost to serve and cost to connect, which have a financial impact. According to P7, the value cannot be seen currently. P8 agreed and said that, “A company’s value is only materialised through the eyes of a customer. I don’t see Telkom use new technologies to create value for their customer” (Appendix D8). P12 explained how the company creates value:

“We try to use technology to improve the lives of our customers... Create a digital workplace that will improve the lives of our employees... Using these technologies... to improve the business. If the business is improved, and we make more money, we create value for our shareholders and for the society, because if you have a sustainable business... then you drive the economy” (Appendix D12).

P9 added that technologies should only be implemented if it can solve a business challenge or making its employees more efficient. P3 also pointed out that new technologies enable the company to provide new products and differentiated products, while P6 emphasised that the products that have been taken to market are due to new technologies.

Finding 33: The company is looking at more innovative ways of improving connectivity and taking new products to market

Finding 34: Some new technologies are implemented to solve business issues in order to have a sustainable business

Finding 35: The company is looking at ways to improve customer experience

Finding 36: Different technologies are used to improve business process and employee efficiency

4.5.1 Summary of the findings

For the ease of reading, findings are listed per RSQ below. Based on the findings, the developed themes are indicated in sub-section 4.6.

RQ: What factors affect digital transformation in a telecommunications company in South Africa?

RSQ 1.1: What technology factors affect digital transformation?

Table 4.2 represents the 11 findings related to RSQ 1.1. From these findings, a headline finding was selected.

Table 4.2: Findings for RSQ 1.1

Finding No.	Description
Finding 1	Although new technologies can have a huge impact on the way it can be leveraged to reach the company's customer base, it is not utilised effectively in the company
Finding 2	New technologies are not embraced for insights into customer expectations and needs, and are not used to improve customer service
Finding 3	New technologies such as data analytics, although acknowledged as being crucial, are not used in the company
Finding 4	Although digital technologies are seen as playing an important role, it is not used to improve the way the organisation operates and communicates
Finding 5	Digital technologies should enable the company to reach its business goals by creating new revenue streams and making smarter decisions, but it is not utilised to that extent
Finding 6	It is acknowledged that digital technology can improve customer experience
Finding 7	Digital technologies are not used to drive efficiency and effectiveness to reduce the cost to the company
Finding 8	There is a lack of appropriate skills for the digital transformation process
Finding 9	Technology factors such as flexibility, agility, the ability to adapt to changing business needs, being able to adhere to open standards, the technical landscape of the organisation, and the capabilities of the technology are important
Finding 10	Legacy systems have a negative impact on the transformation drive, but they remain an asset and are therefore difficult to replace
Finding 11	Complexity in terms of how legacy systems are integrated into other systems is a stumbling block

Headline finding 1: Digital technologies should enable the company to reach its business goals by creating new revenue streams and making smarter decisions, but it is not utilised to that extent

RSQ 1.2: What management factors affect digital transformation?

Table 4.3 represents the eight (8) findings related to RSQ 1.2. From these findings, two headline findings were selected.

Table 4.3: Findings for RSQ 1.2

Finding No.	Description
Finding 12	Management needs to play a pivotal role in the digital transformation, but they are not always involved
Finding 13	Management is not leading from the top and does not challenge the status quo

Finding No.	Description
Finding 14	The company is partnered with higher education institutions in an attempt to develop a digital programme for employees
Finding 15	The company is not optimising the outsourced partnership to its full extend
Finding 16	Reskilling of employees is not a priority
Finding 17	Customer culture, requirements, and efficiency are not used as drivers for digital transformation
Finding 18	Digital capabilities are secondary drivers for digital transformation
Finding 19	The company is not cost-efficient

Headline finding 2: Management needs to play a pivotal role in the digital transformation, but they are not always involved

Headline finding 3: Customer culture, requirements, and efficiency are not used as drivers for digital transformation

RSQ 1.3: What corporate culture factors affect digital transformation?

Table 4.4 represents the nine (9) findings related to RSQ 1.3. From these findings, a headline finding was selected.

Table 4.4: Findings for RSQ 1.3

Finding No.	Description
Finding 20	There are many definitions of digital transformation within the company
Finding 21	Digital transformation is seen as challenging the status quo, exploiting the latest digital technologies, transforming the way business is done, whereby an organisation can then create new products and services
Finding 22	The culture in the company is a challenge that digital transformation hinges on and employees view digital transformation as a threat
Finding 23	The skillsets needed for digital transformation in the company are lacking, and many employees do not have the aptitude or attitude to acquire these skills
Finding 24	The company's multi-generational systems may also be a potential organisational challenge due to technical compatibility challenges between systems and legacy systems
Finding 25	There is little collaboration between IT and business
Finding 26	Business is not the driver towards digital transformation
Finding 27	There is not a clearly articulated digital transformation strategy in the company, although a digital transformation strategy is important
Finding 28	The focus of the company is not on digital transformation, but more on efficiency, essentially driving towards a paperless business model, and using analytics to retain customers through secondary benefits

Headline finding 4: There are many definitions of digital transformation within the company

Headline finding 5: Digital transformation is seen as challenging the status quo, exploiting the latest digital technologies, transforming the way business is done, whereby an organisation can then create new products and services

RSQ 1.4: How do these factors affect digital transformation in the company?

Table 4.4 represents the nine (9) findings related to RSQ 1.4. From these findings, a headline finding was selected.

Table 4.5: Findings for RSQ 1.4

Finding No.	Description
Finding 29	Government and regulatory bodies affect the decision making of a digital transformation strategy and could impede digital transformation to some extent
Finding 30	Government and regulatory bodies are slow with putting policies in place and there could be an absence of regulations on some of the digital concepts.
Finding 31	No clear governance is in place, as the digital transformation strategy is still not clearly articulated
Finding 32	It is acknowledged that digital transformation is very important to the company to remain relevant and competitive in the current economic environment
Finding 33	The company is looking at more innovative ways of improving connectivity and taking new products to market
Finding 34	Some new technologies are implemented to solve business issues in order to have a sustainable business
Finding 35	The company is looking at ways to improve customer experience
Finding 36	Different technologies are used to improve business process and employee efficiency

Headline finding 6: It is acknowledged that digital transformation is very important to the company to remain relevant and competitive in the current economic environment

From the 36 findings, six (6) headline findings were thus derived:

- i) Digital technologies should enable the company to reach its business goals by creating new revenue streams and making smarter decisions, but it is not utilised to that extent

- ii) Management needs to play a pivotal role in the digital transformation, but they are not always involved
- iii) Customer culture, requirements, and efficiency are not used as drivers for digital transformation
- iv) There are many definitions of digital transformation within the company
- v) Digital transformation is seen as challenging the status quo, exploiting the latest digital technologies, transforming the way business is done, whereby an organisation can then create new products and services
- vi) it is acknowledged that digital transformation is very important to the company to remain relevant and competitive in the current economic environment

4.6 Development of categories and themes

Table 4.6 shows a sample from Appendix E, i.e. how the findings were drawn from the summaries, which are the collective responses from the participants on IQ 1.3.1. The findings were categorised and then further grouped into themes.

The list of themes (5), developed from the findings (36) and categories (21), are presented in Table 4.7.

Table 4.6: Example extract from analysis (creating themes from the findings and categories for IQ 1.3.1)

Summary	Findings	Category	Theme
Digital transformation is viewed as challenging the status quo to automate the ways of operation, by changing the way customers and employees interact with the company, exploiting the latest digital technologies, transforming how business is done, whereby an organisation then creates new products and services.	There are many definitions of digital transformation within the company.	Many definitions	Digital Transformation
	Digital transformation is seen as challenging the status quo, exploiting the latest digital technologies, transforming the way business is done, whereby an organisation can then create new products and services.	Digital transformation is about a lot of things	Digital Transformation

Table 4.7: Summary of findings (36), categories (21) and themes (5)

Finding No.	Finding	Category	Theme
Finding 1	Although new technologies can have a huge impact on the way it can be leveraged to reach the company's customer base, it is not utilised effectively in the company	To reach customer base	Customer Experience
Finding 2	New technologies are not embraced for insights into customer expectations and needs, and are not used to improve customer service	Improve customer service	Customer Experience
Finding 3	New technologies such as data analytics, although acknowledged as being crucial, are not used in the company	Assist with decision making	Management
Finding 4	Although digital technologies are seen as playing an important role, it is not used to improve the way the organisation operates and communicates	Digital technologies	Technology
Finding 5	Digital technologies should enable the company to reach its business goals by creating new revenue streams and making smarter decisions, but it is not utilised to that extent	Digital technologies	Technology
Finding 6	It is acknowledged that digital technology can improve customer experience	Customer experience	Customer Experience
Finding 7	Digital technologies are not used to drive efficiency and effectiveness to reduce the cost to the company	Efficiency and effective	Organisational Strategy
Finding 8	There is a lack of appropriate skills for the digital transformation process	Skills	Management
Finding 9	Technology factors such as flexibility, agility, the ability to adapt to changing business needs, being able to adhere to open standards, the technical landscape of the organisation, and the capabilities of the technology are important	Change management	Technology

Finding No.	Finding	Category	Theme
Finding 10	Legacy systems have a negative impact on the transformation drive, but they remain an asset and are therefore difficult to replace	Legacy systems	Technology
Finding 11	Complexity in terms of how legacy systems are it is integrated into other systems is a stumbling block	Complexity how it integrates	Technology
Finding 12	Management needs to play a pivotal role in the digital transformation, but they are not always involved	Strategy	Management
Finding 13	Management is not leading from the top and does not challenge the status quo	Management not leading and challenging status quo	Management
Finding 14	The company is partnered with higher education institutions in an attempt to develop a digital programme for employees	Digital technology	Management
Finding 15	The company is not optimising the outsourced partnership to its full extend	Skills	Management
Finding 16	Reskilling of employees is not a priority	Skills	Management
Finding 17	Customer culture, requirements, and efficiency are not used as drivers for digital transformation	Customer experience	Customer Experience
Finding 18	Digital capabilities are secondary drivers for digital transformation	Digital technology	Organisational Strategy
Finding 19	The company is not cost-efficient	Become efficient	Organisational Strategy
Finding 20	There are many definitions of digital transformation within the company	Many definitions	Digital Transformation
Finding 21	Digital transformation is seen as challenging the status quo, exploiting the latest digital technologies, transforming the way business is done, whereby an organisation can then create new products and services	Digital technology	Digital Transformation
Finding 22	The culture in the company is a challenge that digital transformation hinges on and employees view digital transformation as a threat	Culture big challenge	Management
Finding 23	The skillsets needed for digital transformation in the company are lacking, and many employees do not have the aptitude or attitude to acquire these skills	Skills	Management
Finding 24	The company's multi-generational systems may also be a potential organisational challenge due to technical compatibility challenges between systems and legacy systems	Multi-generations systems are a challenge	Technology
Finding 25	There is little collaboration between IT and business	Strategy	Organisational Strategy
Finding 26	Business is not the driver towards digital transformation	Strategy	Organisational Strategy

Finding No.	Finding	Category	Theme
Finding 27	There is not a clearly articulated digital transformation strategy in the company, although a digital transformation strategy is important	Strategy	Organisational Strategy
Finding 28	The focus of the company is not on digital transformation, but more on efficiency, essentially driving towards a paperless business model, and using analytics to retain customers through secondary benefits	Customer experience	Customer Experience
Finding 29	Government and regulatory bodies affect the decision making of a digital transformation strategy and could impede digital transformation to some extent	Government and regulatory impact	Organisational Strategy
Finding 30	Government and regulatory bodies are slow with putting policies in place and there could be an absence of regulations on some of the digital concepts	Government and regulatory impact	Organisational Strategy
Finding 31	No clear governance is in place, as the digital transformation strategy is still not clearly articulated	Strategy	Organisational Strategy
Finding 32	It is acknowledged that digital transformation is very important to the company to remain relevant and competitive in the current economic environment	Strategy	Organisational Strategy
Finding 33	The company is looking at more innovative ways of improving connectivity and taking new products to market	Improving connectivity	Technology
Finding 34	Some new technologies are implemented to solve business issues in order to have a sustainable business	Digital technology	Technology
Finding 35	The company is looking at ways to improve customer experience	Customer experience	Customer Experience
Finding 36	Different technologies are used to improve business process and employee efficiency	Strategy	Organisational Strategy

From the 36 findings, 21 categories and five (5) themes were developed (Table 4.7).

The themes are as follows: i) Customer Experience; ii) Transformation; iii) Management; iv) Organisational Strategy; v) and Technology.

4.7 Themes

In this section, information of the case used for the research is discussed. Data from the interviews (consisting of 15 interview questions and answered by 15 participants) conducted during the research process, were analysed. Thirty-six (36) findings were identified based on the analysis of the data. Five themes deemed important were

identified from the 36 findings. The themes are presented in Table 4.8, linked to the RQ and RSQs.

The five themes are:

- i) Customer Experience
- ii) Digital Transformation
- iii) Management
- iv) Organisational Strategy
- v) Technology

Table 4.8: Themes per research question

Research Questions	Themes
RQ: What factors affect digital transformation in a telecommunications company in South Africa?	
RSQ 1.1: What technology factors affect digital transformation?	Customer Experience Management Organisational Strategy Technology
RSQ 1.2: What management factors affect digital transformation?	Customer Experience Management Organisational Strategy
RSQ 1.3: What corporate culture factors affect digital transformation?	Customer Experience Digital Transformation Management Organisational Strategy Technology
RSQ 1.4: How do these factors affect digital transformation in the company?	Customer Experience Organisational Strategy Technology

4.8 Summary

Chapter Four provided a background of the case used for the research, herein referred to as Telkom SA SOC Limited, a leading Information and Communications Technology (ICT) services provider in South Africa. Telkom's mission is to connect people seamlessly to a better life. With its headquarters in Centurion, it hosts about 18,286 employees nationwide. Telkom is a semi-privatised, 39% state-owned enterprise. As of 31 March 2018, Telkom connected more than 2.5 million premises with fibre through OpenServe and increased their active mobile subscriber base to 5.2 million. They offer business, residential and payphone customers a wide range of services and products.

For the purpose of this research, the focus is on the operations business units OpenServe and Telkom Consumer, and the subsidiary BCX, as they are responsible for the core operations of the Telkom Group, which is telecommunications.

Participants were chosen for diversity and knowledge on the subject matter. The participants included Chief Group Executives, Managing Executives, Executives, operations staff selected to do internal research, and a Solution architect.

Based on the responses and analysis of the answers, findings (36) were derived for each interview question through transcribing, summarising, and categorising the data, as discussed in Chapter Three. From the 36 findings, six (6) headline findings were identified:

Headline finding 1: Digital technologies should enable the company to reach its business goals by creating new revenue streams and making smarter decisions, but it is not utilised to that extent

Headline finding 2: Management needs to play a pivotal role in the digital transformation, but they are not always involved

Headline finding 3: Customer culture, requirements, and efficiency are not used as drivers for digital transformation

Headline finding 4: There are many definitions of digital transformation within the company

Headline finding 5: Digital transformation is seen as challenging the status quo, exploiting the latest digital technologies, transforming the way business is done, whereby an organisation can then create new products and services

Headline finding 6: It is acknowledged that digital transformation is very important to the company to remain relevant and competitive in the current economic environment

From the 36 findings, five (5) themes were identified. The themes are: i) Technology; ii) Management; iii) Customer Experience; iv) Organisational Strategy; v) and Digital Transformation. In Chapter Five, the themes are discussed and linked to the research questions and aim of the study.

CHAPTER FIVE: DISCUSSION

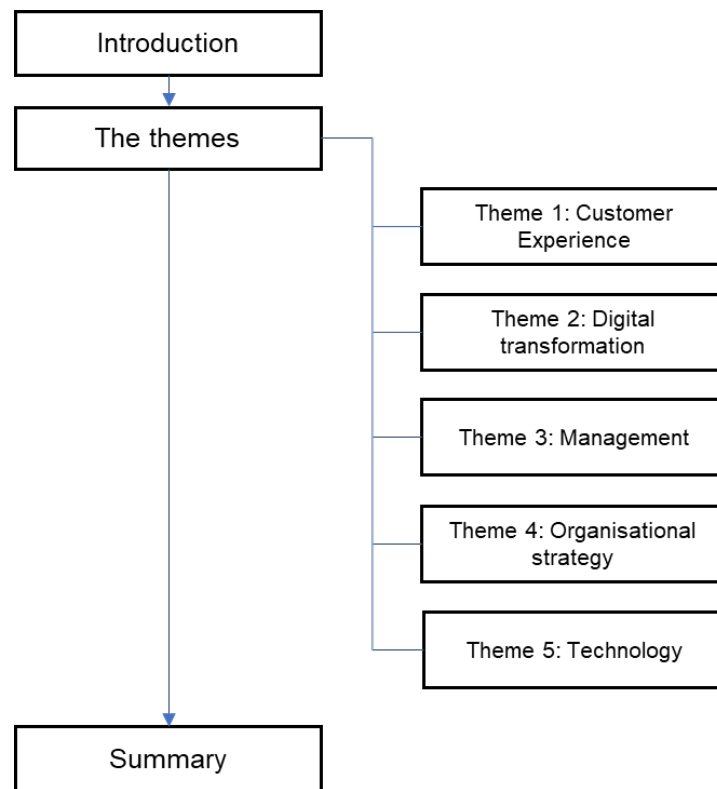


Figure 5.1: The flow for Chapter Five

5.1 Introduction

In Chapter Five, the themes are discussed and linked to the research questions and aim of the study. At the end of the chapter, a summary is provided to highlight some factors evolving from the discussion. There are various factors affecting the way companies perceive digital transformation (Davenport & Westerman, 2018). These factors will become evident in the discussion. Table 4.2 to Table 4.5 and Table 4.7 in Chapter Four provide details of each finding, and the themes developed based on the 36 findings.

A discussion of the themes is presented in the following sections.

5.2 The themes

5.2.1 Theme 1: Customer Experience

According to Schreckling and Steiger (2017), the fast and wide explosion of digital technologies is due to people's expectations and behavioural changes, as well as how people adapt to new technologies, what they want, and the way they want to communicate with one another. Accordingly, the findings show that *customer culture* and *customer requirements* are primary drivers for digital transformation, but they are

not used as such (Table 4.3, Finding 17). Never before did customers have so much access to information about quality, prices, functionality, or customer service. Customers increasingly make informed decisions based on recommendations and experiences of other consumers, and now more than ever expect personalised experiences and offers, which are specifically tailored for them (Châlons & Dufft, 2017). Customers have certain expectations, as explained by P12: “I think customers want to interact with the company 24/7, 365, doesn’t matter where they are. So, customer expectations have changed. You do not want to go into a shop anymore... and the equivalent of that in the Telco space, is [that] customers don’t want to go to shop to interact with you. They want to buy your services from you on a digital platform” (Appendix D12).

As stated by Westerman et al. (2014), companies that succeed in digital transformation use digital technologies to transform their customer experience, the key being how well the company can gather customer information or place customer data at the heart of the company. From the research, it has been found that new technologies have a huge impact in the way it can be leveraged to reach the company’s customer base, but it is not being utilised effectively in the company. (Table 4.2, Finding 1). Technology should also be embraced to understand the customer and improve customer service, but this is not happening in the company (Table 4.2, Finding 2). P1 highlighted, “So Big Data and analytics form a key part for us... It helps us to improve our customer service, our responsiveness to the customers so that we can get better information through to the customers as well. The second thing is actually for us to activate our field force to be more proactive” (Appendix D1). Châlons and Dufft (2017) agree by stating that digital channels are opening new ways of collecting information from the customer and using it to optimise the customer experience. The time that it takes to respond to customer service requests through Twitter, Facebook and other social media platforms, could mean that customers would move away, as it is perceived as bad service with the new reality era (Bharadwaj et al., 2013).

It is acknowledged that digital technology can improve customer experience (Table 4.2, Finding 6). It is for this reason that companies look for new ways to enhance value creation, with the focus on improving the customer experience and customer interaction (Table 4.5, Finding 35).

5.2.2 Theme 2: Digital Transformation

Digital transformation can broadly be defined as encapsulating everything from organisational culture and change to the use of new digital technologies in order to

improve the company in various organisational areas. Some of these organisational areas can be defined as enhancing user services and experience, streamlining business operations or creating new services, as well as redefining completely new business models (Brown et al., 2014).

Mergel et al. (2019:12) propose a holistic effort to define digital transformation as follows:

“Digital transformation is a holistic effort to revise core processes and services of government beyond the traditional digitisation efforts. It evolves along a continuum of transition from analogue to digital to a full-stack review of policies, current processes, and user needs and results in a complete revision of the existing and the creation of new digital services. The outcome of digital transformation efforts focuses among others on the satisfaction of user needs, new forms of service delivery, and the expansion of the user base”.

Digital transformation, digitisation, and digitalisation are sometimes used interchangeably to refer to digital transformation. Mergel et al. (2019) make the following differentiation:

- vi) **Digitisation:** The transformation from analogue to digital services with exactly the same functionality and maintaining this functionality
- vii) **Digitalisation:** The focus is on changes in the processes, which is beyond the transition of paper and/or analogue to digital of existing processes
- viii) **Digital transformation:** Highlights the transformation of the culture and the organisation in order to have a better form of outcome

In research, digital transformation is perceived in many different ways, for example, challenging the status quo, exploiting the latest digital technologies, transforming how you do business, whereby an organisation then can create new products and services (Table 4.4, Findings 20 & 21). P2, P6, P7, P14, and P15 viewed digital transformation merely as the automation of processes. P15 explained: “Digital transformation for me, takes out any form of human intervention, so it takes a manual process, where many bodies used to be attached to it and it makes it end-to-end digital, with the same output or a better output, and done in an eighth of the time. That’s how it should be” (Appendix D15). P3, P12, and P14 perceived digital transformation as changing the way people interact with the company. For P9, DT is as simple as changing any manual process to 1s and 0s. For P6, digital transformation is to speed up processes to be faster in delivering service. For P7, digital transformation is the ability to collect data and analyse it, and for P1, digital transformation points to how digital telecommunication and digital record keeping is used with tools such as Big Data and AI to create a better process. However, P10 viewed digital transformation as,

“Exploiting the latest digital technologies and practices to create a digital operating model whereby an organisation then can create new products and services” (Appendix D10). P8 defined digital transformation as, “Digital transformation is really transforming the entire business to be able to use the mechanism that is now becoming available in the fourth industrial revolution to expand, to evolve, to grow, to be more” (Appendix D8). It would seem that there are different views and opinions on, or an understanding of what digital transformation might be.

5.2.3 Theme 3: Management

The successful transformation of companies depends on how Management drives digital transformation (Westerman et al., 2014; Kane et al., 2015). A strong top management structure is essential for digital transformation, as they need to lead the company into the future and have strong leadership capabilities. Leadership is about vision, engagement, governance, and technology. Studies have shown that the leadership role in digital transformation is essential (Kane et al., 2015; Sawy et al., 2016). Bjärfors et al. (2019) found that:

- i) Not seeing the importance of communicating the digital transformation strategy would make it water down the relevance of such a strategy
- ii) Not providing the necessary development to operational management in IT and digital tools would reduce the success of a digital transformation strategy
- iii) Not having proper standards, processes, and routines to integrate digital tools can lead to a lack in pacing the digital transformational drive
- iv) Not incorporating a recruitment process to bring leaders in from other industries in order to have a fresh approach might have an impact on the digital transformation journey

The participants emphasised that Management needs to play a pivotal role in the digital transformation of the company, as they need to lead from the top, constantly challenging the status quo, setting the vision and strategy, and drive it to the end, although this was not found in the company (Table 4.3, Findings 12 &13). P6 stated that, “It is important for Management to understand, acknowledge, and then live it. Top Management has to set the strategy or at least the drivers. Top Management [has] to invest in enabling Middle Management to execute the digital transformation” (Appendix D6).

According to Bharadwaj et al. (2013), there is consensus that technology has allowed firms to speed up decisions that otherwise might be slow due to information that flows up and down the hierarchy through multiple layers of the management area. In alignment, the findings show that new technologies in the form of data analytics are

key and can assist with decision making in the company, but are not used to the extent of what the capabilities of the technologies are (Table 4.2, Finding 3).

Tiersky (2017) points out that one of the challenges of digital transformation is organisational resistance to change. For 85–90% of people, change means pain in the sense of uncertainty and the challenge to their future, and after all, it is nature not to want to see your applecart turned over. The research has found that culture is a challenge that digital transformation hinges on and that employees perceive digital transformation as a threat (Table 4.4, Finding 22). P2 stated that, “The organisation’s culture is that of old school thinking” (Appendix D2).

Digital transformation has found its way into companies and cross-functional knowledge is becoming a major issue for DT in companies. Therefore, the lack of digital talent and targeted skills development is rare (Hoberg et al., 2015). The research has shown that more emphasis is required on reskilling employees, as this was not the case in the company (Table 4.3, Finding 16). Nair (2019) adds that the pace at which technologies progress and the lack of pace at which organisations upskill their employees will increase the need for crucially required digital skills. For a company to embark on a digital transformation journey, Management needs to have an open mindset to employee initiatives and focus on the development and improvement of the employee experience (Dery et al., 2017).

This research has come to the same conclusion in finding that skillsets are changing. Furthermore, employees need to develop new skills and many of them do not have the aptitude or attitude to do so. The lack of aptitude and/or attitude therefore requires a change in mindset. One of the most important requirements of a digital transformation strategy is leaders and employees with an understanding of digital technologies. These leaders need to understand what skillsets are required for the success of the company’s digital transformation (Hoberg et al., 2015). There is a lack of appropriate skills for the digital transformation process (Table 4.2, Finding 8) and therefore the company has partnered with higher education institutions to develop a digital programme for employees in an attempt to fill the gap (Table 4.3, Finding 14). However, time is of the essence, and the option to assist the company in its needs appointments from outside could be an alternative, if available. As alternative, collaborating with other companies might be a way of bringing in skills that offer a fresh approach, as the company is not yet optimising the outsourced partnership to its advantage (Table 4.3, Finding 15). As stated by P9, “There is quite a bit that we are focusing on, one on bringing new talent. Because obviously you have a lot of different thinking, the new talent is not restricted by old ways of thinking. But it is about

pulling those two forces together, where the guys can start learning from each other” (Appendix D9).

5.2.4 Theme 4: Organisational Strategy

One of the organisation-centric approaches when introducing digital transformation was revealed as having a clear understanding of the key critical success factors required to deliver upon digital transformation, which relates to having a clear digital transformation strategy (Loonam et al., 2018). Although the company acknowledges that digital transformation is very important to the company to remain relevant and competitive in the current economic environment (Table 4.5, Finding 32), there is no clear digital transformation strategy in the company yet (Table 4.4, Finding 27). Kane et al. (2017) found that a digital transformation strategy is the one thing that differentiates a digitally maturing company from the rest. This might indicate some concerns for the company.

Digital governance should not be overlooked, as ineffective governance creates wasteful and missed opportunities, thereby making digital transformation an expensive journey or project. Digital governance requires Top Management to be consciously engaged (Westerman et al., 2014). This highlights another concern where it was found that there is no clear governance in place, as the strategy is still not clearly articulated (Table 4.5, Finding 31).

According to Heavin and Power (2018), digital transformation is often seen as the solution to organisational challenges that relates to efficiency and effectiveness (Table 4.2, Finding 7) thereby reducing the cost to the company, but this was not visible. By improving employee efficiency (Table 4.5, Finding 36), the company will become more efficient (Table 4.2, Finding 19).

A business-IT relationship is crucial, and it needs to be strengthened if a company wants to survive. It might take a lot of work and replatforming, but it is essential that business and IT have a strong relationship (Westerman et al., 2014). Participants argued that collaboration between IT and business is critical, but little of this is seen in the company (Table 4.4, Finding 25). The participants furthermore emphasised the importance of role of business having to be the driver. Most of the participants agreed that business needs to set the strategy and IT has to be the enabler to make it happen and deliver according to what the business needs are, although collaboration between business and IT still is somewhat absent in the company (Table 4.4, Finding 26).

The majority of governments are a stumbling block for digital transformation. They tend to move slowly in updating laws, and they tend to defend existing concepts rather

than promote new approaches. An example of this is Uber, which has been prohibited by transportation regulations in countries in order to protect the traditional taxi industry (Scheer, 2017). From the research, it has been found that government and regulatory bodies affect the decision making of a digital transformation strategy and could impede digital transformation to some extent (Table 4.5, Finding 29). It is also reported that government and regulatory bodies are slow with putting policies in place and there could be an absence of regulations some of the digital concepts (Table 4.5, Finding 30).

5.2.5 Theme 5: Technology

By introducing digital technologies, companies can achieve their business goals because digital innovation can enable established companies to move into new domains and thus develop their existing business (Nylé & Holmström, 2015). It is also clear from the findings that the role of digital technologies is seen to improve the way the organisation operates and communicates (Table 4.2, Finding 4) and enable the company to reach its business goals by creating new revenue streams and making smarter decisions, but this is not used to its full capability (Table 4.2, Finding 5). As noted by P5, new technologies such as Big Data can assist in making smarter decisions. What also became evident is that technology factors such as flexibility, agility, the ability to adapt to changing business needs, being able to adhere to open standards, the technical landscape of the organisation, and the capabilities of the technology, are important (Table 4.2, Finding 9).

According to Teague (2017), companies are challenged by the IT systems they have, and adding to the challenges is a patchwork of legacy systems, built up over years within large companies, making the IT environment rigid and hard to manage. This is also reflected in the findings, as it revealed that legacy systems have a huge impact on the transformation drive, due to the complexity in how it is integrated into other systems (Table 4.2, Finding 11). In some instances, legacy systems are still seen as an asset due to the revenue that it generates, but this has a negative impact on the transformation drive (Table 4.2, Finding 10).

According to Davenport and Westerman (2018), digital is not something you can buy and plug into your organisation, as it is multi-faceted and diffused and does not just involve technology. Digital transformation is an on-going process that requires cleaning up IT systems. This poses a challenge due to the company's multi-generational systems and the technical compatibility problems that it brings between systems (Table 4.4, Finding 24). Therefore, companies need to look at more innovative ways of improving connectivity and taking new products to market, and

implementing technology to solve business issues in order to have a sustainable business (Table 4.5, Findings 33 & 34).

From section 5.2.2, it becomes clear that there are different views and opinions on, or an understanding of what digital transformation might be. A well-defined definition of digital transformation is required, and the researcher proposes the following as a definition for digital transformation:

“Digital transformation can be defined as the use of technology to radically improve performance or reach of enterprises and to enable major business improvements (such as enhancing customer experience, streamlining operations or creating new services, as well as redefining completely new business models and business culture) in an ever-evolving digital economy”.

5.3 Summary

The discussion on themes is based on the literature, findings, and interviewee responses. The vast and wide explosion of digital technologies is due to people’s expectations and behavioural changes, as well as how people adapt to new technologies. Accordingly, the findings revealed that customer culture and customer requirements are primary drivers for digital transformation and can be seen as factors that would affect digital transformation.

The successful transformation of companies depends on how Management drives digital transformation. However, all agree that digital transformation is important to the company, as they need to set the vision and strategy and drive it to the end. This highlights that the vision and strategy are important factors for the company to pursue digital transformation.

The research has come to the same conclusion in the findings as in the literature that skillsets are changing, and employees need to be developed to attain these new skills. Therefore, an effort from Management is required to drive this initiative. Not having the right skills in the company can have an effect on the digital transformation strategy of the company.

Having a clear digital transformation strategy is viewed as the differentiator for digital maturing companies. Not having a clearly articulated digital transformation strategy would therefore impair the company’s digital journey and considered a factor affecting digital transformation.

Governance of the digital transformation strategy is very important, as ineffective governance creates wasteful and missed opportunities, thereby making digital

transformation an expensive journey or project. For this reason, governance should be considered as an important factor in the digital transformation journey. Since efficiency is an important driver of the company, as it results in driving operational costs down, it can be incorporated in the digital transformation strategy to benefit from the capabilities that digital technologies provide.

As stated in the literature, an IT and business relationship is crucial, and it needs to be strengthened if a company wants to survive. The importance of collaboration between IT and business has been evident in the findings.

Government and regulatory policies might have an impact on the digital transformation journey of the company, as they tend to be slow in a world where technology sets the pace.

It has been highlighted in literature and through the findings that companies are challenged by the integration of legacy systems that built up over years within large companies, making the IT hard to manage.

Various attempts have been made in the literature to define digital transformation. This is also evident in practice. In some cases, digital transformation, digitisation, and digitalisation are used interchangeably to refer to digital transformation, which shows that DT still needs some clarity. A new digital transformation definition has been proposed, namely:

“Digital transformation can be defined as the use of technology to radically improve performance or reach of enterprises and to enable major business improvements (such as enhancing customer experience, streamlining operations or creating new services, as well as redefining completely new business models and business culture) in an ever-evolving digital economy”.

CHAPTER SIX: CONCLUSIONS, RECOMMENDATIONS AND REFLECTIONS

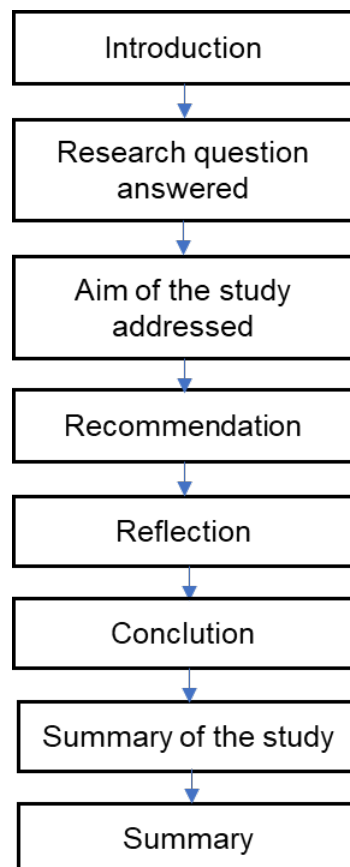


Figure 6.1: The flow for Chapter Six

6.1 Introduction

In this chapter, the research questions and aim are reported on. Recommendations are proposed, followed by a reflection on the research conducted.

6.2 Research question answered

RQ: What factors affect digital transformation in a telecommunications company in South Africa?

The factors that affect digital transformation in a telecommunications company in South Africa are as follow:

- i) Customer culture and requirements are primary drivers for digital transformation
- ii) The vision and strategy are important factors for the company to pursue digital transformation
- iii) Not having the applicable skills in the company can have a negative effect on the digital transformation strategy of the company

- iv) Not having a clearly articulated digital transformation strategy will impair the company's digital transformation journey
- v) Ineffective governance creates wasteful and missed opportunities, thereby making digital transformation an expensive project or journey and for this reason, governance should be considered an important factor to the digital transformation journey of the company
- vi) Since efficiency is an important driver of the company, as it results in driving operational costs down, it can be incorporated in the digital transformation strategy to utilise the capabilities that digital technologies provide
- vii) Collaboration between IT and business is crucial, and it needs to be strengthened if a company wants to survive
- viii) Government and regulatory policies might have an impact on the digital transformation journey of the company, as they tend to be slow in a world where technology sets the pace
- ix) The integration of legacy systems that built up over the years makes it challenging for IT to play a transformational role in the company's future
- x) Finally, the definition of digital transformation is vague and differs widely between role players

6.3 Aim of the study addressed

The aim of this study was to explore the factors that affect digital transformation in a telecommunications company in South Africa, and to what extent. The possible factors, as well as the importance of these factors, were identified by answering the primary research question, "What factors affect digital transformation in a telecommunications company in South Africa?" in section 6.2.

6.4 Recommendation

The results of the research point to several factors in the form of challenges that affect the digital transformation journey of the company. Recommendations for effective digital transformation derived from this research are as follows:

- i) The successful transformation of companies depends on how Management drives digital transformation. Although all agree that digital transformation is important to companies, they need to set the vision and strategy of the digital transformation and drive it to the end
- ii) Having a clear digital transformation strategy is important as it is viewed as the differentiator for digital maturing companies. Not having a clearly articulated digital transformation strategy will therefore impair the company's digital journey. Careful consideration should be given to what DT is, and how

it should be implemented. Having a strategy is one thing, but the most important aspect is implementing the strategy

- iii) Governance of the digital transformation strategy is very important, as ineffective governance creates wasteful and missed opportunities, thereby making digital transformation an expensive journey. For this reason, implementing governance is important if the digital transformation journey is to succeed
- iv) Since efficiency is an important driver of the company, it can be incorporated in the digital transformation strategy to benefit from the capabilities that digital technologies provide, and impact from government and regulatory bodies should be carefully considered
- v) Finally, but most importantly, a common understanding of what digital transformation means to the company should be formulated and incorporated in the vision of the company

6.5 Reflection

The research followed a case study approach, limited to a specific telecommunications organisation in South Africa. The research results are as accurate as possible, based on the interview answers obtained from 15 senior participants. It must be emphasised that the results cannot be generalised, as it is unique to the organisation.

Before and during the interviews, various challenges were experienced. For example, as most of the interviewees are senior employees, they were not always available. Interviews had to be rescheduled on numerous occasions, and in some instances, other arrangements such as a Skype session had to be conducted due to the limited time available of the senior employees. The rescheduling of these interviews was affecting the timelines of the research. Some of the persons identified to be interviewed did not respond to any interview requests or many phone calls. The late approval of the proposal also influenced the timelines.

The findings of the research open the doors to more questions that need to be answered, such as, "What efforts can be made by the company to reskill (skills needed for the future) their employees for the future?" Further study on how to change or direct the employee culture towards the digital transformation journey can be conducted.

6.6 Conclusion

The successful digital transformation of companies depends on how management drives digital transformation, sets a clear strategy, and has governance in place. The benefits of new digital technologies should be carefully considered when planning to implement. The company does not have a common understanding of what digital transformation means or is. Due to the emerging pace of new technologies, a skills gap is created as companies experience a challenge to acquire these skills related to utilise the capabilities of these new technologies.

From the literature reviewed, it is also clear that a clear digital transformation strategy is important and that governance is just as important to keep the company on track of its digital transformation strategy. The literature also highlights the importance of collaboration between IT and business and the role that leadership needs to play. The place of technology and how it is used have an essential role in digital transformation. One of the essential factors for a successful digital transformation, is having a skilled workforce and it would seem that this is one of these areas the companies will have to work on and find ways to skill the workforce or to acquire new skill.

6.7 Summary of the study

Chapter one covered the introduction of the study, which includes a general introduction as well as the research problem, aim, assumptions, design, contribution, and ethical considerations. The chapter concluded with the delineation and contribution of the research. Chapter two covered the literature review, which included the concept of digital transformation, DT and the organisation, digital capabilities and digital transformation, DT and management, and obstacles perceived were discussed. This is followed by Chapter Three, that covered the research methodology approach, research strategy, data collection, data analysis, data validation, and ethical considerations. In Chapter Four, the findings and results were outlined followed by the discussion of the derived themes in chapter five. Finally, Chapter Six presented the conclusion and recommendation of the study.

Based on the responses and analysis of the answers, findings (36) were derived for each interview question through transcribing, summarising, and categorising the data, as discussed in Chapter Three. From the 36 findings, six (6) headline findings were identified:

Headline finding 1: Digital technologies should enable the company to reach its business goals by creating new revenue streams and making smarter decisions, but it is not utilised to that extent

Headline finding 2: Management needs to play a pivotal role in the digital transformation, but they are not always involved

Headline finding 3: Customer culture, requirements, and efficiency are not used as drivers for digital transformation

Headline finding 4: There are many definitions of digital transformation within the company

Headline finding 5: Digital transformation is seen as challenging the status quo, exploiting the latest digital technologies, transforming the way business is done, whereby an organisation can then create new products and services

Headline finding 6: It is acknowledged that digital transformation is very important to the company to remain relevant and competitive in the current economic environment.

6.8 Summary

In this chapter, the primary research question and aim were addressed. Factors affecting digital transformation in a telecommunications company in South Africa were identified. These factors are as follows: customer culture and requirements; vision and strategy are important for pursuing digital transformation; not having the applicable skills can have a negative effect on the digital transformation strategy of the company; not having a clearly articulated digital transformation strategy would impair the company's digital transformation and no governance can be implemented without a strategy; efficiency is an important driver of digital transformation by utilising the capabilities that digital technologies provide; collaboration between IT and business is crucial; government and regulatory policies might have an impact on the digital transformation journey; legacy systems make digital transformation complex; and lastly, a clear definition for digital transformation is important.

By answering the research question, the problem statement was addressed. This was done by identifying the factors that affect digital transformation in an established telecommunications company in South Africa. In the same way, the aim was addressed by identifying the factors and the effect that they have on digital transformation.

The following recommendations were provided to aid in possible solutions: i) setting the vision and strategy of a digital transformation journey, implementing the strategy, and driving it by means of strong digital transformation governance; ii) as efficiency is important, it can be driven by digital transformation, carefully selecting technologies

according to the value of the technology's capabilities and considering regulatory and government policies; iii) and having a common understanding of what digital transformation means to the company.

Lastly, the researcher reflected on the limitation and challenges experienced during the research.

REFERENCE LIST

- Abolhassan, F. 2017. Pursuing digital transformation driven by the Cloud. In Abolhassan, F. (eds.), *The drivers of digital transformation. Management for professionals*. Springer, Cham.
- Beiske, B. 2007. *Research methods: uses and limitations of questionnaires, interviews and case studies*. Munich: GRIN Verlag.
- Bengtsson, M. 2016. How to plan and perform a qualitative study using content analysis. *Nursing Plus Open*, 2:8-14. <http://dx.doi.org/10.1016/j.npls.2016.01.001>.
- Berman, S.J. 2012. Digital transformation: opportunities to create new business models. *Strategy & Leadership*, 40(2):16–24, doi: 10.1108/10878571211209314.
- Bharadwaj, A., El Sawy, O.A., Pavlou, P.A. & Venkatraman, N. 2013. Digital business strategy: toward a next generation of insights. *MIS Quarterly*, 37(2):471-482.
- Bjärfors, T., Liljebrunn, T. & Pierce, P. 2019. *Exploring obstacles in digital transformation*. [Online]. Available at: <http://lup.lub.lu.se/luur/download?func=downloadFile&recordId=8984581&fileId=8984583> [Accessed: 30 September 2019].
- Boyce, C. & Neale, P. 2006. *Conducting in depth interviews: a guide for designing and conducting in-depth interviews for evaluation input*. Pathfinder International.
- Brown, A., Fishenden, J. & Thompson, M. 2014. *Digitising government*. Springer. [Online]. Available at: <https://link.springer.com/content/pdf/10.1057/9781137443649.pdf> [Accessed: 13 October 2019].
- Bryman, A. 2016. *Social research methods*. 5th ed. Oxford: Oxford University Press.
- Bryman, A. & Bell, E. 2011. *Business research methods*. 3rd ed. Oxford: Oxford University Press.
- Cepeda, G. & Martin, D. 2005. A review of case studies publishing in *Management Decision* 2003-2004. *Management Decision*, 43(6):851-876. <https://doi.org/10.1108/00251740510603600>.
- Châlons, C. & Dufft, N. 2017. Theses on digitalisation. In Abolhassan, F. (ed.), *The drivers of digital: why there's no way around the cloud*: 13-22.
- Christensen, C.M. 2013. *The innovators dilemma: when new technologies cause great firms to fail*. Boston MA: Harvard Business Review Press.
- Davenport, T.H. & Westerman, G. 2018. *Why so many high profile digital transformations fail*. Harvard Business Review. [Online]. Available at: <https://hbr.org/2018/03/why-so-many-high-profile-digital-transformations-fail> [Accessed: 1 August 2018].
- Dery, K., Sebastian, I.M. & Van der Meulen, N. 2017. The digital workplace is key to digital innovation. *MIS Quarterly Executive*, 16(2):135-152.

- Dubé, L. & Paré, G. 2001. *Case research in information systems: current practices, trends, and recommendations*. École des Hautes Études Commerciales de Montréal. [Online]. Available at: https://scholar.google.co.za/scholar?q=Case+research+in+information+systems:+current+practices,+trends,+and+recommendations&hl=en&as_sdt=0&as_vis=1&oi=scholart [Accessed: 13 October 2019]. ISSN 0832-7203.
- Fitzgerald, M., Kruschwitz, N., Bonnet, D. & Welch, M. 2013. Embracing digital technology: a new strategic imperative. *MIT Sloan Management Review*, 55(2):1-14.
- Flick, U. 2011. *Introducing research methodology: a beginner's guide to doing a research project*. London: Sage.
- Goddard, W. & Melville, S. 2004. *Research methodology: an introduction*. 2nd ed. Oxford: Blackwell.
- Hallebone, E. & Priest, J. 2009. *Business and management research: paradigms and practices*. Palgrave Macmillan.
- Hartl, E. & Hess, T. 2017. The role of cultural values for digital transformation: insights from a Delphi study. *Proceedings*. The 23rd Americas Conference on Information Systems (AMCIS 2017), Boston, USA, 10-12 August: 1–10. [Online]. Available at: <http://aisel.aisnet.org/cgi/viewcontent.cgi?article=1369&context=amcis> [Accessed: 27 August 2019].
- Heavin, C. & Power, D.J. 2018. Challenges for digital transformation – towards a conceptual decision support guide for managers. *Journal of Decision Systems*, 27(1):38-45.
- Henning, E., Van Rensburg, W. & Smit, B. 2004. *Finding your way in qualitative research*. Pretoria: Van Schaik.
- Henriette, E., Feki, M. & Boughzala, I. 2016. Digital transformation challenges. *Proceedings*. 10th Mediterranean Conference on Information Systems (MCIS), Paphos, Cyprus, 4-6 September.
- Hoberg, P., Krcmar, H., Oswald, G. & Welz, B. 2015. *Skills for digital transformation. IDT-Survey 2015*. Research report. [Online]. Available at: http://www.i17.in.tum.de/fileadmin/w00btn/www/IDT_Skill_Report_2015.pdf [Accessed: 9 November 2019]
- Hyland, K. 2016. *Methods and methodologies in second language writing*. System. Vol 59: 116-125
- Kane, G.C., Palmer, D., Phillips, A.N., Kiron, D. & Buckley, N. 2015. *Strategy, not technology, drives digital transformation. Becoming a digitally mature enterprise*. MIT Sloan Management Review and Deloitte University Press.
- Kane, G.C., Palmer, D., Phillips, A.N., Kiron, D. & Buckley, N. 2017. *Achieving digital maturity*. MIT Sloan Management Review and Deloitte University Press.
- Kane, G.C., Palmer, D., Phillips, A.N., Kiron, D. & Buckley, N. 2018. *Coming of age digitally*. MIT Sloan Management Review and Deloitte Insights.
- Klewes, J., Popp, D. & Rost-Hein, M. 2017. Managing the digital transformation: ten guidelines for communications professionals. In *Out-thinking organisational communications: the impact of digital transformation*: 187-195. doi:10.1007/978-3-319-41845-2_14.

- Kothari, C.R. 2004. *Research methodology: methods and techniques*. New Delhi: New Age International.
- Küng, L. 2017. *Going digital: a roadmap for organisational transformation*. [Online]. Available at: https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=Going+Digital+A+Roadmap+for+Organisational+Transformation&btnG= [Accessed: 25 September 2019].
- Kutzner, K., Schoormann, T. & Knackstedt, R. 2018. Digital transformation in information systems research: a taxonomy-based approach to structure the field. *Proceedings*. Twenty-Sixth European Conference on Information Systems (ECIS2018), Portsmouth, UK. [Online]. Available at: <http://ecis2018.eu/wp-content/uploads/2018/09/1355-doc.pdf> [Accessed: 9 November 2019].
- Laudel, G. & Glaser, J. 2014. Beyond breakthrough research: epistemic properties of research and their consequences for research funding. *Research Policy*, 43(7):1204-1216. <http://dx.doi.org/10.1016/j.respol.2014.02.006>.
- Leedy, P. & Ormrod, J. 2001. *Practical research – planning and design*. 7th ed. New Jersey: Merrill Prentice Hall.
- Liere-Netheler, K., Packmohr, S. & Vogelsang, K. 2018. Drivers of Digital Transformation in Manufacturing. *Proceedings*. The 51st Hawaii International Conference on System Sciences, Waikoloa, Hawaii. [Online]. Available at: <http://muep.mau.se/handle/2043/27162> [Accessed: 9 November 2019].
- Loonam, J., Eaves, S., Kumar, V. & Parry, G. 2018. Towards digital transformation: lessons learned from traditional organisations. *Strategic Change*, 27(2):101-109.
- Matt, C., Hess, T. & Benlian, A. 2015. Digital transformation strategies. *Business and Information Systems Engineering*, 57(5):339-343.
- Mazzone, D.M. 2014. *Digital or death: digital transformation — the only choice for business to survive smash and conquer*. Mississauga, Ontario: Smashbox Consulting.
- McKendrick, J. 2017. *The 5 traits of digitally advanced companies*. [Online]. Available at: <https://www.forbes.com/sites/joemckendrick/2017/07/14/the-5-traits-of-digitally-advanced-companies/#1e88910c25ee> [Accessed: 31 August 2018].
- Mergel, I., Edelmann, N. & Haug, N. 2019. Defining digital transformation: results from expert interviews. *Government Information Quarterly*. [In Press]. <https://www.sciencedirect.com/science/article/pii/S0740624X18304131>
- Moreira, E.D.S., Martimiano, L.A.F., Brandão, A.J.D.S. & Bernardes, M.C. 2008. Ontologies for information security management and governance. *Information Management & Computer Security*, 16(2):150-165.
- Myers, M.D. 2013. *Qualitative research in business and management*. Sage.
- Nair, K. 2019. Overcoming today's digital talent gap in organisations worldwide. *Development and Learning in Organisations*, 33(6):16-18. <https://doi.org/10.1108/DLO-02-2019-0044>.
- Neuman, W. L. 2014. *Social research methods : qualitative and quantitative approaches* . Seventh edition, Pearson new international edition. Harlow, Essex: Pearson.

Nylé, D. & Holmström, J. 2015. Digital innovation strategy: a framework for diagnosing and improving digital product and service innovation. *Business Horizons*, 58(1):57-67.

Obalola, M. & Adelopo, I. 2012. Measuring the perceived importance of ethics and social responsibility in financial services: a narrative-inductive approach. *Social Responsibility Journal*, 8(3):418-432. <http://www.emeraldinsight.com/10.1108/17471111211247992> [Accessed: 1 August 2019].

O'Neill, A. 2014. An action framework for compliance and governance. *Clinical Governance: An International Journal*. 19(4):342-359. <http://www.emeraldinsight.com/doi/abs/10.1108/CGIJ-07-2014-0022> [Accessed: 1 August 2019].

Phelan, S. 2011. Case study research: design and methods. *Evaluation & Research in Education*, 24(3):221-222.

Piccinini, E.A., Hanelt, A., Gregory, R.W. & Kolbe, L.M. 2015. Transforming industrial business: the impact of digital transformation on automotive organisations. Proceedings of the 36th International Conference on Information Systems (ICIS), Fort Worth, TX. [Online]. Available at: <https://pdfs.semanticscholar.org/ea87/b659e573ccd0b6e267c2ca30a1a0d3d98393.pdf> [Accessed: 9 November 2019].

Porter, M.E. & Heppelmann, J.E. 2014. How smart, connected products are transforming competition. *Harvard Business Review*, 92(11):64-88.

Reis, J., Amorim, M., Melão, N., & Matos, P. 2018. Digital transformation: a literature review and guidelines for future research. In Rocha Á., Adeli H., Reis L.P., Costanzo S. (eds.), *Trends and Advances in Information Systems and Technologies*. WorldCIST'18. Advances in Intelligent Systems and Computing, 745. Springer, Cham.

Resnik, D.B. 2015. *What is ethics in research & why is it important?* National Institute of Environmental Health Sciences. [Online]. Available at: <http://www.niehs.nih.gov/research/resources/bioethics/whatis/> [Accessed: 9 August 2019].

Saunders, M., Lewis, P. & Thornhill, A. 2007. *Research methods for business students*. 4th ed. London: Pearson.

Saunders, M., Lewis, P. & Thornhill, A. 2009. *Research methods for business students*. 5th ed. London: Pearson.

Saunders, M., Lewis, P. & Thornhill, A. 2012. *Research methods for business students*. 6th ed. Pearson Education Limited.

Saunders, M., Lewis, P. & Thornhill, A. 2019. *Research methods for business students*. 8th ed. Pearson Education Limited.

Sawy, O.A.E., Amsinck, H., Kræmmergaard, P. & Vinther, A.L. 2016. How LEGO built the foundations and enterprise capabilities for digital leadership. *MIS Quarterly Executive*, 15(2):141-166.

Schallmo, D.R.A., Williams, C.A. & Lohse, J. 2018. Clarifying digital strategy – detailed literature review of existing approaches. *Paper presentation*. The XXIX ISPIM Innovation Conference: Innovation, The Name of The Game, ISPIM, Stockholm, June, 2018.

- Scheer, A.W. 2017. Theses on digitalisation. In Abolhassan, F. (ed.), *The drivers of digital transformation: why there's no way around the cloud*: 33-43. Saarbrücken, Germany: Springer International Switzerland.
- Schreckling, E. & Steiger, C. 2017. Digitalise or drown. In Oswald, G. & Kleinemeier, M. (eds.), *Shaping the digital enterprise: trends and use cases in digital innovation and transformation*: 3-27. Springer.
- Sebastian, I.M., Moloney, K.G., Ross, J.W., Fonstad, N.O., Beath, C. & Mocker, M. 2017. How big old companies navigate digital transformation. *MIS Quarterly Executive*, 16(3):197-213.
- Shakir, M. 2002. The selection of case studies: strategies and their applications to IS implementation cases studies. *Research Letters in Information and Mathematical Science*, 3(1):191-198.
- Silverman, D. 2013. *Doing qualitative research: a practical handbook*. London: Sage.
- Singh, A. & Hess, T. 2017. How chief digital officers promote the digital transformation of their companies. *MIS Quarterly Executive*, 16(1):1-17.
- Snieder, R. & Lerner, K. 2009. *The art of being a scientist: a guide for graduate students and their mentors*. Cambridge: Cambridge University Press.
- Sohail, M.S. 2011. Sustaining competitiveness through information technology outsourcing: evidence from an emerging nation: competitiveness review. *An International Business Journal incorporating Journal of Global Competitiveness*, 21(4):369-381. <http://www.emeraldinsight.com/10.1108/10595421111152165> [Accessed: 1 September 2019].
- Solis, B. & Littleton, A. 2017. *The 2017 state of digital transformation*. Altimeter Group.
- Stolterman, E. & Fors, A.C. 2004. Information technology and the good life. In Kaplan, B., Truex, D.P., Wastell, D., Wood-Harper, A.T., DeGross, J.I. (eds.), *Information systems research. IFIP International Federation for Information Processing*, Vol. 143. Boston, MA: Springer.
- Teague, A. 2017. No innovation without quality. In Abolhassan, F. (ed.), *The drivers of digital transformation. Why there's no way around the cloud*: 72-81. Saarbrücken, Germany: Springer International Switzerland.
- Tiersky, H. 2017. *5 top challenges to digital transformation in the enterprise*. [Online]. Available: <https://www.cio.com/article/3179607/e-commerce/5-top-challenges-to-digital-transformation-in-the-enterprise.html> [Accessed: 20 July 2019].
- Westerman, G., Bonnet, D. & McAfee, A. 2014. *Leading digital: turning technology into business transformation*. Boston, MA: Harvard Business Review.
- Westerman, G., Calmejane, C. & Bonnet, D. 2011. *Digital transformation: a roadmap for billion-dollar organisations*. MIT Centre for Digital Business: 1-68.
- Wilson, J. 2014. *Essential of business research. a guide to doing your research project*. 2nd ed. London, United Kingdom: Sage.

Wiles, R., Crow, G. & Pain, H. 2011. Innovation in qualitative research methods: a narrative review. *Qualitative Research*, 11(5):587-604.

Yin, R. 2006. Case study research – design and methods. *Clinical Research*, 2:8-13.

Zomer, T., Neely, A. & Martinez, V. 2018. Enabling digital transformation: an analysis framework. Working Paper. University of Cambridge.

APPENDIX A: CONSENT FORM



61 Ush Avenue, Highveld,
 Techno Park, Centurion 0157
 Private Bag 2884, Finterhof 0101

I, Sipho Masoko, in my capacity as Group Chief Executive Officer at Telkom SA SOC Ltd gives consent in principle to allow Daniel Arnoldus Pretorius, a student at the Cape Peninsula University of Technology, to collect data in this company as part of his Master of Technology: Information Technology research. The student has explained to me the nature of his/her research and the nature of the data to be collected.

This 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.

Research will be done on the time and dates as agreed with the student.

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				



Sipho Masoko

28/09/2018

 Date

APPENDIX B: PARTICIPANT CONSENT LETTER



April 2019

Student number	Surname	Name
2 1 7 2 9 9 7 2 5	PRETORIUS	DANIEL A.

MTech: Business Information Systems (CPUT)

Faculty Business and Management Science.

The effect of digital transformation in the tele-communication industry.

Dear Mr. ,

The development of the communications profession has never been as demanding as it is today. Depending on the size and type of a company as well as the market, the paths to the future differ. The internet, mobile communication, social media and other digital service have become part of our lives and businesses alike. Internet of thing, big data, data analytics and artificial intelligence of machines and software is changing the world as we know it. Many businesses are feeling the pressure to change to meet customer demand and remain competitive due to emerging markets and digital technologies. Digital transformation is a reality, and many companies experience the impact that it has on their business. The aim of this study is to explore what the factors are that effect digital transformation in a telecommunication company and to what extent.

Your participation in this research will be deeply appreciated. We are requesting your time for this research. We have a questionnaire that we would like to administer in an interview fashion where you will be asked some questions on the topic of digital transformation. Once you have indicated your willingness to participate we will make an appointment not lasting more than an hour on the day of your choice. We will also email you the questionnaire if you want to peruse beforehand.

Purpose of this Case study (Interviews)

Digital transformation can be defined as the transformation of business processes and models to leverage the opportunities of digital technologies and their impact on customer service, internal business processes and business models.

The digital business models of new pioneering businesses put the traditional market-leading enterprises under huge pressure. If they want to avoid being replaced by Uber, Airbnb and NetFlix type of companies, these traditional business models will have to be more vigilant than ever before. For the transformation of companies to succeed, these companies will need people who think digitally, looks different at

business processes and models from the normal perspective, and is bold enough to alter their approach. Selecting the correct partner, stability, agility and quality are factors that will affect digital transformation.

There may be various factors effecting the way companies perceive digital transformation. It is unclear how companies plan for digital transformation, and what factors effect digital transformation in a telecommunications company in South Africa.

The aim of this study is to explore what the factors are, that effect digital transformation in companies, and to what extent.

Participant Confidentiality

Some of the anticipated benefits of participating in this study is that:

- The researcher will gain insight
 - Into the barriers and other unidentified factors that affect or inhibit digital transformation in the industry.
 - Explore the contribution of the evaluation process before adopting new technologies.
 - Understand the perceptions and challenges of companies concerning digital transformation as a process.
- Your contribution will potentially lead to understanding how communication companies adopt digital transformation and what difficulties they might experience in their way forward and potentially how these companies can overcome potential barriers, or how they excel in digital transformation.
- You don't have to answer any questions of you feel uncomfortable with the questions.
- You are willingly participating in this interview and are not forced to do so.
- your particulars will be withheld on your request, if you prefer.

Questions about this Study and Participation

You are welcome to direct any questions about the procedure or participation in this case study to the department of Information Technology at the Cape Peninsula University of Technology, or the researchers listed at the end of this consent form.

Participant's Name and Surname

Participant's Signature

Date

Participant's Organisation

Researcher Contact Information

Danie Pretorius
Researcher
BCX
E-mail: danie.pretorius@bcx.co.za
Ph: 012 3117218
Office: 1st Floor, HUB Building, Telkom Park, Centurion

Researcher's signature/date

Dr Andre de la Harpe
Research Supervisor
Centre for CIO Research in Africa (CenCRA), CPUT
Cape Town Campus
E-mail: andre@cencra.com
Ph: 021 460 3627
Office: Room 2.24, Engineering Building, Cape Town Campus.

Supervisor's signature/date

APPENDIX C: INTERVIEW GUIDE TEMPLATE

RQ: What factors affect digital transformation in a telecommunications company in South Africa?		
RSQ	IQ	Question
1.1	1.1.1	What impact do new technologies (such as social media, IM, AI, data analytics or Big Data, IoT) have on business improvement in the company?
1.1	1.1.2	What role do digital technologies play in the company's digital transformation strategy to achieve its business goals?
1.1	1.1.3	What technology factors play a role in digital transformation strategies of the company?
1.1	1.1.4	What is the impact of legacy systems and technology on the digital transformation drive?
1.2	1.2.1	What role does Management play to drive the digital transformation of the company?
1.2	1.2.2	What efforts have been made to empower employees to drive the digital transformation of the company in terms of reskilling, development, and way of work?
1.2	1.2.3	What are the main drivers for digital transformation?
1.3	1.3.1	What do you understand under the phrase digital transformation?
1.3	1.3.2	What challenges does the company face in term of organisational changes and organisational culture when driving digital transformation?
1.3	1.3.3	What is the importance of cross-collaboration between IT and business?
1.3	1.3.4	What is the company's strategy towards digital transformation?
1.4	1.4.1	How do government and regulatory bodies affect the decision making of a digital transformation strategy?
1.4	1.4.2	How does the company apply governance to ensure its digital strategy stays on track?
1.4	1.4.3	How important is digital transformation to the company?
1.4	1.4.4	How does the company use new technologies to enhance its value creation?

APPENDIX D1: INTERVIEW TRANSCRIPTIONS P1

IQ 1.1.1	What impact do new technologies (such as social media, IM, AI, data analytics or Big Data, IoT) have on business improvement in the company?
<p>Me: What impact do new technologies (like social media, IM, AI, data analytics, Big Data and IoT) have on your business improvement in the company?</p> <p>P1: So, specifically speaking about OpenServe, the baseline of that is Big Data and analytics. And whether you do machine learning analytics after that or even some more standard reporting, but when once you can pull all of the data into one environment and then do analytics on that, and what is great is, you can get feed from social media, you can see what people are typing. We can overlay some, whether statistics, we then overlay fault statistics that we have in the network, then we start seeing interesting correlations and then you can do predictive faults, maintenance, for example, if you see some pieces of the network showing certain faults, it can point to bigger problems elsewhere. And then we can start dealing with those specific incidents before they happen and from a weather overlay perspective, for example, we have seen that we can dispatch field technicians from over parts in closer regions when we know there is probably a going to be an outage in the next couple of hours because of a storm. So there are great things we can do with it, and so Big Data and analytics form a key part for us.</p> <p>Me: Ok, so what is the impact of these technologies?</p> <p>P1: So, the impact is first and foremost that it helps us to improve our customer service, our responsiveness to the customers, so that we can get better information through to the customers as well. The second thing is actually for us to activate our field force to be more proactive, our field force, and also the way we spend our money in maintaining the network.</p>	
IQ 1.1.2	What role do digital technologies play in the company's digital transformation strategy to achieve its business goals?
<p>Me: What role do digital technologies play in the company's digital transformation strategy to achieve its business goals?</p> <p>P1: Digital solutions?</p> <p>P1: It is a key issue for us, [name deleted] our CEO, often talks about concept C3VP, and C3VP stands for connectivity, content, can't remember the 3rd, but will get to it now, but then there is value-added services, the V, and P is for platforms, and third, C is cloud. So what we currently do, even as OpenServe, but even as Telkom, if you think about it, we play a lot in connectivity but that is where I said the revenue is dropping and we need to invest more. So, the value-added business that you can get, for it comes from cloud content and value-added service and from platform, and therefore part from what we are trying to plot from a strategic perspective in OpenServe is how to enable the other business units to provide those kind of services. So a key thing for us is to make our key and core networks IP native by having that entire network a layer 3 network. We can leverage everything IP networks can give us, and then on top of that, we will see case by case, are there places where OpenServe play on any of the other open spaces but as long as we can enable the rest of the Telkom Group to do that we will be fine. But the foundation of IP is critical for that, and then we need to put platforms cloud and value-added services on top.</p> <p>Me: Is that then utilising BCX's service on top of your connectivity?</p> <p>P1: Yes</p>	
IQ 1.1.3	What technology factors play a role in digital transformation strategies of the company?
<p>Me: What technology factors play a role in digital transformation strategies of the company?</p> <p>P1: What factors?</p> <p>Me: Ok, what we are trying to get at – are there technology factors that actually affect you moving forward in a simpler way putting it in a very simple way? There are specific factors in a technology area that might be a barrier, what barriers are there?</p> <p>P1: So I think, a possible barrier might just be that we have a lot of lose IP networks within the group, I think we have about 7 separate IP networks, it is important if we say we have converged our optical transport network, we need to converge the IP networks as far as we can. And the reason why that is important, that gives us then a platform a foundation to establish network function virtualisation and</p>	

software-defined networking and that gets us to that next level; so I think that is the next thing we need to get right. It is this siloed sort of thing.

IQ 1.1.4 **What is the impact of legacy systems and technology on the digital transformation drive?**

Me: Ok, what is the impact of legacy systems and technology on the digital transformation drive? I am sure that might have quite a bit of an impact.

P1: No, it does. We have a lot of costs associated with those legacy environments that if we can transform into new digital systems, especially as far as OSS systems are concerned, that would help us a great deal from a stability perspective but also making us speed up our deployments. But those legacy environments are very complicated, you know, it was grown over a period of 20 years or 30 years and therefore, so it is somewhat tricky to untangle; so it is quite a role so especially on the IT side, on the network side to a certain extent in two ways. The one way there are some traditional strong revenue streams on legacy technologies, things like Diginet, if we start replacing it with new technologies, we find, you know there is then capital to invest and then depending on the bandwidth the customer wants the business case could take longer, before we get a decent ROI. There is always a customer parked on something and we need to manage that; but I think it is less of a big issue on the network side.

Me: But still, legacy systems do play a big role.

P1: Yes, it does... is there... are customers still living there? So, you need to be careful.

Me: Wouldn't systems like Diginet be replaced with fibre-like services?

P1: Yes

Me: Because I know, used to talk about products the whole time but, now we need to switch brands to service.

P1: Yes, that is right. Well to the point then, Diginet is a service that we provide an SLA on so the product on fibre that we can provide SLA on is metro Ethernet. Metro Ethernet is quite expensive to deploy; so if a customer has a 1MB Diginet circuit and he migrates it to 1MB ME service, that is quite a waste. It takes long to get your ROI there, so the alternative would be let provide them with a g-pond service, is the technology we use for fibre to the home but there is no SLA associated with that it becomes best effort. Now you have a trade off from a service perspective ok. If the customer accepts then it is great, but these are the trade-offs we need to make.

IQ 1.2.1 **What role does Management play to drive the digital transformation of the company?**

Me: What role does Management play to drive digital transformation of the company? Because obviously, that must come from Management.

P1: Yes, it is critical to set a clear vision of what it is that we want to achieve. [I] think, very importantly, like I said earlier, to really unpack what that journey should be and to be... for us to be brave enough to work through that journey to transform is very important, and we have to get that right.

IQ 1.2.2 **What efforts have been made to empower employees to drive the digital transformation of the company in terms of reskilling, development, and way of work?**

Me: What efforts have been made to empower employees to drive DT of the company, in terms of reskill, development, and way of work?

P1: I don't, we have done ... ok no, have been thinking overall. Ok so in OpenServe there is a...there has been pockets, we have started with a workforce management system actually digitising the technicians in the field, that's through the click soft systems and that is already a proper digital environment that we have set in place, so we have that from a field technicians perspective. If we talking about reskilling internally of the employees, it is something we are planning right now with Group HR so that will be something that will be established in the next 6 to 12 months. And then we are also working on a change management process actually, that was the meeting we had before, where we talking about how do we put a proper programme in place to change, but apart from that, there is no specific efforts in this front.

IQ 1.2.3 **What are the main drivers for digital transformation?**

Me: What are the main drivers for DT in the company?

P1: I think from a telecommunications operator we face the same challenge that all operators in the world are facing, we sell data products where people demand more data and want to pay less. So, we have increasing data volumes that we need to process through our networks, but we do not generate

the same amount of revenue as we used to do on services like voice, for example. So, our revenues are flat our capital investment remains high we need to increase that every year, and this happens worldwide because we need to invest in new technologies, faster networks be it fixed or mobile and as result the operational component of that also our Opex remains high. So, digital transformation, digitalisation needs to do two things: it needs to drive down our cost, make us much more lean and efficient in terms of how we run and operate our networks and the second thing is it should open up new opportunities for new revenue streams for us.

P1: So, that is in two ways we... it is staying ahead or at least with our competitors but the second thing is trying to find these niche services that the others can't provide.

IQ 1.3.1	What do you understand under the phrase digital transformation?
-----------------	--

Me: What do you understand under the phrase digital transformation? What does it mean for you?

P1: Ok, so for me... and if I start with history, digital transformation has come over a number of years, way back when we went from analogue systems to digital systems. That was the first wave of digitalisation in the telecommunications networks and then I think we went through a second phase of digitalisation where we went... where we started digitising certain information putting it on the internet so that a lot of information was stored digitally and even to the point of music distribution and documents and so on. But now I think [for] the 3rd wave of digitalisation, they make a distinction, and digitalisation now means more how we use the digital telecommunication and digital record keeping that we have now under control through tools like Big Data and AI, and those things to create a better or streamlined process of working between man and machine if you will. So in other words, if we get it right we will be able to do things in a much leaner way. Looking at the screen behind you and the people doing surveillance, through digitalisation we might not need the people doing that analysis going forward. The system can take care of that, and through predictive analytics, we can even dispatch people.

IQ 1.3.2	What challenges does the company face in term of organisational changes and organisational culture when driving digital transformation?
-----------------	--

Me: What challenges does the company face in terms of organisational changes and organisational culture when driving digital transformation?

P1: So I think, so digital transformation, the success of it really hinges on the culture, so it is actually the biggest thing, and by culture I am talking about, people's, I think, openness to embrace new technology, I think their capability in embracing new technology. So are they actually able to start working in new ways, and then I think very importantly in this is something we will have to deal with going forward in that, most companies driving digital transformation have to deal with the fact that we probably will be more lean and require less people. So, I think the combination of those three things alone, is a big riddle we need to solve yet, and that's what I think. That is why a lot of organisations actually struggle because it is to understand how to start that process, and how to plot that out over 3 or 4 or 5 years. It is not straightforward. It takes some proper planning to get that right.

Me: So, basically, it is very complex.

P1: It is very complex, because there are people involved, because of the technology.

Me: And that would be the challenge basically, because of the people affected.

P1: Yes

Me: And the complexity around that?

P1: Yes, I think that is the one thing, so, for me, it is really no technology issue because we know the technology is capable of delivering a lot of really cool features. But I think the other aspect to what I have just said now is, we have this influx of a new younger workforce who are digital natives. They just work with these technologies differently and we have the likes of me and older people and maybe slightly younger, but then people who did not grow up in that world, so it's also a multi-generational environment and how we get that right, that mix right. And especially from a management perspective managing the new style of work, I think is also an important thing. Sorry, it is complicated.

Me: Yes. No, obviously, because I think in one of the books that I read that only 26% of companies in the world is getting it right. Not mastering it, but getting it right to a percentage.

Me: And even from those that they said were getting it right is failing after five years.

P1: Yes

IQ 1.3.3	What is the importance of cross-collaboration between IT and business?
-----------------	---

Me: What is the importance of cross-collaboration between IT and business?

P1: It is critical. It is absolutely critical because the buzzwords when we always talk about these environments is lean organisations and then you know agile organisations, and that agility and leanness, those mean that everything in the value chain adds value so you strip-out middlemen. So, it means you have tight interworking between business and IT and I would like to expand on that actually, it is also not just business and IT but it is also IT and networks and networks and business because IT and networks are also combining in this entire environment. So that cross-collaboration and understanding how people work together and iterate in a different way is also very important. We still used to waterfall delivery methods and even though we say agile, we even sometimes badge it as agile but we are still waterfall.

Me: I know exactly what you [are] talking about.

IQ 1.3.4 What is the company's strategy towards digital transformation?

Me: Ok, and what is the company's strategy towards digital transformation?

P1: So we have a multi-faceted approach from an OpenServe business unit perspective, there is a, we have on the strategy to keep on with our transformation of creating an all IP network, so we have done a lot of work on establishing an optical transport network that is IP enabled. We are busy with that, and that really sets the foundation to say, look we can process and transport a lot of data around the country, and then on top of that, Telkom consumers are carrying on with their investment on the mobile network. So, to make sure that we are quicker from an access perspective and then the BCX, I see the BCX play as a big player in this environment, because if we talk about content or value-added services or platforms, those are the things huge revenue was generated for. I think that is an emerging strategy from BCX, how exactly they want to tackle those verticals.

Me: Ok, in terms of the company, I am talking specifically in the OpenServe area because I will have a session with [name deleted] on the group strategy. So, I just try to see what is OpenServe's strategy and what is BCX, I've got [name deleted] and those guys on the BCX side and [name deleted] and those guys on commercial side.

P1: So with OpenServe, like I said, it is making sure that our transport network can deliver the lowest cost per bit and we do that through natively enabling it through IP. And then also within the OpenServe business cases, then making sure that we deploy fibre in the right places so that we can leverage and 5G going forward and any of the other big bandwidth services.

IQ 1.4.1 How do government and regulatory bodies affect the decision making of a digital transformation strategy?

Me: How do government and regulatory bodies affect the decision making of a digital transformation strategy?

P1: That is a stinker question. So, from Porter's 5 Forces perspective, it is important because they are stakeholders and the South African government says a lot about the 4th industrial revolution, it is a big buzz word at the moment and even the regulator links into that. But my opinion here is that industry is driving this. Like I said, the need for change actually comes from a survival from a business perspective from us as industry, and as a stakeholder I think government wants to see the benefits coming out of this, but under the banner of the 4th industrial revolution and how it can help better, you know, people's lives in South Africa. But in this case, I think we have a lot of improvement to do in the country, and I have spoken in various forums about this before as the need for proper public and private partnership is a key thing in this whole digitalisation activity. We cannot have a scenario where government say they want something, and they are not going to pay, and industry should pay. Someone always needs to pay, and for me the assurance is if we look at the business cases differently, we might unlock new opportunities. There is a good example in India, project Adar, which is something where they issued smartcards to the citizens, and government did that to automate their grants system because there was a lot of corruption. It was all paper-based, so combining those smartcards with the connectivity that the Indian government has worked on with the mobile operators for a long time has allowed a business case to develop where they said by curbing the lost and the fraud and so on, on the grant system they were able to pay for the system. I think we need to consider our business cases differently but combined.

Me: If we think about regulatory, like 5G, all operators are screaming for 5G and that is because of a customer's drive for higher speeds in that effect where government does not want to release that. Is it true that they do not want to release it, the bandwidth for 5G?

P1: No, and I don't want to says too much, there's been a lot of work over the last 2 to 3 years in South Africa from the regulator's perspective to make spectrum available and from everything, we can see it will be opening in the next 12 month or so. I think then we will take it from there. New spectrum is

important for 5G, I think in that case though there is still a lot of standardization that needs to happen on 5G, and the use cases will be important.

Me: I know Vodacom said it would make service cheaper, is that true or not?

P1: I personally do not see that. I really do not see that, and the reason I say that is that 5G uses a new type of radio and there is going to be further network investment. There is a new core network that is going to need further investment, plus, with the amount of bandwidth that you are going to provide, you are going to need massive backhaul and massive transport networks. So think the monetisation, to monetise those networks, will be, it is going to be a trick to monetise them. I think if you have very bespoke solutions, yes, then you can monetise them, but there is a lot of legs in 4G, 4, 4.5G, 4.75G, people talk about those things, it will be with us for a long time. 5G will not make it cheaper.

Me: Still speaking about regulatory and not specific government, but social and economic environment – would you say that plays a role in digital transformation in the speed your company can go forward with it?

P1: Sorry, let me just understand the question.

Me: Let me put it this way. How do the economic and social environments play a role in your digital transformation? Because the economy in the country is not that good, and that means companies cannot prosper and are under immense pressure, so I would image that that would also be a kind of challenge for a company like OpenServe.

P1: Yes, so again, I think in this case we drive it because we need to remain relevant or indeed be better than our competitors, that why we need to be at the forefront there, because it is like I said earlier, it is more efficient way to run our operations and that can get us ahead. And the social aspect for me is back to what I said earlier, I think as a corporate citizen there is a responsibility to harness these new technologies to see if we can make a difference in this country.

IQ 1.4.2 How does the company apply governance to ensure its digital strategy stays on track?

Me: How does the company apply governance to make sure it is digital strategy stays on track?

P1: So, I do not think we have any, there is no concrete plan in place yet, on how we need to move forward from an overall strategy, so it's, so the governance is not in place yet. But it needs to be put in place going forward. I think of what we have so far. Like I said, on click software that project ran, and from a technology strategy as an OpenServe Exco, we do work through the network and technology strategy and that points to what we need to do from a digital perspective. Just so that you also know, well it is not just an OpenServe strategy, that network and technology strategy is also communicated to the wider group so that we can establish this blueprint for what we need to do with digitalisation and we will tie it closely with the group CIO and what they also want to do.

IQ 1.4.3 How important is digital transformation to the company?

Me: How important is digital transformation to the company?

P1: Well for the reasons I mentioned previously it is critical, so I think it is important for survival in an economic climate that I just explained and it is also important if we want to remain relevant. If we do not get on board, we will not have a business in the next 5 to 10 years. That is my opinion.

Me: How does the customer play in this, allowing you guys not supplying the customer-specific but more on the commercial side?

P1: Customer is the centre of the requirement still, because the only reason why we building out this transport network, the national and local transport networks and all of the IP routing, is to move around the bits and bytes for that, that in the end, it the cater for the customer's requirements. So we plan from the access network be it mobile network or fixed access and then we plan backwards into OpenServe. So the customer requirement is absolutely the driver here.

IQ 1.4.4 How does the company use new technologies to enhance its value creation?

Me: How does the company use new technologies to enhance its value creation?

P1: Ok, so, the best example for that would be... would be the click soft system, there we have some real examples of on our NPS scores, scores that we measure with the customers. When we initially rolled-out the system (as we roll out it per region) we would see a bit of a dip because the field staff were also getting used to the system. But we, since in all the regions for the last 6 months now, we have seen an increase actually, even from where we started off, and [an] increase in the NPS from customers. So in that case, for example customers, we are doing better and get to the premises on time and actually, as promised to the customers, and there are even more enhancements where we will used the system

to start pushing messages to the customer when we will be there, and that is one example of how it has helped us.

Me: So, it helped with your customer satisfaction.

P1: Yes, but other proper digitalised technologies, we have not really deployed as such.

Me: thank you for your time.

APPENDIX D2: INTERVIEW TRANSCRIPTIONS P2

IQ 1.1.1	What impact do new technologies (such as social media, IM, AI, data analytics or Big Data, IoT) have on business improvement in the company?
<p>Me: What impact do new technologies (like social media, IM, AI, data analytics or Big Data, IoT) have on business improvement in BCX in the company?</p> <p>P2: What impact do new technologies (like social media, IM, AI, data analytics or Big Data, IoT) have on business improvement in the company? I think new technologies means new business processes in the organisation; it challenges typical traditional old processes. So the moment you're bringing in new technologies to an organisation, you have to look at the existing business processes and see, how does that process change, and how do I make it more efficient, that's congruent with the technology. So, yes, I think technologies can be used as a business improvement imperative in the company. Data analytics, Big Data, those are big things in an organisation. Data analytics ...if...if, and organisations struggle with data. The quality of their data, the storage of the data, the accessibility of the data. Organisations do not have a good information architecture landscape.</p> <p>Me: And maybe not just that. More the analytics of the data. They are sitting with the data and do not know what to get out of it.</p> <p>P2: Yes, but for me, that is equally important; but I think more important is the quality of the data. Because if you do not have good quality data, and if you apply AI on your data, you're going to get bad outcomes anyway. So, garbage in garbage out. You might have terrible insights or the wrong insights from corrupt data, from bad quality data. But if you have good data, the data are stored properly, if it is...if the flow of the data is correct, I think AI and data analytics can work well for an organisation. I think, you will see now a lot of focus on data analytics because organisations want to use, a lot of companies I mean Amazon. All of the technology companies currently, the moment you log on to a web site and you buy something, for months and years after that you will be inundated with reminders of that kind of product, because the AI or the data analytics on the side of these big technology companies picks up this customer likes this... let's flood this customer with this type of thing, that is what data analytics is about. Is understanding your data, applying the intelligence to the data, getting insights from it to better serve your customer. That can be used as a business improvement imperative? Definitely.</p>	
IQ 1.1.2	What role do digital technologies play in the company's digital transformation strategy to achieve its business goals?
<p>Me: What role do digital technologies play in the company's digital transformation strategy to achieve its business goals?</p> <p>P2: What role do digital technologies play in a company's transformation strategy, o my word... that is a big question. What role does digital technology play...Digital transformation strategy is about digital technology, so what do you try to achieve with this question?</p> <p>Me: Ok, in some sense, digital technology plays a role, but there is also a management side and the governments. There are 2 different capabilities. There are capabilities on the technology side with the technology itself, and then there is the management side where it is the vision and drive from Top Management, also governance and that, that plays a role. In this question, I am trying to see how the company uses digital technologies to achieve their business goals.</p> <p>P2: So, let us take an example with BCX.</p> <p>Me: let's take for instance, just a simple example, IM, WhatsApp, I know in our area, they create WhatsApp groups for specific CR's, so that everybody stays informed on what's happening, that kind of stuff. That is a simple, but it is really an inundated type of way that Telkom people uses WhatsApp groups especially and higher senior management also have WhatsApp groups to share information or call on people.</p> <p>P2: So you are saying the use of WhatsApp groups is driving digital transformation?</p> <p>Me: It can, in a sense, because the messages are instant and the people immediately exactly know what is happening. Mails are not as effective, as what it used to be. That is why people revert to IM, to inform immediately.</p> <p>P2: OK</p>	

Me: That kind of thing, but not only that – it could be the kind of data they use. Ok, this is what our clients want, so let us do this – that kind of things.

P2: For me, I think, it is also. If you look at Skype. Skype is also one of those technologies that we can use now to, to drive DT. We do not have to have traditional meetings, we do not have to travel, do not have to waste time doing that whole exercise, when we just can dial into a Skype call and have a meeting. When you can use Skype to chat, to talk like a WhatsApp group as well. So, ja, I think if you have the right digital technologies in the organisation, you can use those technologies, and I think it achieves the businesses goals. But it also requires, you spoke about governance. I came from Accenture and at Accenture Skype is almost our primary, almost primary means of communication. The moment you get to the office, Skype automatically comes on. If I am looking for anybody across the globe never mind in the country, never mind in South Africa. I will just go online and will know who is online where they are, what is happening, are they in a meeting? So, the culture of that organisation is very focused on digital. We need to know where you are, what you are doing, are you online, offline, for how long have you been offline. But at BCX we don't have that. At BCX most times people switch on their Skype for weeks, for months, so there are no governance or policy or thinking around, we have invested in this tool guys, we have invested in Skype, why are we not maximising the use of the technology to drive transformation in the organisation to improve the way we work, to improve the way we communicate. When we improve the way we communicate, we make ourselves efficient and effective; we reduce cost in the organisation. Because now, traditionally and typically I don't have to wait three days for you to read your email, or don't have to fly to Cape Town to have a meeting with you. I'll just dial into a Skype call. But it comes back to, leadership, culture, governance. Use what you have, to drive DT. We do not have to always think about big-ticket items, like let us bring in this Big Data Centre to do this and getting robots and do AI. Yes we will get there, let us fix the small things first. Can we start to use Skype at least, I mean, really? 101, use Skype first. But, it must be leader-led, the culture of the organisation has to be one of reusability, drive the use of technology in the organisation. Not just for our customers. First, eat your own dog food, fix your stuff inside then go out there and do it.

Me: Exactly, and what I also see is that we have different systems, like Telkom would use Cisco, instead of Skype. But now they are paying for both.

P2: Absolutely.

You need to standardise, and as you said governance, governance, governance, is very important.

Absolutely.

IQ 1.1.3	What technology factors play a role in digital transformation strategies of the company?
-----------------	---

Me: What technology factors play a role in digital transformation strategies of the company? Thinking around cost, cost to implement, agility, flexibility, ease of implementation, value to the company.

P2: I would say: the current IT landscape or technical architecture of the organisation; availability of Capex to do digital transformation; availability of the right skills to drive execution of a digital strategy; appetite for the organisation to see the journey through; ability of the organisation to collaborate and integrate across the different areas of the business to drive a unified technical landscape without allowing silo thinking into key technology decisions; legacy modernisation appetite – holding onto old ways of work (the comfort zone). If it worked before why do we change it now? Old school thinking!!!; Politics in the organisation that could hamper digital transformation; HR issues related to digital transformation – automation through a digital strategy could mean people could potentially lose their jobs, securing the right talent to drive digital transformation, remote working/flexible working included in a digital transformation strategy.

IQ 1.1.4	What is the impact of legacy systems and technology on the digital transformation drive?
-----------------	---

Me: What is the impact of legacy systems and technology on the digital transformation drive?

P2: I think it is probably one of the biggest inhibitors of digital transformation. Legacy systems, especially in the financial industry. Banks rely allot on the way things worked in the past, and it worked it is fine, and because they are such a regulated industry, and kind of stick to what worked and they don't necessarily want to make the investment and take the risk of modernising their technology landscape. So I think for me, legacy systems is probably one of the biggest inhibitors of DT, and organisations need to have a plan, to transition or decommission old legacy systems and migrate to the newer technologies. And it does not have to have a big bang approach, it can be done incrementally, phased over time. Bringing in the governance and regulatory measures that go with it. But I think if organisations ... the

thing is, if you look at it, I was reading an article on Harvard business review the other day, that was talking about the standards and poorest, the top 500 standards and poorest companies on the New York stock exchange. Back in the 1950s, on average a company would stay on the top 500 for at least 50 to 60 years. In the 2000's that 60 years move to between 20 to 18 years. Today, currently, every 2 weeks, the company can change and fall out the S&P 500 companies. Because these companies fail to want to transition to the new way of working and they are stuck in their old ways, legacy systems, old culture, bad leadership or maybe not bad leadership but not the right leadership to drive transformation in the organisation.

IQ 1.2.1 | What role does Management play to drive the digital transformation of the company?

Me: Yes. What role does Management play to drive digital transformation of the company?

P2: When you saying management, I am talking strategic, right. Anything. It could be from the Chief all the way down.

Me: Exactly. Management specifically.

P2: Management is leadership. So for me in that context, I would see management as leadership. For me, they are pivotal, because they are the decision-makers of the organisation. They set the strategy, they set the tone, they set the thinking. So, they are the ones that will create the part or show as the plan, and we must now execute, the organisation must now execute on that plan. If for instance, our leadership says, we are going... These BSS OSS discussions that always happened at BCX and Telkom that has never materialised to a decision and an execution plan that goes in terms of our BSS OSS, to the newer systems and we would get a better total cost of ownership, a more efficient organisation, more efficient business processes related to because, we have taken that leap.

But I think, leadership or management in the context of the question, is pivotal and if they do not have a proper plan, and a view, and if decision are not made to execute on, because it does not even help you have a plan, everybody has plans, if you don't execute on your plan, it means nothing at the end of the day.

Me: Exactly.

P2: So, leadership or management should have a plan, and they need to measure the organisation in terms of execution. Guys for this financial year, this is the plan. For us to get our bonus or increases or get a performance appraisal rating that is high, we need to achieve this year in terms of digital transformation. So I think it is about, not just, having a plan, not just executing, but also measuring success, To ensure that we deliver on what we commit to deliver on. From a digital transformation perspective.

Me: To drive and make sure it is implemented.

P2: 100%.

IQ 1.2.2 | What efforts have been made to empower employees to drive the digital transformation of the company in terms of reskilling, development, and way of work?

Me: Ok. What, and this is the other side, we have been talking about technology a lot. But this is the management capability side. What efforts have been made to empower employees, to drive the digital transformation in the company? In term of reskilling, development and way of work?

P2: I have not been in BCX long enough. But my sense from an industry perspective, If I can speak from my previous company, Accenture. There was a lot of imputes. Accenture basses their whole ethos on training their people. What is the latest technology? What is the latest thinking? What is the latest understanding? What were the latest processes around the technologies? And they have a very, very, very effective knowledge exchange. If you want to understand something about DT, if you want to understand something about BSS, OSS. If you want to understand something about strategy versus culture. You go to the knowledge exchange; you learn from the knowledge exchange. And they also have mandatory training sessions. You to attend so many hours of training per month in certain areas of the business, or else your KPI is impacted, and your performance is impacted and your bonuses are impacted. So Accenture drives their thinking around, go and train yourself, and it is not just about, I am going to pay you 50 000, am going to pay an external company 50 000 to go train you. It is not about that. Accenture say no. We have designed, we have come up a curriculum. It is online. It is available to global 350 000 Accenture employees. So there is no cost associated, further than drop it on knowledge exchange. And then people are compelled. Every morning when you login to the systems, there is this reminder, there are these issues against your name, You have not done your ethics training, or you have not done your digital transformation training or you have not done your culture training. Whatever the flavour for that month is. I do not see that at BCX, at all, so it is relative to what I was used to and where

I am now. I do not believe that the organisation puts enough effort in terms of skilling our employees to deal with digital transformation.

Me: And that is actually to make the ready for the future, future employee requirements. And not only the, Future customers.

P2: Absolutely.

Me: Because customers expect more and more.

P2: Of course.

Me: And that is why we need to reskill our employees. And unfortunately, from my perspective, I also have not seen any of that. For me the drive is more to reduce employees than reskilling.

P2: I think there is that, but I have not been involved in the strategy discussion in the last few weeks, at BCX. Sitting with Exco and coming up with a strategy, there is now a little bit more empathise, to says, where is this company to be 5 years, 10 years, 15 years from now. And what is the workforce look like, 5 years, 10 years, 15 years from now. And how do we plan for the workforce of the future? There is some level of think going into it. How does that translate transitionally? I don't know, I have not seen it, it is a bit early days for that. But I do believe that BCX will have to put a lot more empathise around reskilling, and focusing on training and taking their people on this journey of DT. Because digital transformation is not about automating things, it is a culture change as well; it is a people's change as well. And we are not there.

Me: It is quite a bit of things, a lot more about people and strategy, than technology.

P2: Completely.

IQ 1.2.3 What are the main drivers for digital transformation?

Me: What do you think, what are the main drivers for digital transformation?

P2: What drives digital transformation?

Me: Yes

P2: Look, I think leadership are key. Leadership must have this...this...leadership is the kingpin, it's the pivot on which DT hinges, in the sense that if an organisation takes on this view that they want to start focusing on a DT journey. It will be leader-led, and technology decisions will need to be made. So I think an enabler would be leadership. I think an enabler would also be resources, like funding. When you go on a DT journey, traditionally and typically it is very cost-intensive. Because it requires you to changing old systems to new systems, it requires you to automate systems that were never automated before, so upfront the capital investment for DT is very high. So that can almost be like an inhibitor as opposed to an enabler, but the organisation is committed from a financial perspective to take that journey and to challenge traditional or old technologies and focus on new technologies, I think that invest can become an enabler over time. I think culture is also a big thing in the organisation. Culture drives digital transformation in the sense that...

Me: And customer culture?

P2: Very much so, customers now increasingly, if you think about us as customers, we want to go onto amazon or Takealot.com and we want to buy things. We don't want to go to a traditional shopping mall anymore. People want to do things via the internet.

Me: Yes

P2: And that drives the customer experience. So organisations need to factor that into their thinking. So definitely from a... from a... various stakeholders to drive...and culture also internally in the sense that an organisation should be focused on innovation and new thinking and challenging their existing thinking and wanting to be more agile in the way we serve our customers at the end of the day. So, I think those things can be enablers.

IQ 1.3.1 What do you understand under the phrase digital transformation?

Me: What do you understand under the phrase DT? What I am trying to see is more or less what DT means to you.

P2: I think digital transformation is about, how business was done traditionally and previously versus how business is currently been done and how it will be done in the future. But from a technology perspective, I think digital transformation is about challenging the status quo, why we do the things way we do and how can make ourselves more agile and automate the ways we work through digitisation. So digital transformation is challenging the way things are and making it more...using technology to make

the organisation more effective in the way we serve our customers making us more efficient internally, so we'll be able to better serve our customers.

IQ 1.3.2 What challenges does the company face in term of organisational changes and organisational culture when driving digital transformation?

Me: What challenges does the company face in terms of organisational changes and organisational culture when driving DT?

P2: What challenges do we face? In terms of organisational changes, what organisational changes do we make? What culture changes do we make when driving digital transformation? I think the structure of the organisation and the operating model changes when you go on a DT journey. It challenges old structures and typical traditional ways of work.

Me: So much, so, yes.

P2: Completely. It requires you to become more agile in the way you work, which means re-looking at your business model, re-looking at your operating model, are you ideally structure in terms of how you function as an organisation. What do your processes look like? Are your processes traditional typical processes, or are they more forward thinking, automated, has AI build into it, so I can think that, organisational structure can be a thing as well? Organisational culture is for me a big thing as well in terms of DT. If the culture of the organisation is very old school, and I think it is also driven by the profile of the employee typically in the organisation. If the profile of the employee is older and more set in their ways, older people struggle with technology transition. So if the organisation's mindset from a leadership down to strategic, tactical or operational level. If the organisation's culture is that of old school thinking and what works, works. Let us not break it, if it is not broken don't fix it type of thing, then that becomes an inhibitor to DT. But if you have an organisation that has a good balance between the greybeards, yes that is needed in the organisation, but also the young thinkers, the influencers, the ones that wants to challenge things and innovate. Failing is fine, you will get it right next time. Organisations need to make that change in terms of taking risk.

Me: Willing to take risk?

P2: 100%. Organisations do not want to make investments and waste time and money and then nothing comes of it. At the end of the day the thinking needs to shift, to say no, it is not that nothing has come of it, there's been learning in that experience, so the next time we do it, we will be better prepared for it and the next time we will be even better prepared for it. So, I think, a continuous improvement thinking that innovative way of thinking, challenges existing ways of work, focusing on best of bread best of practice, what is happening in the more advanced countries of this world, how are they dealing with the challenges we are dealing with currently. So yes, culture is a big thing in digital transformation.

IQ 1.3.3 What is the importance of cross-collaboration between IT and business?

Me: What is the importance of cross-collaboration between IT and business?

P2: That is an interesting question because I finished my master's degree last year, and that was a big part of my master's degree.

So, for me, currently, the bridge between IT and business is not where it needs to be. That bridge that couples, that joins IT with business is not as strong as it needs to be. Digital transformation requires that cross-collaboration and integration between business and IT, and it is not as mature as to the extent that it needs to be, to make digital transformation more seamless. The question then becomes, who drives digital transformation. Does business drive digital transformation or does IT drive digital transformation? If IT drives digital transformation, their view might not necessarily be synchronised to what the business need is. If business drives digital transformation, they do not have the technology landscape in their minds and they do not have that new thinking what is the latest technologies out there. So that cross-collaboration between IT and business is critical for digital transformation. And I don't believe that that bridge has been build or even strengthened that says IT understands business. IT needs to understand business in order to drive digital transformation.

Me: But also, the other way around.

P2: 100%. It cannot be done any other way. It needs to understand business, business needs to understand IT. But the leader for me, in my opinion, is IT. IT are the technology experts, they go and understand what is the business, what is our core business, what are we doing and how can we bring technology to make our business more efficient. But then also business, take the time to understand what is sitting in the IT world and how you can then exploit the technologies to make the business more efficient as well.

IQ 1.3.4	What is the company's strategy towards digital transformation?
<p>Me: What is the company's strategy towards digital transformation?</p>	
<p>P2: What is our company's strategy?</p>	
<p>Me: Yes</p>	
<p>P2: Right now, the organisation is busy with... we are doing our long medium- and short-term strategy for the organisation, at group level and BCX level. What is our strategy towards digital transformation?</p>	
<p>P2: Right now I think the organisation will need to make some key decisions, around what is our existing technology landscape in the organisation, and what does the future technology landscape look like. If we have x number of hybrid billing systems. Currently, that is current technology landscape, and as far as our billing systems are concerned. What is our medium to long-term goal in terms of that? How do we plan to make that more efficient from a cost perspective, from a integration perspective, from a efficiency perspective, total cost of ownership? What does technology landscape look like right now, and what is the technology landscape of the future for the organisation? And then what steps do we take, to take us from where we are at, to where we need to be? So in terms of how...how...the company's strategy, what is the company's strategy towards digital transformation? I do not think in my opinion; I do not believe that BCX has put a focused view on digital transformation from an internal perspective.</p>	
<p>Me: More on customers than internal?</p>	
<p>P2: 100%. We would go and serve customers with SAP and Oracle and robotics and AI and we do all these fancy things for our customers. But I think internally we lack in the operations... in the engine room. We are not focused on making investment behind the scenes, to optimise the way we function operationally, therefore helping us to better serve our customers. So what is the company's strategy towards digital transformation? There are 2 elements: in terms of facing the customer, I think we are on the leading edge, we were battling against global players, like Accenture, Deloitte, McKenzie, and BCX features in that world, but that is from a customer perspective.</p>	
IQ 1.4.1	How do government and regulatory bodies affect the decision making of a digital transformation strategy?
<p>Me: Exactly, how do government and regulatory bodies affect the decision making of a digital transformation strategy?</p>	
<p>P2: Government and regulatory bodies affect digital transformation in more regulated industries like financial services and to some extent the telecommunications industry. Do not think there is so much interference from government and regulatory bodies in the IT industry. BCX is not impacted by regulation however Telkom will be, therefore this could impede digital transformation to some extent. The idea would be to always try to remain ahead of the curve and factor in potential regulatory requirements into your strategy formulation as far as is possible.</p>	
IQ 1.4.2	How does the company apply governance to ensure its digital strategy stays on track?
<p>Me: How does the company apply governance to ensure its digital strategy stays on track?</p>	
<p>P2: I think if you want to see if your strategy stays on track, you firstly got to understand what is your strategy? You got to understand what are the objectives, that will execute on my strategy? Once you understand your objectives, how am I going to measure this? So if were saying by x period of time I must have done y. Then me must be able to measure, did we meet x by the period y. And if you don't, you are not going to be able to proof your executability or the success of your strategy. So, for me governance is critical and key. But governance must not also become an inhibitor, or a bureaucracy in the organisations, that just draws things out. It must not be governance, for the sake of governance. It must be governance for the sake of driving things forward. Governance for the sake bringing in accountability and responsibility in terms of how we are tracking of what we need and where we need to be. But it comes down to measuring. There is a typical saying... What you cannot measure, you cannot manage. So, if you can't measure something, you can't manage it. Then if you want to talk about governance, what do want measuring from a strategy perspective? And how does the governance support that? And how do we use those governance mechanisms to drive strategy in the organisation.</p>	
IQ 1.4.3	How important is digital transformation to the company?
<p>Internally, I think there is no focus, there is not enough focus, and if do not make that investment soon, in terms of look where we are at operationally within the organisation, how does the engine currently look, what does the engine room of this organisation of the future looks like (and we use digital transformation to get us there), that is lacking in the organisation?</p>	

IQ 1.4.4 How does the company use new technologies to enhance its value creation?

Me: How does the company use new technology to enhance its value creation?

P2: What does that question mean?

Me: Using the current technology, you can create products and new services from that. We see banks, sometimes, taking for instance First National Bank also has a mobile section, and that kind of stuff. It is out of the banking sector, but they are using the technology to provide more services to their clients, different kind of services.

P2: I am with you.

Me: Different kind of products. We are currently so focused on the products and services that we are currently deliver; we do not see the opportunities with these new technologies. You can also provide this and that to your customers.

P2: I think for me at the end of the day, relative to BCX, I do not think we are using technologies to enhance our value creation. I think we are... First thing we need to do is to cut down on our catalogue. Our product catalogue needs to be optimised and made more effective. Forget about value creation; let's fix the basics first before you create more value. But having said that, I do believe that the organisation is looking at more innovative ways of improving connectivity and the whole integration between connectivity and IT. The whole SDWAN roll out that we are busy on and the METRO Ethernet focus that we have. There are new configurations and innovations within the organisation to drive how we create more innovative products, to serve our customers better, to better bridge the gap between connectivity versus IT that whole integration. So think the organisation does put energy into innovation the bridge that gap, and we do use new technologies to add value to our customers when we introduce new packaging, in terms of how we, for the connectivity side, packaging of data and information. So yes, I do believe that does use new technologies to enhance our value. But I think that it needs to become more focused and measured. And there needs to be a plan to show what we are trying to achieve with these new technologies. But, again it comes to the internal to external view. Are we talking about value creation externally? If we do not fix internally, we are limited in our ability to enhance our value creation externally. So there need to empathise around fixing, bringing in new technologies internally, fixing internally so that we are better able to serve our customers. An there is always this conundrum, right. There are always these business units that will earn the money, and you get business units that will burn the money. Typically, the business units that earn the money are against the supporting business units because we are the ones that eat the money. But the thinking needs to change.

And the one that is normally eating is the IT section.

Because that is the most expensive party. With IT and HR, because our manpower sits at HR, that is the salary bill that sits at HR, but IT definitely, 100%. But the thing is, I think BCX needs to change their thinking. I think there is a lot of focus on making money out there with the customer, but there is not an equal amount of focus on fixing what is going on internally in the organisation, from a to DT perspective, from a governance perspective, from an optimising the way we work perspective.

Me: And collaboration between IT and Business, in a sense of actually the IT service that you are using you can provide to your customers.

P2: Absolutely.

Me: So, then in that effect, you can actually make a profit out of your IT section. But yes, we need to get there.

P2: I agree. But you see the thing is, and that is where I struggle. It is fine for people to see a problem, and look at it and talk about it and analyse it. But if you don't execute and make decisions on it, then you are limited in your ability to influence and improve.

APPENDIX D3: INTERVIEW TRANSCRIPTIONS P3

IQ 1.1.1	What impact do new technologies (such as social media, IM, AI, data analytics or Big Data, IoT) have on business improvement in the company?
<p>Me: What impact do new technologies like social media, IM, and that kind of technologies have on business improvement in the company?</p> <p>P3: So, I think we are fortunate in that from a mobile point of view we are both enabling and embracing, you know this kind of social media and IoT and over the top and all kind of applications. I think some of the bigger operators, potentially enough, indicated that they see it as a threat. You know, in terms of traditional kind of communication. So I can be seen as a threat, which I think we have chosen not to see it as that and we are basically embracing it. And what we are seeing is that, you know that is acknowledging that that is what customers prefer to communicate and use, and we are basically an enabler in making it as easy and affordable as possible for people to be able to use social media and, you know, all this over the top kind of applications. You know, and I think as a data provider and network provider that is in our benefit and our strategy. But I think just, in general, it makes it much easier from a communications point of view to be able to get your message out, for people to be able to interact with you and to... You know because previously you had very, kind of a very limited channel into any company. But with social media an all of that it kind of just opens up. You know everybody has a say.</p> <p>Everybody has kind of a way of communicating to larger groups of people. So I think it is opening up the communication and it is also then in terms of analytics and Big Data kind of allowing to know your customers better, you know, to understand what their behaviour is and, you know, to create just a better, in terms of... It is not just on an individual basis, but for you to understand certain groups of people and how to reach them and how to communicate with them. So I think it is really to so also not only for the customers to get communication to the big companies like us, but also then for us to be able to understand and analyse and react better on what the customers want.</p> <p>Me: And internal operations?</p> <p>P3: I think internal operations, is again something that, you know you cannot really automate that kind of ability or the benefit that you get from social media and analytics and that if you don't change the way that you are structured and focused and things like that. So it is required to basically create groups of expertise that can specifically to focus on... so what can we... how do you communicate through social media, analytics ... you know more people can do more analytics, the Big Data, to be able to make sure that, you know all that data are available on your customers, but how you do use it and process it and make sure that you optimise that fact that it is available.</p>	
IQ 1.1.2	What role do digital technologies play in the company's digital transformation strategy to achieve its business goals?
<p>Me: What role does digital technology play in the company's digital transformation strategy to achieve its business goals?</p> <p>P3: Again, I think it is definitely playing an important role, being in our strategy, and I think it is for our strategy currently... although we are ... we have done a lot of digitisation being an ICT company. We have our online channel. We've got a ... you know we've got digital products, we've got apps, we've got digital service delivery, we've got, you know, all those kinds of things that we gone through that transformation. But I think it is also then the realisation that it not only from doing business online, you know being able to have an online channel and stuff like that. But in each and every area, how does DT impact and but then also drive the company's digital transformation strategy.</p> <p>So I think ... it is in there, I think at this stage it is still bit of a, I wouldn't say an after-thought, but a separate kind of thought but the importance is now how you basically integrate it with each and every aspect of the business. From a marketing to a sales to product development to obviously IT and back-office business processes and all of that. And I think that's how it needs to happen next in terms of the...</p>	
IQ 1.1.3	What technology factors play a role in digital transformation strategies of the company?

<p>Me: What technology factors, it is basically a different question to the previous one, what technology factors play a role in digital transformation strategies?</p> <p>P3: So I think on the 1 hand, it is pure from a IT and systems point of view and I would say one of the biggest challenges, for us, is just in terms of I think the more established conventional type of systems you have in place, it's more difficult to drive digital transformation rather than, you know, a smaller company that is starting up new and are able to just, you know, from the beginning start with a completely different way of doing business and structuring their systems. So think the very cumbersome conventional big customer databases and systems that you have are really very difficult to transform. And also, you know, the way that I think smaller companies just got this APIs that they can connect to different kind of companies and it just happens. When you have all this security and big systems and stuff like that it is much more difficult to be able to just be very flexible in terms of how you transform and connect and integrate and you know, smaller different type of systems and partners.</p>	
IQ 1.1.4	<p>What is the impact of legacy systems and technology on the digital transformation drive?</p>
<p>Me: Ok. Your answer basically links to the next question, which is, what is the impact of legacy systems and technologies on the digital transformation drive?</p> <p>P3: Yes, like I said, it is massive because you know as much as your big customer base is one of the most important assets but to transform that you know in terms of the volumes and the structures is very challenging.</p>	
IQ 1.2.1	<p>What role does Management play to drive the digital transformation of the company?</p>
<p>Me: What role does Management play to drive the digital transformation of the company?</p> <p>P3: You know again it's a very important role and I think in two components; the one is that ... I think digital and what we have seen it is something that, it is not just going to happen by thinking that people will over and above the day to day responsibilities also have the kind of appetite and ability to drive digital transformation. I think it is the responsibility of Management to create a space for digital transformation and strategy to be done in terms of resources and priority and you know a bit of a ring-fence capability that you have to create to be able to make that happen. But then I think also the risk of that again is that it also does not help that you have this wonderful ring-fenced capability but the ability to then implement it within and right through the business is not supported and encouraged. You know, as much as you have to create that separate capability, you must also make sure that that entity has the capability and support to implement it right through the business.</p> <p>Me: So, in terms of vision, the vision should be driven then from Top Management down.</p> <p>P3: Yes. I think it has to be driven by Top Management down. But I think it is the vision that needs to be driven top-down, but I also think it is also an encouragement and an acknowledgement and creating for everybody in the value chain to be able to know that they are contributing and that they have the support and kind of space or room to be able to drive digital transformation with each and every component of the business.</p>	
IQ 1.2.2	<p>What efforts have been made to empower employees to drive the digital transformation of the company in terms of reskilling, development, and way of work?</p>
<p>Me: And that leads to my next question. What efforts have been made to empower employees to drive the digital transformation of the company in terms of reskill, development, and way of work?</p> <p>P3: I think there are these areas in the business that may be more advanced, advance in terms of digital transformation. An I think in those areas there are a, and it is not a subject matter expert, but there is someone that is an expert within that area that has been given an opportunity to basically focus on digital transformation. And as I said, whether it is on creating a specific product portfolio or a portfolio within the commercial back office that ,you know, they are looking at all the processes and systems to see how that can be transformed to basically an online channel that also kind of used for sales and marketing, so I think it is a bit of a definitely already a ... definitely, an intend a vision from the top in terms of that we want to drive the digital transformation of the business but then also, like I said in certain areas not maybe enough and not maybe everywhere but specific resources and space created for people to be focused on delivering digital transformation.</p> <p>Me: Ok, but in terms of reskilling and development of employees as such?</p> <p>P3: That is to be able... separate capability that is created. Sometimes it is created through appointing people from the outside with that skills but it is also filled and build through reskilling existing employees</p>	

to be able to be responsible for the digital transformation in that area. So, it will be a combination of buying in the skills as well as then, you know external people or internal people to work with that external resources that's got the skill. And we also have quite a strong partnership policy where we are partnering with external companies that specialise in certain areas of digital transformation. So, I think it is a bit of a combination of all those things we used to reskill and build the capability.

IQ 1.2.3 What are the main drivers for digital transformation?

Me: What are the main drivers for digital transformation?

P3: So, I think, for me, in the space where we are, and thinking about, and from where I am in terms of being responsible for the products, management and develop within the consumer space, is ...

The drivers is basically the customer needs, you know, and how they want to interact and use the products, which is just then also a... which can result in a competitive advantage. So that the way people use your product that make it easy, seamless, additional feature that you can provide to the customers a differentiator from all the other products that are available in the market. You know. Not that much differentiated. So, I think from my point, it is the customer needs and how that change and to be competitive. Where I think the popular belief is the availability of technology, is what is driving digital transformation. But I think that could be very dangerous and risky if you kind of let it be driven from a technology point of view rather than from a kind of business, customer experience needs point of view.

Me: Basically, customer expectations?

P3: You know, I think sometimes the customer does not really expect it even, they don't even know that they need... For example, if you talk about consumption of video, to buy and watch a video online, you know that have got a need for that but in the way that you can then can move it from your TV screen to your mobile phone, you know, to your tablet. I would not say that the customer would demand, because they do not even know that, that is possible. But to create that experience and kind of drive that... You basically drive that need for the customer to become so dependent on those requirements. I think it is really a customer need and then improved and differentiated customer experience.

IQ 1.3.1 What do you understand under the phrase digital transformation?

Me: What do you understand under the phrase digital transformation?

P3: I think it is really to transform whichever component you are talking about, from a manual, traditional, way of working, to an online, electronic digital way. You know. And to change the way that people are interacting, with your company, with your products, with your business processes and to completely, just transform that into a next-generation, electronic, seamless basically experience proposition.

IQ 1.3.2 What challenges does the company face in term of organisational changes and organisational culture when driving digital transformation?

Me: What challenges does the company face in terms of organisational changes and organisational culture when driving digital transformation?

P3: I think it is to... to ... to look at things from a complete different angle, you know, it is still the risk-off, you know, we are used to do step 1,2 and 3 previously and now just seeing how we can make it a bit quicker, run it a bit more reliable by digitalising it. You know, but you are still looking at step 1 and 2 and 3 in terms of the prices. I think the challenge is, is to completely look at it differently, you know, and not even thinking about step 1,2 and 3 and how you automate that, but to rather look at maybe, you don't even need the three steps. Maybe you need a completely different approach to that, and I think that is the biggest challenge in terms of digital transformation, is not only to change your current way of doing business but [also] to completely change your business.

Me: Your business model?

P3: Ja, the business model, the business, how you, how you, kind of interact with customers even the products that you provide, the way you used to think about products, product development and all those kinds of things. I think it's the risk is such as just digitise and the current processes, but you need to rethink and transform your whole business to be able to ...

Me: And culture?

P3: I think definitely culture is a big challenge, but it is even beyond just people are threatened by, you know, if we become more efficient, if you know things are more automated and online and then you know you won't need as big call centres, you don't need as big back office, you know. So I think that is then people are scared of what that would mean to their jobs and what they ... their responsibilities and it would take away some of that. So think it is definitely that, but I also think it is, you know in terms of you know for example, if you look at one the case studies internationally, of international operators have

been very successful in DT, is Turk Cell, for example where they have... and they believe their whole video and getting into the content space contribute to their DT. You know where their traditional products and their product range of what they sell are speeds and Gig. And to transform from not selling speeds and Gig, but to sell content and entertainment, you know rather. And speeds and Gigs are just an enabler. So you can just think, how you buy, how you interface, what features you require, what skillsets do you require from your personal is very different from when you sell entertainment rather than speeds and Gig. It is not even thinking about to change and automate things. What will that do to jobs? It is a complete different skillset, approach and thinking that you require to be able to get to that. Still has speed and Gig. That is still your core product. It is just how you package it and position it that makes the difference.

IQ 1.3.3	What is the importance of cross-collaboration between IT and business?
-----------------	---

Me: What is the importance of cross-collaboration between IT and business?

P3: I think it is critical. You know, I think it is absolutely, obviously if you do not have that cross-collaboration, you will just not be able to implement it. And I think it is also like I said, I think, me being on the business side. Its. Obviously, I will think that... but I think there is also realisation within IT, that. It is not that. It is not systems efficiency, improvement transformation, that we are looking at, at this end. You know. It is really something that should be driven from a business point of view, you know because it is looking at solving business problems with what you can deliver from a IT point of view. So, I think that is where it needs to be driven by the business and enabled and delivered by IT according to what the business requirements are. And I think that is in a ICT company, that is quite a big change in the way that. You know people think about and do... kind of cross-collaboration. It is more like, this is how our systems work, you know, this is what we can do from a systems point of view, that is, I think, how it works often. Whereas, you know. This is rather than, this is what is going to make the biggest change and impact on the business and this is how we need to deliver it. And basically, see how the systems can deliver on that rather than the other way around.

IQ 1.3.4	What is the company's strategy towards digital transformation?
-----------------	---

Me: What would you say, what is the company's strategy towards digital transformation?

P3: So, I think to a large extent our organisation, the digitisation strategy is still very much driven from a technology point of view, in terms of automation, time-saving, resource-saving you know, and all those kind of things that traditional kind of benefits that you will get from moving something from a manual resource-intensive process to a more kind of digital online process. I think to a large extent it is still driven, to like have a online channel to have a, you know reduce... the process, the time that it takes to process, to reduce the human intervention that it requires to process orders and thing like that. So I think that it very much still structured around automation and efficiencies rather than a complete change in the way you do business and how the customer experience and interact with you.

IQ 1.4.1	How do government and regulatory bodies affect the decision making of a digital transformation strategy?
-----------------	---

Me: How do government and regulatory bodies affect the decision making of a digital transformation strategy?

P3: I think everything eventually gets kind of effected and impacted by the government and regulations. I think from our point of view again things like kind of legal obligations and licensing and having to kind of conform and comply to certain regulations might make it difficult to really have a free kind of ability to introduce, for example again of broadcasting and entertainment, you know you need a broadcasting license to be able to kind of even from a digital point of view distribute content. And I think it is... it is you know that kind of regulation that's more kind of rules and governance that is more used to and skew to more traditional way of doing business, you know, that the regulations and even the legislation has not adjusted to be able to enable and encourage a more digital transformed way of doing business and kind of products that you provide and stuff like that. So, I think that is kind of a, can be a quite a difficult challenge to overcome if still to think more in terms of a digital transformation.

IQ 1.4.2	How does the company apply governance to ensure its digital strategy stays on track?
-----------------	---

Me: How does the company apply governance to ensure its digital strategy stays on track?

P3: So, we are maybe not as good as we should be firstly to have a very clear specific digital strategy in place with specific milestones to deliver against. I think that is maybe a bit of a gap at this stage but as a kind of consumer and mobile business unit we realise that that is a gap in our current environment. So, I think the first step is just to make sure, we have got a digital strategy as I said, everybody has got there view and strategy and funding and all of that to be able to deliver on, you know, what they believe, IT, commercial, product, what they believe are their digital strategy and to deliver against that. But I think it is basically putting all of that together from a business unit point of view with that specific milestones. So that is that is basically the first step that we need to get to as a... you know, from a Exco point of view and then basically.... I believe it is important enough at this stage that there should be kind of a Digital Transformation Officer on a Exco level that can continuously basically drive that agenda in terms of being able to understand what are the big thing that will drive the most digital transformation and then be able to work with the rest of the team to be able to implement that.

IQ 1.4.3 How important is digital transformation to the company?

Me: How important is digital transformation for the company?

P3: I think it is extremely important. And also think it is extremely important that you get it right, you know, in terms of being able to get the end benefit then rather like I said, I think it is, it is.... Everybody will have to adopt automation and efficiencies using, I don't know, bots and more kind of automation. I think that all the companies are fairly advanced and good with that. But to really transform the company to a digital way of doing business, I think that is even more important that it is driven from a business point of view and not from a technology systems point of view. I think that is extremely important.

IQ 1.4.4 How does the company use new technologies to enhance its value creation?

Me: How does the company use new technology to enhance its value creation?

P3: I think being a technology company there are, that's kind of different from a lot of other companies, its I think on the one hand it is you know technology and IT and digital is not only kind of, like channels and marketing and systems, it is actually sometimes the essence of the product that we are providing. You know again things like entertainment and content and just kind of data and internet access and you know all those kind of things it is basically giving us the opportunity not only to provide existing services better and faster and more efficient but it is also enabling us to provide new products and differentiated products. So I think it is in essence of what we are providing and our business.

APPENDIX D4: INTERVIEW TRANSCRIPTIONS P4

IQ 1.1.1	What impact do new technologies (such as social media, IM, AI, data analytics or Big Data, IoT) have on business improvement in the company?
<p>Me: What impact do new technologies like social media, instant messaging, artificial intelligence, data analytics, Big Data, Internet of Things have on business improvement in the company?</p> <p>P4: I can categorically state that we have derived several efficiencies from our operational as a result of the implementation of digital technologies. We've seen a massive reduction in our cost to serve as a result of the intelligence that Big Data are giving us to do intelligent dispatches, in other words not to waste kilometres. We have seen a reduction, a major reduction in the kilometres that our fleet are traveling. So, huge efficiencies being extracted as a result. And apart from that from a, that's very much focused on the operations environment, and apart from that the softer type of applications like WhatsApp and the instant messages and so forth. That enables internally discussions it enables project management if I project, not project management to the extent that it is PMO, but it provides you the tool to give instant communication to provide instant feedback, which is much easier and much quicker. So, major efficiency improvement.</p>	
IQ 1.1.2	What role do digital technologies play in the company's digital transformation strategy to achieve its business goals?
<p>Me: What role do digital technologies play in the company's digital transformation strategy to achieve its business goals?</p> <p>P4: That is linked to the previous question. So, we [are] using this tool to drive efficiencies, that achieve cost savings on our cost to serve. So a major part of our business is to improve the cost to serve and secondly to improve the customer experience, and that is also a vital tool to communicate and improve. I mean if you are... if you are able to keep to a commitment with the customer, [then] you will keep the customer happy. With such a tool you are able to pre-empt what might happen and dispatches is much more efficient.</p> <p>So, from a customer experience and a cost, cost to serve it is driving those too. We have in our environment... we basically have three main institute pillars being the modernisation of the network, the commercialisation and the transformation service delivery. From a transform service delivery perspective, the digitisation of our technicians has improved that rapidly. So, it is vital to our strategic pillars in OpenServe environment.</p>	
IQ 1.1.3	What technology factors play a role in digital transformation strategies of the company?
<p>Me: Thanks. What technology factors play a role. I think I have asked this one. No. Ok, this is specifically to the factors, the technology factors that play a role in the digital transformation strategy of the company. Specifically, you mentioned efficiency, what about marketing and that areas?</p> <p>P4: O Yes, and a very good point. We are actually using marketing. We use an application cycling kit, and especially LinkIT I know for a fact that we use it as a marketing tool where you publishing sites, which is actually quite a powerful tool, and a mean, it is, you reach a huge amount of, a large audience without having to spend millions on marketing material. So, your penetration is extremely good using this digital type of tools. With regard to the technology, the technology, it is vital for us that the technologies, that the interface between the technologies the different technologies. Because we live in a, our environment. It's a fairly complex environment. We are dependent on a, on a, lot of different systems application to interface to each other, to talk to each other in order to have an overall view of the data and to be able to analyse the data. So, from a customer data, from a customer information up to... up to the network information. So the interaction between the systems in order to like to have sensible information is very important.</p>	
IQ 1.1.4	What is the impact of legacy systems and technology on the digital transformation drive?
<p>Me: What is the impact of legacy systems and technology on the digital transformation drive?</p> <p>P4: Huge. Huge. We had the experience that some of our legacy systems did cause some major issues with regard to fulfilment and assurance both from a reporting, from dispatching environment. So, it is so important that there is, that there's proper alignment and that there is reliable, reliable information. So,</p>	

integration of the data is extremely important and thus the integration of the different systems. So legacy, as soon as you get legacy equipment with, with, and if I may think, unfortunately from the Telkom environment, from the OpenServe and Telkom environment, we were so used to “bastardise”, some of the systems you know to do modifications out of the EOM scope type of thing and that causes major issues, especially with upgrades, specifically with integration. So it is vital that you have a vanilla type of system so that upgrades and bug fixes and consolidate and integration is much easier.

IQ 1.2.1 What role does Management play to drive the digital transformation of the company?

Me: What role does Management play to drive the digital transformation of the company?
 P4: Without the management buy-in, you will not have the end back that you want and what you need, to the extent that our COO, good example, our COO is actually. There is an app for one of the digital technicians what we call the digital technician, where you can take a photo of yourself and then it shows as one of these digital technicians with the almost ironman like of suit type of thing. And the... COO actually got a photo of himself in that environment on his WhatsApp profile. So, they need to buy-in and they need to show that there is an intent from their side to actually use it as well. That they find it useful, otherwise it has never gone a... that type of utilisation and acceptance is not gone a flow through to the whole organisation.

IQ 1.2.2 What efforts have been made to empower employees to drive the digital transformation of the company in terms of reskilling, development, and way of work?

Me: What effort has been made to empower employees to drive the digital transformation of the company, in terms of reskill, development, and way of work?
 P4: Re-training and development is very important. We have spent many hours and days to train each and every technician on Click, re-train them on Click with the development. Because unfortunately with every new application, with every new functionality, there is some change required, there are some skills required, certain skills, people need to be familiar with that. Because if you are not confident and familiar with the front-end you will not be able to utilise the input device to full extent. A very good example, from a generic environment is that I am of the opinion that, that in general the population only possibly use 10 to 20 per cent of the functionalities available on a high-end smartphone currently. None of the equipment... You do not get a lot of users that use that smartphone to the full extent. So, it is important that the user know what the capabilities are, and that they are trained properly in order to extract maximum utilisation out of this functionality.

IQ 1.2.3 What are the main drivers for digital transformation?

Me: What are the main drivers for digital transformation?
 P4: The main drivers for digital transformation, in my view effectively the amount of information currently available and the way it is packaged in the form of the so-called Big Data era that we are moving into, and your ability to access the information extract information, manipulate the information perhaps manipulate is not the right word but transform the information in such a way that you, that you can use it for the purpose that you want it. So, it is effectively, it is driven by the amount of data that are currently available.

IQ 1.3.1 What do you understand under the phrase digital transformation?

Me: What do you understand under the phrase digital transformation?
 P4: Digital transformation in my view is a transformation to an all-access 24/7 mobile, almost mobile, mobile and PC access to information reporting and important information to manage a business. So, it is to have digital access, online access where you want it, when you want it and how you want it.

IQ 1.3.2 What challenges does the company face in term of organisational changes and organisational culture when driving digital transformation?

Me: What challenges does the company face in terms of organisational changes and organisational culture when driving digital transformation?
 P4: I would say the biggest, the biggest problem of digital transformation first of all is, is the security aspect, because as the result of the amount of data that are available, and considering that you can then, you have, you have access from mobile devices and from PCs in that matter, that there is always a danger that, that information can be accessed and can be used be unauthorised people. So customer information is very important to us, so that is one of the biggest issues. Secondly, it is to convince the baby boomers and the millennium generation is fairly adaptable, they like using instant messages, WhatsApp and that type of applications. Because to them a cell phone is a tool and not such a

communication device. But for the older generation, the cell phone is still a... and I am using a cell phone just as an example, a cell phone is still a communication device and not a data access device. So, there is a bit of a change, a change management required in order to get them to be comfortable to trust first of all, to trust the equipment and the application and then use it.

Me: And therefore, the technology.

P4: And therefore, the technology. Yes, unfortunately, the technology is moving at such a rapid pace. So, if you're, if you're not been kept abreast, or keep yourself updated with what is happening, you're losing out on a lot out of functionalities.

IQ 1.3.3 What is the importance of cross-collaboration between IT and business?

Me: Correct. What is the importance of cross-collaboration between IT and business?

P4: I cannot stress the importance of this collaboration between IT and the company, and or Open Serve in order to make the digital transformation work. Because the interface between where the data are sitting, the collection of the data, the packaging of the data, is in IT environment. The IT need to ensure that the system, the data are available, updated and most of all that the system is available. (the uptime of the system). Because it is of no use if you have 24/7 access through a device but the interface or the data are not available or out-dated. So, very important, so that IT can package, and also one of the applications we are using is the power BI. So if the backend information cannot be trusted, the whole process is useless. So everybody in that value chain need to have a vital role to play in order to ensure that the right data are available where you need it and when you need it.

IQ 1.3.4 What is the company's strategy towards digital transformation?

Me: What is the company's strategy towards digital transformation?

P4: We are driving digital transformation very hard. Very good example is the workforce management tool, the dispatching tool that we have implemented for our field technicians, called Click, where they run this application on their mobile phones, where they are they are being dispatched, information are being uploaded about the customer and then they do clear their activities, whether it is a fault or installation on that app as well. So, it gives you the added advantage of that, it's giving you tracking capabilities and then you can automatically measure the, measure the productivity. So that is also one of the big advantages for us implementing digital transformation because it is very good audit tracking when you use such an application in the form of date stamps, time stamps and even for that matter location. So, it gives you that advantage of almost, policing might not be the right word, but tracking productivity of the of especially the technicians.

IQ 1.4.1 How do government and regulatory bodies affect the decision making of a digital transformation strategy?

Me: How do government and regulatory bodies effect the decision making of digital transformation strategy?

P4: It is a huge influence. So first of all as a, as part of the Telkom company we are subjected to the protection of personal information. So we need to ensure that we do protect that information to the extent that it cannot be accessed by unauthorised people. So we need to do everything in our power, also, and I am sure you are aware of all these attacks on our firewall, the DDOS being the latest one. So, that all effects our... how we setup the information, how we provide access, how... and to what level of granularity we can provide data to certain profiles which is very important. You know, that's, we are also driven by the competition commission as a wholesaler. We need to treat all our wholesale customers equally. And thus, information cannot be shared between resellers, that's giving them uncompetitive advantage. So, I think their decision, specific from the INCASA environment, their decisions drive a lot of the change behaviour and the way we implement and use the digital transformation the digital functionalities that's available.

Me: Would you see it as a barrier, or as a governance tool?

P4: It is actually a very good governance tool, however, as with every governance it, unfortunately, comes at a cost. There is always a cost involved in order to secure your data. Not that I am saying that it is a bad thing. It is a very good thing, but it comes at a huge cost. Especially, when the world goes digital, the access to the cloud data becomes easier and easier. The, even the hackers become cleverer and cleverer. So, you need to keep one step ahead of those with malicious intent and that drives cost and it drives a very, in my mind a very strict governance policy in order to ensure the safekeeping of your data.

IQ 1.4.2 How does the company apply governance to ensure its digital strategy stays on track?

Me: Then. How does the company apply governance to make sure that its digital strategy stays on track?

P4: We have another good example. This is our... we have implemented Mixit. My Mixit application for our fleet. And then in order to ensure that the technicians are using it, we have implemented compliance. So you need to do frequent compliance on the application itself in order to ensure that you are using it and to actually keep it alive. So, from that perspective I think we are, we fairly good. Another one. And for that matter, a very good example is SAP Fiori as well, which is now also available. Where, if you give, if you provide information in such a way that, that it is easy to use and it is information that is important, to the extent that on SAP Fiori you can see your payslip and you can do your leave and so forth. That will encourage and force you to use the application.

IQ 1.4.3 | How important is digital transformation to the company?

Me: How important is digital transformation to the company?

P4: O, it is very important. Because, since our customers are also moving into the digital area, we need to provide them with the capability and thus the capability to connect with us on a digital way to the extent that we actually from a ... that we're busy with a POC where we gone a provide the customer, where we providing the customer with a self-help, self-helper capability where they can, where they can select appropriate time and date for a field visit. And the added advantage is that then they can actually track the selected technician and see, is the technician on his way and so. And its, it is, the importance there is that, that it ensures communication, two-way communication to the customer and the customer is informed of what is happening.

IQ 1.4.4 | How does the company use new technologies to enhance its value creation?

Me: That is true. How does the company use new technologies to enhance its value creation?

P4: Always looking for new ways to improve. The Click self-help is a very good example of this value creation, where we are going to give the customer added priority and added input in when and what they want our technician to do. Which will, as I have mentioned earlier, which will obviously improve customer experience. Because that is what we need to do, that's what we need to drive, we need to become a star in customer experience. So, we will always use this type of tools to improve our customer experience, to improve our cost to serve and thus to become a force to reckon with in the telecommunication environment.

Me: So, what you would say is the drive of efficiency is affecting your ROI?

P4: The drive of efficiency, I mean, the efficiency you ... the impact of efficiency is either that you improve productivity or you show incremental cost saving. In both of those environments, if you do more with the same, then obviously you avoid additional cost... you avoid incremental cost. If you do the same with less being more efficiently, that will impact your bottom line and improve your cost to serve, thus the company financials. To that extent as well, it will impact not only your income statement but [also] your balance sheet, in the form of CAPEX. Because the cost to connect will also, one will also be able to improve the cost to connect. So massive drive from a digital transformation, the value that it is creating for the company is, I would say first of all customer experience, improvement of customer experience, and then secondly to improve your cost to serve and cost to connect which have an impact on the financial performance of the company. Both from a revenue, from a cost, and from a CAPEX environment.

APPENDIX D5: INTERVIEW TRANSCRIPTIONS P5

IQ 1.1.1	What impact do new technologies (such as social media, IM, AI, data analytics or Big Data, IoT) have on business improvement in the company?
<p>Me: What impact do new technologies like social media, instant messaging, AI, data analysis or Big Data and IoT have on business improvement in the company?</p> <p>P5: I think if I look at... so I think number one is the automation. And I am using automation loosely. Because if I look at your AI, your, ok we do not have robotics here, but even AI to a point is about automation.</p> <p>Me: It is IA, IoT type.</p> <p>P5: Yes. And then if you look at your, your Internet of Things, also the, it's a combination of using process automation, optimisation with your data. The two, you know that where they converge. So, at the end these are there to make us, to make your business smarter. And for you to have the information at the right time to make the right decision. If you start looking at your social media, that also brings intimacy with the market out there with prospective customers. So if you look at those things together, they can really assist any organisation, if implemented correctly, to service the customer better.</p> <p>Me: It actually brings you closer to your customer.</p> <p>P5: Yes. Bring you closer to your customer. But one of the things that I always caution with, because I know 4th industrial revolution is one of the big buzz words now. And one of the things that I always caution is; you don't digitise for the sake of. Right? Everybody want to be seen to have this IoT capability to be, you know we through the words around and we look all smart, it still has to make business sense. Ultimately, there is a bottom line.</p> <p>Me: Yes.</p> <p>P5: There is a bottom line, that is why people are in business. And if these things are not doing something to your bottom line or bring doing something for your customer, which again goes to your bottom line, then it's not worth doing. And I think people need to also have the boldness at times to walk away and say this specific one is not for my business but that one, yes that one will add value.</p>	
IQ 1.1.2	What role do digital technologies play in the company's digital transformation strategy to achieve its business goals?
<p>Me: Yes. What role do digital technologies play in the company's digital transformation strategy to achieve its business goals?</p> <p>P5: I think I have sort of touched on this. It's more about customer intimacy. So if you look at our key performance indicators, what we are measured on, from a... Openserver which rolls out to Telkom. It's customer service which is our NPS. Right. This has capability to bring you closer to your customer. Then is the numbers. Opex. Right. When we start talking Opex, then we have to talk about process efficiency. Then when you bring these other elements in that talks to how we can optimise and automate your process. One of the other elements that we ... KPIs measured on is Capex. Again, when you start looking at your Big Data etc., that where you can also make informed decisions around your investments. Right. So, instead of just saying ... there's a ... You know, sometimes some of these decisions you go to, you go and play golf and then somebody says you know there is an opportunity in Centurion and then people go and invest in Centurion. But if you really look at what Big Data can give us as a Telco, around even geology-related information. I mean all those things together. Then you can actually say, this is where I would want to maybe, you know, start building something, or this is where I must invest. This is where I can start investing. If you look even in our current coverage, we can actually even see which areas are the most profitable. And profitable doesn't mean where I have the most number of customers. Because sometimes you have a lot of customers, but it is your lower-level type of customer. You're not really getting... you not making a lot of margin. But you will find that the one area, might be small, you might not have as many, but the margin is, you know. And those are the type of areas you want to grow into. So, but you need this information, to help you to make those type of decisions. You need this information to do scenario planning. I mean if you look at acquisitions, for example, you know, with this type of capability, you can just put in ... fill in a few parameters and say you know what, I am potentially thinking of buying BCX. And then you pull in information from the stock exchange and from all over the place and say, this is ... how BCX is looking and then you put all of these things and it gives you a green, red or amber, and say you know what red, no-go or green go for it, you know. So these are the type of things that ultimately, they enable us as business leaders to do higher-order work, you know, instead of doing the mundane, because the opposite scenario to that BCX example is what, somebody is dying on excel.</p>	

You know. Trying to... that's actually the opposite of it. Busy trying to get ... ok what about the share price, somebody is getting things from there. Stock exchange, what is the markets saying about this. Somebody must go and search newspapers. The other one, you know... and so on and so on... But with Big Data, you have information like this, and then you can make smarter and quicker business decisions.

IQ 1.1.3 **What technology factors play a role in digital transformation strategies of the company?**

Me: Yes, exactly. What technology factors play a role in digital transformation strategy of the company?

P5: I am not sure when you say factors, can you give me an example?

Me: Ok, technology factors, is like, it could be customer experience, could be business remodelling.

P5: O, ok.

Me: How does that play a role in your digital transformation strategy? Do you really need to remodel a lot or is it not. Because not all companies need to remodel, but sometimes because of digital transformation, you need to remodel.

P5: Ok, so those that come to mind, the customer definitely. I Believe more and more the customer is taking centre stage. You know. So the customer is at heart of it. Because the customer is what going to determine what goes on your bottom line, that I was talking about. So there has to be a strong customer sort of centricity. And one of the examples I will give you the customer. And I can use my own personal example. I am not a fan of call-centres. I hate them with a passion. Because I think from a process efficiency perspective. Tick. From a customer intimacy, zero. And. So I am not opposed to technology, improving the process in terms of how we service our customers. But that intimacy is needed. And sometimes if you look at some of the technologies that are coming in, you tend to lose the intimacy.

Me: Exactly

P5: So, I believe that the intimacy, that connection needs to remain. And even if you provide a tool, you know. I mean if you look, for example, they will have personal bankers. So, you still will have your app and whatever, whatever, that you can still use to sort yourself out. But if you have an issue, from an exception management perspective, You know this is the person that will assist me, you know. So, the customer has to be at the heart of what you do, from a digital transformation perspective. The process also is critical. But it is important that, we also understand... We distinguish between the customer-facing processes to the back-end. Because what you'll find is, you're not going to have a blank check when you do digital transformation. Because the truth is, digital transformation is very expensive business. I mean these like massive investments. Right? So, it is important that again looking at the fact that the customer is in the forefront. So, you need to say which of my processes are customer-facing, which means, this where I get to make the difference from customer perspective. What is sitting in the background? The customer doesn't need to know or see. Because that is our dirty laundry somewhere that we are hiding at the back. And over time we can start cleaning up and cleaning up, you know, because the truth is, there's an expectation out there in the market that companies are embarking on this digital transformation. So, if the customers don't see you, as actually transforming, digitally, then they will just go to the next guy and the next guy, who is doing a much better marketing job.

Me: So it is basically customer experience?

P5: It's more than customer experience. Right. But at the end, you still need to clean-up at the back. Because it do eventually catch up with you, but I'm just saying, in terms of prioritising and also quick win perspective, first look at your channels because have immediate impact. You know. So, you have to look at that and then you also need to look at your infrastructure component and say to what extent is my current technology infrastructure and platform enabling me to move. You know. For example, one of the channels that for me has become an expectation is mobility. Everything I expect an app. If somebody says go on this website, I actually go to an app store. I am not expecting to still transact through a website. You know. So, if then as an organisation you not creating mobile capability or you have an infrastructure that does not enable you to have that kind of capability then there's a challenge there. Your infrastructure and how it is made up and the rules and everything need to talk to that digital capability. And then, as part of that as well, is an issue around, you know you're classical on prem cloud etc. And it goes back again to the customer because you need to say where are my customers. If I am in Centurion and my customers are in Centurion, maybe there is no business case for a cloud, I mean, because then there is latency warra warra. But if it is close then the experience is better. But if I have aspirations to go really become a global player, then also how I architect my infrastructure has to talk to that. You know. So, I mean we can even see how the likes of Microsoft, I mean they used to operate

centrally, but now they actually have local data centres, because they realised, if we really want to grow, the way that we should, then we need to start invest even outside our own country.

IQ 1.1.4 What is the impact of legacy systems and technology on the digital transformation drive?

Me: What is the impact of legacy systems, I always smile about this one, and technologies on the digital transformation drive?

P5: So, you know, I know when you talk about digital transformation people look at the legacy as the villain in the, you know it's like why do we have this legacy, you know, but the truth is that is where your data are sitting. That is the reality. So, legacy is a critical, critical part of the digital transformation, because you need the data to move to the next level, and all the data are residing there. And the other challenge which I have also touched on earlier is, because most of these legacy applications were put in before there was a lot of (rigger) in terms of our IT applications were build. You'll find that they don't meet certain standards. So, it's also not really advisable to do data migration from legacy, because that clean-up exercise, I mean I can just imagine. If we were to do data clean-up on our courses, on our legacy applications to go onto a digital platform. The only thing that you can do is superimpose some form of orchestration or integration platform that will take this, and then operate from there into your digital offerings. You Know. And over time you will switch it off. Because, but for me I also see it as key component of the digital transformation journey.

Me: Yes, it is.

IQ 1.2.1 What role does Management play to drive the digital transformation of the company?

What role does Management play to drive digital transformation of the company?

P5: I think management is a... the role we need to play is that of a change agent. And being a change agent means you need to constantly challenge the status quo. Constantly challenge why we are doing thing the way that we do? Why can't we do it better? You know. Why are you doing this thing in excel when we have power BI? You know. And we have a BI team. Why are we still having hundreds of excel spreadsheets all over the place? You know. And why do we have an application, and take information out of that application to another excel spreadsheet, when you can get the report directly from the application? So, there is a lot of those things that, you know, I think as managers we need to start being proactive in terms of how things are done. Obviously, you do it in a respectful manner, but I think we need to get to that stage where we really challenge each other and the status quo. And also leading that digital transformation. You know. Because I mean, just a light-hearted thing... there's a friend of mine she's also in IT, and she keeps this Nokia 200 rand. And then I say but, what IT transformation are you driving, drive with a phone like this? Because you are actually saying people must stay in the old. That is the brand you are wearing. But at the same time, you want people to buy your story. They will not. So sometimes it is also about those kinds of things where, as leadership you need not only to be saying or talking, you know, you also need to walk the talk. We need to see you.

Me: You need to be.

P5: You need to embody it. You know. You need to constantly challenge. And also, in terms of how you conduct yourself. We need to see that, you know what, this thing can work differently, you know.

Me: Yes.

P5: So, I think for me it is more of a change agent.

IQ 1.2.2 What efforts have been made to empower employees to drive the digital transformation of the company in terms of reskilling, development, and way of work?

Me: What efforts have been made to empower employees to drive digital transformation of the company in terms of reskilling, development and the way of work?

P5: So, in terms of.... There's a project or programme with Wits the digital something, something. So that is also actually an initiative at Telkom level, to start creating those skills within the organisation, so that's the one programme. And then, I mean for me in my personal capacity, I get my team exposed to a lot of these things. So if there are like conferences, etc. I just pass them on. Most of which are actually free. So through my contacts in the industry, whenever there are those opportunities, I pass them on and say guys let us get equipped. Last week there was robotics, some of the guys went there. The week before was block chain, you know, and so on; so that is for me what I do to try to get the guys to skill up. And you know, forming part of this new revolution.

IQ 1.2.3 What are the main drivers for digital transformation?

Me: What would you say is the main drivers for digital transformation?

P5: So, I think we, I touch on the actual digital capability, which is more the actual technology, right, to say, where can I apply technology. And for me, another driver of that, that I would look into is process, because I always see a system as just nothing but an automated process, Nothing more than that. So, I think other driver that I would look at is what are the processes saying, what kind of processes do I have. Because ultimately, when you start going on a transformation, you need also to have structured your processes, such that you can have a quick turnaround time, when you need to introduce new products or tapping into new market etcetera. So the processes for me are key drivers as well. And then the other one, talks to more the people but not people as in employees but people that could potentially be a customer.

Me: Yes

P5: To say this is a sort of road that I want to embark on, who are the different stakeholders that I need to interact with and how. You know, and that will then tap into your processes in terms of how you engage those stakeholders and have the technology enablement. But primarily, digitalisation is.... It talks more to the technology layer... of, you know, your, how your organisation is made up. It talks more to the technology capability.

IQ 1.3.1 What do you understand under the phrase digital transformation?

Me: What do you understand under the phrase digital transformation?

P5: For me digital transformation is about using digital capability to transform how you do your business, and hence the difference between digitising and digitalisation. So digitisation, we talk to just having the digital capability, you know.

Me: The 1s and 0s?

P5: Yes, but digitalisation is when you then use that to transform your business model even an opportunity to enter into new markets etc. So, digitalisation is now where you start leveraging the digital capability that you have in your organisation.

Me: And is digitalisation the same for you what digital transformation is for you?

P5: Yes, I would say pretty much, I would say pretty much. Because I cannot... The only instance where I can say it is not the same, is if you have already digitalised, then we can't really say you will go through digital transformation. So, for me they are almost anonymous.

IQ 1.3.2 What challenges does the company face in term of organisational changes and organisational culture when driving digital transformation?

Me: What challenges does the company face in terms of organisational changes and organisational culture in driving digital transformation?

P5: It is resistance to change and fear of the unknown. So, for me I think the challenge, you can have tech... challenge I think is 2 faults, there is a people challenge, which is, where I said it's a fear factor. Because if I have never been exposed, and I mean if I look at the OpenServe scenario, and also Telkom. You find that Telkom have been a very good employer and being a good employer, you have people that have been in the organisation for 30 years, whatever number of years. That is not a bad thing. It's not necessarily a bad thing, but I think where you have a challenge is because I believe you need both. I also don't believe you also need people who are 5-year-old in the organisation. You need people who also keep you grounded, who have got the institutional memory. So, I think the two complement each other, but ...

Me: And maybe to, to have the same geographic in terms of age of your customer base.

P5: Yes. That's the thing. So, what I find is, some of the guys, because they have only ever worked at Telkom, they do not know what is possible. Because, I mean, if you have not ever seen it you won't know. Other than something maybe you'll see reading an article or you see it on TV, but it is a completely different experience if you have lived it, you know. I think, and I always see it with a lot of projects that we implement, that there is that initial fear factor, because people are now feel vulnerable. Because, I have been operating in the same way for 15 odd years, I know my job like that palm of my hand. Now you bring in this thing that is shaking everything up and it puts me in a vulnerable position. because now I have to learn from scratch.

So, I find that there is an element where there is resistance to change. And the second one is a technology migration issue. Because if you look at technology and how far it has advanced, also from a pure platform and architecture perspective, you know, and then moving to digital offerings is also a challenge. So, you'll find that you have legacy applications that are like 14 years old, that were built even

before relational databases came into being, so there is no normalisation, so data quality is a huge challenge. Then you need to move this thing to this new dynamic platform. Then you find that you don't have compatibility. So, there is also that technical challenge or technical compatibility as well, to get these kinds of things to work.

Me: So, you would say that the age thing would be the cultural thing as well?

Because....

P5: It's not so much the age, because I think it's more the mindset. It's more the mindset, and I mean if you look at, today to be competitive, you need to be so nimble, you need to be out there, you know.

Me: Yes

P5: If you look at now, how these new kids on the block kind of companies, they just come and eat up all your lunch when you've been around for about a hundred years. A hundred-year organisation can just disappear just like this, by some company run by some 20-year-old, because they just look at the market and they see the niche and they go for it. But we, then start with laborious processes that just have no place in the business landscape today.

IQ 1.3.3 What is the importance of cross-collaboration between IT and business?

Me: What is the importance of cross collaboration between IT and business?

P5: I cannot even overemphasise it, because I don't see how one party can exist without the other. I think this is a partnership that just.... I always say joint at the hip. You can't have the one without the other. Because if you have an organisation where business is very strong then you will always have technical issues because people who make technical decisions don't have the know-how. The same as the other extreme, when you have technology people, you will have a lot of fancy tools that nobody uses, because they are not talking to the business. But when you've got the two really collaborating and working together then you know your chance to success is like above 80 per cent every time. And also, that collective ownership for me is critical, you know.

IQ 1.3.4 What is the company's strategy towards digital transformation?

Me: What is the company's strategy toward digital transformation?

P5: At the moment from an OpenServe perspective, there is no, I would not say there is a clear digital transformation strategy. I know that there are elements of digitisation that we are introducing in different spaces. But in terms of a clearly articulated digital transformation strategy for OpenServe, is not necessarily there. We have projects that look at, you know, your OSS, BSS, but that for me again it means to an end and not an end to itself. And for me becomes a digitisation vs. digitalisation type of a topic. So, we do have a lot of projects on the go from technology but we're not necessarily digitalisation space yet. We are still digitising.

IQ 1.4.1 How do government and regulatory bodies affect the decision making of a digital transformation strategy?

Me: How do government and regulatory bodies affect the decision making of digital transformation strategy?

P5: So, if I look at our specific space because it is interesting because I was reading an article today where ICASA is saying the minister is interfering in their business. So this is one of those dynamics that you deal with and from OpenServe or even Telkom we have this huge spectrum debate. So, in terms of the regulatory environment, I believe that they can either enable or disable. Because certain things are regulated a certain way, so must do it you know that particular way.

So I think, the intent is always good because the regulators also want to bring fairness to the market, etc. However, sometimes some of the regulations can be hindering. I'll give you another example of a different industry, in the aviation sector. So the likes of Boeing and so on, those aircraft OEMs. They have actually.... The aircrafts that we use today, they don't need you to switch off your cell phone. So that is like the old make of aircrafts, but happens today when you go into an aircraft? They tell you must switch off. But that rule does not apply anymore. Because what the likes of Boeing and so on are doing is, they are trying to even perfect their Wi-Fi on their aircraft. That is connectivity, let's just call it connectivity. That is where they are now, spending a lot of money around when you are in the aircraft, it's like a business lounge, you know it's like had a slow lounge, where you have all the facilities that you need. Because business executives, I mean they travel all the time, they spend more time in there, you know. So, they are saying they want to bring the services into their aircrafts, so that while you are travelling across countries you can actually just work. Everything will work, so that's the technology that they are working on. And we are still saying switch off the cell phone, because of regulation. You know.

And there is a lot of push from the airlines to civil aviation authorities to take that of, but it is not happening. So, this is where I think for me as an example of where legislation sometimes can hinder progress.

Me: That is where the rule and regulations are old and apply to old technology.

P5: Exactly

IQ 1.4.2 | How does the company apply governance to ensure its digital strategy stays on track?

Me: How does the company apply governance to make sure it is digital strategy stays on track?

P5: So, firstly the question assumes there is a digital strategy. I am not sure there is. As I have said, there is no real clearly articulated digital strategy. We do have, what I can say, it's a to be ... architecture to say. Based on the term model to say, this block and that block and that block must be, must change. But in terms of really... what OpenServe of the future is going to look like. You know. And we have a high level to say these are the channels and it will be the usual channels that will say... mobile, whatever, whatever, but in terms of a clear picture to say but this is OpenServe of the future. How will the ... ok so.... Again, I need to remind myself that OpenServe is a wholesaler, I must not think consumer. So, we are working on projects that will also increase the channels that, you know, add more digital channels. But I think from a strategy perspective there is still a bit to be done, in terms of governance that we have in place, I know that for any strategy for that matter, there are checkpoints at different weekly, monthly, etc. To keep track of what is happening there. So, that is a sort of BAU mechanism.

IQ 1.4.3 | How important is digital transformation to the company?

Me: How important is digital transformation to the company?

P5: In my view, it is critical. I do not see as a, particularly in a technology space, I do not see as a Telco or as a technology provider out there, how we could not have the same digital, that we selling to people out there.

So, for me it is really critical and as I have said once you run a fully digitalised organisation, from a cost perspective, you drive your cost significantly down, you're, your, you're more efficient in terms of how you operate because of the automation that comes from the digital capability. In terms of the market share as well, you can tap into markets that no longer... that were not, you know, possible, and not only in terms of type of industry but also geographically.

Me: Yes

P5: You know. So, I think there is so many opportunities and advantages to move in that direction; so, I would say it is definitely important, it is critical.

IQ 1.4.4 | How does the company use new technologies to enhance its value creation?

Me: How does the company use new technologies to enhance its value creation?

P5: So, if I look at ... in the operations space, the field forces, last year we implemented Click, which also automated the process, and as a result, I mean our techs just have this, and they just do their thing, you know. They can just get their appointments here, you get your appointment, and when you get to my house and this is my router which is broken, they take their photo, it goes on the phone, whatever. So that whole process now has changed from, I mean they used to go with these books, you know. But now, but everything is here (cell phone). So that's where technology has been used. The recent project that we are busy with is the equivalence of access. And that is also now where we are employing APIs, which now from a web perspective, all our customers can just go through there. So we've put in main leader provide kind of APIs. So we are still going to beef-up on the assurance side and so on. So that they can start ... so that we move more towards self-service, right. So even the appointments... The ISPs says no, we don't want, the guys to setup appointments with you. So for instants MWeb will say. [Name deleted] is not Telkom/OpenServe's customer, it's our customer. Which means we, you know, expose the API to MWeb. Then [name deleted] as the customer of MWeb will go onto the MWeb website, and book a appointment there. So the relationship remains. Because I think that they are just afraid if they... you go to OpenServe and the next thing you know you are with Telkom and you leave MWeb. So those are just 2 of the things that I can site. But I think if I look slightly outside my immediate environment, from a consumer perspective they've got an app. And I mean if you look what an app can do, there is so much you can do also in terms of selling new service etc. you know.

Me: Thank you very much.

APPENDIX D6: INTERVIEW TRANSCRIPTIONS P6

IQ 1.1.1	What impact do new technologies (such as social media, IM, AI, data analytics or Big Data, IoT) have on business improvement in the company?
<p>Me: What impact do new technologies like social media, instant messaging, artificial intelligence, data analytics, Big Data, IoT have on business improvement in the company.</p> <p>P6: Parts of it are relevant, you know, I say must have is good to have it. You do not need it. Let us just talk about social media; it's an asset and a liability. You need be very careful how you interact in social media and social media itself does not mean you digitised because your transactional timeframe is must quicker, which means you create a setup behind the scenes to be able to be able to cater for it. Again it is a process conversation. Big Data, data analytics, if you read up Gardner, they talk about analytics about the last 10 years so it's nothing new, and I think data are always being under pint asset, we haven't realised to the extent that we need to and I think that is the journey we want to take forward. What you do with the data are also important, comply to regulatory is important. So, data in my view is extremely important. I have a bit a different view on AI and as much as I am a technologist, I am also practically, I am an economist also, I believe at least. So, in a country which have 40% or 35% unemployment, how do you effectively use AI, you have to enable job code, so you use AI effectively, it's a person with a system by an application to solve the problem, I that for me is AI. Not a person against the system, so AI has to work within tandem with us as humans.</p> <p>Me: More enhancing our lives than taking our lives.</p> <p>P6: In the economy that we are, especially in, you want to enable job growth. You do not want to create a situation that AI is taking away jobs. So, you have to carefully look at it. And that is what we do, for example our network we put probes in there proactively tell us if there is happening, that for me is AI. It actually enhances the technician ability to solve the problem. IoT, we need to see who IoT pans out, right now, reality is we don't effective communication between people, so yes, it is important to look at IoT, but the framework has to be done on IoT. So traditionally the last decade if you go back IoT worked an enterprise, so you went into a factory, you want to check the temperatures, example, that is where IoT starts work effectively, you know as the temperatures drops it gives you signal, machine to machine, has it worked? That's effectively an application, variables, yes it has, but in consumer, IoT has not seen so growth. Yes, it is a dream when I BMW when I see an advertisement. In South African prospective I think that IoT is going to be relevant in an enterprise world how do you effectively use IoT to help farmers enable their crop growth. We are looking at that aspect. So IoT is segmentalised in, effectively used not across board. And I think you agree, all technology is being in that way. That is the impact has been here to be seen, is yet to be seen in the industry, from IoT, Big Data from the lever ... is the way to go. Social media I shy away personally as well, it can improve your business, but if it is used carefully, you can have a detrimental impact.</p> <p>Me: So in terms of the business improvement, the impact of technology on business improvement?</p> <p>P6: I mean as I said, data analytics will have a huge impact IoT in certain segments, AI in certain segments. I cannot tell you actually 1 to 10 how much of an impact it had, because it's use in different aspects of our life and network has a big impact, I believe, as we fiberized, as we IP based network. You know, AI from a robotics probe perspective it has helped us immensely.</p> <p>Me: But even wireless technologies, in specifically in areas where it is difficult to provide fibre, I think Wi-Fi also played a very big role.</p> <p>P6: I don't know where to put Wi-Fi, it is not EA for sure, in networks, in general, I am saying, remember and I think people will understand this, the more you were wireless, the more you were fixed, ok, so yes, it is wireless, but the more towers you build, the more fibre you have to put in the ground. Because that data are to brought back to the core for it to break out, so, the more you were wireless you go more fixed. What I revered to as fixed is the core network, including a wireless or a last-mile access, does not mean which medium you use, has to come in. So, wireless in itself is an enabler, so is fixed. These are revenue enabling or cost efficiency drivers for me, data analytics, Big Data, IoT, social media is a bit tricky.</p>	
IQ 1.1.2	What role do digital technologies play in the company's digital transformation strategy to achieve its business goals?
<p>Me: What role does digital technology play in the company digital transformation strategy to achieve its business goals?</p>	

P6: Choosing the right technology, is an important aspect of digital transformation. Do they play a huge part? I do not believe so. Of course, if you chose the wrong technology you are going to be in big trouble, you know, it should be customer-driven, user-driven, business rules-driven, business objectives you can even go open source, whatever technology wants. It should always be an enabler. And Uber is a great example, the business model is more important, and the technology used, because that technology is now being replicated across multiple things, but a lot business models put around it haven't worked, so the business model is extremely important, So, yes, as a IT professional I would love to say technology is very useful. But I think business model, how you want to go to market, what is the drivers behind it, play a bigger role, and digital technology choosing the right technology is important. Knowing who to implement is important. I want to say, they all play an important role all in the ecosystem, but if you have the business part wrong, yes.

IQ 1.1.3 What technology factors play a role in digital transformation strategies of the company?

Me: What technology factors play a role in the digital transformation strategies of the company?

P6: For me, in this people's versus technology, and culture, I think we talk about this quite a bit, I don't know what factors means for you, but all the enabling functions to enable revenue abroad the cost efficiencies, are digital factors. You already digitised, you already use emails for the last 20 – 30 years, and you already digital, you already translated what you taught in a spoken in a HTML text, so it is not a new phenomenon, it is just how we consume how technology is change. So, how pervasive technology is becoming has changed. So, I think, they play, all factors play an important role, cultures as a key, adoption, adaption is key for any transformation. I think that [is] were the rubber hit the road.

IQ 1.1.4 What is the impact of legacy systems and technology on the digital transformation drive?

Me: What is the impact of legacy systems and technology on the digital transformation drive?

P6: In our word, huge impact, in our world, in any world, for banking for instance, there is still stuck on mainframes, telecommunication as they mention OSS vs. BSS, so legacy plays a role, legacy business model plays a bigger role that includes processes, which include the way we work. So, for instance, we keep coining this word out of the box, I don't know if there is anything in the box, but what it means, is that if there is faster and more efficient way of working, can you adopt to it. Legacy becomes legacy when you ensure the system adapts to what you believe is the right way of working and you keep those ways of working for the last 20 years. And hence your systems ever transform. So yes, it impacts us, the application itself because, you never chose to look at new technologies, to enable new ways work of working and hence we have the applications in our systems that is 30 years old, as old as I am. That is not the technology's fault, it is actually us as business leaders who had done it. In any industry, legacy systems would have an impact, because the user model, consumption model expectations have changed.

IQ 1.2.1 What role does Management play to drive the digital transformation of the company?

Me: What role does Management play to drive the digital transformation of the company?

P6: Totally, you set the tone, for sure, so it is important for Management to understand, acknowledge, and then live it. Enable decisions that help transform a company. Does digital transformation mean complete automation, no, as I want to treat, it does not, so what one need to understand is where to find the medium. Me as Management I also say, as this question is asks, and said for me, cost effect transformation which enable revenue growth is what I look for digital transformation. Not because I want to be on my broadband, or tech central, to show automated, no, if it enables my revenue growth the cost efficiency, what is for me digital transformation using technology. So, Management has to play a huge role from top to bottom.

Me: Because they actually supposed to drive it?

P6: I think, yes, I think Top Management has to set the strategy or at least the drivers of saying this is...hand. You know organisation forget the spine, organisations forget, you know I have a little back issue, low back issue, so I learnt the hard way is, as much as my mind and my head is important the real glue to my existence is my core, and the core is my Middle Management which enables, who takes this strategy and enable execution. So as Top Management, I have to invest in enabling Middle Management to execute the digital transformation. As Top Management, it is my job to ensure that we set the guideline of digital transformation. So there are two prompt aspects, do I drive it, yes, I ask the organisation towards it, the real drivers are the Middle Management who play both worlds of management and a specialist and I need to enable those, and that is the role of Management.

IQ 1.2.2	What efforts have been made to empower employees to drive the digital transformation of the company in terms of reskilling, development, and way of work?
<p>Me: What efforts have been made to empower employees to drive the digital transformation of the company in terms of reskilling, development and way of work?</p> <p>P6: Lots of initiatives have been taken place in Telkom, in pockets, unfortunately, which means we have an overall agenda, but that is changing, we actually looking at end to end and say what is digital means for us. How do we bring the right skills for us. There is for example, Wits, we partner with Wits digital and a hundred of two hundred Telkom employees going through the course on digital transformation, as we speak for a year. And that being selective across Telkom Group. So, there is lot of effort to do that. New cultures driven through new appointments of trying to change how we operate. Its a slow process sometimes, I think but there is some good efforts done, it needs to come together better. Have we effectively communicated that no. I think that is and Achilles heel so, but there is a lot of effort being done, investment being done by Telkom, to enable reskilling of people, because a large portion of those employees are Middle Management as I say, and they are recalibrating how they operated before in a digital world.</p>	
IQ 1.2.3	What are the main drivers for digital transformation?
<p>Me: What are the drivers for digital transformation?</p> <p>P6: I think.... Well, revenue and cost. As a business, I need to make money and I need to figure out every possible way to ensure my revenue go up or my cost go down, and obviously has a balance in it. And hence my view of user and client, you enable the user to serve the client and you enable the client to serve themselves. So, your processes have to align with that two key teams and the drivers have to be that. What is under pinning, that is customer experience, how do you ensure that there is a satisfactory customer experience to a customer, is important? You don't have to wow them every time, but when a app becomes functional and you know how to operate it, the wow factor was away quickly but it becomes a 'rumenotomy' [sic] part of your life, it should about it, and that is the success about digital transformation, when you enable the user or the customer to utilise the digital transaction, that enable in an organisation. The doubt then will think twice about it, that is the success of digital transformation. And those are the drivers to push you to toward digitalising. Digitalising just because you want to, just not make sense, there are some aspects like regulatory, which you have to be careful about you digitise, so you have to segment those, and you need to understand how much digitisation of digital transformation you need in an organisation as well. So, I think the drivers have to be as a businessman, and as a management it has to either enable me tothe output has to revenue growth..... or through better customer experience or it means to reduce cost through cost efficiencies, hence the client and the user.</p>	
IQ 1.3.1	What do you understand under the phrase digital transformation?
<p>Me: The first one is, what do you understand under the phrase digital transformation? How would you define digital transformation?</p> <p>P6: I think from my point of view, we are segmenting into a firstly you need to understand does transformation entail, so obviously it is across people process of technology, and to what, transform to what, is very important for us to define. From the work we are doing, from an IT application perspective, one of the first fundamental concepts we start working, is on the process digitisation itself. How do you change the underline process of user interface, user interaction, client interaction, customer interaction? How did you digitise those processes across the landscape? Understanding the fact that the group is quite wide, we are looking at it in chunks. So if you what to define what digital transformation is, I think the best way to conceptualise it, is to say, the ways of working which enable, automation as well as digitalisation of certain processes and systems to enable people to optimise their work, essentially is what digital transformation should be. And that should be done the "land-clean" behind it. It is not to reduce jobs, it is not to create hurdles but it is essentially improve efficiency of the work you doing, it could mean that jobs get re-organise because certain optimisation does take place. But in its essence form, digitation [sic] means zero's and one's in essence, as a digit, but to transform that organisation to enable process to be faster for the user and for the customer any digital process systems can be utilised is essentially done depending pillars for digital transformation we went through. You know we are talking about people, and I think the cultural transformation to adapt and adopt the new processes and the ways of working is essential for any company, truly digitisation themselves and transform.</p>	
IQ 1.3.2	What challenges does the company face in term of organisational changes and organisational culture when driving digital transformation?

Me: What challenges does the company face in terms of organisational changes and organisational culture when driving digital transformation?

P6: I would answer this in a broader sense, than just an organisation, as the country is onto a transformation I think you can either build or buy your talent, and I think one of our challenges to have that balance. When you buy you build, obviously need to build as you go-ahead. We also need to understand the feeder system we have in South-Africa for the skills that we need, is not the best, if we sort of rank the last in maths and the kind of Intake university are getting for computer science graduate's, or engineering graduate's, I think that is the feeder system if is not our organisation faces but across the board. So, if think those are the bigger challenge we face, and we'll need to continually invest in buying in talent from across borders, which is fair, all country's do that. But in the underpinning talent group has to be done, when extensively with public and private corporation. What we face, again I really don't really believe operating models, should impede digital transformation it does impede certain decision making, which is always being there, and consequence could be digital transformation become slower, because the right decisions are not taken because of the operating model. So that is a challenge. And why I raise the earlier point, is that all industries especially our communication ICT are facing an ageing workforce challenge, which may have been relevant, you know, technologies over there, relevant maybe five, six years ago, for that age group as new technologies that ecosystem has to feed into our system as well. So we have an ageing workforce, so we need to cater for that. The business that we are in, are revolving, a simple things copper to fibre, the technician has to now understand how the fibre work and that is self is a skill upliftment. So those are challenged we are facing in organisation network in a trend ensure that people understand it. But from a IT perspective it is even more complex, because the programming languages changes, the applications change, how do deal with consumption based transformation. All your contracts becoming cloud orientation, which mean your whole business model has change from CAPEX driven model to a OPEX model. The company needs to adapt, and so does the financial application of it. How much OPEX and how much CAPEX , how do you trim that. So it is a transformation into utility that we going through as a ecosystems as the OEMs as the business around us operate as a digital footprint. Country is always tough, I myself sometimes struggles to get to get onto a certain platform just because the medium of communication is that. I just prefer adopt to people of call people, or WhatsApp. I have not reach the other forms of communication, and I think culture essentially, if you can communicate effectively so we have to strike a balance of it, I don't believe digital transformation has to be one extent to another. And think it go through phases. As new generation come through the culture changes are, but we need the right skills come through it.

IQ 1.3.3 What is the importance of cross-collaboration between IT and business?

Me: What is the importance of cross-collaboration between IT and Business?

P6: This is the biggest Achilles heel that I ever had, and all businesses go through. Fundamentally, IT is being seen as a factory, which is wrong, and partially, the people like myself and myself forward when we create our own empires around the technical jargon. Reality is we are in the business of IT and if you look at from the perspective all business KPI's of revenue better cost should apply to us as well, and as soon as you do that IT behaves like business and that gap reduces. Having said that, businesses, and I been in Business right now, I can tell you, we assume what you think and what is the solution, IT would understand it. So how do you articulate, I think that business analysis road becomes crucial of taking, you know, condoned between IT and Business to taking English in turns of zeros and ones. If then else an application base requirement is essential and we always sort of not invest in it effectively but got the right people around it sometimes and I go to across the world and I can tell you this is the biggest challenge, not just in Telkom, it's, I work for TNT Telco before this, we always have that gap, not just communication across board. This is one of the biggest challenges, and we need to, you know, if you collaborate better, I think the deployment becomes faster.

Me: If there is an understanding from both business and IT on the other side, what their model, what their processes are, that kind of thing.

P6: Yes, but you know IT has to evolve, and earlier it was a waterfall model you build something for a requirement and you ask for another requirement. The application platform has evolved where you can plug and play. Our jobs as IT professionals is to create the platform the ecosystem for business to plug and play whatever they need if you understand that as a IT professional if think the interaction of business will become easier. So, we can't be in the yesteryears of creating air requirement and change request and changing it, if think that evolution has to happen. Telecommunication industry itself is saddle with the OSS and BSS world of it, where you literally have to do orchestration of model, there is a banking or any other non-physical inventory led industries, slightly easier to do it where you don't have to activate some physical component of the network. Those are challenges that we face and necessarily not just in IT, I think our club network within the technology front and maybe it is about technology and business

and not just IT, because that is in our world when rubber hits the road when the copper wire becomes a line and the fibre becomes a line.

IQ 1.3.4 What is the company's strategy towards digital transformation?

Me: What is the company strategy towards digital transformation?

P6: I don't think there is a set strategy, they are dabbling into it. I think there is a revolving what an understanding what digital means, a lot of people assume that a website or app and that is not that digital means. And I emphasise the process, because that process for me is the way of working within the organisation, what goes from A to B and how you respond to it. And I think that is a strategy that need to be articulated, and with the groups CIO being appointed, and who will take business processes within the organisation, and us as new cleans coming in, are goal is to ensure we are to understand what the strategy is, more importantly, to also feed the system correctly, so you need the right skills to be able to change and drive the change, you also have invest in change management to be able to adopt and adapt the kind of management.

Me: You are talking a lot about processes, but it could also be the business model.

P6: So business model, operating model is important. Having said that, I think regardless the job remodelling you take, digital transformation indoors pockets has to happen. And there have to find common thing through the user or the customer. So, yes, the operating modelling is important, but it should not be used as a hurdle, to create digital transformation. The strategy has it being pinned down? No. Should there be a evolving document for digital transformation, I don't think so. I think in today's world it should be embedded into your HR policies, into your recruitment policies, into your remuneration policies. Because unless we do that you will not change or transform the organisation, and that essentially in my view should be the strategy towards it.

IQ 1.4.1 How do government and regulatory bodies affect the decision making of a digital transformation strategy?

Me: How do government and regulatory bodies affect the decision making of a digital transformation strategy?

P6: I think, I eluded to it before, I think big parts of the policies, how do you incentivize the business to adopt digital platforms, how you create effective policies for skills transformation, in the current set that we are. I would want to log, and get more skills into South Africa, and promote that skills quite effectively for the next ten to fifteen years, till the time you build the next generation of skills coming through, and if you don't do it, and you can see the numbers across the amount of talent that is leaving the country as well, has in increased and I think maybe you can find those numbers that will effecting, it will be more relevant of what I say but you losing young skilled workforce which is going across the borders and creating a lot of value. Your policies are also restrict bringing effective skills internally to build the South African digital economy. So, it has to be in-pling (exclamated). I believe the government is taking the right steps that just scape for industrial revolution, government policy of framework, which Telkom is participating. so there is are some good right steps being taken. Understanding where you want to go, is important. I think once you take that benchmark and saying, you know if want to connectivity. If I am the government, I want to connectivity across South Africa by 2025 as per our NDP, it doesn't stipulate what kind of speed, what kind of cost, what is the impact of it, so that holistic view of what actually does it means has to be understood and then that handshake between private and public has to happen. So it is extremely important for us and government work then closing of us, I believe we as Telkom are working closely... You one can talk about spectrum...multiple vacates what needs to be done.

But essentially need to understand, and I am sure you do, South Africa is a holistic plea-market and it play a huge part in how you transform this economy. You essentially have three to four players control the market in every industry, health care, banking, finance, insurance, communication, and as least in communication it is become quite competitive because there being influx of high speed, 200, 300 ISPs are there. So, you created a good base and competition across the board. Other industries have not done that, so it has effectively done across the ecosystem because digital transformation has to happen across. Remember today I create marketplace in the ecosystem for me to interact and the other party is not digitised. My digitalisation means nothing and so does the government.

IQ 1.4.2 How does the company apply governance to ensure its digital strategy stays on track?

Me: How does the company apply governance to make sure the digital strategy stays on track?

P6: So we obviously ensure that we looking at King IV, making sure that we are in line with King IV and a lot of governance structures had been put in place, to ensure that we look at data, we look at technology, we look at network, we look at applications, a lot of governance aspects had been put in

place now as we gone, so I would say there is more focus on governance now especially with the operating model that had gone through, as sometimes governance was decentralised so we also looking at centralising the governance to ensure that we are aligned across the loop from a governance perspective.

IQ 1.4.3 How important is digital transformation to the company?

Me: How important is digital transformation to the company?

P6: I think, we are behind the curb already, we lost a few years that we should have, for example the whole world shops online, we don't have an online shop, so basic things have to be fixed, and I think, it is an imperative for us to be relevant in a new world or in the current world, as the demographics and the age barriers changes in South Africa, the way they interact with customer, company's like us, become more digital than always people-centric. And to ensure that we to adapt to it, and be in the forefront of it as an essential for us. You can see it in all industries, you see it in the banking industries, which is closing down their bricks and mortar, and moving us to a digital platform. Similarly, are we as a telecommunication provider especially we should be building towards that in any case. Your shop is essentially in your hand as a mobile user and we should be leverage all the digital capabilities that we have to be able to be exploit it. So, it is an essential part of today's transactional business ecosystem.

Me: So, importance to the company itself?

P6: Extremely high.

IQ 1.4.4 How does the company use new technologies to enhance its value creation?

Me: How does the company use new technologies to enhance its value creation?

P6: As I said, simple things have to be put in place, we have a playpen now, I want to create that playpen where we as technologies can play around, very fast, so that is something that we enable value creation. You already can see kind of products we taken to market from consumer which is based on technology and so there is been a lot of good effort. A lot more needs to be done on it. Value creation is customer experience, value creation is that, and I am not, I would not term it as new technologies, I've grown up in this world, so technologies I can tell you these are not new technologies you can dome it as new technologies, but there are fundamentally technologies which are allow us to group and ungroup systems, which help create value creation. So, I believe there are gonna play a big part in how we interact in better customer experience, revenue. So, it will create a lot of, there will be huge value in it, we see it today, if I can do something on a platform which somebody else can play it, white labelling for instance, I can create a white label product, which others can take to market, which necessarily doesn't mean it has to be a Telkom logo, it could be anyone, but it enable value creation for not just me but for the ecosystem itself. ISP's are a great example of it. I think technologies as they evolve will continuously create value, for either business or the customer and I think it will have to make sure bought are driven in the right direction.

Me: And it also depends on industry, because certain technologies might be for different industries and not specifically for the banking or factory industry.

P6: Right now, you're in a world where I don't think there is a world industry anymore, you know, look at us, we are getting an industry and IT in the communication space, so we are, self's horizontally spread across industries, Discovery which is pronominally insurance provider and self's more the IoT devises, so I think platforms are an eco-system which enable you to create value in any industry. I think those days are gone for only one industry works. Underline systems may be there, which enable some transaction to happen but the value-creating technologies today, are technologies, which allow interaction to happen between two parties or three parties or more. So that cuts across industries, I don't think it's subject to one industry.

Me: Industries boundaries are getting blurred

P6: Totally, I mean today if you think Emirate is an airline, your smoking something, Emirates is not an airline, Emirates is in the hospitality business, if you buy a business class ticket, there is a chauffeur-driven car that picks you, you brought to their lounge, the lounge is as good as any hotel, you can sleep, best in the hotels that we tie-up, and their buy their own couple of hotels, and in the experience that you go through in the aircraft itself is not about travel, you choose Emirates because of the experience, you traveling, yes, but why you choose a partially airline is basically, either cost or the experience, so I don't think in the travel business anymore it is about the hospitality experience business, Uber is an experience business. So how do you make the user experience easier, faster and more uncomplicated?

APPENDIX D7: INTERVIEW TRANSCRIPTIONS P7

IQ 1.1.1	What impact do new technologies (such as social media, IM, AI, data analytics or Big Data, IoT) have on business improvement in the company?
<p>Me: What impact do new technologies like social media, instant messaging, artificial intelligence, data analytics or Big Data and IT have on business improvement in the company?</p> <p>P7: For now, I said it has an impact, but not so much in the Telkom Group, it might just being my perspective, but I do not see it as much in the Telkom Group, I think where we can, it is there is untapped potential especially when we look at Big Data. We are sitting in a company with tremendous amount of data, I mean everyone is transporting their data over our network and yes, there are certain privacy policies, but we can utilise that data and put a value-added service on top of our existing network, to help us, and I not quite seeing that in the Telkom Group.</p> <p>Me: Yes, yes</p>	
IQ 1.1.2	What role do digital technologies play in the company's digital transformation strategy to achieve its business goals?
<p>Me: What role does digital technology play in the company digital transformation strategy to achieve its business goals?</p> <p>P7: I did not make notes about this question. Digital technology does play an immense role in a digital transformation strategy, without the technology been there we would be able to meet our strategy, and visa-versa, like I said with the other question, you also need strategy to impact your technology. And, can I just add to something, obviously you want to achieve your business goals, but you want to develop your technology's but ...I never mind, I lost my point.</p> <p>Me: It should add value.</p> <p>P7: It should add value and it is adding value. It's about adding value and creating those new products that we can sell and generate new revenue.</p>	
IQ 1.1.3	What technology factors play a role in digital transformation strategies of the company?
<p>Me: What technology factors play a role in digital transformation strategies of the company?</p> <p>P7: My opinion is, the physical hardware type technologies we have, we have our emiconotes, we have our fibre to the home, yes we still can roll-out more fibre to the home but that is a different topic, but then there is a softer side on the software side, as I said with the Big Data there is that untapped potential, where we looking at yes we are installing this network and it is the hardware side, but on the software side we also need to improve those things to help with the digital transformation and it is not just about improving it towards the customer it is also about improving within the company. Sometimes we are so customer focus that we sort of neglect our own systems inside the company and we have many systems as I think you be are aware that you don't talk to each other, we have all these silo systems but we don't have that integration and isn't that exactly what the internet thing is all about and bringing it home to do it actually in the company.</p>	
IQ 1.1.4	What is the impact of legacy systems and technology on the digital transformation drive?
<p>Me: What is the impact of legacy systems and technology on the digital transformation drive?</p> <p>P7: This is a very, very sensitive topic for me, I always feels like a bit self-concise about my answer about this one, I think there is still a place for legacy systems, I know that yes we need digital transform, and yes we need to roll-out new network and we need to create new systems, but we are so focus on the new that we sort of forget what the existing one's can do, and how to integrate that legacy ones into the new ones. So, we trying to reinvent the wheel the whole time instead of utilising what we have, and I think the legacy network, and I know you talking about systems, but legacy network like the copper network and I know there is a big company strategy to decommission copper, but there is still value in that copper, that copper can still give you a 40meg per second line, and most people want to apply for a 10meg, but they insist for having fibre, but it is the same speed. So, there is definitely still a place for legacy ones, and I think we should utilise it, and not sweat asset but promotes it instead of just cutting it off like a sick dog.</p>	

<p>Me: I think the big problem here is maybe the integration with other systems, because of legacy systems that is always difficult to integrate into newer or other systems.</p> <p>P7: But my problem with that is, I don't mind them not integrating at, but at least save the data that you have, I mean you put a lot of effort into records, don't just trough away your all records and now you need to spend how many man-hours to update those same information again. It's like people forget that these systems were created and don't actually utilise the data and just focus on created something new that can do the same thing but not incorporated the existing system but the existing data into the new system. And the systems talking to each other.</p>	
IQ 1.2.1	What role does Management play to drive the digital transformation of the company?
<p>Me: What role does Management play to drive the digital transformation of the company?</p> <p>P7: I am giving you the answer that so annoying me during our interviews. They play a big role. Full stop. Ok, I will expand a bit. They play a role because they need to sort of, they need to drive it in the sense of, this is noticing the systems that do not talk to each other, noticing that the technology is there and management here, I see as Senior Management, your Chief as organisation and your ME's and them to notice the shortcomings that are within the company and as I said not to the customer and we need to give this wonderful service to the customer but also looking closer to home and basically do an internal investigation and to what can these technologies what we have mean within the company and then to explore those new revenue streams putting the strategy in place, driving the strategy and then making a ripple effect throughout the company which ultimately also impact the customer. Because if you look at the legacy oh well the systems and digital transformation it also about enabling the customer to have an easier experience with the company, to click a button and create an order, and that's it, and not phoning a call centre to get resolved but fixing it yourself based on a couple of questions you have on the internet or one or two troubleshooting things.</p>	
IQ 1.2.2	What efforts have been made to empower employees to drive the digital transformation of the company in terms of reskilling, development, and way of work?
<p>Me: What efforts have been made to empower employees to drive the digital transformation of the company in terms of reskilled, development, way of work?</p> <p>P7: I am looking from an operational perspective because that is where I am. Employees are not always empowered to drive digital transformation. The ones that are empowered might not have all the knowledge or the right network in place, people network in place, to get the appropriate inputs, for their digital transformation, and it's also it's still the silo effect, people are digitally transforming but in a silo, and for me digital transformation is exactly about that cross-collaboration, and having the systems talk to each other and seen the trains in Big Data. In terms of reskilling, I've not seeing much reskilling and the reskilling I seen is more on the softer side, not software but like the in humanitarian studies, so like I did with the FLDP it was more focus on self-awareness and also the business strategies and that things but not necessary on digital transformation as such, and that is where my point come in about you must also be willing to up-skill yourself and that not expect the company to up-skill you. So, it is a whole different mindset and the way of work, I know for example, there is someone here that trying to get a system in place, a national system in place, and he is met with resistance. So, the efforts that have been made from my perspective are very, very few and it is constrained and there is resistance.</p>	
IQ 1.2.3	What are the main drivers for digital transformation?
<p>Me: What are the main drivers for digital transformation?</p> <p>P7: Technology definitely, and then the skills utilise that technology, so that in my opinion that skill is not the skills you have, but it is also the skill to skill yourself, so it is not waiting for someone to spoon-feed you to say this is how you are going to do this, it is also having that innovation and go-getter mentality to upskill yourself, and to bring that to the table, that is definitely one of the drivers, the technology and the skills, and then obviously the funding and the resources, which is quite constraining at this stage. Another driver for digital transformation is mindset, as I said with the skills, but also the cultures that you have in an organisation and our research may way around the culture although we did not explicitly call it culture. And the culture can be quite a barrier.</p> <p>Me: Yes</p> <p>P7: It is an enabler.</p> <p>Me: It depends on which way you see it.</p> <p>P7: It depends on what your current culture is and whether you can use it to enable you to transform a little bit quicker or whether there is a constraint.</p>	

IQ 1.3.1	What do you understand under the phrase digital transformation?
<p>Me: So, as indicated the aim of the study is to explore the factors that affect digital transformation in Telco company and to what extent. So, my first questions is, what do you understand under the phrase digital transformation?</p> <p>P7: For me it means to move towards digitalisation, which is using digital technology to speed up certain processes and then the ability to collect and use data, like Big Data and analyse it, and to automate certain actions, so, I make notes, based on your questions, so it should be business-wide strategy, it is a long-term thing, it is not something that is one to two people getting involved and it should be companywide thing that is put in place and to collect that data and to analyse, and to have a holistic picture of the way forward and the way that systems need to speaks to each other.</p>	
IQ 1.3.2	What challenges does the company face in term of organisational changes and organisational culture when driving digital transformation?
<p>Me: What challenges did the company face in terms of organisational changes and organisational culture when driving digital transformation?</p> <p>P7: Immense Challenges, I can tell you that especially when it comes to culture, because without culture, the culture of wanting to change or having, we did a studying on the different types of culture you have, and if you look at a company like OpenServe, we have a very big survey and from that we notice that authority learning in purpose was basically our main, our main cultural in the company especially authority come out quit huge, and if you have a learning culture or embrace the learning side, it just makes that culture a bit more flexible to changes. So, challenges definitely to that cultural, organisational cultural changes transformation sort of in the process, but if you go and tell people you need to change your culture, it is not necessary the best thing either, because then already that big resistance. So, it is basically influence the edge without actually people noticing that you changing the culture. For embedding a new culture in the organisation, and when we had this discussion with all these projects, we mainly focus on the learning aspect of it, because a learning aspect is highly flexible it is independent, it gives you that nice balance, because with authority, or autorotational culture you have a very stable environment, so people don't want to change. So that is definitely one of the big challenges. Did I answer your question?</p> <p>Me: Yes, sure</p>	
IQ 1.3.3	What is the importance of cross-collaboration between IT and business?
<p>Me: What is the important of cross collaboration between IT and Business?</p> <p>P7: It is very important, my opinion is that business sets the strategy and IT helps to make it happen, but then reverse must also be true, because of some cases IT can see the opportunities where business might not able to see it. And that is why that cross-collaboration and not just a one-way street is important that your technology can also drive your strategy, your business strategy, but business strategy is also then enabled by your IT. So, I don't know if I explain it very artificially but, business might say we need to do this, and IT can make it happen, but in the other sense IT might say we know we can do this, why don't you make this part of your strategy.</p> <p>Me: Yes, it makes sense.</p>	
IQ 1.3.4	What is the company's strategy towards digital transformation?
<p>Me: What is the company's strategy toward digital transformation?</p> <p>P7: Ok, I am not privileged to the company strategy, I am more in operations, but from what I can see, and from the interviews we did as part from our research, I think the company knows that it is necessary, and I certainly hope there is a long-term strategy for digitalisation. But from the operation side can see there is a renewed focus on something like Netplan, and there are small changes within the systems to make them aligned to each other to actually talk to each other and to streamline it. But those changes are very small from my vantage point, but I hope that there is a company strategy.</p>	
IQ 1.4.1	How do government and regulatory bodies affect the decision making of a digital transformation strategy?
<p>Me: How do government and regulatory bodies affected decision making of a digital transformation strategy?</p> <p>P7: They do effect, there are currently policies in place to speed it up, to speed up this transformation, but in my opinion we are a third world country and the third world has not totally embraced it yet, and it</p>	

is still a new thing as, I said there is no company that successfully transform into a digital service provider. So, it is still a journey, but government and regulatory bodies definitely have an influence on it, and I think they are putting policies in place that might be a bit slow, but if you speed it up, if you put in more constraining policies you might get a bigger resistance from the population.

Me: Yes, yes

IQ 1.4.2 How does the company apply governance to ensure its digital strategy stays on track?

Me: How did the company apply governance to make sure its digital strategy stays on track?

P7: From my perspective, I cannot answer that question. I see MMPs coming out, but that MMPs are its method and procedures documents, that did not really focus on the digital strategy of the company it is more focus on the technology and how we are going to make things work. So, I might not be privatised with that information, but from my perspective, there is not much governance to make digital transformation

IQ 1.4.3 How important is digital transformation to the company?

Me: How important is digital transformation to the company?

P7: To the company, very important. We are a technology company, we are basically the enablers of digital transformation and from as we as a country we as a species, as humans move towards the fourth industrial revolution it would be critical to adopt digitalisation to be able to be able to survive. Not just in the market place, but in general, in the market place especially, but also in general. Digitalisation though is a long-term solution and there is great revenue opportunities to the company, and to the company's that embrace it.

On that point as, we have an interview with, now I cannot remember, one of the consultants, and they mentioned that no company has ever moved successfully into fully digital transformation well be digital transformed, being ready for the fourth industrial revolution. It is still an on-going process and I think we sometimes jump to a conclusion that we forget it is a journey.

IQ 1.4.4 How does the company use new technologies to enhance its value creation?

Me: How does the company use new technologies to enhance its value creation?

P7: This is a difficult one, we see it in the customer side, with FTTH and all of that, but it's basically the still same products being sold to the customer there is not really a lot of value-added services being sold to the customer. I know maybe in the BCX environment it is a bit different, but from where I stand, I mean OpenServe still only offers your ADSL, your Metro Ethernet type services and voice. So, there is no, that is basically providing the pipe and the technology but the pipe to transport data or the pipe to transport the call, or whatever, but there is nothing build onto it. There is your speed, but there is nothing build onto it. There is nothing like to say that, well if you get Metro Ethernet service you will also be able you do this, or we can give you data regarding what is happen in your other office or there is nothing added to that. There is meat build to it.

Me: Thank you for your corporation.

APPENDIX D8: INTERVIEW TRANSCRIPTIONS P8

IQ 1.1.1	What impact do new technologies (such as social media, IM, AI, data analytics or Big Data, IoT) have on business improvement in the company?
<p>Me: What impact does new technologies, like social media, instant messaging, artificial intelligence, data analytics, or Big Data and IoT have on business improvement in the company?</p> <p>P8: So, the question is what impact do these new technologies have?</p> <p>Me: On the improvement of the company.</p> <p>P8: The internal improvement or external?</p> <p>Me: Internal, because we are looking at the processes within the company.</p> <p>P8: So, the impact of these new technologies is that it could become easier to collaborate internally for the organisation it could make decision making easier because if we use the data we have, it can drive the decision that we make, it could bring in a new source for revenue, but the thing is really are we allowing it to do that for us. So, there is lots and lots of impact that it can have, it can replace certain people in the organisation, for example, call centre agents, we think about chat bars, we think about all of that kind of capability, so business improvement is obvious available with all of those things, but we need to embrace it, to enable that for the organisation.</p>	
IQ 1.1.2	What role do digital technologies play in the company's digital transformation strategy to achieve its business goals?
<p>Me: What role do digital technologies play in the company digital transformation strategy to achieve its business goals?</p> <p>P8: What role... do digital technologies play? Well digital technologies actually drive the sinking around the company's digital transformation strategy. Think about 5G as a technology concept, the fact that it comes available means it drives the organisation to consider all the new capabilities that are available and therefore it has a big impact on the strategy of the organisation seeing that competitors may go that route, and then puts you on a back foot or that you go that route and then you put you on a corner so it's absolutely influence the strategy.</p>	
IQ 1.1.3	What technology factors play a role in digital transformation strategies of the company?
<p>Me: What technology factors play a role in digital transformation strategies of the company?</p> <p>P8: And when you say factors, what do you mean?</p> <p>Me: Factors in the sense of the capability of the technologies in how the company use these technologies whether they embrace it and how, whether it is actually a barrier for the company, or is it something moves them forward in their digital transformation strategy.</p> <p>P8: So, the sort answer will be: the factors around the technology that plays a role in the strategy is the capability that it enables, because the technology itself is meaningless, if you do not understand what the capability is that it provides you and you are not able to translate that into in either new revenue or in cost savings, so that actual capability that enables for the organisation is the factor that drives the impact on the strategy.</p> <p>Me: It could also be like, customer..., what the customer wants, those are also type of drivers.</p> <p>P8: Yes, absolutely</p> <p>Me: And that can also have an effect on the company in which direction they would go.</p> <p>P8: Yes, I would've then maybe have put the question a little bit differently, so maybe just what factors play a role, so the factors is: technology play a role, the customer and what the customer expects to play a role, and potentially then also what the competitors do in a space could play a role.</p>	
IQ 1.1.4	What is the impact of legacy systems and technology on the digital transformation drive?
<p>Me: What is the impact of legacy systems and technology on the digital transformation drive?</p> <p>P8: The impact is that it is to slow, because the legacy systems in many cases are not able to adapt so quickly to what the organisation may want to take into the market, so it removes a little bit of the agility of the organisation to be able to respond quickly and to be able to transform it using those legacy</p>	

<p>systems. The legacy systems itself is potentially is not always the single source of slowness or of not having agility, but the culture around the implementation methodology of how you implement change within that legacy environments is very much still waterfall, there is not a lot of agile thinking that is really become part of the culture of the organisation.</p>	
IQ 1.2.1	What role does Management play to drive the digital transformation of the company?
<p>Me: What role does Management play to drive digital transformation of the company? P8: Is your question what role should play or what are playing? Me: Are playing P8: They are not playing a big role, it is as if many of them do not understand what digital transformation is, it as if many of them still think that we have there is lots of time to consider things, so I am not seeing them playing a big role in flying that flag.</p>	
IQ 1.2.2	What efforts have been made to empower employees to drive the digital transformation of the company in terms of reskilling, development, and way of work?
<p>Me: What efforts have been made to empower employees to drive the digital transformation of the company in terms of reskill, development and way of work. P8: I haven't seen a lot of that, although I know one person in our organisation that is currently attending a sort of a course around industry 4.0 at WITS University, I haven't been exposed to exactly to what kind of training and reskilling is available, but I haven't actually beside that one, I haven't seen anything.</p>	
IQ 1.2.3	What are the main drivers for digital transformation?
<p>Me: What are the main drivers for digital transformation? P8: So the main drivers are firstly the availability of vast amounts of data, and all of the technology that has become available in the fourth industrial revolution, as part of intelligence systems. So, the first driver is technology, the second driver is data and then also the third driver is the evolution of who are customers are, because our customers haven't been standing still, they have also evolved, they use to using different types to technology, their expecting a certain level of technology used by all businesses, so it is inevitable that those three drivers will force all businesses to actually have to transform in the long run.</p>	
IQ 1.3.1	What do you understand under the phrase digital transformation?
<p>Me: The aim of the study is to explore what are the factors in a digital transformation in a Telco company are and to what extent, so what do you understand under the phase digital transformation? P8: So, digital transformation is also sometimes called digitalisation, not digitisation but digitalisation, and it is often easy to confuse digitisation, which is making businesses digital which we have being since 1950's whenever the first computer was invented, but we now shifting into a new gear where we actually are becoming enterprises that operate mostly in a digital fashion. And part of that mechanism is really the evolution of the third industrial revolution to the fourth industrial revolution, where we now seeing intelligence enterprises base on the fact that we have all this vast amount of digital information that we are able to use to becoming to operate at a higher level that we had previously done with the third industry evolution. So, digital transformation is really transforming the entire business to be able to use the mechanism that is now becoming available in the fourth industrial revolution to expand, to evolve, to grow, to be more, to just to be more that we have previously being doing. So, transformation is at various levels that it needs to happen, and most importantly at the culture level because to digitalise your business is not just to digitise your business.</p>	
IQ 1.3.2	What challenges does the company face in term of organisational changes and organisational culture when driving digital transformation?
<p>Me: What challenges does the company face in terms of organisational change and organisation culture when driving digital transformation. P8: One of the first challenges that I see here, and in many other businesses is that, we still operate as a business from a perspective that we have business processes and we had mechanisms that we put out there for the customer. What is, however, changing in the digital revolution, if we can call it that, is that the customer is king. The customer is the one that swipes, the customer is the one that selects, that pushes the button, that has all these options available. So, our big challenges as an organisation are to change our mindset to see that the whole digitalisation economy is a customer driver economy. We can't</p>	

force a customer to interact with us, by putting a process out there, they will choose how and when and if to interact, and if we understand that we will transcend many businesses but the challenge to get the mindset right to start thinking that it's a customer driver economy that we are moving towards and obviously that is also a cultural aspect, and part of our culture is also that we sit with lots and lots legacy, lots and lots of slowness, lots and lots of the perception that there is a lot of time to do things, and in a digital economy there is no time, so the organisation needs to tackle this challenge because, very soon it will be out of time.

IQ 1.3.3 What is the importance of cross-collaboration between IT and business?

Me: What is the importance of cross-collaboration between IT and business?

P8: It a very interesting question, because, I always look at these statements about alignment between IT and business, and I always ask myself the question, when will we as businesses start realising that we are information businesses, we can no longer have a separation between business and IT, business is IT. So, from that perspective on the one hand to answer your question directly, it is of such importance that I cannot foresee that businesses can still separate IT and business.

Me: IT has basically become business.

P8: Business is IT and IT is Business.

IQ 1.3.4 What is the company's strategy towards digital transformation?

Me: What is the company strategy towards digital transformation?

P8: So, at the moment the company strategy is not completely clear, so it is not as if you can go somewhere and you can read exactly what the strategy is of the organisation towards digital transformation, in a strategy document or in black and white, there are however lots of activities happening towards positioning the company strategy for digital transformation and the first step around that has being taken to position a digital platform business. So, in reality the strategic intend with that positioning is that we want to become a digital platform. And that is a quite an obvious step for a Telco, because lots of technology and capability that is necessary is in place, so it is a logical next step for us as a Telco to go that route.

IQ 1.4.1 How do government and regulatory bodies affect the decision making of a digital transformation strategy?

Me: How do government and regulatory bodies affect decision making of digital transformation strategy?

P8: Well one of the key challenges in the Telco space is the availability of spectrum, and to really to adopt all that is available in the industry 4.0 space, for a Telco, the whole spectrum issue in the regulatory environment needs to become easier, needs to get out of the way, need to actually start flowing, to enable business. So, the government and regulatory bodies have a big impact on Telco's and can either make or break the digitalising effort, so yes there is definitely an impact on the availability of spectrum, the strictness of regulation for the boundaries that is put around businesses as to what they are allowed to become, what they allowed to do etc. I hope I have answered your question on that.

IQ 1.4.2 How does the company apply governance to ensure its digital strategy stays on track?

Me: How does the company apply governance to make sure that digital strategy stays on track?

P8: Governance is a sour point in the organisation for at least a year, or more than less a year since when Len left, there were no governance in place even before he left it doesn't look as if there was a lot of governance because of a lot of the decision that was made and the things or the procurement that was done, didn't look as if there was good governance in place. So, governance is now slowly getting attention. I see there is now a presentation that is specifically on IT governance that has gone to Exco. I don't know if that has been approve as yet, because I haven't seen the structures happening and being actively operated yet, but ever since the journey of independence governance has really got a big knock and it has to has to receive a lot of attention to start working again to enable the digital transformation strategy.

IQ 1.4.3 How important is digital transformation to the company?

Me: And maybe you have answered the next question already, but how important is digital transformation to the company?

P8: It is non-negotiable. It is non-negotiable, because the company will become irrelevant if we do not actually transform into a fully fledged digital business.

Me: But from your point of view, how important is it for the company itself?

P8: I do not see it on the floor yet, that it is important, so maybe it is important at the higher levels of the organisation but it has not spread throughout the organisation, so from that perspective, it doesn't look that it is so important.

IQ 1.4.4	How does the company use new technologies to enhance its value creation?
-----------------	---

Me: How does the company use new technology to enhance its value creation?

P8: For its customers?

Me: For itself and its customers, well its value creation for the company in this case.

P8: And I am to choose to respond from the perspective for the customer because a company's value is only materialised through the eyes of a customer and Telkom is possibly using its mobile network, to create value for the customer if we can, that is not new technology; that is old technology, but new technologies from a customer's perception they are not see anything. So, I don't see Telkom use new technologies to create value for their customer.

Me: Thank you for your time.

APPENDIX D9: INTERVIEW TRANSCRIPTIONS P9

IQ 1.1.1	What impact do new technologies (such as social media, IM, AI, data analytics or Big Data, IoT) have on business improvement in the company?
<p>Me: What impact do new technologies like social media, IM, AI, data analytics, Big Data, and IoT have on business improvement in the company?</p> <p>P9: So, the one quick one that is the biggest impact, that it can tell you things that you never knew, and it can perhaps give you questions that you never knew you needed to ask. So, I guess the biggest impact for me of all these capabilities which really is the proliferation of information in that it gives you insights into stuff that you never knew existed. And whether it is your own information and whether it is ...connect the ecosystems together, and that is the biggest impact on that. It actually impacts you as an individual, it impacts society, it impacts the customer's customer and that for me is the biggest impact.</p> <p>Me: And processes as such?</p> <p>P9: Not so much. I guess, you know in terms of processes, absolutely, there will be a lot more automation that will come out of it. Remember, we always been automation, we have always been automating processes all along. I think it has gone a lot sexier now. I think by having connectivity readily available by having the internet readily available it democratizes a lot of that process capability and automation. But the true impact you make on, is what do all of that do for you at the end of the day? By automating a process, what did it achieve for you at the end of the day? And if it can achieve something on a business achievement where it's either having an impact on your top line or had an impact on your bottom line, add an impact on you customer retention, or grow your business exponentially, that is the big impact that these type of technologies will have. Because remember a lot of these things talks to huge amounts of information the consumption of huge amounts of information. Ok. And why would you want to consider consume huge amounts of information? Because it must give you something so cutting edge, you would never do by even having someone or by having a standard BI capability that can show you something is to reaped on that side.</p>	
IQ 1.1.2	What role do digital technologies play in the company's digital transformation strategy to achieve its business goals?
<p>Me: What role does digital technology play in the company's digital transformation strategy to achieve its business goals?</p> <p>P9: So, I think the technologies are the platforms, ok they are the platforms for you to achieve your varies digital strategies ... blueprints that you create for yourself. Just like how you create any blueprint you need some enabler to execute on that. Right? And I think where these technologies are at play, it also makes it easier for you to achieve that. Right? And that's the key message that we must remember, the technologies must be a way, an enabler to help you achieve your strategy, your digital strategy quicker and faster. That's for me the key component of the technologies not to say it is a cool technology. What is your strategy, how does it relate to your business impact, how does it improve your business overall and that's what you want it quicker? So, you know, someone had to tell you, you could save Telkom 10 billion, 10 million a year by implementing the following solution. First thing going to say is how long is it going to take you? Right? Because you going to say a year to deliver that is not going to work, so you want to look at technologies that are matured, that are there, that are readily there and not like Mona lotic type PRP where you can get results almost instantaneously, where you can get prebuild capabilities. And a lot of the technologies, the digital technologies are pre-build capabilities that are aloud that make it easier to use, you know, almost puts you as being the dumb user to become the intelligent user. And that really were digital technologies play. You got spend less time understanding the actual technology and more time understanding what the technology actually does for you and you can get value out of it.</p>	
IQ 1.1.3	What technology factors play a role in digital transformation strategies of the company?
<p>Me: What technology factors play a role in the digital transformation strategy of the company? We looking at in terms of customer engagement, that kind of thing.</p> <p>P9: So, I do think you know, So what technology factors play a role, what technology factors. Having a good understanding of technology is important. Right, I mean, so, I would think a consulting capability that can translate the tech to business language and business acumen will actually really help a company in terms of the digital strategies. If you have just techies on their own that can give you point solutions and do not tie back to the bigger business outcome that you want to solve. I think that is where you going</p>	

to be challenged with. So, having strong individuals who are promoters and custodians and champions of technologies and then they can articulate business values out of that. That for me is going to be a key factor that will actually enable a company's digital strategy.

IQ 1.1.4	What is the impact of legacy systems and technology on the digital transformation drive?
-----------------	---

Me: What is the impact of legacy systems and technologies on the digital transformation drive?

P9: Very big actually if you think about it. Right. So, you know. If you focus on the soul by mode of operation, if you focus on saying that...and you got to figure out what you want to achieve with digital? Because a lot of times on digital it's about the end experience, it's about the customer and the consumer experience, employee experience. And you will find that, if a lot of the time, if the core engine work and does what it needs to work, it's about how do you enable that to create the endpoints around that that can actually be more That can create a better experience for customers. So, you know, the argument having legacy capabilities especially in the age where you don't want to drive your whole digital strategy based, I am going to rip and replace. You got to really start thinking about, ok. What works well today and can work well for the next 10 to 15 years, and what do I need to change? So where you embrace legacy technology, it is actually about, what do you keep at the core and what do you extend out at the periphery. So, if you look at the FNB's etc., they run a core banking legacy app cold Hogan. But when you interact with that, its very, it looks very modern, very digital in terms of interacting with the FNB app or the RMB app. But the core of it, when it actually goes and checks your balance, it goes to the system, that actually goes to the legacy system and goes and checks your balance and comes back and give you the balance. Right. It renders it into a mobile app, it renders it on your laptop, etc. for the same experience. But you have changed the periphery, the core of that you do, is going and checking balance has not changed. So I think as people embrace the digital economy, they must also take stock on what works great now and leave it. Don't interfere with that. Focus on the peripheries around that. And they talk about the bi-model mode of operation. Bi-model is not to leave what's there and let it die a slow death. It's to leave there that's really working well at the core, and then what do you change around the peripheries that can give this experience of something new, something you know different.

IQ 1.2.1	What role does Management play to drive the digital transformation of the company?
-----------------	---

Me: What role does Management play to drive the digital transformation of the company?

P9: So, I guess you got to lead from the top, right, so got to almost embrace the digital journey yourself, become a champion of it, understand it and the impact it has on your company. So, you know, not as do as I say as opposed to as I do, you know. So, if you start showing that you are embracing it, that you are starting to use things like, for instance, you know your mobile to check your leave balance as an example, guys around you will start to do the same thing. So, it is very much of a shadow you cast as a leader. So, if you are going to cast a shadow, as a digital champion, definitely the organisation “ “ into that as well. So you got to embrace it, as opposed to being dictatorial and pushing it down, leading by example.

IQ 1.2.2	What efforts have been made to empower employees to drive the digital transformation of the company in terms of reskilling, development, and way of work?
-----------------	--

Me: What efforts have been made to empower employees to drive the digital transformation of the company, in terms of reskilling, development and the way of work?

P9: So, this is a key area, right. There is quite a bit that we are focusing on, one on bringing new talent. Because obviously you have a lot of different thinking, the new talent is not restricted by old ways of thinking. But it is about pulling those two forces together, where the guys can start learning from each other. There is not a... For me there is not a workbook or exercise or a course that you can send someone on to said right now after you have been on the course, now you are a digital person so can go and start coding. The honest reality is, not much will change for you as a coder, but the way that you would code and the outcomes you code against may change. Ok. Where you previously coded against one way of thinking, now you are going to code against a different way of thinking. For instants, where you coded previously where a customer could only see a application via desktop, your new mode of coding will be based on, ok, you can have an optic channel, you could have multiple channels that you can serve it from. So these are the things you have to think about and that you got to understand by understanding the whole concept of digital cross-pollinating with different individuals seeing different perspectives, bringing in a younger generation who may not necessary be tainted with how you know we grow-up in terms of doing development. Looking at what you can learn from them, you know, and them applying your senses and then obviously getting yourself for developing in the newer technologies that are out there. Remember one thing, is that whenever there is a new technology out there, if you come with a mindset that says the new technologies is making my life harder as oppose to easier, then

you will never get the benefit of the new technology. If you believe that new technology is there to really to improve my life and to almost make it as if most of the task that I was doing was manual and now can be done by that and now I should start focusing on other areas, then you would really embrace. So it is, how do you get those employees to start thinking on that. Is that whatever ... every five years when a new technology come out, they come out exponentially improve things by a factor of 15, 20. Ok. If you can appreciate that, then you will see the benefit coming out of that.

IQ 1.2.3 What are the main drivers for digital transformation?

Me: Ok, what are the main drivers for digital transformation?
 P9: Efficiency, automation, new revenue opportunities that may come out new business models that might get created as a result of that.

IQ 1.3.1 What do you understand under the phrase digital transformation?

Me: What do you understand under the phrase digital transformation? What does it mean to you?
 P9: So basically, any manual process that you can change to 1s and 0s. That's how I see digital transformation. It is as simple as that. And 1s and 0s mean that it becomes computer language.
Me: OK
 P9: If I can take any manual process and convert it into 1s and 0s, it means that I have applied a level of transformation to that and digital transformation to that.

IQ 1.3.2 What challenges does the company face in term of organisational changes and organisational culture when driving digital transformation?

Me: What challenges does the company face in terms of organisational changes and organisational culture when driving digital transformation?
 P9: Ja good, it is fair (ponder). I guess that is what most in any initiatives that you have in an organisation. So, I mean if you think about, whether an organisation, I mean think digital, I guess the first thing that people think about is jobs, ... and you know, is my job safe? So, you know, if you look at the whole aim of digital, right, you got to increase.... either help increasing the top line, which means it brings in new ways of work, new value chains or new business models that has an impact on people, right? Or it improves your bottom-line by doing efficiencies. Which means if you have to look at efficiency, it's around tooling, it's around people, it's around automation, and again has a big impact on people. So, you know in terms of the challenges you face is how do you embrace the company to realise that digital does not make them to be ... what is the word I'm looking for... when they are not ... when you have no use for them...there is a nice word for that...anyway whatever that word is, but you got to get them away from the paradigm thinking is that, paradigm shift is, is not like I'm not needed anymore, I've got now a new way of I want to work. My capabilities is going to be used differently. So, if you able to do billing, and all you did for the last 10 years was excel spreadsheets and how to align billing from invest to whatever manual billing etc. and tide back to CBS and now say robotics came and then actually take care of that, that doesn't mean you should be 'disintermediate', maybe that's the I was looking for. The aim is now, with all the knowledge gained on billing, what else can I do to improve this organisation, you know. Can I start looking at different types of billing models that I can bring in based on my understanding of how the systems work here. So about getting people to realise that they need to think differently to embrace the digital economy. And that is going to be the big shift, you know, all of us.
Me: That's the culture thing, to think different.
 P9: Ja, and remember and the whole idea of the digital was very associated with disruptive and connotation, very negative connotations to it. And you got to change that negative connotation into something positive, so it disrupts because it gives you a different way to think. It allows you a different way to work, it allows you a different way to carry out an activity, 'disintermediate' as well. It gives you a change. You know. How many times we also said that we want to change in our environment. So, if you embrace digital it gives you the change, you know. You can go from a, from a call centre agent becoming a CRM specialist. You know, if you embrace digital and understand the power of what digital can do. So, it's about creating and people going on a journey to realise that we going to create new business model, we going to create new roles. It does not mean that you need new people as well. You know, so, you might have people that you want institutionalise that you may want to change and transform. As with anything in life, that if you are willing to change and transform, you can add value in a different context. On that side.

IQ 1.3.3 What is the importance of cross-collaboration between IT and business?

Me: What is the importance of cross-collaboration between IT and Business?

P9: Ja, So I mean it has always been important and you can never underestimate it, and certainly with digital. Right. So, for instance if you had to look at it as an example. So you have a digital technology that has got sensors that allows you to capture information from endpoints as an example. Ok. It is still meaningless if you don't understand the business value why you are doing that. The business value of why you are doing that is because it allows us to do preventative maintenance. We are allowed to see some endpoint before it fails, that we have all the information we can act on it. So that is the age-old question. Right. If you are not aligned between business and IT, no matter what you do, you never going to see the true benefit of it. So, if I say to you that I have a technology that can come and collect end device information. Again, it is meaningless and it is not digital until you say why you are collecting that. what you going to do, you collecting that because you are going to do one of two things; you are going to switch of that machine when it is overheating or you going to inform or send out an alert to an operator to say, rather than your job being to watch and see how the thing ... when the point hits it, now you need to know you must call so and so, or get a part for so and so at this point or before the following thing happens. So, you move from a point of operational maintenance to preventative maintenance. On that side.

Me: Exactly

P9: And you take that to every other element of your business, you know. Why do you want financial consolidation, you know, as opposed to doing things independently? Well the reason you want financial consolidation, not because you've got a technology that can actually allow you to do it , but you want it because you want a report to your shareholders quicker. The want to see results quicker. You want to get a sense of impact and external influences in the environment geo, political, social impacts, what impacts it has on your business. You see, you have to tie business with transformation. And as we get more intelligent with technology, as we get more intelligent around how digitisation happens and becomes this digitisation economy, the more and more you actually need for business and IT to become more closely aligned with each other.

IQ 1.3.4 What is the company's strategy towards digital transformation?

Me: What is the company's strategy toward digital transformation?

P9: So, I mean 2. One is we need to evolve in terms of how we currently perform...our tasks. So basically, we have to embrace the digital journey. And we got to look at where we've got manual processes, that how we actually convert those manual processes into the 1s and 0s so that become digital and we give you that level of automation and efficiency. And ultimately does one of a few things [name deleted]. It either adds to the top line or adds to the bottom line by giving you a level of efficiency.

Me: And in terms of restructuring, does it affect your company's structure?

P9: Yes, it would [name deleted]. So, let's think about it. Right. In terms of. So, it restructures in terms of how you go to market, because now you got to go with an element of digital. So... You know, historically where you had a business consulting capability and now you would obviously evolve that to become more digital consulting capability that starts looking at things like customer and client's experiences, workforce experiences that's really what you consult in. Previously a business consulting capability was, and this is my processes, you know come in understand my value chain optimise my process. Right. Very process-driven. A digital consulting practice is really about end results. It's about showing how the new way of work is. So you got to go and do an ex... you got to create an executable. So the difference between a business consulting was, your executable was a process-driven artefact, a digital consulting, your executable is an actual a reality of whatever you design working it has to work If you cannot convert it to 1s and 0s then it is not really digital at the end of the day. And that's the difference, you know. A Process is very paper-driven, you can store it, you can even store it in "arrows". But a digital consulting journey has to result in something that is created in 1's and 0's. Has to ... on that side.

IQ 1.4.1 How do government and regulatory bodies affect the decision making of a digital transformation strategy?

Me: How do government and regulatory bodies affect the decision making of a digital transformation strategy?

P9: Ja, I mean so far, I seen happening at a macro level. So, it is policies. So, I mean really, so if you think about government, the biggest impact that government can make on policies that can either enhance or restrict in terms of how you proliferated the digital economy, right. If you start thinking of things like 5G, you know, that we would think, that technology like 5G is an absolute enabler, a technology enabler to enable the digital ecosystem. Because it should democratise a lot more of endpoints, information endpoint devices etcetera, right. But I guess a policy perspective may be very

different, because policy perspective the guys may be thinking ok if you are looking at the economy right now, look at the plays in the Telco space what is going to disintermediate, what happens to the economy if I change it and if new players enter and if I go 5G does it mean I become now a global bandwidth player? Am I going to be able to control, in terms of the assets information that flows now, security threats all of those things starts coming into play. So, I think policy, government will always play hand of policy all the time. And it is important as well in certain elements. We've seen where, you know where policies were overlooked many times, that went ahead and did stuff with technology where they lead the race, and its comeback and backfire. So, if you think about places like India and China, where they now put restrictions on things like Facebook and things like Google. Ok, so this was after the effect that these technologies launched, you know.

And it makes big decisions because if, perhaps if the Indian government, Chinese government were upfront with their policy and regulations, maybe Google and Facebook, could have said let's turn to Africa as opposed to going into Asia, and starting investing on that side. So, I think never underestimate the impact of governance and policy regulations that government can do. Tomorrow if government makes a decision and say well, based on POPI we are now going to be adamant that information can never leave the boundaries of SA. Can you imagine the impact of companies that have already started consuming from the cloud that are consuming from places outside the territory that are sharing information with those outside? So, I do think, you know there is always a factor that you will see is the government is always lagging behind, and I don't know why that is the case. Because the easiest part should be setting out the framework, the policy, the regulation before you start going down the journey of execution. But you will find it in developing countries where you will find that the governance around policies are always lagging behind on the technology side. And its just the way things work. So remember today, if technology gets released, ever gets it at the same time. You know. But when policy gets released, because of countries and continents and different political agendas, each country does a different adoption of how they adopt policies. Some of them does a wait and see game in terms of how they do it. But at the same time.... The technology has already become premeditated. And the whole idea of digital is that, you now become part of a global landscape. You now there was a stage where technology was a regional, geographic thing you know. And know with the whole onset of digital is they've democratised that. As a stupid example. You get Uber here; it is the same experience as seen here in South Africa as opposed to the US. You can take that same app that you've got now and you jump of a plane in the US and you go on and click and it shows your location and allows you to get the same service.

Me: Yes, it is the same for AIRBNB and those companies.

P9: Absolutely right. So, part of the digital economy, it has democratised a lot of that. But I don't think government has been matured enough to stay abreast to be mature enough with all the democratisation that has happened on the digital side.

Me: And I think technology is actually creating a headache for government because of all these new technologies that emerge.

P9: Absolute right. And again, think about, it is the same concept as the culture of the workplace. You can either think of it as a headache or you can embrace it to your benefit. So, if governments start thinking about how do I embrace 5G to my benefit. So, I would say with the introduction of 5G I am going to set a policy that every person under the age of 18 will be democratised to have access to 2 points that gives them 5G. So what we are not clever on as government is how do we quickly, rather than sink something as being a hindering use it to our benefit. On that side, and we have not done that, you know. As for an example they should have put a policy in place, AIRBNB coming into this country, you will first drive local establishments and promote them for free before you would charge as part. So, you would have said to AIRBNB, this is you globally rate of charge, is you take 30% of the charge, but because you are coming into South Africa, I will allow you to come in here if you take 20%. Because now they immediately putting a policy that is very favourable to the consumer, it is very favourable to the owner you know on that side. So if I book on AIRBNB, we in South Africa are getting it cheaper, and if I am an owner I will get more money in my back pocket. If we start thinking about policy, governance and stuff around that, that helps our country, then we will get ahead of the game. You see in countries like India are catching up on that, where they are starting to push where they see these global players are coming in and not giving the local capability the opportunity to grow and thrive. So I think when we look at regulations and stuff we need to think of it from that perspective.

IQ 1.4.2	How does the company apply governance to ensure its digital strategy stays on track?
-----------------	---

Me: How does the company apply governance to ensure its digital strategy stays on track?

P9: So, I mean I guess you can apply levels measurements, you know, but I am not sure if there is like real governance that you can apply, you know. How do you do that? I honestly don't know. I guess you

would do things like, you measuring your top line, you measuring your bottom line, you measure customer sentiments, you know, I guess you would have some really strong KPI's that can actually give you the results of digital type programs that you want to look at. So I guess if you would have governance, you would have a governance around how you measure the outcomes of digital programmes around set KPIs, set business outcomes, and I guess you would need to look at that. I thing on the softer side is around, yes you would have new governance around cyber security, governance around data and democratisation. You will have new governance around people's information and the protection of that, you know. But I guess for me the key elements is what I said earlier, you know that what's going to be key on that.

IQ 1.4.3 How important is digital transformation to the company?

Me: How important is digital transformation to the company internally?

P9: Absolutely right. Because it has to change the way we service our customers. It's got change the way we engage with our customers, it's got to change our solution sets to our customers. So, right from engagement to how we service to the new solution we take to our customers. We have... If we do not embrace digital transformation and all elements and all the various sectors and opportunities that the digital world brings to us, we may lose relevance for the customer. So, for us to stay relevant for the customer we got be focused on that.

IQ 1.4.4 How does the company use new technologies to enhance its value creation?

Me: How does the company use new technologies to enhance its value creation?

P9: So, for me do not implement technologies for the sake of implementing technologies. Implement technologies because it can really solve the business challenge. If you implementing technologies that cannot give you a business result and either like I said your customer retention, or growth in customer base resulting in growth in revenue or cost efficiencies and operational efficiencies that results in better bottom line, why are you doing it. Why on earth are you doing it. You know, so when you go through the process of putting in new technologies it is a disruptive process it is a 'disintermediating' [sic] process. But you are doing it because there is a benefit. There is an overall, it makes your employees more efficient or it solves a business challenge that you couldn't solve, and if you are keeping articulating back to a business challenge and measure that business challenge and how it gets solved then you have a good adopt of technologies.

Me: Thank you very much.

APPENDIX D10: INTERVIEW TRANSCRIPTIONS P10

IQ 1.1.1	What impact do new technologies (such as social media, IM, AI, data analytics or Big Data, IoT) have on business improvement in the company?
Me: What impact do new technologies like social media, IM, AI, data analytics or Big Data and IoT have on business improvement in the company?	
<p>P10: So, I think the feedback loop is almost instantaneous in our days. So, if you do something, with the likes of social media and stuff like that, you would get immediately. So, you know whether, you know, this product is going to be a hit or a... it's going to be a miss in the market. And it speeds up the decision making cycle because, you now, you know this product is a flop. And your customers are telling on Facebook as you launch it, then you pull the product or if it's a hit, then you say guys how do make sure this thing doesn't collapse under you know, the demand. So, your feedback loops back into your business is now much, much faster, it's happening in real-time. So, if you are doing something good, it can, your business is... becomes well-advertised. But the converse of that, if someone has a bad experience, that could literally close your business down. Because of the viral nature of social media. So, if you have a bad... if you give a customer a bad experience, you don't have to pay for that publicity, it will close on your business, if it is bad. So that's around the impact of social media and instant messaging. But when it comes to things like AI and data analytics and Big Data, the volume of information forces that you have now is no longer your traditional way you collect data. You know you got a CRM system, you got an ERP, you got a web page where customers come and give you feedback. Now the internet of things, you've got sensors literary everywhere. So, you've got to balance between using structure data which you collect through formal processes in your organisation's business processes, and you have this wealth of unstructured data that's coming in. And I think, what Big Data allow you and data modelling allows you on the Big Data platform, you pull out the relevant data in there. Again, as an input into your strategy and your business making... You know, if you were planning to... to discontinue with ADSL in this area and the feedback from your customer is saying, guys we like LTE but we want fixed. So, it could feedback in your planning processes, to say yes ADSL is a legacy technology is not sustainable maybe we should, because base on the customer feedback in there and what the analytics is telling us, we should install fibre in that areas. So, I think your feed... the underlying things these technologies bring is a feedback loop, is now much, much... you know, quicker and you getting in real-time, what you should do and what you shouldn't do.</p>	
IQ 1.1.2	What role do digital technologies play in the company's digital transformation strategy to achieve its business goals?
Me: What role does digital technology play in the company's digital transformation strategy to achieve its business goals?	
<p>P10: Like I said earlier on, that it enables the... when you implement things like machine learning, neural networks, Big Data, it allows you to move away from your traditional way of doing business. So, you now can look at new products that supplement your existing products, because your existing products is probably going to die, a natural death. But then what happens, for example, what we are facing in our industry right now, is traditional voice is dying and as traditional voice dies, the revenue stream is going to die. Now if we do not have something to supplement that, it means a whole lot of revenue what this company have been used to, is gone. So, if you look at traditional revenue declining and if you look at the digital platform that we can introduce like VOIP, voice over IP, WhatsApp calling, so all social media. So, if we can start making those platforms. So, as your traditional voice is dropping your data revenue supplements that. So then again, the digital platforms give you that opportunity make sure that you still remain relevant as well as you can protect your revenue.</p> <p>So that's the one example, there is multiple examples of that you know, in other industries that allows you now to compete with your non-traditional competitors. If you look at Telkom mobile or Vodacom or Cell C, or MTN, for all your mobile providers, then with digitalisation on their platforms, your cell phone number is literary become a banking account number. You can now transfer money from cell phone number to cell phone number without even a bank being involved. So, again these are the things... So, your strategy becomes broader than just operating in your traditional landscape.</p>	
IQ 1.1.3	What technology factors play a role in digital transformation strategies of the company?
Me: What technology factors play a role in a digital transformation strategy of the company?	

P10: So, the technology, like I said, you don't do IT for IT sake. IT is the enabler to the business. So, your technology platforms that you choose have to be agile, it has to adapt to a changing business, it has to adhere to open standards because your echo systems are much wider now. You can't build a propriety system, that's very hard to change and only 2 people knows how to change the code on that. So, it has to be literary open-access API, open-source or wide used technologies that can change and adapt as the business changes.

IQ 1.1.4 What is the impact of legacy systems and technology on the digital transformation drive?

Me: What is the impact of legacy systems and technology on the digital transformation drive?

P10: So, I think that is a very Telkom problem. Like you said Webforce was year marked for decommissioning and 15 years later it is still running. So, I think the thing with digital transformation is making... You know we spoke about how quickly in real-time you getting feedback. Now, and if you superimpose that to traditional legacy IT, where you know things are slow it's difficult to get information, propriety sitting on mainframes and you know databases. So, the impact...traditionally it can slow down your digital transformation if you are unable to extract the information out of there. So, I think that you're going to live digital, our legacy technology for a while, but how do we then build a wrapper around that, to make information accessible. So, if you look at the banking industry, all the innovation, I mean your... and I think in IT they have that terminology for describing legacy systems where it is your systems of records sitting, it's like your backend SAP system your mainframes. But if you look at FNB for example, and all the banks, the aps that they developed, the innovation happen on the front-end on the customer-facing and then those apps then call then the information out of the legacy system and present it to the customer. So, I think it's getting the best...Because that's where your assets are sitting in that legacy systems. And obviously you need to make sure it's not sitting on the legacy systems.... platform for too long because then you going to have... you know encounter the traditional problem of support and maintenance. But even if it sitting on one of these old monolithic "systems", I think that the digital success factor lies in how easy you can extract that information and present it to your customer or your stakeholders and a usable digital platform format.

IQ 1.2.1 What role does Management play to drive the digital transformation of the company?

Me: What role does Management play to drive the digital transformation of the company?

P10: So, like I said I mean, you don't do technology for technology sake. Digital should be the same. It should be specific targets, specific objectives that enable the business strategy. So, Management then needs to understand, when you come them with a digital project, what business imperative you are enabling with that. And then Management needs to support that, because that, in turn, enables business strategy and it could by, you know, cost optimisation, revenue generation. So, everything that you do needs to be linked back up to a business strategy and Management needs to buy in that. Because seriously Management is there to make sure that the company is sustainable and one of the ways the company is sustainable and profitable is by executing your strategy. And if your strategy is right then your company will be successful.

IQ 1.2.2 What efforts have been made to empower employees to drive the digital transformation of the company in terms of reskilling, development, and way of work?

Me: What efforts have been made to empower employees to drive the digital transformation of the company in terms of reskill, development, and way of work?

P10: So, Telkom has done little significant stuff in there. I think over last 2 to 3 years Telkom has understood and specifically with BCX the importance of digitalisation, 4th industrial revolution, the new skillsets that are required. And there is a number of initiatives put in place. If you look at BCX, we think code, that is an academy that Telkom sponsors and supports, where people are taken and trained how to do coding and stuff, so that is one initiative. On a more formal level, Telkom, one of the senior executives of Telkom, Brian Armstrong, Telkom has sponsored, when he left Telkom, he is now a professor at Wits Business school, and there is an entire digital business programme right up to master's level. So, it starts from an undergraduate level then on a post-graduate level, and a master's level. So, Telkom is currently I think on its 2nd or 3rd cycle of taking people, 30 or 40 people across the business, business leaders and sending them through these programmes to understand how digitalisation would enable the business of the future. So, they go on formal training and they come back and they have implemented that within the company. So, I think Telkom is... I am not sure if other companies are doing the same, but I know Telkom involve not just sending people for training but they actually sponsoring organisations that are setting up this.

IQ 1.2.3	What are the main drivers for digital transformation?
<p>Me: What are the main drivers for digital transformation?</p> <p>P10: So, I think a lot of companies at this point in time are at a crossroads where, you know, with the 4th industrial revolution and all the new technologies it brings in, companies need to re-invent themselves to remain relevant. So, a lot of the traditional ways of operating is now becoming obsolete. Their competitors are no longer in the vertical industry like in the past, because their competitors are now coming from different industries. So, for example in the Telco you are getting banks that now becoming Telco's, and vice versa Telco's becoming banks. So, that's fundamentally the need to innovate and to be relevant. That why companies are looking now at digital strategies and so forth.</p>	
IQ 1.3.1	What do you understand under the phrase digital transformation?
<p>Me: So, the aim of the study is to explore the factors that affect digital transformation in a Telco company and to what extent. So, my first question is, what do you understand under the phrase digital transformation?</p> <p>P10: So, my understanding of digital transformation is exploiting the latest digital technologies and practices to create a digital operating model whereby an organisation then can create new products and services as versus the traditional one, new business models in the way you engage with your customers and that in turn generates new revenue streams. So that is what I understand as digital transformation.</p>	
IQ 1.3.2	What challenges does the company face in term of organisational changes and organisational culture when driving digital transformation?
<p>Me: What challenges does the company face in terms of organisational changes and organisational culture when driving digital transformation?</p> <p>P10: So, I think, and I think this is a bit of a tricky question because you talk about organisational changes, the thing that pops into mind is people are going to lose their jobs, and I think you know, there has been some doomsday stories that... if you look on the internet, talk about AI, machine learning and all this comes as a package with digitalisation. So, the challenge is people are going to lose their jobs and machines are going to take it over. So, I think, the skillset the traditional skillset that companies typically poses and how we acquire those skillsets is fundamentally changing. You know there is a saying that says you either control the machine or the machine controls you going forward. So, we as an organisation we need to have the skillsets that enable these kinds of technologies, and I think the important thing; how do we take our people on that journey with us. So its no longer somebody needs to go to university and get this advance degree, that's probably fine, you know for your base degree, but I think organisations now need a cultural way... the employees are given an opportunity to learn, unlearn and relearn, because of the pace of change is happening that quickly. So, because the environment is moving that quickly, the organisational culture can't be one that is static. So, it needs to have support that new. You know, today you need to learn python, next day might be something different. So, we need to have a flexible culture, that "??", you know and creates that innovation platform for organisations to make their staff are always relevant.</p>	
IQ 1.3.3	What is the importance of cross-collaboration between IT and business?
<p>Me: What is the importance of cross-collaboration between IT and business?</p> <p>P10: That is the old question, even before digitalisation was relevant. I mean IT exists; the sole purpose of IT existing is to enable business. So, if whatever you are doing in IT is not enabling a business process or allowing business to create a new process or a new product, then you are doing technology for technology sake. So, IT and business alignment is critical, it has to be.... IT first needs to understand business strategy, one of the business imperatives and then understand...how am I then going to use the technology that I provide to enable business. So, if we don't have that alignment and that constant collaboration with business then understand where business is going to be, then we typically setup on this IT journey and we take 3 years to build a platform, and then we go back to business and say business your platform is ready, business has already moved on. So, we need to have that collaboration all the time, it must not be just a once-off thing, we've got your requirements we give you a solution in 12 months. It can't be like that, because like I said in this changing world, things change so quickly. So, if business direction change, we need to make sure that the systems we put down is nimble enough to change as well. So, it can't be this big monolithic system that takes years to build and it is hard to change its trajectory. Has to modular, it has to be quick to adapt to change, because business is never going to be static.</p> <p>Me: So, agility is very important.</p>	

<p>P10: Absolutely.</p> <p>Me: So, collaboration should be very important.</p> <p>P10: Absolutely. It needs to be, in fact, there needs to be a standing forum, maybe a weekly, bi-weekly basis between business and IT.</p>	
IQ 1.3.4	What is the company's strategy towards digital transformation?
<p>Me: What is the company's strategy towards digital transformation?</p> <p>P10: So, from a Telkom perspective digitalisation we are looking at two-fold. The first one is looking at our existing business processes and our existing practices, which are still relevant, and do we make them more efficient. That falls under the ambits of digital optimisation. So, how we do things better, things like automating business processes where it was led by intense how we can get the machine to do certain things and then on the second part of the strategy is then the digital transformation, then looking at how do we get into other areas. Telco's are fundamentally the building blocks if digitalisation. We provide the connectivity. So, it's then how far up the digital stack do want to play, at the end of the day, because you know, or do we just become the enabler to everyone else. So I guess, it depend on how much of the pie, and I think from a Telkom Group perspective we play in all the spheres of that landscape. With OpenServe providing connectivity then you know with the wholesale portion of the business, providing that connectivity to all licensed operators and then with the likes of consumer and enterprise BCX being able to provide solutions across that. So, I think it is very important for the company because that would determine how sustainable we are going in the future.</p>	
IQ 1.4.1	How do government and regulatory bodies affect the decision making of a digital transformation strategy?
<p>Me: How do government and regulatory bodies affect the decision making of digital transformation strategy?</p> <p>P10: So, in our case, our regulatory body is still ICASA, because we are obviously Telco. So, we still have to comply to certain of the ICASA guidelines. I think irrespective of the technologies you use, ICASA will guide then that mandate. So, in terms of the technologies that digital brings in, things like cloud, computing and stuff like that will come, come in to place I think where government and regulatory bodies have huge say is the policies they put down. One of the thinks like POPI, which is protection of personal information, we can't independently make a decision, that we going to use Amazon cloud who stores the information in eastern Europe and that does not comply to POPI regulations. So, as we implement the technology landscape, we still have to make sure that we comply with the regulatory bodies of our country.</p> <p>Me: So, again, how does it affect...your decision making?</p> <p>P10: So, for example as the example I gave you. So, when you chose a cloud provider, as an example, you need to make sure the host [is] in the country, or they host in a country that still satisfies the policy requirements that our regulatory bodies put down.</p>	
IQ 1.4.2	How does the company apply governance to ensure its digital strategy stays on track?
<p>Me: How does the company apply governance to ensure its digital strategy stays on track?</p> <p>P10: So, I think at this point, and I stand to be corrected as far as my knowledge is, there is talk of a digital transformation office been setup. But I think it is still at strategy level. So at this point in time because it is still part of the future strategy, there is no data, digital governance. But t is part of other...So we have IT governance streams, we data governance stream and digitalisation at the moment will be part of the technology that enables those. But there is no governance body called digital governance at this stage. Whether they will have one going forward, it seems it will be incorporated as part of our existing governance structure, needs to be seen.</p>	
IQ 1.4.3	How important is digital transformation to the company?
<p>Me: You are actually started answering my next question. How important is digital transformation to the company?</p> <p>P10: I think I touched it briefly in the previous answer. It actually determines our relevance in the market. If we are not able to transform and become relevant then we will become obsolete. So, we need to remain relevant, we provide some of the key building blocks of enabling digitalisation, for not just our company but being the largest fixed-line Telco in South Africa. Our success actually opens up the entire landscape in the South African context. So, I think it is very, very important, not just from a company sustainability but also to sustain the market and elimination some of the social-economic challenges that</p>	

we face as a country. Because digitalisation enables the 4th industrial revolution. If we make connectivity and digitalisation available across the spectrum from the country perspective, we can see the country growing.

IQ 1.4.4 **How does the company use new technologies to enhance its value creation?**

Me: Lastly, how does the company use new technologies to enhance its value creation?

P10: You can create value two-fold. In the first, you use these technologies to create additional revenue streams, new business operating models for new opportunities. So that then becomes an entirely new revenue stream. So, one of the things we have done now is streaming. So, if you look at the streaming platform with the LIT boxes and everything, that now is creating a new revenue stream. So that is the one example of value creation. With these new digital technologies bring you these new capabilities, but what it also can do is on your existing legacy it allows you to optimise, it allows you to streamline your business using these technologies to speed up delivery to your customers. For your value creation in aspect is then, you are able to reduce cost, you have quicker time to serve your customer and that creates the customer experience is the value, you know, the value in that you cannot quantify it. Because once you have a good customer experience the recommendations from that customer will then, you know, will make your business grow quite significantly.

Me: Ok, thank you very much.

APPENDIX D11: INTERVIEW TRANSCRIPTIONS P11

IQ 1.1.1	What impact do new technologies (such as social media, IM, AI, data analytics or Big Data, IoT) have on business improvement in the company?
<p>Me: What impact do new technologies like social media, IM, AI, data analytics or Big Data and IoT have on business improvement in the company?</p> <p>P11: So, I think, you know, I think the guys in consumer spend a lot of time looking at social media reports in order to see what customers are unhappy with, what some of the issues are around that. So I think that is used as an input into business improvement. I think we are probably not as good as we could be in terms of taking that data and translating it into fixes, but I think the information is there.</p> <p>IM I think is, you know both a threat to us as a business but also is quite a good way of interacting between people but I think it is done more informally than formally, so some companies are been at use IM in a formal sense. Like on Skype they will be messaging people from their computers. I think we tent to do it in a more informal sense outside the system. AI has been obviously used in the call centres to try and improve self-service, and that goes together with data analytics and Big Data. Those three to me are a combination of things. I think we are starting to use it, but I would say the impact is still relatively small, inside Telkom. Those got great potential.</p>	
IQ 1.1.2	What role do digital technologies play in the company's digital transformation strategy to achieve its business goals?
<p>Me: What role do digital technologies play in the company's digital transformation strategy to achieve its business goals?</p> <p>P11: I am not sure what you want here. Do you want some examples, of them? I think...</p> <p>Me: The specific role that technologies play in the company.</p> <p>P11: So, I think we have covered it to some extent, I mean these... these digital... I mean you basically want a toolbox. You want to figure out what you want to do for the customer, and these technologies form tools in a toolbox in order to deliver on that. So I think it is more a case of ... of starting of what you want to achieve from a customer perspective and then apply the right thing rather than saying right, now I have an AI solution where can I go and enforce it on the business.</p> <p>I don't know if that makes sense.</p> <p>Me: Yes, it does.</p>	
IQ 1.1.3	What technology factors play a role in digital transformation strategies of the company?
<p>Me: What technology factors play a role in digital transformation strategy of the company?</p> <p>P11: So, I think the... I think the biggest issue is how to integrate a whole lot of different systems that we have, both from a legacy point of view, which we [are] going to discuss a bit more at point number 11. But I think, I think the issue there, obviously we can talk about what they are, I mean its cloud, AI and Big Data and IoT. But... I just do not know quite what you mean by technology factors.</p> <p>Me: It is like customer experience, this is one; the others are internal. How do business processes need to change because of the technologies and the digital technologies, out there? The customer experience and probably your business models, in some cases business models. So, it impacts those things.</p> <p>P11: To me, one of the technology factors that is quite big, is that fact that we have quite a diverse range of customers, and some of them are much better adopters of digital technology then others, so, we don't have the actual luxury of moving everything to a digital platform. We need to have a strategy of enabling things to be digital but presenting some of it through a person to a customer and some of it directly to the end-user. And I think that is one of the more difficult things that we have to get right, is catering for our diverse range of customers. If you think about the guys doing like an Uber or an Amazon, they self-select, ok you, if you are not digital you don't go and order an Uber; you phone for a taxi, but having an existing base of customers that we are trying to change, and so managing that change with our customers, It think is quite a big issue.</p>	
IQ 1.1.4	What is the impact of legacy systems and technology on the digital transformation drive?

Me: What is the impact of legacy systems and technology on the digital transformation drive?	
P11: I think this is massive, and I am not sure if anybody in the company completely understands how to deal with this end-to-end across the company. Maybe I am wrong, but I think marrying together what we have as legacy systems and what we actually need to deliver to our customers, across the different business units, I think it is quite a significant challenge. I think this is probably If I think about the NGN project, from what I have heard about that, that the complexity involved in that is massive, and I think the other problem that we have is coming down to the processes. We need to actually streamline the way that we do things in order to implement some of this digital transformation, and I think, I think sometimes we don't, There are very few people that understand those processes end to end, so, I think that is huge.	
IQ 1.2.1	What role does Management play to drive the digital transformation of the company?
Me: What role does Management play to drive the digital transformation of the company?	
P11: I think they have a huge role to play, I think it is in two levels: to provide the right kind of resources, you know the time, the Capex, and the training to support it. But I also think they really need to help focus the organisation on certain key digital transformation perlatives [sic]. So, I think we need to be very careful, that we not trying to touch digital all over the place, that we working on an end-to-end roadmap, and that we really trying to get one thing working really well, for the customer, and then move on to the next thing. At the moment, it seems little bit uncoordinated and disparate across the organisation, and I think there's a risk of duplication in some senses, and maybe a lack of alignment in terms of the underlying architecture, that we might end up using.	
IQ 1.2.2	What efforts have been made to empower employees to drive the digital transformation of the company in terms of reskilling, development, and way of work?
Me: What efforts have been made to empower employees to drive the digital transformation of the company in terms of reskilling, development, and way of work?	
P11: So I think there are a few different programmes on the go, I think, I saw there is a digital leadership programme that is taking place at the moment, where they are trying to get some of the, it looks like some of the Upper Management a bit more about what digital transformation involves and how to drive that. I am not sure how much is happening through the different BUs in terms of reskilling people who might be impacted by things like automation and things like that. I have not seen a huge amount of that, but I do think we are busy with some initiatives to see how we need change the way of working in order to provide, to things better for our customers and to use digital as the key enabler in order to do that.	
IQ 1.2.3	What are the main drivers for digital transformation?
Me: What are the main drivers for digital transformation?	
P11: So, I think, one of the...I think the biggest driver from a customer perspective rather than internal, and so that's to really meet the digital expectation, so increasingly as we do more things that are digital, so if we order things online from amazon and things like that. If we have an expectation of how easy things can be and then traditional companies need to try and meet that expectations in terms of providing a service on a digital platform.	
Me: And internally?	
P11: So internally, I think it's ... it's got two legs. The one is to improve the employee experience. So [it is] very hard for a company to prove great customer experience if the employee experience is not great. If the internal people are frustrated by the systems and processes then it is very hard for them to bring it to the front. So that's the one, is employee experience, and the second one is, internal efficiencies, improving turnaround times and getting things to move faster, to try and take out cost. Cost and speed, I guess is the two big efficiency drivers.	
IQ 1.3.1	What do you understand under the phrase digital transformation?
Me: So, the aim of the study is to explore the factors that affect digital transformation in a telecommunications company and to what extent. To that, my first question would be, what do you understand under the phrase digital transformation?	
P11: So, I think, I guess this phrase digital transformation is a lot around becoming more like Uber, Netflix's and ...or Amazon. So those companies have started with a digital first strategy, and they have then set the benchmark for normal traditional companies, who have them to change the way which they have done business traditionally, in order to be more like those modern digital companies. So, at a high level that is to me what it's about. So digital for me is like things like data AI analytics, its cloud, its IoT,	

it's a whole lot of technologies that make up the digital landscape. And then, obviously there is an internal aspect to it, so how do companies change the way that they do business internally to make themselves digital, and then, probably the most important part how do they present a digital face to the customer in order to really to improve the customer experience. So, it is to give the customers a more visibility into what's going on, to enable self-service, it's to enable for to be easier for the customer, faster, quicker... So the whole of those features that become important to give your customers. This is kind of how I see it. So, then it is a change transformation, so it's really trying to take all the legacy physical ways of doing things, the paper ways, you know the things that involve a lot of human interaction, and trying to automate that., and to put it into a digital format.

IQ 1.3.2 What challenges does the company face in term of organisational changes and organisational culture when driving digital transformation?

Me: What are the challenges? What challenges does the company face in terms of organisational changes and organisational culture when driving digital transformation?

P11: So I think the one challenge we have at the moment is the... and I don't think its... I am not saying it is impossible to fix, but the structure that we have, the five separate BUs, with a fairly high level of independence, I think is meant that we don't easily collaborate across BUs, in order to fix end-to-end processes and to digitise end-to-end. So, I think we have to re-look our ways of working across BUs to get that right, with [a] customer-centric hat, in order to do that. So I think we need to be ... so it's a culture to become more customer-centric. I think is the most important thing that needs to drive our digital transformation. If we are just doing it from a technology point of view we probably won't succeed.

IQ 1.3.3 What is the importance of cross-collaboration between IT and business?

Me: What is the importance of cross-collaboration between IT and business?

P11: So, I think it is extremely important, I think it has to be led by business; I think business needs to be defining what it is they want to create for the customer. And then IT needs to be the enabler in order to do that. I think it is very dangerous if this gets lead to strongly by IT. I think that will be... will create a very difficult situation there.

IQ 1.3.4 What is the company's strategy towards digital transformation?

Me: What is the company's strategy towards digital transformation?

P11: So, this is what is Telkom Group's strategy towards it? I think it is a very good question. It's not completely clear to me what that is. I think it is still being defined and you might know more than I do, and maybe you can tell me afterwards. But, I think, when I last spoke to [name deleted], he was still formulating his strategy for that, I am not sure if he since landed it. But I think there are components that we can see that are evident. But I don't know already defined what we to achieve. So we have things around customer experience that we are trying to get right, we have some things that want to do around using more data, more analytics. We have some things around building platforms for our customers, for small-medium businesses and for our consumers we have some things around putting chatbots into the service environment trying to put online portals in place to make it easier for customers. So, I think there is a broad theme but I don't know if it is really got to pulled into a real strategy. Strategy to me is about choices, and at the moment we seemed to be... I don't see that we consciously deciding not to do anything. It feels like we just grabbing at a whole lot... kind of topics.

IQ 1.4.1 How do government and regulatory bodies affect the decision making of a digital transformation strategy?

Me: How do government and regulatory bodies affect the decision making of a digital transformation strategy?

P11: So, I think there are different parts to this. I think the one part are from a privacy point of view, we need to obviously making sure that we comply with all the laws around POPI and protection of information and privacy because one of the things you tend to drive with a digital transformation is the sharing of data. And so we need to make sure that are compliant regarding that. I don't... maybe I am wrong, but I don't see government necessarily impacting the digital transformation strategy of companies, as long as they stick to the main laws around, as I said data storage and privacy and things like that. So I am not seeing, and I didn't think about it for too long, I didn't see any main impact of government on that. If any, government would probably be slightly late to the party and there would be an absence of regulations around some of these digital concepts, and so it probably feels like the government and regulatory bodies aren't going to drive this, but come afterwards and try and control it after its already happened.

IQ 1.4.2	How does the company apply governance to ensure its digital strategy stays on track?
<p>Me: How does the company apply governance to ensure its digital strategy stays on track?</p> <p>P11: So, I think this is currently owned through the group CIO office, Through [name deleted] and [name deleted], but I am not sure to what extent they have visibility of all the digital programmes that are taking place across the company. So I think, I'm hoping that the governance is sitting in their area at the moment.</p>	
IQ 1.4.3	How important is digital transformation to the company?
<p>Me: How important is digital transformation to the company?</p> <p>P11: Look, I think it is critical. I think, I think we will become increasingly irrelevant if we can't compete with our direct competitors like MTN, Vodacom on a digital level and they both have very strong ambitions in that area. Then secondly, we need to be able to compete with the over the top players like WhatsApp, Skype, Netflix and everybody else in terms of owning the customer. So if we do not get the digital transformation right well become a purely wholesale player.</p>	
IQ 1.4.4	How does the company use new technologies to enhance its value creation?
<p>Me: And lastly, how does the company use new technologies to enhance its value creation?</p> <p>P11: So, I think there are a number of different areas that have been driven and we touch on a view of those, the one is using the... building out platform businesses, so we are busy with platform and small-medium business, another platform for consumer which is going to make a lot of use of data and insights in order to target the right customer segments with the right kind of office. Obviously in the CVM side, the customer value management side, inside consumer, they use a lot of analytics to try and figure out who they going to target with pre-paid office based on how often the guys recharge and how often they... and to what level they recharge. So, I think we have seen pockets of it, there is an analytics team inside BCX that's trying to move across the centre that's trying to use data and analytics a lot more. I think we going to see more products and service that are delivered on a digital basis for example if we get into things like Fintech and insurance and things like that. Those increasing ling will more base on digital technologies to get them right. And obviously another big area is obviously customer service, you know using digital technologies for self-help, self-service portals and then playing around with using AI and bots and things like that and to try and automate the query resolution and things like that. So, I think we are creating value both on the sale side and the service side and different area in the business.</p> <p>Me: Ok Thank you very much.</p>	

APPENDIX D12: INTERVIEW TRANSCRIPTIONS P12

IQ 1.1.1	What impact do new technologies (such as social media, IM, AI, data analytics or Big Data, IoT) have on business improvement in the company?
<p>Me: What impact do new technologies like social media, IM, AI, data analytics and Big Data, IoT have on business improvement in the company?</p> <p>P12: It does have a huge impact, ok. All of that, well in different ways because, in order to retain your customers, you will need all of those things, you need to implement and use it in order to retain your customers. You need to do analytics to understand where you are going to have a network failure even before it happens. You need to understand using analytics to tell to warn you even before the customer churn, this customer is likely to churn. So it is very important that you use these technologies in interacting with your customers and to improve the services that you actually provide to them, so, they are very important.</p>	
IQ 1.1.2	What role do digital technologies play in the company's digital transformation strategy to achieve its business goals?
<p>Me: What role do digital technologies play in the company's digital transformation strategy to achieve its business goals?</p> <p>P12: Ja Well, I am not sure if you are asking what should it or what does it? Ok, I think it should play a role. It obviously...it should play a big role. Sometimes however there may be a lag because... and I will give you an example. We have data analytics, we have a team, but they are small, so, we do use them to improve business performance, and we do use them to drive digital transformation initiatives. But probably not at the scale that you want to do it. So, all of those things, like you said, AI... that should be part of your digital transformation. It should be part. If you ask me, have we really used it? The answer is no.</p> <p>Me: Are we there yet?</p> <p>P12: The answer is no. Do we want? Yes, but it is a journey again. How many people in Telkom do you know that are experts or knowledgeable around AI? You have to go and look hard. If you get maybe 1 or 2 people ... or 3 people, you would be lucky, so, it does play an important role.</p>	
IQ 1.1.3	What technology factors play a role in digital transformation strategies of the company?
<p>Me: What technology factors play a role in the digital transformation strategy of the company?</p> <p>P12: What do you mean by technology factors?</p> <p>Me: Technology factors could be like availability of technology, the cost of the technology, whether the implementation... how easy it is to implement.</p> <p>P12: So obviously, I mean, there is... I would call apply and demand, so, on the demand side, I spoke about customers that want to interact with you in a digital manner, and on the supply side, and I guess this is the technology factors, there are obviously a lot of things that you need to consider. Is the technology readily available? Are there standards? Are there standards set for example 5G? So, you know, there are still people experimenting with it, but unless you have a standard that is internationally agreed, the technology is not as useful as it could be. There are things around availability of the technology, and I will give you an example, this whole debate between the US and China about Huawei, and the use of Huawei equipment. That could set you back many years, if a decision is to be made around the availability of the technology is important and your ability to use it. So obviously, it may be available, even if it is available, coming back to your question about regulators; so it is available but maybe the regulators say no, we do not want you to use it because of security risk, national security. Now there they play a role all of a sudden. So, all of these things, but obviously you want technology to be available, to be available at lowest cost, in order for you to implement it.</p>	
IQ 1.1.4	What is the impact of legacy systems and technology on the digital transformation drive?
<p>Me: What is the impact of legacy systems and technologies on the digital transformation drive? I know you have touched on that.</p> <p>P12: It is a huge constraint, it is a huge inhibitor, because on a... and I am not even going on a practical level. Ok, but if you just think about it. If you have invested, I am just saying 5 billion in legacy and you</p>	

want to say, I want to move to new technology that will enable digital transformation, in essence you have to write off a 5-billion-rand investment. How do you explain that to your investors? Now let us say the company, I am just giving an example. Let us say the company is worth 40 billion rand; so, the company is worth 40 billion rand and you are going to write off 5 billion rand, of legacy investment. So, there are huge considerations, financial consideration, there are people considerations because legacy systems are maintained by “legacy” people, people with skills that can maintain those legacy, so there is the people component. There is a cost component to it, so, the impact to your question is, it has a huge impact. It is probably one of the big inhibitors for companies to embrace digital transformation.

IQ 1.2.1 | What role does Management play to drive the digital transformation of the company?

Me: What role does Management play to drive digital transformation of the company?

P12: They play a huge role. Unless Management embraces it, and believes in it, and want to do it, it is not going to happen, so, you need Management. That is, the role of Management is to drive digital transformation and if at management or leadership level, if they have not made the switch, ok then it will not happen, so, Management needs to drive it.

IQ 1.2.2 | What efforts have been made to empower employees to drive the digital transformation of the company in terms of reskilling, development, and way of work?

Me: What efforts have been made to empower employees to drive the digital transformation of the company, in terms of reskilling, development, and way of work?

P12: So we have done varies efforts. Ok, we have done varies efforts, especially around analytics, data analytics and stuff like that. I mean the company supports a couple of things in terms of, you know, we think code, where we take on 300 interns to kind of skill them to be able to perform in a digital world. Is it enough? No. The company is 20 000 people, how do you reskill 20 000 people. You know, you don't do it very quickly. So, efforts are being made, it goes beyond the company, for example our company is leading a conversation about the 4th industrial revolution. Outside of the company, we create platforms where we collaborate with universities, with WITS as an example, ok, to put this on the agenda for government; we put it on the agenda for business and stuff like that. So, we have made efforts, but it's a.... it's the normal stuff, normal training stuff, skilling people, giving them the opportunities to get exposure, but it is going to take time.

IQ 1.2.3 | What are the main drivers for digital transformation?

Me: What are the main drivers for digital transformation?

P12: Obviously, a lot of stuff that drives it. I want to focus on the customer. I think customers want to interact with the company 24/7, 365, doesn't matter where they are. Ok. So, customer expectations have changed. You do not want to go into a shop anymore. It is like, I have not gone to a bank, I don't know for how long. I cannot remember when I have been to a physical bank, ok, and the equivalent of that in the Telco space, is customers don't want to go to shop to interact with you. They want to buy your services from you on a digital platform. And it must be available like I said 24/7 365, and anywhere, everywhere. Ok, so, if the customer is sitting in Keetmanshoop, as an example, and they want to buy airtime, or they want to change or port their number or they want to add to their portfolio, they just want to go online to be able to do that. So part of that, is customer-driven, part of it is also obviously technology-driven, in the sense that as technology evolves you are able now instead of putting a switch ok which takes a floor like this in the old days, now a switch is like a small computer. So that also drives the ability of us to systems and technology that can help you with digital transformation. Another part is cost efficiencies. I think that is a very important point, so, a lot of Telcos go digital because it is just more cost-efficient. That is how you take operational cost out. Again, in the old days if you wanted to do network provision, you would have to send out a technician to physically go and do something. In the new world it will all be remotely done, if you have SDN and all of those things, so, I think the main drive is customer expectation, technology development and really cost efficiencies.

IQ 1.3.1 | What do you understand under the phrase digital transformation?

Me: As you know, the aim of the study is to explore the factors that affect digital transformation in a Telco company and to what extent it does; so, what I would like to know is, what do you understand under the phrase digital transformation?

P12: So, [name deleted] ja, I think it is a broad concept and for a lot of people it means different things. I will give you my view of digital transformation and I am going to give it to you because you said a telecommunications company. Ok, because it may be different. A digital transformation journey I think depending on the industry and the type of company it may have a different meaning. So, for a Telco I

think first of all it means in a really enabling customers to interact with the company in a digital way. OK. So, part of that includes, looking at processes, primarily processes but it would also impact on systems and the core of the business. In other words that I am saying is so typically Telco's when they talk about digital transformation they say ok, the way that we provide service to the customer and the way we interact with the customer is in a digital manner its more electronic, its more online as oppose to for example going to a shop where you apply. Ok. So typically, old-world you go to a shop and there is a lot of paperwork. Ok. In a digital transformation, if it has been successful, the customer will go online, and they will get all they need served in a digital manner, so, it will basically be electronic, electronically. Don't want to go into another part of it, but for Telco's, we talk about digital transformation, if you think about legacy, from manual exchanges to digital exchanges, there is also a component where the networks must become more digital and that would include things like, software-defined networks, network virtualisation and stuff like that. So, it's more a technical component in the way that you provision the network, but I think for most people and for most Telco's if you talk about digital transformation it's more the way we interact with customers and the way we run the business. For example, this would have been electronically. You would give me an Ipad and would have just ticked a few things.

IQ 1.3.2	What challenges does the company face in term of organisational changes and organisational culture when driving digital transformation?
-----------------	--

Me: What challenges does the company face in terms of organisational changes and organisational culture when driving digital transformation?

P12: Well, how much time do you have? Because this is a... the challenges as you would know is enormous. Ok.

Me: If you can highlight just a few?

P12: So, ja, I think you have the word culture in there, ok. To do digital transformation, you need a cultural change. I don't think you can. They are like twins. They go together. You cannot really fully embed digital transformation without doing the cultural change, and changing, or changing the culture of a company you know, people can write PhDs of what is required to do that, but there is inertia. People see digital transformation, taking them out of their comfort zone; they see that as a threat, they see it as a risk. Ok. I can give you one or two examples. If you digitalise HR, then you probably do not need an HR consultant, because there are no forms attached to it, the... I didn't mention it earlier on, but part of a digital transformation, if you see the end state of that, you are talking about using robotics, you are talking about using AI, you are talking about Big Data and all of those things. I did not mention it earlier on when you asked me what do I understand. That is the end state, and in that end state, you don't need a HR person, you probably don't need a financial person, you probably don't need a strategy person. Ok. Because in the digital transformation in the fullness of time, it means everything is digital, and is driven by Big Data and AI, so, there is a people component that are very important and there is inertia. People do not necessarily want to embrace it, ok. There is a skills component, so, culture is one part, you know, ok, we have to change, and people don't like change. They see this as a risk for employment. There is a skills component, ok, even if people say yes, we like it, we want to do it, ok, but we don't have the skills. So, if you think about data analytics team reporting to me, with the change in the last two months. Now if I listen to these youngsters, I mean, wish I could do coding but I can't, but I think I am too old to learn. You know, the point I just want to make, it's a new skillset that you have to develop, and a lot of people don't have the aptitude or attitude to do it. So these are some challenges. There are also some challenges around that I would call legacy systems. So even if you say we want to embrace digital transformation, which we have said, we want to do, the problem is that some of our systems and processes are legacy. You cannot just say, ok we are... want to go digital. So, our billing systems come our legacy, billions, I am talking about billions of Rand have been invested in that. And to change that to state-of-the-art new digital systems and processes cost you billions again. And time...and skills that you don't have, so, a lot of the challenges that the company face is really, I see is your next point... is really around systems, which is basically IT. Our current processes, the way we do business, run the business is based on a manual world. So, if you say you want to go digital, you actually want to change your processes, ok, and again, its time, its effort, it is kind off re-engineering your whole business, and those just a few of the challenges.

IQ 1.3.3	What is the importance of cross-collaboration between IT and business?
-----------------	---

Me: What is the importance of cross-collaboration between IT and business?	
P12: Ja, it is, as just said now, it is very important. You cannot have a digital business unless it is supported by IT. Maybe just a comment on that – it is maybe just important, people think, if you want to go digital it should be IT lead, and that would be wrong, so, it should be business lead, IT should just be seen as the enabler. So, you don't want IT to determine the product road map, you don't want IT to determine your channels, you don't want IT to determine your processes, you still want business to run with those things and IT to support and enable that, if you do it the other way around...	
Me: And guidance in terms of technology.	
P12: Ja, they should say we have these technologies, this is what we can do, blah, blah, blah, but the only point I am trying to make it should really be business lead.	
IQ 1.3.4	What is the company's strategy towards digital transformation?
P12: Ja, So we embrace it, we believe that we have to do that, we believe if we do not do it you will be left behind, so, we believe it is strategically... it is important to do it. Of course, it is another question in terms of how successful you are, you know, but when you say, what is our strategy, yes, we believe it is important and we will do it.	
IQ 1.4.1	How do government and regulatory bodies affect the decision making of a digital transformation strategy?
Me: How do government and regulatory bodies affect the decision making of a digital transformation strategy?	
P12: They do affect, so the answer is they do affect. If they do not create a regulatory world that is supportive of a digital society, ok, then it is very difficult to embrace and to function in that world. If regulations are out dated and build on legacy old school stuff, then you cannot, and I will give you two or three examples. For example, if regulatory bodies protect labour, it is very difficult to make this leap from, what I would call a manual world into a digital world because, they do not allow you to take people out. So, if you cannot take people out, you know what I am saying, how do you go digital without taking people out, because that is the one thing. Things like spectrum, ok, is a critical enabler. If spectrum is not available, ok, then it is difficult to make this transition. Thing like investments, to move from into a digital world you have to make significant investments. If regulatory authorities don't give your certainty, that when you make those investments, you will not be able to recover it, ok, then you are hesitant to make those investments.	
IQ 1.4.2	How does the company apply governance to ensure its digital strategy stays on track?
Me: How does the company apply governance to ensure its digital strategy stays on track?	
P12: So there is a ... the Exco, it is on the agenda of the Exco. Ok, so, there is governance associated with it. There are also... it is embedded in the business plan, so, there is a governance forum that helps with it, and make sure that we kind off achieve it. There is a ... for example, Telkom has a technology forum, that supposedly, kind of things about ... our digital strategy, and how we take things forward. So, there is governance around it, but the point I am trying to make is, your digital strategy should be embedded in almost your business as usual, and therefore there are governance structures that support that. You know, as part of BCX transformation, I mean they report into Exco, there is monthly meetings on operational reviews, performance reviews, how far are you, are you on track, etc., etc. So we use, we use, if I can put it like that, if I can put it like that, pretty much the existing governance structures, to make sure that the strategy stays on track..... There are not really, really separate governance structures, it is embedded in the business.	
Me: So, is it embedded in the vision of the company?	
P12: Ja, it is embedded in the vision of the company, our vision statement says to enable our customers to connect to a better life, and that is all about digital transformation, and that vision is supported by five strategic pillars. Those five strategic pillars are obviously monitored because that is part of business performance.	
IQ 1.4.3	How important is digital transformation to the company?
Me: How important is digital transformation to the company?	
P12: I think it builds on question three, I mean if your strategy, if you are embracing digital transformation you will only do it if [you] think it is important, or else you will not do it. So, we believe it is important and again the two main reasons if I can isolate them, the first one is, it is important, because, in order for you to retain customers, you will have to do it. Customers want to interact digitally with you, especially the	

youth. Some of the, let's call it older generation people like myself, ok I am not sure I fall in that category; some people are still ok to interact in a personal way or go to a shop, but the youth don't want, they want everything to be online. So, because of customer expectations are changing you have to do it and also like I said and I do not want to underplay it, there are huge cost benefits in doing it, and for you to stay relevant in the future and to be competitive. If you don't do it, your cost structure will be higher, which means you will not be able to compete with other Telcos that are doing it.

IQ 1.4.4 | How does the company use new technologies to enhance its value creation?

Me: And lastly, how does the company use new technologies to enhance its value creations?

P12: Well, what do you mean by value creation? It could mean different thing for different people. So, value creation for the employees, is different to value creation for customers versus shareholders. Ok, but I am trying to bring those things together, to say, obviously you... and that is what we are trying to do, we try to use technology to improve the lives of our customers. So, that is value creation for them, that, if they can interact with us in a more digital way. If the products that we give them are digital products, it makes their lives better. If we provide them with content, if we provide them with financial services, which is our "ambition", and having all of this seamlessly done, the way that we package products and converging products. Ok you do not have to buy things separately from mobile, as an example, so, we are trying to provide them with... to improve their lives. For employees the same thing, you know. You want to create a digital workplace that will improve the lives of our employees, but will also make the company sustainable in the medium to long-term. And the same thing then for our shareholders. Ok. Because using these technologies AI improve the business. If the business is improved, and we make more money, we create value for shareholders and for the society, because if you have a sustainable business, ok, then you drive the economy. So ja, we do use these technologies. Again, are we where we should be, the answer is no, not yet. But you know, it's a journey, so, I think maybe just to end the conversation. It is maybe important to note that digital transformation does not really have an end day. It is a journey.

Me: It is a journey, exactly.

P12: And, it's you continue on this journey and even if we get to a day that we have a lot of AI, ok, there will be new technologies, new things, maybe implant employees, ok, so, it is not a thing that will end. We will always be challenged.

Me: Yes, technologies can change, but your transformation is like you said, a journey. It is just new technologies that you would apply in future... whenever, if the technology is suited for your business, which is also important.

P12: Absolutely. Absolutely.

Me: Thank you for your time.

APPENDIX D13: INTERVIEW TRANSCRIPTIONS P13

IQ 1.1.1	What impact do new technologies (such as social media, IM, AI, data analytics or Big Data, IoT) have on business improvement in the company?
<p>Me: What impact do new technology like social media, instant messaging, artificial intelligence, data analytics, Big Data, and IoT have on business improvement of the company?</p> <p>P13: It has a big impact on the business improvement of the company. I think these technologies put a power in the hand of the consumer who often can be irresponsible with that power for example, when the complaint on social media about bad service instead of getting in touch of the service provider obviously if you put down a digital transformation to make that getting in touch easier, maybe integrating to social media, then you would lesson that impact a little bit, so you've got to monitor social media, and it is a new business function that must be catered for. In other spaces, the impact is that those players like social media they are global and improving the business must change from implementations, you know instead of implementing your own digital transformation for social you should rather partner or collaborate with those global players. Many businesses think they can implement [a] digital platform. It is quite a big thing to implement that kind of platform, only to realise much later that they do not get a desired result from it all, they could have done much more at a lower cost by simply partnering with the global players. So again, business improvement must change to consider additional outlets or approaches to improvement, business improvement must be just what can we do internally, you have to look what is the big technologies outside and could you potentially partner with those people. I think even lately Microsoft coming with thing to help telecoms providers improve their telecoms business, in fact they become a telecoms business themselves so all of these different industries that was separate is kind of the lines get blurry with digital transformation.</p>	
IQ 1.1.2	What role do digital technologies play in the company's digital transformation strategy to achieve its business goals?
<p>Me: What role do digital technologies play in the company digital transformation strategy to achieve its business goals?</p> <p>P13: I personally think the terms use with many IT concepts are often very confusing even to the IT specialist, so like digital technologies, digital transformation, cloud, those are some of the words, and I have seen that the word digital is slab in front of everything. So, you can take your application functions and you add digital in front of it and now suddenly they are digital technology, so for me it is actually very confusing to do that. Maybe as architect or strategist, we need to move the word digital and cloud from our vocabulary so that we can actually deal with the real things. Even cloud your infrastructure is a service platform, software is a service they totally different things, and I've seen that many people sometimes just put the work digital in front of it, and now suddenly it is a digital thing, but they did not really understand what is behind it. To answer the question, any type of technology can be used for a digital transformation; it is not always just specific types of technologies. However, there are new technologies like social media, internet of things, Big Data, small data, connectivity, web, your mobile apps, robotics, your global digital business platforms, etc. that significantly lead towards a sometimes-involuntary digital transformation. But is not limited to digital technologies only. What is it any case, or IT is digital? It is how you apply that information technology in a business context that makes the business digital. So, digital technology I think is sometimes a funny word. It is about using any type of technology to make the business better. And we can also think about it this way, many companies have undergone digital transformation long before the concept was even coined. So, like implementation robotics in manufacturing isn't always a kind of digital transformation in itself, and digital transformation the word doesn't really exist at that time, so they took standard business functions and then apply technology to it to make it better, faster, cheaper. So that can also be consider a type of digital transformation. Now it is just more pervasive and it is so much easier to do with the technologies. Everybody is connected, so it is much easier to implement. Imagine trying to get someone to use a portal, if nobody had access to internet or nobody have a smartphone, it would be difficult to get them. It would be easier for them to walk into a shop, but now with other technologies having involved like your connectivity, your smartphones, everybody [are] using technology in some way and being actually skilled with it, this thing become easier to implement for businesses now, so, it's kind of timing thing that lends to this time being at digital transformation.</p>	
IQ 1.1.3	What technology factors play a role in digital transformation strategies of the company?

Me: What technology factors play a role in digital transformation strategy of the company?	
<p>P13: Like I already mentioned, the connectivity, smartphones, people's usage of the technologies, I think actually the technology interfaces that was created through web and smart phone and all of that, made it now possible to implement, so that definitely plays a role in digital transformation. But we also look at vendor upgrades and the vendor roadmaps, cloud implementation, and the resulting ease of implementation that comes with it. So, the roadmaps amongst all vendors is in some way to go to some kind of subscription model take it to the cloud and they give you a seamless type of experience. So that would make it easier for business to transform or migrate to some kind of digital or do some kind digital transformation that improve the business. And like I say sometimes it is involuntary, it wasn't thought about the business at that time but with the technology upgrades that came, it is just an opportunity that became available. Still it must be taken with care and thought and must be planned properly because digital transformation is not just about the technology, it is about are you do the organisation change management are you think about your business, rather than the technology as well. We must also think that digital transformation can also be disruptive in one way or another, even to the economy in some cases, and it must be approached with care. You have to think about legal aspects, sometimes you replace jobs through digital transformation, so you have to think about the legal implications or labour implementation of doing a digital transformation, you have to probably reskill people to do something else, or so on or so on. If you look at all the TDS stores that closed for Telkom, because we have portals now that took over the function that had quite a big impact on jobs and people that have to move around. So, a well-balanced approach is to be considered and often the implementation stall to consider the impact of business actors, the business processes, the functions, the business interfaces through which the technology is experienced and the general social responsibility of the company.</p>	
IQ 1.1.4	What is the impact of legacy systems and technology on the digital transformation drive?
Me: What is the impact of legacy systems and technologies on the digital transformation drive?	
<p>P13: Well, for me I would like to say, legacy systems have no impact, to make it simple. I know it is a radical stance. But digital transformation mostly augments legacy systems and technologies, and in some cases, it results in the replacement of a legacy system or technology, but with the advent of new middleware and implementation approaches it should become almost insignificant, because it is very easy to integrate to your legacy systems. It is very easy to dev ops [sic] and handle multiple streams, one where systems evolve slower, and another space where systems evolve faster. Those concepts are known now if it not known, it would not have a big impact but know it's known that spaces faster evolves spaces slower [sic]. So, you can plan for it; so, the impact should not be that significant. What is significant is to change the thinking of the people from old type of technology thinking, to new type of technology thinking and further convincing the Chief Financial Officer that the cost of this IT will increase and why it is beneficial in the long-run, so that is kind of the difficult thing to change. Legacy thinking vs. new thinking instead of the system. System for me is the easy part.</p>	
IQ 1.2.1	What role does Management play to drive the digital transformation of the company?
Me: What role does Management play to drive the digital transformation of the company?	
<p>P13: Ok, so I guess the question here is in the context of after the strategy for a specific domain has been rectified; so, once we have decided on a domain and thinking of digital transformation there, and what management role is in that context, is that what we kind of look at?</p> <p>Me: It's global</p> <p>P13: Global, so, the role of Management to drive digital transformation is very valuable. However, I don't think most general managers are skilled to drive digital transformation. They [are] still skilled in managing old type of support in systems implementation. And also, the other thing is, if you are in a domain, if you are a manager, or management in a domain is being digitally transformed, this could be a roadblock for digital transformation, because Management would like to protect people and make sure the business is still functioning as it used to function. KPI's actually needs to change completely, how your management performance of Management needs to change before they will actually be able to provide sufficient value for the digital transformation. So, I think for now, since it is still new and we still trying to figure out exactly what roles they should play. I would rather prefer to rely on organisational change managers to come in and support digital transformation rather relying on general management to support the digital transformation. I think there might be issues therefrom a management perspective.</p>	
IQ 1.2.2	What efforts have been made to empower employees to drive the digital transformation of the company in terms of reskilling, development, and way of work?

Me: What efforts have been made to empower employees to drive the digital transformation of the company in terms of reskilling, development, and way of work?	
P13: I think at this stage very little, and I think it is still in an evolving space, I do not think HR has probability if you ask an HR manager what does he think of digital transformation, he probability [does] not give the right answers. So, there is still not enough skilling and empowering for digital transformation. We still rely very much on doing research and getting consulting firms to provide us with some information. Sometimes just using general common sense, but at this point there is no specific drive to improve for digital transformation. It is sometimes self – you go out and do the research yourself.	
IQ 1.2.3	What are the main drivers for digital transformation?
Me: What are the main drivers for digital transformation?	
P13: Ok, so I... what I have seen is... there is the business lead drivers where business wants to try to transform their business to a more digital type of business. A good example of that are the customer interactions where they want to more, have more, instead of a customer's speaking to an agent they would go onto an online portal and get all of their things done there. So that is some of the business drivers and usually those business drivers can always be classified in I want to do it faster, I want to do it better, or I want to do it cheaper. So, it depends on the type of business it will typically be something be like that. Then you also get your technology led drivers, where it's due to the evolution of the technology that this digital transformation comes in. Applications that get upgraded that brings new capabilities and kind of make it work, to make that technology work, you have to evolve to a digital type of business. So, it can be either from a business perspective the drivers or it can from a technology perspective.	
IQ 1.3.1	What do you understand under the phrase digital transformation?
Me: The aim of the study is to explore the factors that affect digital transformation in a telecommunications company and to what extent. What do you understand under the phrase digital transformation?	
P13: Ok, I am not an expert digital transformation, but working in architecture, we know a little bit about it, and I understand it to be basically the transformation of your business activities, that is often realised through traditional ways of doing things, and adding an IT type of capability to it. And in other cases, it's when you take your legacy way of doing where IT only supports the business and you actually transform it so that IT is the business, so it's bringing more improvements to your business processes, your business activities with a type of a technology approached to it.	
IQ 1.3.2	What challenges does the company face in term of organisational changes and organisational culture when driving digital transformation?
Me: What challenges does the company face in terms of organisational changes and organisational culture when driving digital transformation?	
P13: So, one of the challenges is too much of a technology benefits business case, instead of the business benefits business case, so that is one of the challenges. The business cases must have really good business benefits to go with digital transformation. The other challenge is, like I mentioned the organisational change management is not geared for digital transformation or the function is completely missing or is out dated, the organisational change management function. We usually temp to implement technology, but not fully integrate business with the technology, or get the realisation of the technology for business benefits. So, that is some of the challenges.	
IQ 1.3.3	What is the importance of cross-collaboration between IT and business?
Me: What is the importance of cross collaborations between IT and Business?	
P13: It is very important across collaboration, it is also difficult in this instance, I always say, when IT support a business process, but then you get the IT type to technology where IT become the business and that is where digital transformation very much play. So, the cross-collaboration is a little bit different in digital transformation because is it not an IT vs. a business type of thing. It is like the two is merging rather than the two being separate and have a cross-collaboration. So I think the better approach to collaboration is actually thinking how to merge the two aspects, because IT now becomes the business, so IT must be in business and business must be IT. So, it is a different type of thing. So, thinking more in terms of merging the two, rather than collaborate the between two different the entities.	
IQ 1.3.4	What is the company's strategy towards digital transformation?

Me: What is the company strategy towards digital transformation?	
P13: I think initially we said digital transformation that's the way to go, we should do it, digital is the way to go, but I think what we realise, there is more to it to that just to put down the technology. So, we very more selectively looking at digital transformation, where does it make sense, where will it actually bring benefits, instead of just put punting this technology aspect of digital transformation, so it must be taken sometimes with care because it doesn't help you put digital transformation, but it cannot survive one year. It's actually a much bigger thing than just technology, you have to change the way you think about your business, you sometimes have to get your customer to how they think about your business. And it's sometimes- softer issues, cultural and so you have to think about all of those, organisational change management. So, there are still some key stakeholders in our company that just bluntly say that's the way to go. But more and more people are realising you have to be selective about it.	
IQ 1.4.1	How do government and regulatory bodies affect the decision making of a digital transformation strategy?
Me: How the government and regulatory bodies affect the decision making in a digital transformation strategy?	
P13: As far as decision making for digital transformation is concerned, I don't think government or regulatory effects it that much, except if you are a government, that is changing to implementing digital transformation. The decision, we still have to comply with government and regulatory legislation as with any IT solution, for example with POPI, you still need to comply to that, but the decision making of digital transformation is for me purely affected by the business benefits that we realise from it, or where technology lead, it kind of decision forces on you. You still need to comply to regulations or what is set by governance, but I don't think that government specifically will lead you to decide whether to transform, it might be more competition that will drive you to make a decision to do digital transformation.	
IQ 1.4.2	How does the company apply governance to ensure its digital strategy stays on track?
Me: How does the company apply governance to ensure its digital strategy stays on track?	
P13: At present, the governance specifically for digital strategy is very much on an ad hoc basis, but there are efforts to formalise this, so we have already identified digital as a domain in its own, which means that it will get a strategy and there will be roadmaps and implementations principles, measures and procedures defined for it etc. It is formalising as this stage.	
IQ 1.4.3	How important is digital transformation to the company?
Me: How important is digital transformation to the company?	
P13: It is very important because of the drivers that is important which is always, faster, better, cheaper, so we want to do faster, we want to do better, we want to do cheaper, so with digital transformation bringing those type of things, attributes, digital transformation will be important for the company. But the challenges, is organisational change management, and sometimes is not geared for digital transformation, they were geared for IT supporting business in some way or another, not IT becoming the business, so even change management needs to adapt to how we implement digital transformation.	
IQ 1.4.4	How does the company use new technologies to enhance its value creation?
Me: How does the company use new technologies to enhance its value creation?	
P13: Ok, so at this point in time, we always looking at new technologies to enhance value creation, but I think at this point of time, the primary focus is on customer interactions, so we looking at customer and how the customer interacts with the business. As architects, we always try keep up to date with new technologies and like I said, we identified digital as a domain, but I think there is more that can be done looking at all of the domains not just the customer interactions for digital transformation. I think sometimes it doesn't even fall under the banner of digital transformation, like network functions virtualisation in the network communication space it a form of digitalisation transformation, because to take all of those different exchanges out there and centralise into one box. And most of the things happen there. So sometimes, it is not specifically thought of as digital transformation but new technologies are implemented in that way.	
Me: Thank you very much...	

APPENDIX D14: INTERVIEW TRANSCRIPTIONS P14

IQ 1.1.1	What impact do new technologies (such as social media, IM, AI, data analytics or Big Data, IoT) have on business improvement in the company?
<p>Me: What impact do new technologies like social media, IM, AI, data analytics or Big Data, IoT have on business improve in the company?</p> <p>P14: So I think the advent of social media has changes the landscape quite dramatically because customers are able to provide a window to what they have experienced to the world with your company. So instantaneously they can cause great havoc within your business, so your NPS scores, I think your net promoter scores are under great pressure because customers have access to social media, but you have to embrace it and manage it. It is important, and leverage off it to reach your customer base. In many cases, it becomes a great vehicle to advertise your services to communicate with your customers. If you, if you... that is, so let us call it... that is a customer touch point, it is an entry point into your business. It is an extension on your CRM, and of your call centre or contact centre, systems need to be integrated with that. That needs to be a channel to your market. That needs to be a mechanism through which your customer can interact with you, and needs to be responsive and structured.</p> <p>Me: And use it as a tool to understand your customer.</p> <p>P14: Indeed, but obviously organisationally structure your business to deal with it, responsively, because your challenge is that is that your back-end, SLAs with your suppliers does not align with this responsiveness, which is required. Because effectively, you know, the contracts that underpins the services the digital systems and service that you have built, your digital transformation platforms on is typically for our response when things break. That is your best response time and is measured in hours, not in minutes, so you can imagine when things go wrong. This [is] an instant ratification context, they want to know now, and the whole world can see what they want. Here is... will you fixing the problem... we going to potentially take 4 hours to 6 hours. Structurally how do you deal with communicating to that client base? Not hourly but instantaneous. How do you ... you know, structure your communication plans to deal with these people effectively. So, that has a big impact on how... you now, digital transformation then drives organisational transformation, which your systems, your support system is not necessarily underpinned with the necessary contracts and which is also very, very expensive. You do not expect a minute-by-minute kind of fixing on the system, but you have to balance it off with organisational structure that is then responsive to deal and communicate with that kind of customer, and that social media systems, is 24 hours 365 systems. They are now integrated to your systems, so those people expect that kind of availability and responsiveness to your systems. Those people want to buy airtime in the middle of the night, they want to browse YouTube in the middle of the night, and they want that experience to be great. Whereas your office systems and your staff and your people is not necessarily structured to be as responsive to those kinds of users. That is what I am trying to do.</p> <p>Me: And in terms of analytics?</p> <p>P14: Ja, as I said earlier, it's about using your data as the competitive advantage of your customer, and it is around building analytics to retain those customers to create new products and services, to increase your revenue opportunities</p>	
IQ 1.1.2	What role do digital technologies play in the company's digital transformation strategy to achieve its business goals?
<p>Me: What role do digital technologies play in the company's digital strategy to achieve its business goals?</p> <p>P14: It is central to achieving its business goals, so, I will give you an example, you know, business is about to create shareholder value and shareholder value is about driving of revenue and increasing the bottom line, and that is driven typically by increasing the customer base... that grows... people want more of your services. So if your growth is rapid, like in our mobile space, your technology that you choose to underpin that growth, is most important. For argument sake, can it scale fast enough with that growth to deal with a high growth environment? Is it modelled enough to grow if it is not successful that you can taper it down, if you do not need it. So that you can keep the cost line as efficient as possible. In your fixed-line business, if it is tapering down, can you switch off and decommission fast enough so that you save on your maintenance and cost. So, cost drivers and revenue drivers, that drives your business, you have to have the linkage to technology to see how it impacts cost and how it impacts revenue, and choose the right technologies to achieve that.</p>	

IQ 1.1.3	What technology factors play a role in digital transformation strategies of the company?
<p>Me: What technology factors play a role in the digital transformation strategy of the company? This is in terms of the cost of the technology, as well as the implementation.</p> <p>P14: So, we have a very structured process to deal with that. It is called a business case – management, which is based on a need for technology that is driven by business. Technology enables the business to achieve a business need or business goal. Then, what happens is you have to offset the cost. Ok, potentially it is the revenue and you have to look at the total cost of ownership over the life cycle of that technology, and then if the benefits outweigh the cost, you then app-drive it and you manage that business case and that technology along the lines of the intended benefits. So if that business case is driven by having email 400,000 customers, you know, that is what it must achieve, that becomes the output and that becomes the part what we call benefits tracking, you know, did you achieve the initial intention of what this money was purposed for, and that is how we manage it.</p>	
IQ 1.1.4	What is the impact of legacy systems and technology on the digital transformation drive?
<p>Me: What is the impact of legacy systems and technologies on the digital transformation drive?</p> <p>P14: Well, legacy in Telco's is a big challenge, because it is so entrenched in the delivery of existing of existing systems. Where you get a fair amount of revenue from, so you cannot switch it off... easily because to switch it off you have to migrate or you have to terminate the service. If you still make a ton of revenue out of it, the choice is to extend the legacy system's life or to transform it. Whether it is the infrastructure or the application, it is typically very expensive, because you... if you say you want to extend the life of the application that could be typically extended, but your infrastructure live is typically limited, because of the laws of physics, right. So, your fan can only spin so many revolutions and then you got to change it, right? And your hard drive wouldn't last forever. So, then it is about transforming the underpinning infrastructure, investing in it, and retaining the application or shifting to a new application with new infrastructure, so, when you do the migration, you have parallel systems running here, with migration costs that have to be catered for. You have functionality if you move to new software, which may have to change the way it is done. You have to retrain your customer, re-launch products, it becomes very, very expensive and complex to achieve, and in most cases, you know, it's about sun setting these things over time and have a transition plan, and it is very difficult to, to achieve. So, let's say, you want to change technology, you go from Amdocs to Huawei, for fixed-line, Huawei is later, its more modern and it could be potentially much cheaper compare to your legacy, let's say Amdocs, but Huawei might not have all the features that Amdocs have, which is a service that you sell to your customer. Then you have to decide, do you develop that feature on Huawei, or do you switch it off and migrate your customer off it, or terminate the service, so, it is very complex, because it touches your customer. It is not easily achievable. In general, even for enterprise systems, "CI" finds it very difficult to decommission systems, because there are such great dependencies. You know, systems are integrated into upstream and downstream systems, even if it is just an enterprise system. If you want to switch this off, that is impacted, and you know it is often the DNA of the business. It is often not documented because it is old. It is a lifelong problem.</p>	
IQ 1.2.1	What role does Management play to drive the digital transformation of the company?
<p>Me: What role does Management play to drive the digital transformation of the company?</p> <p>P14: Well, we must lead it. Management and leadership must lead it, but we must lead it in a context of what is driving value for your investors and what is best for your customers. And that is where, you know, experience and skills and capabilities of "???" and management have be in place, because although technology or transformation of technology or digital transformation can be an enabler for business it is also costly, it doesn't come cheap. Make the wrong decisions, you do not necessarily keep the benefits, or it becomes too costly you eventually... spend too much money on a particular project. So, the notion, let us say the notion of the cloud for argument sake, which is part of let's say a hybrid digital transformation.... Strategy where everything does not sit inside your data centre but spread across the world, and it is part of an ecosystem to deliver a service to your customer, digital service. Cloud is not necessarily cheaper than on-premise. It is just easier to get it. It is there on demand. So it has that value of flexibility and responsiveness and it get burst, but over time, you know, it can be costly, because you cannot get out of the cloud easily. So, you've got to have leadership and Management that is aware, that makes the right tactical and strategic decisions around technology, as a digital transformation tool or capability.</p>	

IQ 1.2.2	What efforts have been made to empower employees to drive the digital transformation of the company in terms of reskilling, development, and way of work?
<p>Me: What efforts have been made to empower employees to drive the digital transformation of the company in terms of reskilling, development, and way of work?</p> <p>P14: Ok, I think generally, we have a change management program that accompanies any transformation programme that is in Parktown. Whether it is the operational organisational transformation that needs to happen to support the digital transformation or whether it is about dealing with the resistance to change and adoption, whether it is communicating, you know communicating a message that needs to hit home. That is what we have learned is required and is required investment. These things do not work on its own. Technology on its own does not fly. I have many examples of that. I mean I have just started 1 Feb and I have inherited lots of them, so, let us for argument sake, you know, one of the pillars underpins your digital transformation journey or strategy would be a security strategy. A digital security strategy, because you cannot transition to a future state and transact digitally without ensuring digital security. So, your user base inside your company, and your user base as customers need to be informed an educated just on the need and importance of interacting securely with company assets or with company systems. For argument sake, when you access your email, you know you should actually... you should only access it using a VPN connection, because if you go directly via the internet as you could, your emails are exposed. That is a simple message that needs to hit home, because if it is not contained, your users are sitting in internet cafés, hotels, they are exposed to potential digital risk and threats. That is one example.</p> <p>Me: But in terms of empowering employees for this change...?</p> <p>P14: Training goes with the change management programme, where you have communication plans and awareness and broadcasts that you do, and click-through content to train your users. That is part of your change management programme and that provides them with the skills to navigate the systems in the way that we want them, and also for argument sake, build and re-enforce certain behaviours so that we finally end up with a culture that supports digital transformation.</p>	
IQ 1.2.3	What are the main drivers for digital transformation?
<p>Me: What are the main drivers for digital transformation?</p> <p>P14: Maybe I have touched on some of it now. It is probably effectiveness and efficiencies that drive companies generally. Because if you are not efficient and effective, it means that there are leakages somewhere in your business, that you lose your competitive advantage if someone else does it and you don't do it. So, it's about staying ahead and probably and ensuring that you transform in relation and in line with your customer's needs. You do not transform for the sake of transformation, but you transform to achieve what your customer needs and your business needs to grow.</p>	
IQ 1.3.1	What do you understand under the phrase digital transformation?
<p>Me: The aim of the study is to explore the factors that affect digital transformation in a telecommunications company and to what extent the effect is.</p> <p>So, my first question is, what do you understand under the phrase digital transformation?</p> <p>P14: I think in a lot of ways digital transformation is a second attempt at e-enablement of your business. So, let us call it waves in IT. IT comes with waves and sometimes the same thing is just called something else; so maybe 10 years ago when I did my MBL.</p> <p>Me: A bit more</p> <p>P14: Oh, you checked. I actually focused on e-commerce and e-enablement of the business. Then I was running the e-billing, electronic bill presentment and maintain function for this business. That really was very underpinned by very similar digital transformation let us call it rational. That you want to automate and transform your business to gain better efficiencies be more effective, and put yourself in a position where you automate as far as possible. And you intend doing that not only on the back-end, because, you know, on the back-end systems that is what we do from a IT perspective. But typically, digital transformation also talks to the systems that touch the customers and how the interact with you, from a customer interact perspective, right down to consuming a service on a platform and taking all paper out at the time because it is similar to manual processes that might be still in place. So I think it's a, you know, I look at it, I have been in IT for 25 years, IT comes up with different waves for the same thing, many times over, and is typically born on the west coast of silicon valley. Because it does not really matter, what wave actually becomes this big wave, at the end all the companies in Silicon Valley will make a buck out of it. Whether it is CRM systems or whether it is the chip manufacturers that's going to sell more chips or it is the storage guys that is going to sell more storage. So, I think a lot of it talks to...</p>	

engaging in a digital format with your customer as well as ensuring that you, as far as possible, integrate your back-end systems and your landscapes in such a way that you automate as far as possible and you give your customer and your business create... Automate as far as possible to be more effective and efficient, and through that creating a competitive advantage for your company.

IQ 1.3.2 What challenges does the company face in term of organisational changes and organisational culture when driving digital transformation?

Me: What challenges does the company face in terms of organisational changes and organisational culture when driving this digital transformation?

P14: It is quite interesting; I am dealing with such an example, where we are shifting from an on-premises HR solution to a cloud base solution. That means is that your on-premises guys will effectively, the infrastructure guys will not have a job potentially. That your HR administrators that run systems will no longer be required to the extent that it is today, because it will be largely standardising and sitting in the cloud, the cloud means it does not sit on-premises, so there is typically resistance, to that, because people will perceive it as their job being at stake. The cloud is also part of a digital transformation in terms of driving of efficiencies and responsiveness to market needs, where you have the ability to access the infrastructure in the cloud without the problem of lead-time on buying equipment, procurement processes that can take big time, can take a lot of time. So you have that resistance in general if people perceive it as negatively impacting their careers, and particularly as it pertains to the cloud and to automation and robotics. Robotics very similar, where you try to automate mundane and repetitive, you know, examples. So, I mean, repetitive problems that you need to solve or requests that comes in to the business, so, I think the human factor from a cultural perspective needs to be managed there, and you need to find space for these people that potentially will become redundant as far as possible. You know, perhaps transition them to product and services development people, because they understand the IT landscape, they understand the basics of digital, doing the digital business so to speak because they understand the infrastructure and the applications. So, you probably have to look at, you know, transforming those kinds of resources into business like resources where they understand the digital world and perhaps, top it up with business acumen so they can leverage that.

IQ 1.3.3 What is the importance of cross-collaboration between IT and business?

Me: What is the importance of cross-collaboration between IT and business?

P14: Most important – it is the most important thing for IT. IT does not exist within a corporate without a business need. You Know. Corporate Enterprise, IT follows the business need, and IT becomes the enabler to satisfy that business need. It is very different to an IT service provider, where IT becomes the product that a customer consumes, right? There IT leads the conversations, and it creates the services that the customer consumes. In an enterprise, it is the other way around; you cannot spend IT money without validating the need with business, otherwise, the tail is wagging the dog. And what you often see when that happens you have a low adoption and ownership from business, So, you build systems, your business doesn't adopt it, they step away from it they feel they wasn't part of it.

Me: They are resistant to change.

P14: Yes, that is very common.

IQ 1.3.4 What is the company's strategy towards digital transformation?

Me: What is the company's strategy towards digital transformation?

P14: I think in broad terms, it is a journey that essentially drives towards paperless business model or operational model, or operations model when you deal with your customer. Automate as far as possible along the line of automation and robotics, use analytics to understand your customer better, because that is the big advantage digital transacting brings to you, that you are able to archive and store, you know, the transactional records of your customer. So it is largely a precursor to ensure that you retain as much of your customers through the secondary benefits that a digital business provide you, like the ability to do analytics, because you cannot grow the base infinitely. You can only, as your fix line tapers down, that is what we see in our business, and the mobile business ramps up... right... you cannot grow infinitely. There is going to be a cap on the subscriber base, and at that point, it is about having a competitive advantage against your competitors and [being] the leader in digital transformation. It is about also retaining your customer, which is where the analytics come in, where you understand your customer and then you sell and develop products and services that he wants.

IQ 1.4.1 How do government and regulatory bodies affect the decision making of a digital transformation strategy?

Me: How do government and regulatory bodies affect the decision making of a digital transformation strategy?

P14: So once again you know, turn back 10, 14, 15 years when I did my MBL, so, your external environment in that case, you know government must provide the regulatory framework and the external environment for these kinds of initiatives to flourish. What it means is, the laws and the regulatory environments must be written in such a way that it supports and drives the business; it should not suffocate and impact business negatively. For argument sake, going back to my e-commerce days, when we transitioned from a physical paper bill to an electronic bill that you send the customer, you know, you had vat compliant issues, because vat requires you to submit our original invoice to SARS when you claim back vat, and in that case what becomes your original invoice? And your regulatory environment, your legal environment in terms of tax did not keep up with the transformation of the IT environment. It was lagging behind, you know, that caused a bit of a stir because electronically what is original? What is a copy? Very difficult, right? Sensibly, electronically it is the same thing. So, it took a while, eventually we got the ECT act and it dealt with components of it, but that is a good example of you know, your legal framework or your tax laws in that case. Keeping up with the technology development space, and whatever transformation there is. You know, IT is often electronic version or digital version of what used to be done manually. You know, whether it is the ECT act or let us say your POPI act, privacy of your personal information, you know that needs to be clearly driven and understood. So with that, you know, it supports the efficiency drive for business, for argument sake, if you look at Office 365, you know, which is the cloud version of your email today. Today, Office 365 is not supplied by Microsoft as a service in South Africa. So every corporate that uses Office 365, their email is somewhere in the world, and not within the boundaries of South Africa. In the context of POPI law, how do you protect your customer? How do you give insurance or assurance to your customer that you are POPI compliant? Where does that data end up? So, I think it is generally, government will lag behind, because IT move light years ahead, compared to government's snail pace. So, it is important, but I think it is also accepted that government will probably get there, it won't get there before business does.

IQ 1.4.2 How does the company apply governance to ensure its digital strategy stays on track?

Me: How does the company apply governance to ensure its digital strategy stays on track?

P14: Is this the last question?

Me: Second last

P14: Ja, so we, we have a governance structure an IT governance structure that is aligned to king 4 requirements in terms of governance. We have a Risk and Compliance Committee that reports into the risk committee of the board. We all contracts of delivery partners is underpinned by a governance framework, where forums are created and counter parts needs to... is held accountable, is required to be delivered, so we have strong governance as it pertains to risk and compliance as it pertains to external IT governance best practice. Then operational governance is done through examples of having schedules in your master services agreement that deals with accountability. And then you have project delivery governance where projects run only if there is funding available and it is financed and that funding is underpinned by a business case, which is underpinned by business case governance in terms of committing to certain benefits that must be realised. And project delivery, you know, is then governed through the funding and business case component as well as ensuring that it is on time and delivered in quality.

IQ 1.4.3 How important is digital transformation to the company?

Me: How important is digital transformation to the company?

P14: I think it is central to the retention strategy, in other words retaining customers. There are two strategies: grow and retain, so, growth means new, new services that attract new customers and then retain existing customers with new services.

IQ 1.4.4 How does the company use new technologies to enhance its value creation?

Me: And lastly, how does the company use new technologies to enhance its value creation?

P14: I think early adoption, in certain... early adoption of certain technologies in certain environments is promoted. It is... we are not very rigged in terms of you know, let us call it... we are not very rigged in how solutions enter the business or technology enters the business, so, in other words, we are not descriptive that IT becomes the only entry point. If business engages with a supplier that can do certain things for us, they are welcome to do that, but there is a governance framework that it must fit into; so, entries is open, but there is a governance framework that governs how new technologies is adopted and how investment is done on new technology. But early adoption, let us say someone does robotics and

automation in the environment, you know we are not going to scream about it, if it solves a problem, it is fine. We will utilise that to learn from them integrate them into our technology roadmaps etc. Once you become too descriptive, you lose the opportunity to become innovative and you lose the opportunities to be creative.

Me: Ok where is the value in that?

P14: Well, we see that some of the things that come into the business are not necessarily thought-up by ourselves, you know, it evolves through landscape and ecosystem, that when it got to us, you know it was already down the track and we just have to embrace it. So, what that means is that you've adopted early you've got the benefits early and therefore you don't do things in sequence now, you know, because what typical happens, you've got bottlenecks when you are very descriptive and will only get to you after the last new one has been requested. So we have learned, you've got to have a framework with a future mode of operation, open it up for different, you know, enablers that can get us there and be aware that your future mode of operation is not a straight line, it is many a times very crooked in how it gets there. You know, that is the lay of the land.

Me: Thank you very much...

APPENDIX D15: INTERVIEW TRANSCRIPTIONS P15

IQ 1.1.1	What impact do new technologies (such as social media, IM, AI, data analytics or Big Data, IoT) have on business improvement in the company?
<p>Me: What impact do new technologies like social media, instant messaging, artificial intelligence, data analytics or Big Data and IoT have on the business improvement of the company?</p> <p>P15: Massive! So what it does, remember it speaks to those efficiencies, it speaks to where we want to be, it speaks to humans. So AI, we do not use at all, and if we use AI correctly, all we have to do is... You know that AI does is it takes what the problems put them all together and you start writing the solutions to that, so, now we know what our top 10 complaints are. So, what we should be doing is tracking those AI, coming in to say those are our problems, let's write the tree, so that everyone can sought the solutions, because then 10 issues that you are phoning in for are 80 per cent of your calls. But we are not using AI to our advantage at all. Again, we are working in silos. So until [name deleted]says, this is how our digital transformation looks like, this what AI looks like, this is what Telkom looks like on social media and this is how we respond, irrelevant if it is a BCX or a... this is how we look like. Right now, we do not even have a social media team with the full strategy. Half our social media team has left. Look at FNB, and I always use them because they are a good benchmark. You are allowed on social media to respond as Telkom. If you see somebody talking about Telkom, there is not an official page. There are a lot of rules that govern it, and that is cool. You fix the rules. So, FNB created RB Jacobs. RB Jacobs goes, is AI, it scouts the whole internet for where ever it says FNB, a tweet, a post, whatever. RB Jacobs comes back to you and says dear Megan, I saw you posted about, I saw that you have an issue with FNB; I would love to help you, please message me. So they made FNB an individual called RB Jacobs, and he responds. Now, why haven't we done that? And what is our strategy around that? We should be doing that. We have massive reputation damage. That is where the social media is powerful. It will make or break you, and if you are not managing social media, however it is, you are not going to survive in this world where people talk out there openly. You do not need to write a letter or an email on it, you know, so we have to transform, and we have to start speaking to our customer in a technology way, because we are a technology company. So finally, we introduced WhatsApp, where you can finally WhatsApp us, and we can respond to you via WhatsApp. So we are getting there; not AI, just how we communicate with you. We [do] not necessarily prioritising them as a business.</p>	
IQ 1.1.2	What role do digital technologies play in the company's digital transformation strategy to achieve its business goals?
<p>Me: What role do digital technologies play in the company's digital transformation strategy to achieve its business goals?</p> <p>P15: If we are playing in the digital technology space, we are not going to be able to transform. Digital technologies really are just all the different areas that pull everything together in the total strategy of digital transformation. That is what I see it is.</p>	
IQ 1.1.3	What technology factors play a role in digital transformation strategies of the company?
<p>Me: What technology factors play a role in a digital transformation strategy of the company? This is things like implementation, cost that kind of thing.</p> <p>P15: So, again, I think you can only really define that once you understand what your digital transformation is to look like, and from there you start build-in the technology factors that start to play a role. And that is when you also need to start buying different systems, that sits above there, that speak to your digital transformation. So, the technology factors I really believe are defined by what your strategy looks like. You then second to that you start to define the technology factors that will assist in implementing the strategy of digital transformation.</p>	
IQ 1.1.4	What is the impact of legacy systems and technology on the digital transformation drive?
<p>Me: What is the impact of legacy factors and technologies on the digital transformation drive?</p> <p>P15: Do you have 4 hours? I can talk about this for long. The legacy systems are right now what's killing us. NGN is a perfect example of where we try to transform legacy systems into a new era and absolute nearly killed us this financial year. In fact, it is back again doing what it did 12 months ago. We lost a billion rand of revenue last year in fixed, in fact we killed fixed quicker than fixed was killing itself. We</p>	

killed a year earlier than it would have died, because of NGN. The legacy systems will determine whether we can go forward or not, and how we build on top of that legacy system. But we have to be strong as Telkom and our chiefs need to be very clear on how we going to manage that, and we can't have conflicting opinions on that. We need to have one voice.

IQ 1.2.1 | What role does Management play to drive the digital transformation of the company?

Me: This leads to the next questions. What role does Management play to drive the digital transformation of the company?

P15: They are the reason why we would transform or not transform. If Management is not involved in buying in one voice we would not transform, so, that is how strong it is.

IQ 1.2.2 | What efforts have been made to empower employees to drive the digital transformation of the company in terms of reskilling, development, and way of work?

Me: What efforts have been made to empower employees to drive the digital transformation of the company in terms of reskilling, development and the way of work?

P15: I don't believe that a lot of effort has been made. Again, until you are clear on where you are transforming to how you start to reskill. We have done nothing in reskilling in a digital environment. There is companies out there that teach you how to reskill your people a digital environment, you actually buy software that they can learn how to be skilled in a digital environment. But are we a digital environment? Have we changed? No, so what do we need to reskill now? You do not have to reskill. Once we are clear where we are going, then a skills plan should be done to support the execution of the digital transformation. But because we are unclear where we are going with digital transformation, then what do you reskill on and how do you work differently?

IQ 1.2.3 | What are the main drivers for digital transformation?

Me: What are the main drivers for digital transformation?

P15: Efficiencies, costs, better service to customer, quicker service to customer, that's the four main – customer experience. The other thing that Telkom do wrong, not necessarily Telkom but Telcos do wrong, but particularly Telkom, is we decide how it should go and we think the customer wants. When the customer can tell you, quite comfortably what they want but we totally ignore that, because we think what is going to work for us. So, the whole that it needs to work is, what does the customer want? The customer wants FNB, the customer wants CAPITEC, the customer wants Amazon, the customer does not want to talk to a human being if they do not need to, and you are building for the future. So, there is still the old pensioners that wants to talk to a human, that's fine. You still have the call centre to do that. So a better customer experience is not to talk to a human. At FNB, I have had my account for 10 years, and I have never gone into a bank ever. I do everything on my app. Worst-case scenario, I go to my relationship banker on the telephone, but that is the last resort. So, why can't we have that? And I don't do just banking. You can shop with your ebucks, you can sell your shares, you can trade in shares, and you can actually do anything you want with it. You can buy a sim card; you can buy a phone, so that is what the customer wants. Not what Telkom thinks a customer wants in a digital transformation.

IQ 1.3.1 | What do you understand under the phrase digital transformation?

Me: The aim of the study is to explore the factors that affect digital transformation in a Telco company and to what extent the effect is. So, the first questions is, what do you understand under the phrase digital transformation?

P15: So that's why now when I said to you about my topic is the digitisation and digitalisation is 2 different things in my mind. So there's a digital transformation which takes you from a manual thing to a digital process. So a lot of what we do is not digital at all, for example, application form. If you apply for a Telkom line, it is still manual, nothing is digital as in end-to-end process. Digital transformation for me, takes out any form of human intervention, so it takes a manual process, where many bodies used to be attached to it and it makes it end-to-end digital, with the same output or a better output, and done in an eight of the time. That's how it should be.

IQ 1.3.2 | What challenges does the company face in term of organisational changes and organisational culture when driving digital transformation?

Me: What challenges does the company face in terms of organisational changes, organisational culture when driving digital transformation?

P15: Huge challenges! First of all, culture is a problem in Telkom. We [are] all running different cultures. We also have a fixed culture that has been here for a very long time. We have a mobile culture, and those worlds do not necessarily collide, because they are very different. Since I have been here for 7 years and we are on our 4th culture transformation or whatever. Culture starts at the top at the end of the day. What is it that we want? If people do not conform to the strategy of digital transformation, then they need to leave; and, however it is, then we need to get them out, whatever it takes. Because they will become destructive and they will start to sabotage your transformation if they think that they are losing their jobs. So, you have to be very clear, in what you want, and if your ultimate is efficiencies, there are going to be a lot of casualties along the way, because there is robotics already that's starting to take place. Already the call centre we are trying to do, an approaching call centre we do not speak to a human, you speak to a machine. Rightly or wrongly, that [is] where we need to go in terms of efficiencies, particularly for prepaid, because they spend a little bit of money, we cannot service them with a human, it is just too expensive. We face our legacy people, and I call them that quite openly, with our legacy systems and we haven't clearly defined what that person looks like, because the person in digital transformation is different. What does that look like? Also, are we employing for the future? No, we are not employing for the future. We define it, which speaks to culture. Everybody executes culture. So, then HR and the business units have to employ this kind of person, and if they do not look like that, they don't get in. We also start to stop moving our people around, because we cannot employ more people, we need to bring new blood into our business to shake it up. Across the board, if we are not bringing in new blood in, we are going to die.

Me: Especially where the younger ones have a different kind of thinking.

P15: They are, and also if look at Telkom in relation to other corporates, other telecoms, our attendee is ten years longer than other telecoms and corporates. I mean, when I worked for Cell C, worked for 10 years. I should have gotten a golden watch because that is long in telecoms. Where it is in Telkom, 10, 20, 25 years, it's too long.

IQ 1.3.3 What is the importance of cross-collaboration between IT and business?

Me: What is the importance of cross-collaboration between IT and business?

P15: It is critical. So we don't, it's us and them. In Telkom, it is an 'us and them' situation; its IT and then business. IT believes business talks nonsense and out of line and it is not true, and business just believes that IT just trying to screw us at every opportunity, plus, if you look at the cost we are paying for IT, we are paying an absolute premium price. If you benchmark it against other companies, we are paying a premium price for our IT solution and our IT people and not getting the return that we should be getting. So, if we do not start to correlate and come together, then we got a serious problem, and it is not ever going to gel... and that's the problem we have had for many years; it is that IT sits independently from business and it is an 'us and them' situation.

Me: And what do you think what should the roles be between, in this collaboration?

P15: I am very simple on these things, and I have the same discussion with operations about this. Why do salespeople carry targets? Why don't IT people carry targets? There is revenue to be hit. If you are dedicated to my team in consumer, we have to hit 20 billion revenue. I mean, we have to do 50 million connections. Now why is my KPI and your KPI different. If we as a business have to hit that, and you are my IT team that is dedicated to my BU, we get the same KPI; when I get a 4, you get a 4. When NGN is not working, and my whole sales team get a 4, because they are so measurable because they have a target. If you do not hit the target, you get a 4. Yet, the IT guys are getting 2s and 1s. Those same guys that are not giving them the solution to fix their problem – something is wrong, right?

IQ 1.3.4 What is the company's strategy towards digital transformation?

Me: What is the company's strategy towards digital transformation?

P15: So, we know we have to go there. I believe Telkom is not necessarily on the same page. Which is a problem we have in Telkom is that we operate in silos. BCX seems to believe that they are the gods on all of this and that they have the miracle solution for us, which is not true because they are still the same people that do my IT every day that does not work. We as Telkom, headed up by [name deleted], need to decide what does digital look like for Telkom, what does future in digital look like for Telkom? Then start work our way down. How does that transform into each BU? Because of all our different ways to operate, and all different people that we are servicing at the end of the days business or consumers, how does that look for those customers, how does it look in the yellow pages environment, how does it look in BCX? How does it look in consumer? And then you start building. Does Amdocs fit in the situation,

or don't they fit in the situation, because FNB builds their entire transformation on legacy systems that are a hundred years old. It still sits on those legacy systems, it still working on those legacy systems, so our first response is standard, Amdocs, we cannot do it. The FNB CEO was a tech guy, was not a banking guy. When he came in, Michael Jordaan, he came in and said, this is my vision, and you have to build it. I do not care what you say. He forced them to build an over the top layer, and everything legacy have to speak to them over the top layer. So it worked, it is proven, so, copy and paste, why do you need to reinvent it. It worked for FNB. Anybody has legacy systems, the banks are the worst; we are not even as bad as that, and obviously they need to bring OpenServe in line with that as well, because OpenServe, a lot of the backend sits there, and there is no view from any of us into that backend. We have to somehow. [Name deleted] also needs to make a ruling on that.

IQ 1.4.1 How do government and regulatory bodies affect the decision making of a digital transformation strategy?

Me: How do government and regulatory bodies affect the decision making of digital transformation strategy?

P15: I think regulatory, in mobile regulatory is not like fixed where it is so governed, but Telkom is scared of regulatory, which is ridiculous. Because at the end of the day, we still seem to apologise for since of being a monopoly. We are no longer a monopoly, and fibre has proven that; and in fact, in an area where we are an apparent monopoly, we are doing the worst. I the area where we are number 4, we are doing the best, so, we have to starting push back to the regulatory bodies. I believe the regulatory bodies want transformation of digital. I think for them, that is where the country should be going, and we want to be a country that leads there, which we are not, then we should be driving that harder. I do not think that they will impact on us very much, but I think we need to become stronger when dealing with regulatory bodies.

IQ 1.4.2 How does the company apply governance to ensure its digital strategy stays on track?

Me: How does the company apply governance to ensure its digital strategy stays on track?

P15: [Name deleted] has to own the project, and there are key role players that have critical... Can I tell you something, that someone did, one company did. They employed a chief digital officer. The Chief Digital Officer had absolutely nothing to do with IT. They brought a person in, that understands, not to build, not how to put the screws together, and could never run IT if their life depended on it. They brought in somebody that understands business, they understand customer experience, and they understand what the customer wants and how it should look; and they called him the Chief Digital Officer. The chief digital officer drove the transformation of the strategy and drove the strategy. The IT chief had to answer to the chief digital officer because they owned the strategy and they owned the total way of where the business was going. That is the only way, and that person has to directly report to [name deleted], because there is no pressure. IT is not bullying them. They [are] not sitting in a separate business unit. What are they there for? They are there to make sure Telkom get the ultimate digital strategy right and the transformation of it, and they are there to make sure that every BU complies and does what they are told to do, and if they do not like it, they can go to [name deleted], because that's the only place they can go. It's not like consumer always wants this, and BCX always wants that, so they take out all those siloes. If we do that, we will be able to get a transformation strategy like this, and will start executing, because that person does not care what [name deleted] wants and what [name deleted] wants. They understand that we buy into this; this is our strategy. Do we all buy into this? Yes. OK, now we are executing.

IQ 1.4.3 How important is digital transformation to the company?

Me: How important is digital transformation to the company?

P15: If you do not transform, you will die.

IQ 1.4.4 How does the company use new technologies to enhance its value creation?

Me: How does the company use new technologies to enhance its value creation?

P15: Look, I think that part we have actually done very well. In terms of...well consumers have done well there. Because I am speaking on behalf of consumer, because we have done very well in terms of Free Me, creating a very strong value proposition using the various technologies and the triggers that are out there. When we first launched Free Me, it did not have any social media to it, but you could do WhatsApp calling and your WhatsApp was for free within your package. We then evolved it to start to include streaming and music and be able to stream for free on the Free Me packages. So, we have really looked at what's the main triggers out there. YouTube – 80% of streaming is YouTube. So what we did is, we went last year for summer, we spoke to the prepaid market to say you get 250MB of YouTube streaming

for free, because we needed more people to stream. The more people stream, the more money we could make, so, we have been actually very good in the mobile side, creating the value and then using the technology to make that value proposition rich.

APPENDIX E: EXAMPLE OF ANALYSIS OF INTERVIEW DATA



(Double Click to Open)