DSPACE

https://dspace.org/

Exploring the relevance of digital maturity factors in South African Businesses

Mkhwanazi, Qoqanani

2022
https://hdl.handle.net/10539/34033

Downloaded from a DSpace repository. https://dspace.org/

Exploring the relevance of digital maturity factors in South African Businesses

Qoqanani Mkhwanazi

A research report submitted to the Faculty of Commerce, Law and Management, University of the Witwatersrand, in partial fulfilment of the requirements for the degree of Master of Management in the field of Digital Business.

Johannesburg, 2021

Abstract

Digital maturity in recent times has become topical in boardrooms around the world, including South Africa, with significant resources being directed into digital transformation. Various models created by academia and practice have identified numerous factors that are required but few exist on how digital maturity factors manifest in emerging and developing countries. This exploratory qualitative study therefore examines their relevance of those to South African businesses. Through semi-structured interviews with senior leaders across different industries it defines digital transformation and digital maturity as well as the dynamic capabilities that different businesses have developed to achieve it and an understanding of the relationship between the two concepts. The operational and conceptual definitions indicate digital maturity is an holistic organizational concept, thus, business looking to achieve it should develop dynamic capabilities throughout the organization, triggering wide transformation. This suggests that managers should intentionally build dynamic capabilities that address different maturity factors, with those found in the South African context not fundamentally different from those in models and in the developed world. However, importance was placed on what determined the success of digital maturity in a business, including external and internal factors. Government policies, regulation and legislation are vital in driving digital maturity and though models mainly look internally to improve it, the impact of external antecedents cannot be ignored.

Keywords: Digital maturity, dynamic capabilities, digital transformation, South Africa, emerging markets, digital maturity factors, strategy, culture, client-centricity, workforce enablement, processes, partnerships and ecosystems, innovation, integration, data analytics, organization, leadership.

Dedication

To my parents, siblings, and daughter, Ramadimetja Nomqhele.

Acknowledgement

I give my deepest thank-you and appreciation to God, for shining a light on this journey, which was met with many trials and tribulations, all which we conquered through Him.

Though taunted to be a journey embarked on alone, many became part of this journey through their support, whether a listening ear or guidance at times when I had hit a brick wall. My thanks go to my supervisor Brian Armstrong for his guidance through this process. To Ms Ayanda Magida and Prof Edwin Bbenkele, whom I called on for guidance and were always willing to give me an ear, ideas, and unwavering support in tackling the elephant in the room, my deepest gratitude.

My daughter, Ramadimetja Nomqhele for her patience, empathy and understanding during the journey of this study, words are not enough for me to say thank-you, you have been quite the sport. My family at large, my parents, Albert and Jillian and my siblings, I thank you for your immense support.

All my friends and colleagues go without mention, as this would have not materialized without your support and patience. I remain indebted to all of you.

Declaration

I, Qoqanani Mkhwanazi, declare that this research report is my own work except as indicated in the references and acknowledgements. It is submitted in partial fulfilment of the requirements for the degree of Master of Management in the field of Digital Business at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other university.

Name: Qoqanani Mkhwanazi Signature:

Signed at Melrose

On the 16th day of November 2021

Table of Contents

ABSTRACT ..... **I**

DEDICATION ..... **II**

ACKNOWLEDGEMENT ..... **III**

DECLARATION ..... **IV**

TABLE OF CONTENTS ..... **V**

LIST OF FIGURES ..... **IX**

LIST OF TABLES ..... **X**

CHAPTER 1. INTRODUCTION **1**

1.1 PURPOSE OF THE STUDY 1

1.2 BACKGROUND AND CONTEXT OF STUDY 1

1.3 RESEARCH PROBLEM 3

1.4 RESEARCH OBJECTIVES 5

1.5 SIGNIFICANCE OF THE STUDY 5

1.6 DELIMITATIONS OF THE STUDY 6

1.7 ASSUMPTIONS 6

CHAPTER 2. LITERATURE REVIEW **7**

2.1 INTRODUCTION 7

2.2 DIGITAL MATURITY AND DIGITAL TRANSFORMATION 7

2.2.1 Digital Maturity 7

2.2.2 Digital transformation 8

2.3 THEORETICAL FRAMEWORK 10

2.4 DIGITAL MATURITY MODELS 11

2.4.1 Maturity models: origins and nature 11

2.4.2 Information systems maturity models 12

2.4.3 Digital maturity models 12

2.5 DIGITAL MATURITY MODELS CONSTRUCTION 13

2.5.1 Factors of digital maturity 13

2.5.2 An holistic digital maturity model 14
2.6 Dynamic capability theory 15
2.6.1 Sensing 16
2.6.2 Seizing 17
2.6.3 Transforming 17
2.6.4 Micro-foundations 18
2.7 Conclusion of literature review 19
CHAPTER 3. RESEARCH METHODOLOGY 20
3.1 Philosophical underpinning 21
3.2 Approach to theory development 21
3.3 Methodological choice 22
3.4 Research Strategy 22
3.5 Time horizon 23
3.6 Population and Sample 23
3.6.1 Population 23
3.6.2 Sampling method 25
3.6.3 Sample and Sample Size 25
3.7 Data Collection Methods 26
3.8 The research instrument 27
3.9 Procedure for data collection 28
3.10 Data analysis and interpretation 29
3.11 Transferability and dependability 31
3.11.1 Credibility 32
3.11.2 Transferability 32
3.11.3 Dependability 33
3.11.4 Confirmability 33
3.12 Ethical considerations 33
CHAPTER 4. PRESENTATION OF RESULTS 35
4.1 Introduction 35
4.2 Participants' demographics 37

4.3 OBJECTIVE 1: DIGITAL TRANSFORMATION 39
4.3.1 Value Creation 39
4.3.2 Response to an external trigger 41
4.3.3 Holistic business transformation 42
4.4 OBJECTIVE 2: DIGITAL MATURITY 43
4.4.1 Adapting to changing environment 44
4.4.2 Digital Embeddedness in the business 45
4.4.3 Measurements of status quo 47
4.5 OBJECTIVE 3: BUILDING DYNAMIC CAPABILITIES 48
4.5.1 Sensing 49
4.5.1.1 Mapping the landscape 50
4.5.1.2 Deep client understanding 52
4.5.1.3 Planning for the digital environment 55
4.5.2 Seizing 56
4.5.2.1 Digital portfolio balance 57
4.5.2.2 Redefining Solutioning 58
4.5.3 Transforming 60
4.5.3.1 Digital Ecosystems 61
4.5.3.2 Improving digital maturity 63
4.5.3.3 Internal business redesign 65
4.5.4 Contextual Factors 69
4.5.4.1 External barriers 70
4.5.4.2 External triggers 74
4.5.4.3 Internal enablers 75
4.5.4.4 Internal barriers 76
4.6 CONCLUSION OF FINDINGS 78

CHAPTER 5. DISCUSSION OF FINDINGS 79

5.1 INTRODUCTION 79
5.2 OBJECTIVE 1: DEFINITION OF DIGITAL TRANSFORMATION 79
5.3 OBJECTIVE 2: DEFINITION OF DIGITAL MATURITY 82
5.4 OBJECTIVE 3: BUILDING DYNAMIC CAPABILITIES 84

5.4.1 Sensing Capabilities 84
5.4.2 Seizing Capabilities 88
5.4.3 Transforming Capabilities 90
5.4.4 Contextual factors 93
5.5 Conclusion of discussion 97

CHAPTER 6. CONCLUSIONS AND RECOMMENDATIONS 99

6.1 Introduction 99
6.2 Conclusion pertaining to research objective 1 99
6.3 Conclusion pertaining to research objective 2 100
6.4 Conclusion pertaining to research objective 3 101
6.5 Managerial Implications 103
6.6 Government Recommendations 103
6.7 Academic Contributions 104
6.8 Limitations of the study 105
6.9 Suggestions for further research 106

REFERENCES 107

APPENDIX A: INTERVIEW GUIDE 117

APPENDIX B: COVER LETTER TO PARTICIPANT 120

APPENDIX C: CONSENT FORM 121

APPENDIX D: ETHICS APPROVAL 122

List of figures

Figure 1: South African Sector exposure to Digital Disruption 2

Figure 2: Theoretical framework for the study 11

Figure 3: Frequency of maturity areas utilised in general digital maturity models and industry-specific digital maturity models 13

Figure 4: Holistic Digital Maturity Model. 14

Figure 5: Micro-foundations for building dynamic capabilities. 18

Figure 6: Saunders's Research Onion 20

Figure 7: The Digital Vortex, 2019 24

Figure 8: Structure of Thematic Network.. 30

Figure 9: Strategies for transferability in Qualitative Research. 31

Figure 10: Elements of the business value creation 39

Figure 11: Elements of client value creation 40

Figure 12: Elements from digital embeddedness. 45

Figure 13: Skills for a digital environment 56

List of tables

Table 1: Results of thematic analysis 35

Table 2: Demographics of Participants 38

Table 3: Sensing codes and categories 49

Table 4: Seizing codes and categories 57

Table 5: Transforming codes and categories 61

Table 6: Contextual factors codes and categories 70

Table 7: Relevant digital maturity factors for sensing dynamic capabilities 85

Table 8: Relevant digital maturity factors for seizing dynamic capabilities 89

Table 9: Relevant digital maturity factors for transforming dynamic capabilities 91

Table 10: Relevant digital maturity factors for contextual factors 94

Chapter 1. Introduction

1.1 Purpose of the study

This exploratory qualitative study explores the relevance of digital maturity factors in South African businesses, achieved through embarking on digital transformation (Thordsen, Murawski, & Bick, 2020b), where the business acquires various significant capabilities (Warner & Wäger, 2019). However, both phenomena of digital maturity and digital transformation still lack agreement on meaning and terminology, hence the study must first look to define the concepts.

1.2 Background and context of study

Digital maturity relates to the ways in which organisations are adapting to a continually changing environment driven by technologies (Kane, Palmer, Nguyen-Phillips, Kiron, & Buckley, 2017). Achieving digital maturity is coupled with challenges and relies on eliminating obstacles that may interfere with processes in the digital environment (El-Telbany, Abdelghaffar, & Amin, 2020). The emerging markets' digital environment is different from that of developed markets. For example, El-Telbany et al. (2020) identified four digital disruptors that differentiated digital from non-digital organisations, namely, the powers of technology, digital trust, human digital talent, information and data. The power of technology relies on consistent upgrades, high speed Internet and broadband, access to information and computer literacy, all typical challenges to businesses operating in a developing country. Businesses have to navigate excess government regulation, insufficient financial resources for system enhancements, lack of collaboration and poor comprehension of client needs. Digital trust is facilitated by having sufficient data protection and data privacy laws and regulations, which have been found lacking in developing countries (El-Telbany et al., 2020). Insufficient learning frameworks for workers and lack of innovation means the power of human talent is impeded, thus leading to resistance of the digital transformation journey (Mannan et al., 2015). Differing digital environments imply capabilities built for digital maturity by businesses

operating in developed countries might not be relevant or effective for businesses operating in emerging or developing economies (El-Telbany et al., 2020).

In keeping with international trends, South African businesses are included in the evolving digital environment and are thus faced with the task of embarking on digital transformation in a quest to achieve a form of maturity. South Africa is an emerging market so the applicability of digital maturity factors may not be in line with more developed countries.

South Africa is one of the leading African countries regarding the adoption of information and communication technology (ICT) in government, business, and society. The government's goal of using ICT as a tool for inclusive digital transformation of government and business is encapsulated by policies and decisions, in line with its National Development Plan. This overarching national development strategy sets the country's development vision, including that of ICT in the short and long term (Manda & Backhouse, 2018). All sectors are affected by technological disruption, with some more exposed than others, for instance media, insurance, and banking.

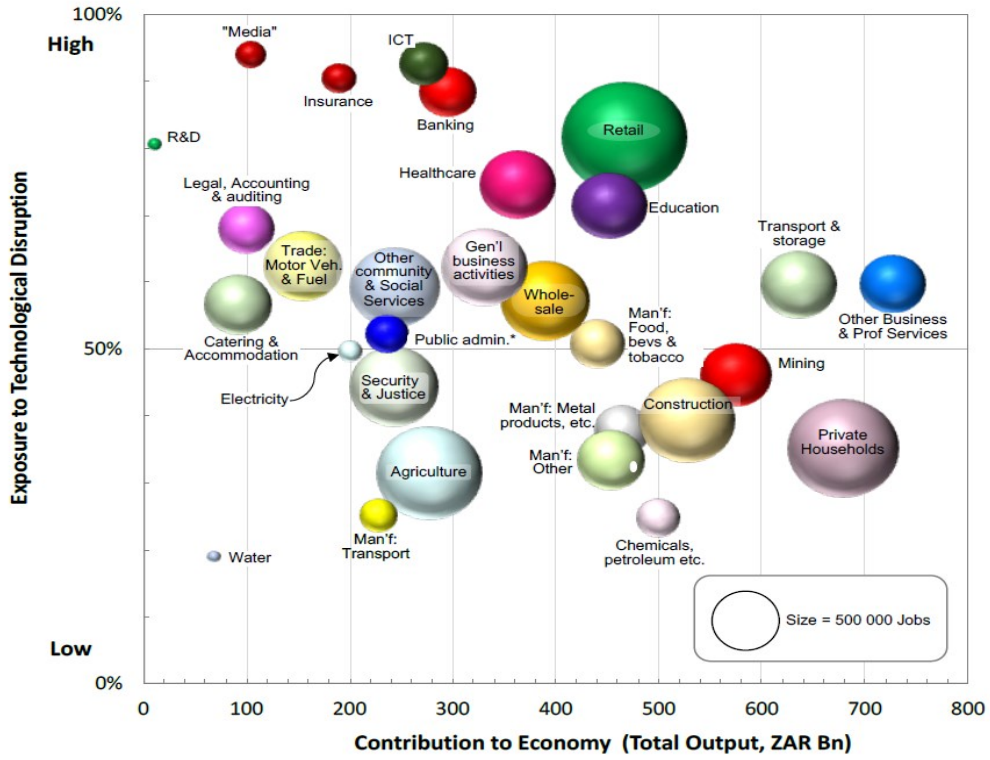


Figure 1: South African Sector exposure to Digital Disruption: Source: Armstrong and Lee (2021, p.736)

With digital disruption affecting all sectors in South Africa, digital maturity has become an important element on every business' executive leadership's agenda, as increased access to resources, products, and services through the Internet has changed how enterprises are run, along with the labour market, industries, and professions (Grewiński, 2017).

1.3 Research problem

Digital maturity is a challenge that businesses in South Africa must tackle, irrespective of its size or nature as it affects all enterprises (van Dyk & Van Belle, 2019). Therefore, they must understand it and its level, as the tipping point has passed and it must be embraced and capitalised on (Hess, Matt, Benlian, & Wiesböck, 2016). The notion of ascertaining the level of digital maturity of a business arises from an attempt to preserve competitive advantage in an increasing digitalised business environment (Thordsen & Bick, 2020), through exploiting potential opportunities and averting potential threats from advancing technologies (Chanias & Hess, 2016).

There is no consensus in the definition of digital maturity in literature (Mettler & Pinto, 2018), though several authors regard it as the ability to adapt to a constantly changing digital business environment driven by evolving technologies (Eremina, Lace, & Bistrova, 2019; Kane, Palmer, Phillips, Kiron, & Buckley, 2018). Adapting to the constantly changing digital environment is achieved through digital transformation, which leads to some authors defining digital maturity as the status quo of digital transformation (Chanias & Hess, 2016; Remane, Hanelt, Wiesboeck, & Kolbe, 2017; Thordsen, Murawski, & Bick, 2020a).

Varying factors and/or capabilities lead to the achievement of digital maturity, understanding of which has led to an influx of digital maturity models from management consultancy and academia (Chanias & Hess, 2016; Remane et al., 2017; Thordsen et al., 2020a). The intention of the models is to assist managers' understanding of the level of digital maturity of a business (Remane et al., 2017). Managers can use the outcomes of the models to identify which factors need to be improved or introduced.

South African managers look to digital maturity models to understand the capabilities needed within the business, however, whether the factors identified are applicable to a developing

or emerging country is yet to be established. The adaption of digital maturity factors identified in various models has proved problematic as they are developed in a different context (Jaquire & von Solms, 2017). Developing and emerging economies face their own challenges, including dynamic but unstable political and economic environments, which make digital transformation difficult (Tadeu, Duarte, Taurion, & Jamil, 2019). As a developing economy, South Africa is not without these challenges, with businesses still needing to adapt to a rapidly changing global business environment that is increasingly volatile, uncertain and complex (Teichert, 2019).

Digital maturity, as the status quo of digital transformation, implies understanding of the capabilities built during the process and comparison of these to digital maturity factors. Transformation efforts have resulted in the change or overturning of business models (Hess et al., 2016), leading to a set of acquired capabilities by business which put it in good stead to optimise for the new environment (Thordsen et al., 2020a), varying from leadership, culture, learning capabilities to operational capabilities (Kane et al., 2018). Digital transformation requires a business to develop various capabilities whilst implementing digital technology, create and implement a digital transformation strategy, and re-inventing its business models to sustain competitive advantage (Achtenhagen, Melin, & Naldi, 2013; Carcary, Doherty, & Conway, 2016; Ransbotham, Kiron, Gerbert, & Reeves, 2017; Zinder & Yunatova, 2016). As businesses have high expectations linked to digital maturity and start a number of initiatives to change the way value is created, the academic research agenda needs to develop greater understanding of the factors/capabilities involved (Warner & Wäger, 2019).

Attaining digital maturity requires a strategic framework for a rapidly changing environment, and one that has gained popularity is the dynamic capabilities framework, where a growing theoretical research stream of strategic management literature has shown how businesses react to fast technology or market changes (Ambrosini & Bowman, 2009; Di Stefano, Peteraf, & Verona, 2014; Eisenhardt & Martin, 2000; Helfat & Raubitschek, 2018; Konlechner, Müller, & Güttel, 2018; D. J. Teece, 2007; D. J. Teece, Pisano, & Shuen, 1997). Firms demonstrate flexibility, timely responsiveness, ability to relocate internal and external expertise (Ambrosini & Bowman, 2009) to achieve positive results, such as competitive advantage (Arndt & Pierce,

2018). It is evident that there is a connection between a firm's dynamic capabilities and digital maturity factors, as found in digital maturity models.

Therefore, the problem this study investigated was the relevance of digital maturity factors in South African business, typically expressed in the form of models. However, these have been created in developed countries, a digital environment different from that of developing countries. To compound the problem, the models are based on a definition of digital maturity as the status quo of digital transformation, whilst in practice it and digital transformation hold different meanings. To a business, it is about acquiring capabilities aligned to its perceived meaning, thus different factors will hold different levels of significance. To understand the factors/capabilities and why digital transformation journeys were shaped in a certain manner for South African businesses, it was imperative to understand the perceived meanings of both phenomena.

1.4 Research Objectives

In order to understand the relevance of digital maturity factors in South African businesses, the study had the following objectives:

i. To explore the perceived meaning of digital transformation to South African businesses
ii. To explore the perceived meaning of digital maturity to South African businesses
iii. To determine the dynamic capabilities South African businesses have developed for digital transformation.

1.5 Significance of the study

In exploring the relevance of digital maturity factors in South Africa businesses the significance of the study is:

i. To contribute to the discussion to advance knowledge academically on the relevance of digital maturity factors in South African businesses

ii. To contribute to the body of knowledge in the understanding of dynamic capabilities built for digital transformation in emerging countries
iii. To contribute to the literature on digital maturity factors with a valuable link between theory and practice, i.e., understanding the operationalisation of digital maturity factors
iv. To contribute to a better understanding of the managerial and practical implications of dynamic capabilities built for digital transformation
v. To contribute to the conversation on a conceptual definition of digital maturity in South Africa.

1.6 Delimitations of the study

i. The dynamic capability theory includes micro-foundations necessary for dynamic capabilities, but this study will not look for micro-foundations
ii. The research will not seek to build a model for the South African environment but rather identify which capabilities exist or are considered by South African businesses
iii. The study will focus on digital maturity factors and their relevance, not their relationship with each other or their weightings in achieving digital maturity.

1.7 Assumptions

i. Businesses in South Africa have some understanding of digital transformation and digital maturity, and both are under consideration
ii. South African businesses have undertaken the process of digitally transforming so some level of digital maturity exists
iii. The businesses identified have some structure to their digital maturity quest
iv. South African businesses endeavour to continually improve the level of digital maturity they have in order to retain their competitive advantage
v. Dynamic capabilities are built on the basis of micro-foundations and ordinary capabilities. These are assumed to be in place.

Chapter 2. Literature Review

2.1 Introduction

This study aimed to explore the relevance of digital maturity factors to South African businesses. In order to build an understanding of their relevance the definition of the terms is necessary. The tools necessary to operate in an environment driven by digital technologies are encapsulated in dynamic capability theory and digital maturity models. The literature review will therefore seek to clarify the key concepts as understood for this study.

Digitisation and digitalisation have driven the so-called "fourth industrial revolution," and as it has gained momentum the terms "digital transformation" and "digital maturity" have come to the fore. Literature repeatedly highlights a divergence in the definitions of these terms. One of the underpinnings has been a rapidly changing business environment, driven by rapidly evolving technologies in the digital, physical, and biological fields. The implication is that businesses are required to operate in a volatile environment and continue to deliver superior performance across all domains. Dynamic capability theory is a lens through which the capabilities to sense, seize and transform for such an environment can be identified.

2.2 Digital Maturity and Digital Transformation

2.2.1 Digital Maturity

There is no commonly agreed definition for the concept of "digital maturity" (Mettler & Pinto, 2018), with some authors regarding it as the ability to adapt to a constantly changing digital business environment, with change driven by evolving technologies (Eremina et al., 2019; Kane et al., 2018). Driven by evolving technology, it is also regarded as an IT-induced phenomenon (Thordsen & Bick, 2020).

The process of enabling businesses to adapt to a digital environment is achieved through its transformation, which involves producing a set of acquired capabilities for the organisation, to enable it to continue performing in its new environment (Thordsen et al., 2020a). These

include leadership, culture, learning and operational capabilities (Kane et al., 2018). The process of acquisition of these capabilities is known as digital transformation, thus a need arises to understand its status quo (Chanias & Hess, 2016; Remane et al., 2017; Thordsen et al., 2020a), a definition found in extant literature.

The primary importance of transformation is its impact on business, with digital maturity being the ability of an organisation to change and apply innovation in order to remain competitive (Deloitte, 2019; Eremina et al., 2019). It is therefore not a static target but a set of dynamic capabilities that a learning organisation develops over time. Warner and Wäger (2019) posited the dynamic capability framework was a powerful lens for examining the digital transformation of incumbent firms, and in order to survive in the digital economy they had to build strong dynamic capabilities to ensure the rapid creation, implementation and transformation of business models. The implication of this is that for a business to be viewed as digitally mature it must have an ability to build dynamic capabilities and readily adapt to a constantly changing environment (Teichert, 2019). The environment is driven by technology which continually evolves but does not reach a state of completion or perfection. Digital maturity is thus a relative concept with regards to the environment and time, and a learned characteristic of an entity that represents an ability to respond appropriately to the environment in which it operates (Mettler & Pinto, 2018).

2.2.2 Digital transformation

Several authors view digital maturity as a measure of the status quo of digital transformation (Chanias & Hess, 2016; Remane et al., 2017; Thordsen et al., 2020a), therefore in order to understand it, it is imperative to understand the meaning of digital transformation. Though digital transformation is different from digital maturity the term is sometimes used interchangeably with it (Teichert, 2019). Several concepts, including digitisation and digitalisation are labelled digital transformation, an indicator of its breadth (Reis, Amorim, Melão, & Matos, 2018).

In literature there is no consistent definition of digital transformation, as found by Warner and Wäger (2019) when they conducted a summative content analysis of strategy consultancy reports. Broad inconsistencies and ambiguities centred on processes and outcomes exist,

whilst empirical evidence has shown that it varies from an individual and an organizational perspective. It consists of varying themes, including a cultural orientation that recognizes fast and flexible decision-making, awareness of digital technologies, changing consumer behaviour, developing business models and a capability-building process. One of the major contributors to differing perspectives on the meaning stems from different terminology used to discuss a variety of themes relating to how awareness, preparedness, and responsiveness are built to address this phenomenon (Warner & Wäger, 2019).

Digital transformation is a technology-driven change, affecting different levels of the organisation and is a two-pronged approach, involving the exploitation of digital technologies for the improvement of processes as well as exploration of digital innovation in an attempt to transform digital models (Berghaus & Back, 2016). The process is arduous but has to be undertaken for survival and competitive advantage (Reis et al., 2018), it involves the business redefining itself to be able to adapt in a constantly changing environment (Teichert, 2019; Vial, 2019b). The spectrum of influence ranges from changes in countries and industries, societies and organisations (Vial, 2019b). Authors agree that digital transformation is building and orchestrating several digital capabilities within the organisation to deliver value to stakeholders (Berghaus & Back, 2016; Deloitte, 2019; Reis et al., 2018). As it involves several capabilities and affects several levels in the organisation it is viewed as a holistic concept, so how the company is run from the top becomes highly important (Teichert, 2019).

It can be concluded that there is no consensus in defining digital transformation or in the breadth of the concept. The differences in the definition of digital maturity and digital transformation lead to the first two research objectives:

Research Objective 1: To explore the perceived meaning of digital transformation to South African businesses.

Research Objective 2: To explore the perceived meaning of digital maturity to South African businesses.

2.3 Theoretical framework

In identifying the digital maturity factors relevant to South African businesses, the study used dynamic capability theory and digital maturity models. Understanding digital maturity to be the status quo of digital transformation, assessing it translates to a complex exercise involving different aspects of the organisation. An ontology to measure digital maturity with the intention of identifying the shortcomings in the organisation and defining a pathway to improve digital maturity should reflect the different aspects of the organisation (Sandkuhl, Shilov, & Smirnov, 2019). Digital maturity models demonstrate these different aspects through several constructs and dimensions that diagnose the maturity of different capabilities across the organisation. The difficulty lies in measuring capabilities from different domains, which have different formalisms and terminology and summarising into a single measure (Sandkuhl et al., 2019), thus a multi-aspect ontology that captures the dynamism of the different capabilities of organisation where digital maturity needs to be utilised.

Warner and Wäger (2019) theorise the dynamic capabilities framework is a powerful lens through which to examine digital transformation, a multi-faceted organisational concept that requires different capabilities to develop simultaneously. Digital maturity defined to be the status quo of digital transformation would therefore look at the status quo of the capabilities that have been built by the business in the process of transforming. Thus, the dynamic capability theory framework can be used to examine digital maturity factors. A closer look at digital maturity models shows these are created generically to consist of measures, indicators, factors, dimensions, and outcomes, as shown in Figure 2 (below). The dimensions are consolidated to determine the level of digital maturity.

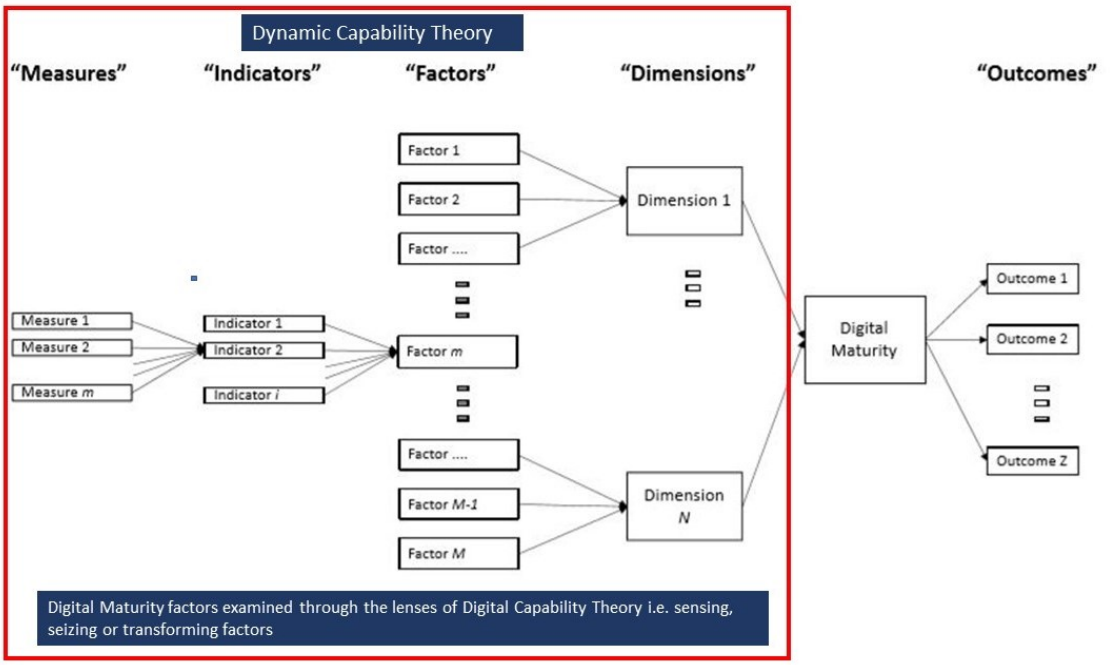


Figure 2: Theoretical framework for the study Adapted from: Armstrong and Lee (2021, p.768)

This study argues that the capabilities built for digital transformation are aspects of digital maturity factors.

2.4 Digital maturity models

2.4.1 Maturity models: origins and nature

On the assumption of predictable patterns, maturity models are a representation of how business capabilities can evolve from one stage to another along a well-defined logical path, hence they are also termed stage-of-growth models, stage models, or stage theories. The ideology of maturity models can be traced to Maslow's hierarchy of human needs in 1954, Kuznets' economic growth in 1965 and the Nolan's progression of IT organization in 1973 and 1979. Nolan's stage model led to the early emergence of maturity models based on staged sequence levels (Pöppelbuß & Röglinger, 2011). By their nature they look at the maturity of a domain based on a comprehensive set of criteria (De Bruin, Rosemann, Freeze, & Kaulkarni, 2005) and are a reference tool that is conceptual and normative (Becker, Niehaves, Poeppelbuss, & Simons, 2010). The outcomes from maturity models could be either

descriptive, prescriptive, or comparative, depending on the purpose for which they are designed (De Bruin et al., 2005). In their prescriptive form maturity models are set to identify gaps in capabilities that can be improved through a set of actions (Lahrmann, Marx, Mettler, Winter, & Wortmann, 2011). However, a concern, is that most fail to describe how the users of their models can effectively perform prescriptive actions based on the outcomes (Lahrmann et al., 2011).

Maturity models are important tools to assist the organisation in informing strategy and defining a path of evolution for the organisation. However, they struggle with being grounded in theory, the theory of emergence and the theory of diffusion of innovation can offer foundations for maturity models (Lahrmann et al., 2011).

2.4.2 Information systems maturity models

In more recent times the phenomenon of maturity models has been extensively used in the field adjacent to digital maturity, that of information systems, where they are a tool to inform continuous evolution of systems, provide benchmarking or to be used for self-assessment purposes (Lasrado, Vatrapu, & Andersen, 2015; Mettler, Rohner, & Winter, 2010). The most well-known of the maturity model in this field is the Capability Maturity Model, introduced in the early 1990s. It is a major contributor to the broad acceptance of maturity models in the information systems community (Mettler et al., 2010), widely accepted and adopted to address an extensive range of problems in the organisation (Lasrado et al., 2015). However, maturity models within the information systems arena are not flawless and suffer some challenges, including measuring distance between maturity level, scale of measurement discrepancies, dealing with additivity, and how the dimensions used in these models are derived (Lasrado et al., 2015).

2.4.3 Digital maturity models

Within the digital landscape, maturity models are a tool for an organisation to assess the current situation of various capabilities that it has built, acquired and introduced over time (Becker et al., 2010). Digitisation affects all areas of the organization and as such it is often difficult to define an optimal digitisation strategy (Schwer, Hitz, Wyss, Wirz, & Minonne,

2018). Models assist in looking at the digital maturity level of the organisation as they take an overview and identify specific areas in which it can optimize digitisation (Schwer et al., 2018).

2.5 Digital maturity models construction

2.5.1 Factors of digital maturity

Figure 3 (below) illustrates the number of times different areas are considered in 23 digital maturity models.

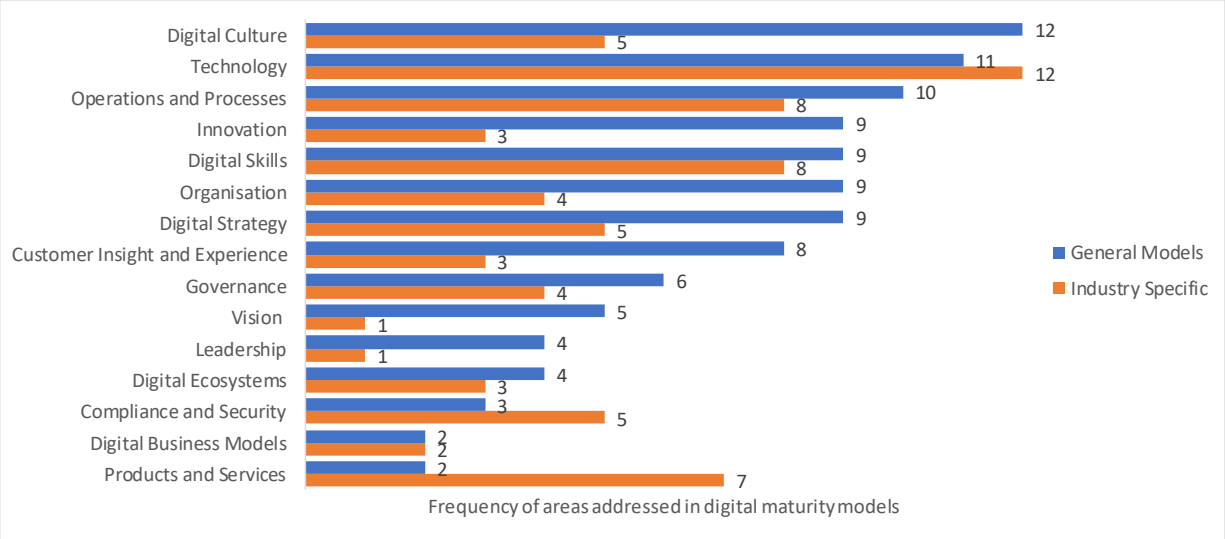


Figure 3: Frequency of maturity areas utilised in general digital maturity models and industry-specific digital maturity models. Source: Teichert (2019)

Across the digital maturity models, from industry-specific models to more generalised ones, there is a range of factors used (Teichert, 2019), some of which are considered more frequently than others. The derivation of the various areas to be considered for inclusion in digital maturity models is largely unclear, as shown through gaps in addressing every facet of the organisation. In a study to understand how digital maturity variables impact the enterprise architecture layers, from 15 models studied of 147 variables, it was found that no model addressed all aspects of the enterprise's architecture (Schwer et al., 2018). The greatest concern with digital maturity models is that they deal with the business side of the organisation but are limited in addressing the technical side, including technology, physical,

implementation, and migration (Schwer et al., 2018). Digital transformation is an IT-induced phenomenon and thus the level of organisational IT becomes a key factor for digital maturity (Thordsen & Bick, 2020). However, Thordsen and Bick (2020) found digital maturity models disregarded IT dimensions in determining an organisation's level of digital maturity.

2.5.2 An holistic digital maturity model

Digital transformation goes beyond functional thinking to consider holistically the comprehensive factors that must be in place for exploiting the opportunities or avoiding the threats that stem from digital technologies (Warner & Wäger, 2019). Existing models do not provide an holistic view on the path towards digital maturity, that is, digital transformation, and through a comparison with established IT maturity models, significant shortcomings were identified in them (Thordsen & Bick, 2020). The gaps in the models fail to extract the full value of digital transformation, to acknowledge that it is an IT-induced phenomenon, or that the level of IT maturity is a key factor of digital maturity (Thordsen & Bick, 2020).

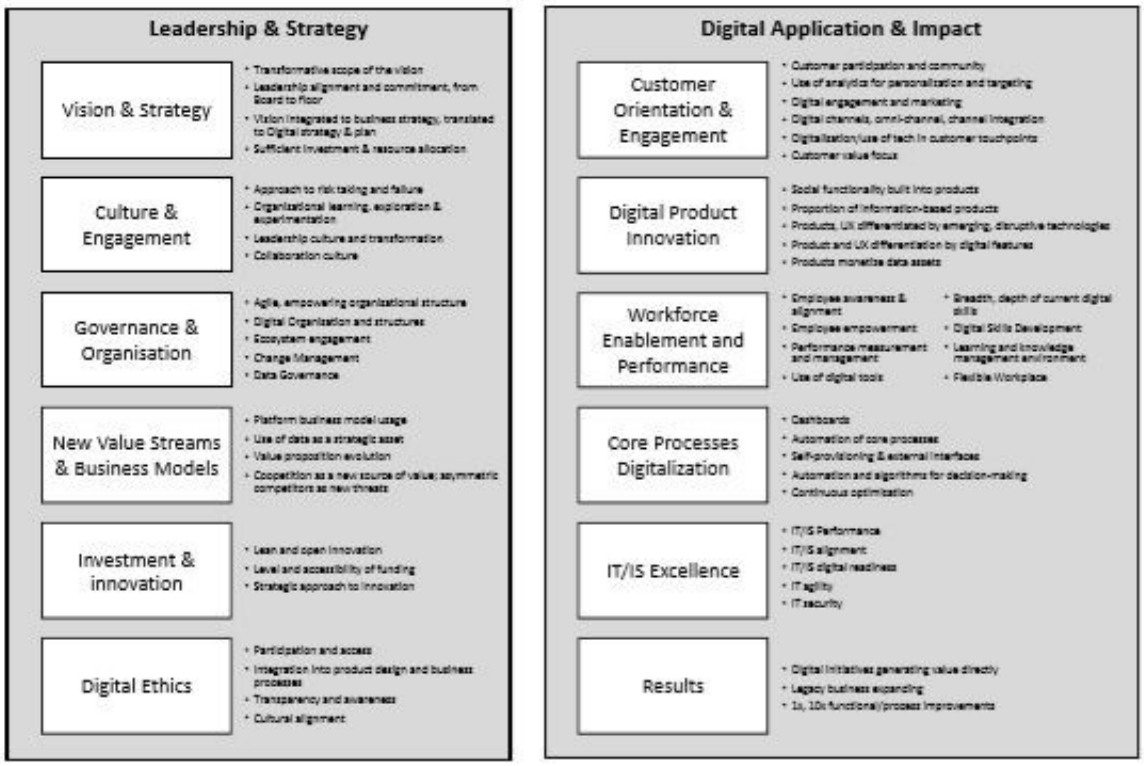


Figure 4: Holistic Digital Maturity Model. Source; Armstrong and Lee (2021, p. 791)

Armstrong and Lee (2021), suggest an holistic model shown in Figure 4, which looks at all aspects of the organisation and splits the assessment into two main components mainly leadership and strategy, and digital application and impact. The digital maturity factors found within each of these components are not only found in other models but are also suggested as capabilities in the dynamic capability theory (see 2.6).

2.6 Dynamic capability theory

The theory of dynamic capability argues that organisations cannot survive on traditional sources of competitive advantage, that is, baseline capabilities, but it was imperative to build a super-capability for change which would enable the organisation to sense, seize and shape new market opportunities, more specifically in an environment characterised by rapidly changing technology and market volatility (D. J. Teece et al., 1997). This super-capability, known also as dynamic capability, enables a business to transform in periods of rapid change (Denrell & Powell, 2016). Strong dynamic capabilities are vital for businesses facing dynamic competition as market disruption occurs on a regular basis and in some instances arise from outside their traditional industry (D. J. Teece, 2016). The strength of a business's dynamic capabilities can benefit it by producing not only superior profits but also differentiated products and services that are more suitable to the new business environment (D. J. Teece, 2016). The speed by which the business can align and realign its resources to this new environment is determined by the strength of its dynamic capabilities, strengthening of which involves developing and orchestrating resources in response. This can be achieved if the business is able to continuously sense, seize and periodically transform (D. J. Teece, 2016).

Warner and Wäger (2019) believe the dynamic capabilities framework is useful for examining digital transformation, given the disruptive nature of digitisation. Digital maturity as the status quo of digital transformation can also be examined through the lens of the dynamic capabilities' framework. Businesses need to build strong dynamic capabilities to respond rapidly in order to maintain relevance in the emergent digital economy. Core to implementing changes needed for a business to be in a position to optimize opportunities within its business environment is leadership (D. J. Teece, 2016). Coupled with vision it is essential to mobilising the business to share strategic vision, align business activities with strategy and ignite a desire

to succeed. Thus leadership, strategy and vision are core elements of a business's dynamic capabilities and the quality of these elements are central to the strength and weakness of its dynamic capabilities (D. J. Teece, 2016). These elements are also found in digital maturity factors as seen in Figure 4 and Figure 3.

Dynamic capabilities evolve around doing the right thing at the right time and require an assessment of the business environment, along with technological opportunities, strong leadership, and the building of a change-oriented culture. Leadership and culture are the cornerstone of digital maturity, with digital maturity models identifying them as factors to measure in the assessment of digital maturity. Teichert (2019), identifies knowledge sharing, empowerment, risk and failure tolerance, collaboration and more importantly change-ability as some of the main culture categories needed for digital maturity.

The abilities to sense, seize and transform are essential for long-term sustenance of the business in an environment in which customers, competitors and technology are changing and engagement with each cluster of factors is not continuous or semi-continuous, nor necessarily sequential (D. Teece, Peteraf, & Leih, 2016).

2.6.1 Sensing

Sensing is paramount to the business being able to adapt to volatile markets, technological uncertainty and competitors (Day & Schoemaker, 2016). It is inherently a set of factors that give the business an ability to explore technological opportunities, probe the market, listen to customers and scan the business ecosystem (D. J. Teece, 2019), and helps with identifying threats and opportunities by scanning the external environment for unexpected trends that could disrupt the business (Warner & Wäger, 2019; Weritz, Braojos, & Matute, 2020). Sensing encapsulates the intricate understanding of customer needs such that the business is able to identify, develop, co-develop, and assess technological opportunities to meet these needs. It involves looking for trends and is supported by strong utilization of data analytics from which managers can build and test hypotheses about market and technology evolution, including recognizing latent customer needs (D. J. Teece, 2019). Further to data analytics the speed of sensing is increased by speedy information gathering, which can be achieved through an innovation capability (Roy & Khokle, 2016). Sensing also involves making exploratory

investments in the right technologies and having timely intelligence about every part of the business ecosystem (Day & Schoemaker, 2016). Figure 3 and Figure 4, refer to the factors of customer insights and experience, customer orientation and engagement which are factors that look to what extent businesses utilise data analytics to understand its client's needs as well as what channels it uses to deliver these to clients (Armstrong & Lee, 2021; Teichert, 2019)

Once the business has a deeper understanding of its environment along with the impact of the changing landscape, the question is how it utilizes this to enhance the business.

2.6.2 Seizing

Seizing involves the mobilization of resources to address needs and opportunities, and as a result capture value from these opportunities (D. J. Teece, 2016). Seizing concerns itself with implementation (D. Teece et al., 2016), elements of which include new products, processes and services which require investment in development and commercialization activity (D. J. Teece, 2007). Investments and their timing are central to the seizing stage, as this determines if the business has an ability to invest heavily in technologies and designs that will achieve marketplace acceptance and can stay ahead of the competition. Strategy around investments and their timing, leveraging products and services and building on increasing return are important during the seizing stage (D. J. Teece, 2007).

Selection or creation of a business model that will define the commercialization strategy and investment priorities is an important element of seizing. Business model design is a part of organisational innovation and business success depends on it as much as the selection of technology. Business models implicate processes and incentives, and are vital in supporting innovation (D. J. Teece, 2007).

2.6.3 Transforming

Transforming arises when the need to fully realize the full commercial potential of business opportunities created by the sensing and seizing capabilities requires execution of a new strategy which can only be achieved through business transformation. It involves continued renewal and forms the third pillar of the dynamic capability theory (Day & Schoemaker, 2016;

D. J. Teece, 2016). It speaks to the ability of the business to change itself as well as how it navigates and shapes the external environment (D. Teece et al., 2016). The transforming capability is characterised by an agile, entrepreneurial mind-set within the business and a broad expansive partnership externally (Day & Schoemaker, 2016). Thus, the components of transforming include organisational redesign and external shaping.

2.6.4 Micro-foundations

Within the context of the dynamic capabilities' theory exists the term "micro-foundations," which are the factors that support the development of dynamic capabilities. The micro-foundations are varied as shown in Figure 5 (below), and include elements of operations, governance, customer needs, business models, investment prioritization, and innovation (Teece, 2007). Micro-foundations support the development of dynamic capabilities, these begin to tie in with factors identified across different digital maturity models that have been created in academia and practice. Figure 3 and Figure 4 identify digital maturity factors concerned with governance, operations, investments, processes as well as investments and innovation.

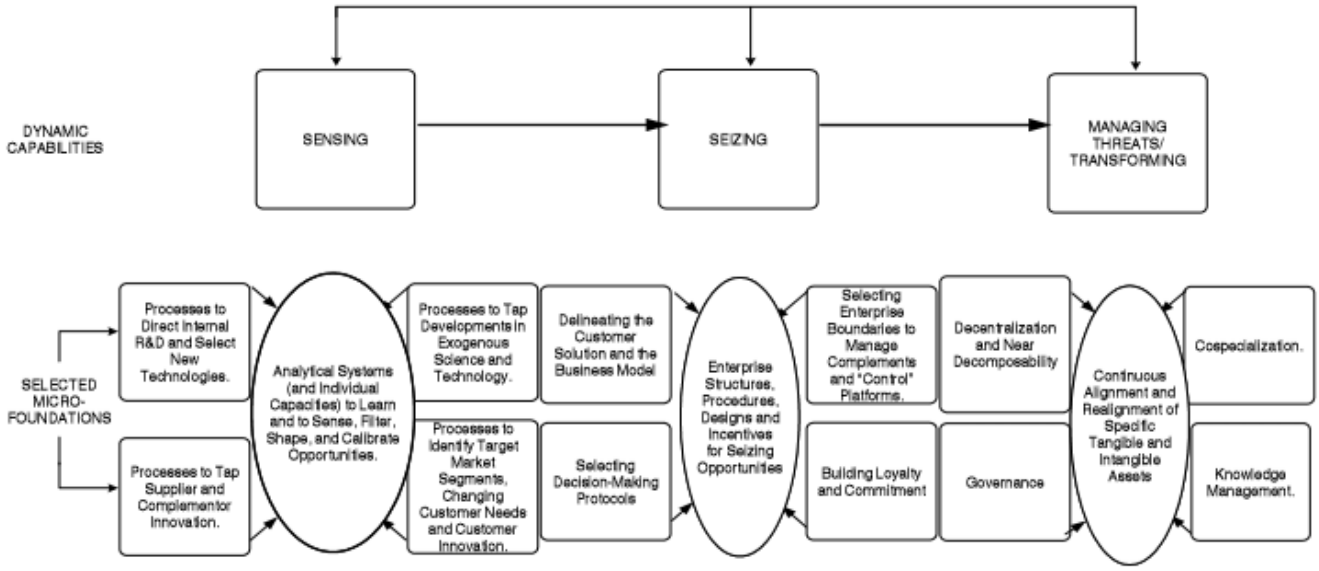


Figure 5: Micro-foundations for building dynamic capabilities. Source: D. J. Teece (2007)

The literature suggests there is a strong relationship between the dynamic capabilities that a business builds for a changing environment and digital maturity factors. Thus, looking at the dynamic capabilities acquired by the business for digital maturity should provide a lens to understand the relevance of digital maturity factors to South African businesses. This leads to the following:

Research Objective 3: To determine the dynamic capabilities South African businesses have developed for digital transformation.

2.7 Conclusion of literature review

The literature review has looked at the definition of digital maturity and digital transformation and found no universal definition of this term or a common one. In an analysis of digital maturity models, it was revealed that the language used for the factors to drive maturity is not a common one, with some models referring to constructs, other to dimensions, and some to factors. In expressing the level of digital maturity some models use stages, some use archetypes, and others use levels. It was further discovered that they are not rooted in theory, and some authors have begun to suggest theories for their possible grounding. It was further found that digital maturity models do not fully consider all the organisation's aspects, more specifically when the factors the models consider are compared to the scope of enterprise architecture.

The research aimed to understand the relevance of factors driving digital maturity proposed by various authors within the South African context, through the lens of the dynamic capability theory.

The research objectives were -

i. ***To explore the perceived meaning of digital transformation to South African businesses.***
ii. ***To explore the perceived meaning of digital maturity to South African businesses.***
iii. ***To determine the dynamic capabilities South African businesses have developed for digital transformation.***

Chapter 3. Research Methodology

The research aimed to explore which digital maturity factors were relevant to South African businesses. Digital maturity was defined for this research as the status quo of digital transformation, however, neither term has no single universally accepted definition. The researcher's departure point was therefore to gain an understanding of how South African firms perceived them.

This chapter describes the research methodology used to explore the research objectives, depicted by the research onion shown in Figure 6.

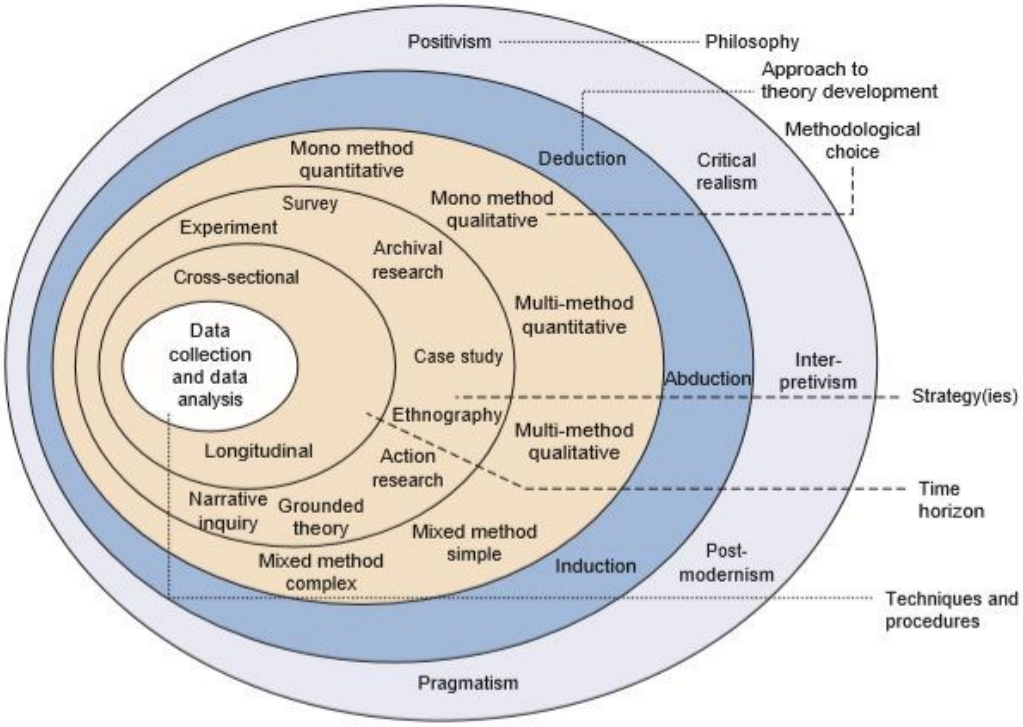


Figure 6: Saunders's Research Onion. Source: Saunders, Lewis, & Thornhill (2016)

Figure 6 depicts the choices concerning philosophy, approach to theory development, methodological choice, research strategy, time horizon before deciding on data collection and data analysis (Saunders et al., 2016). It provided the framework for formulating the research design.

3.1 Philosophical underpinning

Five major philosophies exist in business and management research, namely positivism, critical realism, interpretivism, postmodernism and pragmatism, as illustrated in Figure 6. The research philosophy utilised fell into the interpretive paradigm, characterised by creating new, richer understandings and interpretations of social worlds and contexts. In a business and management environment this involves looking at business from the viewpoint of different groups of people (Saunders et al., 2016).

The study aimed not to generate new theories but to determine if factors already identified through digital maturity models in extant literature applied to South African businesses. The study further sought to make sense of the phenomena of digital maturity and digital transformation within the South African context, based on an understanding of the world from the subjective experiences of individuals (Antwi & Hamza, 2015). The use of an interpretive and exploratory approach is seen in studies by Weritz et al. (2020) and Warner and Wäger (2019), which also investigated the relevant dynamic capabilities and digital culture aspects which may influence digital transformation and maturity.

3.2 Approach to theory development

There are three main approaches to theory development, namely deduction, abduction, and induction, as illustrated in the second layer of the research onion in Figure 6. The research followed an abductive approach to theory development, one which oscillating from theory to data, effectively combines the deductive and inductive approaches (Saunders et al., 2016).

The interrogation of the relevance of digital maturity factors was achieved by asking questions constructed using the dynamic capability theory as a framework and aligning the dynamic capabilities to elements of digital maturity factors found in digital maturity models. The research required the researcher to build patterns, categories and themes relating to the dynamic capabilities from the bottom up through organising information gathered about the business from the interviewee (Creswell & Creswell, 2017). This approach of building the themes to illustrate the dynamic capabilities was an inductive methodology. The portion of the research relating emerging dynamic capabilities to the elements of digital maturity factors

to determine the relevance of these factors introduced a deductive approach to the research (Creswell & Creswell, 2017). The combination of the inductive and deductive approaches resulted in the research following an abductive approach as it oscillated from theory to data and back to theory.

3.3 Methodological choice

As the study was interpretative and abductive, the appropriate methodological approach was qualitative, conducted when phenomena need to be explored (Creswell & Poth, 2016). Research objectives that reflect the identified phenomenon are used to direct the course of the research (Ryan, Coughlan, & Cronin, 2007). The first two objectives dealt with the meaning of both digital maturity and digital transformation to South African businesses. Without consensus on the definition of digital maturity and digital transformation, a more complex and in-depth understanding of the phenomena is required (Creswell & Poth, 2016). Although often perceived to be biased, small-scale, and lacking rigour, qualitative research is unbiased, in-depth, valid, reliable, credible, and rigorous (Crick, 2020).

The last research objective was to investigate the relevant dynamic capabilities which may influence digital maturity. In order to conduct the investigation, the dynamic capability theory was applied to frame questions to determine the capabilities built for sensing, seizing, and transforming in response to a continually changing digital environment. Prior research has lacked in adapting and connecting dynamic capabilities to digital maturity factors, so a complex, detailed understanding was required (Creswell & Poth, 2016). As the study concerned itself with emerging economies, which have different challenges to developed economies, minimal research exists on the relevant digital maturity factors. El-Telbany et al. (2020) focused on looking at the gap in digital transformation in Egypt using qualitative research, as in this study.

3.4 Research Strategy

Several strategies are exclusive to a qualitative research design, namely ethnography, action research, grounded theory, narrative inquiry, and phenomenology (Creswell & Creswell,

2017; Saunders et al., 2016). The research adopted a phenomenological approach. According to (Davidsen, 2013), the aim of a phenomenological approach is "to capture as closely as possible how the phenomenon is experienced within the context in which the experience takes place". This approach best fitted the purpose of this qualitative study, which was to explore the relevance of digital maturity factors in the South African context by understanding the lived experiences of executives that influence digital maturity. Digital maturity is an ongoing socio-technical phenomenon, whilst digital transformation is a context-specific phenomenon and can take distinctive paths (Remane et al., 2017). This research was thus a phenomenological study to determine the views of executives on the dynamic capabilities necessary for digital maturity. The units of analysis were discrete statements extracted from interview data regarding digital transformation resources, capabilities, and results (El-Telbany et al., 2020). Phenomenology does not reveal generalisable situations but provides examples, explanations and experiences to better understand the phenomenon, an approach by Marks, AL-Ali, Atassi, Abualkishik, and Rezgui (2020), in their study to understand the practitioners' views on the maturity and challenges of digital transformation.

3.5 Time horizon

According to Figure 6 there are two possible types of time horizons in a study, namely, longitudinal, which is a representation over a period in time, or cross-sectional, an instance in time. The research looked at the objectives at a point in time, making the time horizon cross-sectional (Saunders et al., 2016). The time horizon was determined by time constraints of the study as well as the definition of digital maturity. It was assumed that digital maturity was the status quo of digital transformation, at a point in time, specifically for the third objective, which looked at the dynamic capabilities that had been built along its journey.

3.6 Population and Sample

3.6.1 Population

The population for this study was board members or senior executives who occupy active roles in multiple businesses in South Africa, since they had the most knowledge about

company-wide related aspects of digital transformation (Weritz et al., 2020). Both old corporates and born-digital businesses were considered in the population. Whilst it is counterintuitive to include born-digital companies, they are under constant pressure from new disruptors to reinvent themselves using emerging technologies (Li, 2020). Though digital native companies held an advantage over traditional companies the differences were already becoming blurred before the pandemic. COVID-19 made these distinctions irrelevant as it introduced a new disruption for all businesses. Traditional companies accelerated digital changes that were already underway. In the "new normal" dispensation, the expectation is that distinction will be between those businesses that successfully manage to continually transition to new technologies, new business models, new organisational designs and those lagging (Li, 2020).

Different sectors were vital to the study as industries experience digital transformation differently, thus, some sectors were more digitally mature. The "digital vortex" illustrates how industries are all being drawn into the vortex of technology disruption at different paces, as shown in Figure 7 (below). This implies that different sectors could have different capabilities, so a comprehensive analysis entailed including various sectors.

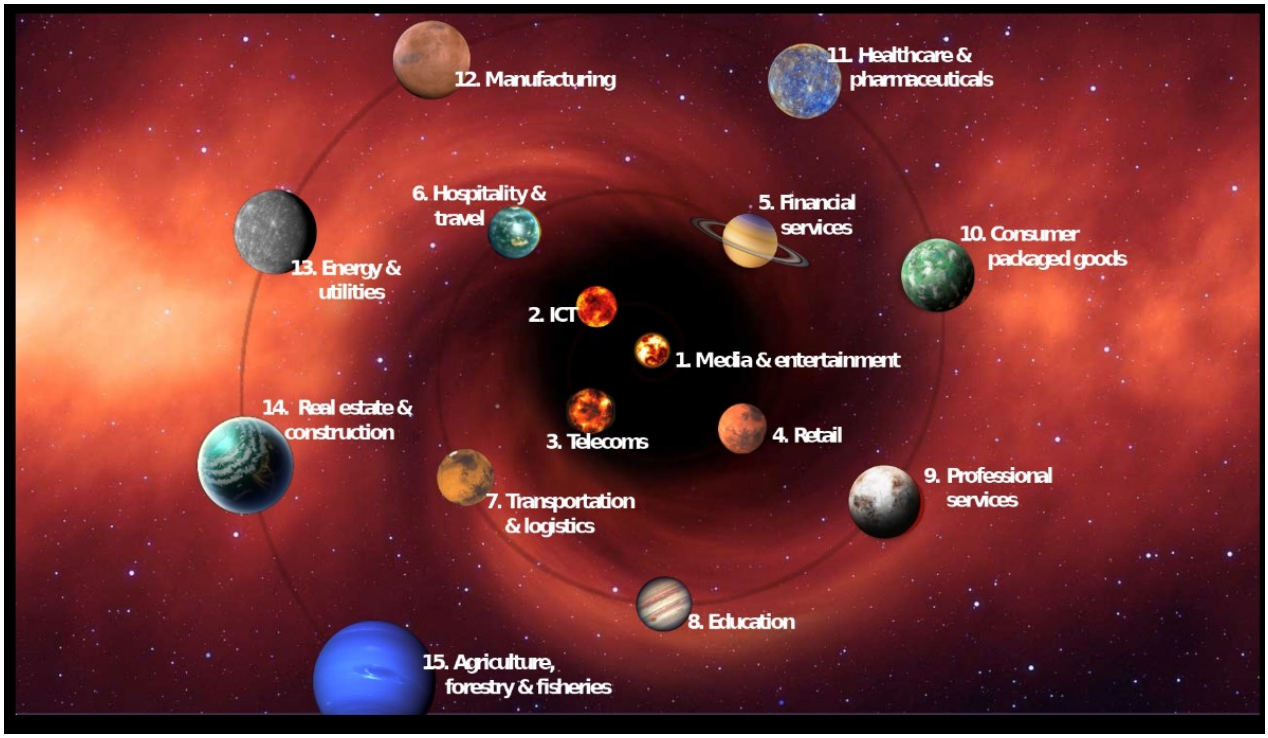


Figure 7: The Digital Vortex, 2019: Source: Armstrong and Lee (2021, p.734)

3.6.2 Sampling method

The study required participants with broad and in-depth knowledge of the organisations in which they are employed. The sampling technique, therefore, targeted the organisations' top managers and executives who were intricately involved in strategic planning for the development of digital innovation and could highlight the variables and constructs that might directly or indirectly affect the level of digital maturity (El-Telbany et al., 2020). Purposive and snowball sampling techniques were both suited as the methods were dictated by the phenomenon, including the type of participants (Groenewald, 2004)

A purposive, non-probabilistic sampling was used to select individuals within the chosen organisation to participate. The research strategy informed the choice of the sampling method. In phenomenology, purposive sampling is used because it selects individuals with knowledge of the phenomena concerned and allows an understanding of their lived experiences (Mapp, 2008). It is also practical when the research intends to reveal or illuminate key themes (Saunders et al., 2016). Further, the sample was based on the researcher's judgement and purpose for the research, explicitly including participants experiencing digital transformation and digital maturity (Groenewald, 2004). The main disadvantage of purposive sampling is that the computation of results for that organisation will not be generalisable (Lennon-Dearing & Neely-Barnes, 2014), as the individuals will be selected based on what the researcher perceives their role entails.

Though purposive sampling managed to assist the researcher with securing some interviews it was noted that the target population for the research was relatively small, so snowball sampling was also applied. The researcher asked for referrals from participants to peers who held similar roles in other businesses. By its nature, snowballing allows for the expansion of samples by allowing informants or participants to recommend others for interviewing (Moser & Korstjens, 2018).

3.6.3 Sample and Sample Size

In order to gain the perspective of different sectors the sample covered different industries and roles within a business, drawn from the population for this study. Different roles within

the organisation are essential to digital maturity as it affects the whole organisation. The eligible participants were individuals who occupied a crucial role in businesses, who were willing to participate and who had an influence on corporate strategy and business models. Eleven senior leaders took part.

For non-probability sampling techniques the sample size is ambiguous, and there are no rules. Saunders et al. (2016) recommend a sample size of 5-25 for a study that utilised semi-structured interviews or in-depth interviews. The sample size depends on comparison the research intends to take, the heterogeneity or homogeneity of the population, and how wide-ranging the research is (Saunders et al., 2016). Mapp (2008) suggests that the number of participants in phenomenological research should be small to allow scrutiny of each experience in depth. As the aim of the study was not to generalise the results a large number of participants was not a requirement.

El-Telbany et al. (2020) used a sample size of five to explore the digital transformation gap in Egypt, looking for the presence of nine factors and restricting it to the telecommunications sector. In another study to explore the antecedents of digital transformation through the lens of digital capability theory, the study interviewed eight participants (Weritz et al., 2020). According to (Warner & Wäger, 2019), in their study that aimed to look at digital transformation through the lenses of dynamic capability theory, interviews with 13 companies, in particular companies of more than one person, there were 18 in-depth interviews across eight industries. Creswell and Poth (2016) recommend that the sample size for a phenomenological study can vary from three to 15 participants.

3.7 Data Collection Methods

In an exploratory phenomenological study, both an in-depth and a semi-structured interview are helpful in understanding the background, the current status, and the context of the study (Saunders et al., 2016). Both formats are acceptable in phenomenological research, as they allow the researcher to obtain detailed descriptions or interpretations from the participants (Padilla-Díaz, 2015). The primary data source for this study was semi-structured interviews

based on previous studies with a similar aim, for instance those of (El-Telbany et al., 2020; Warner & Wäger, 2019; Weritz et al., 2020).

3.8 The research instrument

A guideline was developed for the semi-structured interviews based on the aim to explore the relevance of digital maturity factors in South Africa. The guide allowed for a predominantly fluid informal interview interaction that facilitated the discovery of unexpected and new insights (Eppich, Gormley, & Teunissen, 2019). The interview was structured to last between 60 and 90 minutes.

Dynamic capability theory gave the main areas in which an organisation must build capabilities in response to a rapidly evolving environment. These provided the guidelines for the open-ended interview questions (Saunders et al., 2016), therefore the main themes that were covered during the interview were: (1) the definition of digital transformation and digital maturity; (2) the dynamic capabilities built for scanning the environment for threats and opportunities; (3) the dynamic capabilities built for seizing opportunities; (4) the dynamic capabilities built for transforming the business; and (5) the challenges faced and how to improve digital maturity. The main theme questions were supported by follow-up questions for the participants to understand more easily and steer the dialogue towards the study subject (Kallio, Pietilä, Johnson, & Kangasniemi, 2016). The follow-up questions in certain instances followed the predesigned ones and, in some instances, were spontaneous. Various probing techniques were applied when asking follow-up questions, including both verbal (expressing interest with a verbal agreement or repeating or summarising the participant's points) and non-verbal techniques (nodding and allowing the participant to go on further with their point) (Kallio et al., 2016). Probing was necessary as the study intended to:

i. achieve significance and depth to the data obtained
ii. adopt an interpretivism approach that sought to understand the meaning that different participants assigned to digital maturity and digital transformation and what needed to be in place within an organisation to achieve certain levels of digital maturity or improve the current levels of digital maturity (Saunders et al., 2016).

Three pilot interviews were conducted to anticipate the discussion's length and refine the interview questions and techniques (Saunders et al., 2016). The pilot testing involved field testing, with the researcher simulating an actual interview (Kallio et al., 2016). This was chosen over internal testing and expert assessment as the researcher was conducting solo research and had no access to specialists in the field. Based on feedback obtained, questions were refined and re-ordered to achieve a better flow. An example of this semi-structured interview guide is attached (Appendix A).

3.9 Procedure for data collection

The study required access to professionals in senior positions with in-depth knowledge of the digital transformation in their business and various elements of the organisations. Two routes were taken to identify participants, approaches on *a* social media platform and referrals from others in those positions. Different social media platforms exist for a mixture of general interaction and entertainment, however, one created in 2003 to connect professionals in various fields was used, named *LinkedIn* (Murphy, Hill, & Dean, 2014). The researcher initially approached individuals directly to establish rapport, followed by requests for an interview.

An email was sent with attachments, notably:

i. A covering letter described the research, an introduction to the researcher, and the reason for the research. (Appendix B).
ii. The ethics certificate obtained from the university's Research Ethics committee with the following ethics protocol number; WBS/BA2029630/336. (Appendix C).
iii. The semi-structured interview guideline, which allowed the participants to have time to prepare for the responses. This proved to be appreciated by the participants. (Appendix A).
iv. Consent form for the interview, asking for permission for it to be recorded and indicating that interview participation was voluntary, and the participant could withdraw at any moment. (Appendix D).

On securing a participant’s time, data collection was conducted using online meetings, a version of traditional methods using Internet venues that have gained prominence with digital

societies accelerated in use by the COVID-19 pandemic (Lobe, Morgan, & Hoffman, 2020). The preferred platform for online interviews, *Zoom*, which has already been extensively used for research purposes as it carries the advantages of rapport, convenience, simplicity, and user-friendliness (Archibald, Ambagtsheer, Casey, & Lawless, 2019).

The time for the interviews remained flexible and was according to the preference of the participants. They began with an introduction to build rapport, such that the participants felt at ease before sharing their experiences (Moser & Korstjens, 2018). They were recorded with the permission of the participant, having been informed of the commencement of recording at the beginning of the interview. The interview audio recordings were subsequently downloaded for verbatim transcription (Sutton & Austin, 2015) by a professional transcriber in preparation for data analysis. The researcher then de-identified by removing any names of the participants or references to other individuals by name in the organisation, removing names of companies and any other identifiable variables in the transcript (Stuckey, 2014). To verify the correctness of the transcripts the researcher listened to the audio recording and ensured it had been accurately captured (Sutton & Austin, 2015).

Essential documents from the interview and transcribing process were filed on a password-protected computer in the researcher's home in a research folder containing the following subfolders: meeting recordings, meeting transcripts, cover letters, electronic consents, and participants information sheets.

3.10 Data analysis and interpretation

The choice of research design lent itself to interpretive phenomenological analysis, which entails multiple readings of the transcripts, making and transforming notes into emergent codes, seeking relationships, and clustering codes into categories and themes (Pietkiewicz & Smith, 2014). A crucial step for the researcher was interpreting the narrative given by the participants into notes. In order to identify patterns within data (notes), analyse and report the themes, thematic analysis was applied. Discrete statements collected from interview data regarding digital maturity, digital transformation, and dynamic capabilities built by the business were used to derive codes, followed by categories and ultimately themes (El-Telbany

et al., 2020). Thematic analysis revealed salient themes in the notes at different levels, and thematic networks allowed the structuring and depiction of these terms (Attride-Stirling, 2001). The structure of a thematic network started with a basic theme followed by an organising theme and ultimately a global theme, as shown in Figure 8 (below).

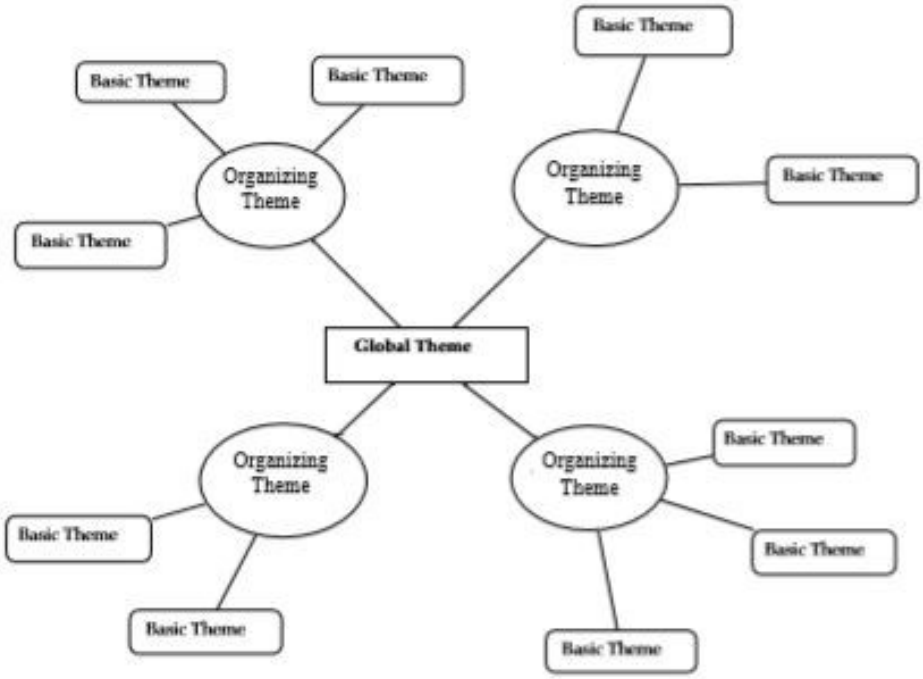


Figure 8: Structure of Thematic Network. Source: Attride-Stirling, (2001).

The global theme was essentially digital maturity, identified by the organising themes (factors and capabilities) and the basic themes (aspects of capabilities or factors).

The analysis of the transcripts involved the following steps:

i. Note making – In certain instances the respondent narrated a story to which the researcher assigned meaning and made notes
ii. Coding – Coding was carried out relatively close to the data, with identified topics, issues, similarities, and differences in the participants' responses (Sutton & Austin, 2015)
iii. Categories - The codes were reduced to categories by searching for patterns and the universal nature of experience amongst the participants and grouping them. The

categories were evaluated against the research questions to create themes and subthemes

iv. Themes – Themes were developed as aggregate units that presented the unit of analysis, and which described and explained the phenomena thoroughly.

The themes that emerged from the study are based on the participants' lived experiences as seniors in facilitating digital transformation or with oversight of digital transformation. They are presented in chapter 4.

3.11 Transferability and dependability

The role of transferability and dependability is to judge the quality of the research (Saunders et al., 2016). In quantitative research, reliability and validity are well established, however, their appropriateness to a qualitative interpretive study is considered philosophically and technically inappropriate (Saunders et al., 2016). There are several techniques that Creswell and Poth (2016) suggest a researcher can follow to establish rigour within qualitative research, which looks at validation through three different lenses, as shown in Figure 6 (below).



Figure 9: Strategies for transferability in Qualitative Research. Source: Creswell & Poth, (2016)

The three lenses shown in Figure 9 are the reader or reviewer, the researcher, and the participant. Each of the techniques establishes transferability, credibility, dependability, or confirmability of the study. Some of these strategies were implemented and are discussed in the sections that follow.

3.11.1 Credibility

Credibility in qualitative research is synonymous with internal validity in quantitative research. There are three methodologies in which credibility can be established, namely:

i. Triangulation – The researcher utilised notes made during the interviews as well as the interview recordings to triangulate. This was an application of validation through the researcher's lens as shown in Figure 9.
ii. Seeking participants' feedback – transcripts were provided to the participants for feedback and their views on any findings and interpretations (Creswell & Poth, 2016; Tobin & Begley, 2004). This was an application of validation through the participant's lens as shown in Figure 9.
iii. Peer reviews (Creswell & Poth, 2016; Tobin & Begley, 2004) - This involves having a peer review or debriefing of data and research process, as the study was conducted under a supervisor, this is implicit in the study. This was an application of validation through the reviewer's lens as shown in Figure 9.

3.11.2 Transferability

Transferability in qualitative research is synonymous with external validity or generalisation in quantitative research. However, generalisation is not the aim of qualitative research but the applicability of the findings and interpretations. In the paradigm of interpretivism, transferability can be achieved through the generation of rich, thick descriptions (Lincoln & Guba, 2013). A high level of transferability was achieved within semi-structured interviews by clarifying meanings and exploring responses from different angles. Each of the questions posed to the participants probed for more in-depth insights from the participants, ultimately producing detailed, thick descriptions. Thus, validation was provided through a reviewer's lens (Figure 9).

3.11.3 Dependability

Dependability in qualitative research is synonymous with reliability in quantitative research and concerns itself with consistency and dependency of the process of deriving findings and interpretations (Lincoln & Guba, 2013). Dependability was achieved through an audit trail, where the researcher kept a self-critical account of the research process, including internal and external dialogues (Tobin & Begley, 2004).

3.11.4 Confirmability

Confirmability in qualitative research is synonymous with objectivity in quantitative research. It refers to how findings and interpretations are a result of a dependable process of enquiry as well as data collection (Lincoln & Guba, 2013). Triangulation can serve a dual purpose of establishing both confirmability and credibility. For the study, triangulation served both purposes. Other techniques for assessing confirmability included an audit and a reflective journal. Confirmability is also usually established once credibility, transferability and dependability are achieved (Ryan et al., 2007).

3.12 Ethical considerations

The right to privacy and wellbeing of the participants was of the utmost importance. The researcher prioritised protecting the participants, thus, the application of appropriate ethical principles was critical. As such, commitment to adherence to ethical research procedure through informed consent was assured.

The following measures were put in place to safeguard the participants:

i. The research objectives were communicated to the participants through letters written requesting permission to interview them (see Appendix B). The contents of the letter informed the participants of voluntary participation, assurance of anonymity and confidentiality. The letter also provided an overview of the aim of the research.

ii. A consent form, re-iterating voluntary participation and indicating the meeting was being recorded and that quotes would be used anonymously, was to be filled in by each respondent. (see Appendix D)
iii. The respondents were given sight of the ethics certificate granted by the university to undertake the research. (see Appendix C)
iv. At the beginning of the interview, the researcher asked for permission again to record the interview and alerted the interviewees that notes were being taken in order by the researcher
v. The researcher described the next steps after the interview, that is, transcribing, data analysis and write up the research report
vi. Names, positions in the business, and business names were excluded to guarantee anonymity, and the research focused only on responses gathered during the interviews.

Participants were comfortable continuing with the discussion being recorded after giving the various assurances. Giving assurances of honesty and confidentiality in results helps enhance sincerity in the responses and insights extracted from the interviews (Sanjari, Bahramnezhad, Fomani, Shoghi, & Cheraghi, 2014).

Chapter 4. Presentation of results

4.1 Introduction

This chapter presents the key findings from in-depth, semi-structured interviews with key individuals who occupy various senior positions in different South African businesses.

The following research objectives assisted in drawing insights from the different participants who participated in the study:

i. To explore the perceived meaning of digital transformation to South African businesses
ii. To explore the perceived meaning of digital maturity to South African businesses
iii. To determine how South African businesses built dynamic capabilities in order to achieve digital maturity.

The research findings are based on thematic analysis of the interview responses and the researcher's observation of the participants. The thematic analysis conducted on the interview data generated the codes outlined in Table 1.

Table 1: Results of thematic analysis

<table>
<tr><th colspan="2">Codes</th><th>Categories</th><th>Themes</th><th>Objective</th></tr>
<tr><td>Scale business</td><td rowspan="2">Leverage Technology</td><td rowspan="3">Business value creation</td><td rowspan="5">Value creation</td><td rowspan="6">Research objective 1: Perceived meaning of digital transformation</td></tr>
<tr><td>Transform and improve processes</td></tr>
<tr><td colspan="2">Create a competitive advantage</td></tr>
<tr><td colspan="2">Modernisation of technology</td></tr>
<tr><td colspan="2">Deliver value proposition</td><td rowspan="2">Client value creation</td></tr>
<tr><td>Omni-Channels</td><td></td></tr>
</table>

Codes		Categories	Themes	Objective
Client Centricity	Define client engagement models			
Response to external trigger				
Holistic business transformation				
Adapting to a changing environment				Research objective 2: Perceived meaning of digital maturity
Account for value created by digital		Understand how to leverage technology	Digital Embeddedness	
Process automation		Technology adapted for core functions		
Process exceptions automation				
Enabled workforce		Acceptance of technology		
Digital as normal activity				
Measurement of status quo				
Continuous market scanning		Mapping the landscape	Sensing	Research Objective 3: Dynamic capabilities built for digital maturity
Screening competitors				
Identify trends (market, technology, clients)				
Client relationship management		Deep client understanding		
Understanding client journeys				
Client data analytics				
Formulating digital strategies		Planning for the digital environment		
Identifying skill sets for the future				
Role of partnerships		Digital portfolio balance	Seizing	
Balancing internal and external options				

Codes	Categories	Themes	Objective
Enhancing external options	Redefining solutioning		
Promoting innovation			
Prototyping			
Joining a digital ecosystem	Digital ecosystems	Transforming	
Having a partnership network			
Promoting digital citizenry	Improving digital maturity		
Employing digital natives			
Optimising operations through data transformation and digitisation			
Central digital and data offices	Internal structure business redesign		
Emphasising integration			
Redesigning teams			
Lack of enabling environment	External barriers	Contextual Factors	
Lack of client digital skills			
Changing client behaviour	External triggers	Contextual Factors	Research Objective 3: Dynamic capabilities built for digital maturity
COVID-19			
Disruptive competitors and technologies			
Executive Support	Internal enablers		
Enabling culture			
Fear and resistance to change	Internal barriers		
Lack of skills			
Legacy systems			

4.2 Participants' demographics

The study interviewed executives from businesses within the private sector of different sizes and ages, as shown in Table 2. This study looked at five industry sectors in South Africa and conducted 11 semi-structured interviews, at which point saturation was reached as the

narratives by the participants became repetitive and no new categories were found in the data.

Table 2 shows participants were skewed towards males, making up eight of the 11. The sample also skewed itself to financial services, with seven participants from financial services, however, the businesses within financial services varied, consisting of banking, insurance, investments, and professional education. The primary cause of the skewness was lack accessibility to senior executives in other sectors by the researcher.

Seven of the businesses were listed on the Johannesburg Stock Exchange (JSE), whilst only four were not. The age of the businesses ranged from three years to 150 years, with four of the businesses being over one hundred years old, three over 45 years and four below ten years old. Only three of the non-listed organisations did not disclose the profits of the previous year-end for the business but described themselves as medium enterprises. The participants all occupied senior positions within the company and had oversight of the business and not only the area of the respondent's role.

Table 2: Demographics of Participants

Participants	Gender	Business Sector	Business Age (Years)	Profit to previous year end	JSE Listed	Position of the Respondent
Respondent 1	Male	Financial services - Professsional Development	100	n/a	✗	Head - Marketing and Business Development.
Respondent 2	Male	Consumer Discretionary	130	R6.2b	✓	Senior Manager - Special Projects
Respondent 3	Male	Financial Services - Banking	3	R6.0b	✓	Chief Design Officer
Respondent 4	Male	Healthcare Services	7	n/a	✗	Chief Executive Officer
Respondent 5	Female	Financial Services - Banking	3	R6.0b	✓	Former Programme Manager
Respondent 6	Male	Financial Services - Insurance	8	n/a	✗	Board Chairman
Respondent 7	Female	Integrated Chemical and Mining	70	R-24.0bn	✓	Head - Growth and Innovation
Respondent 8	Male	Financial Services - Insurance	130	R16.0b	✓	Head - Insurance, Southern and Central Africa
Respondent 9	Female	Management Consulting	48	R4.5b	✗	Expert Partner
Respondent 10	Male	Financial Services - Investments	70	R9.2b	✓	Chief Technology Officer
Respondent 11	Male	Financial Services - Insurance	150	R16.0b	✓	Executive Head - Insights, Content and Digitisation

4.3 Objective 1: Digital Transformation

The first research objective sought to explore the perceived meaning of digital transformation to South African businesses. Different meanings emerged from the results. The three themes found in the results were (1) value creation; (2) response to an external trigger; and (3) a holistic business transformation.

4.3.1 Value Creation

All the participants expressed digital transformation in terms of value created for either the business or the client. The results pointed to different aspects around business value creation derived from digital transformation, as shown in Figure 10.

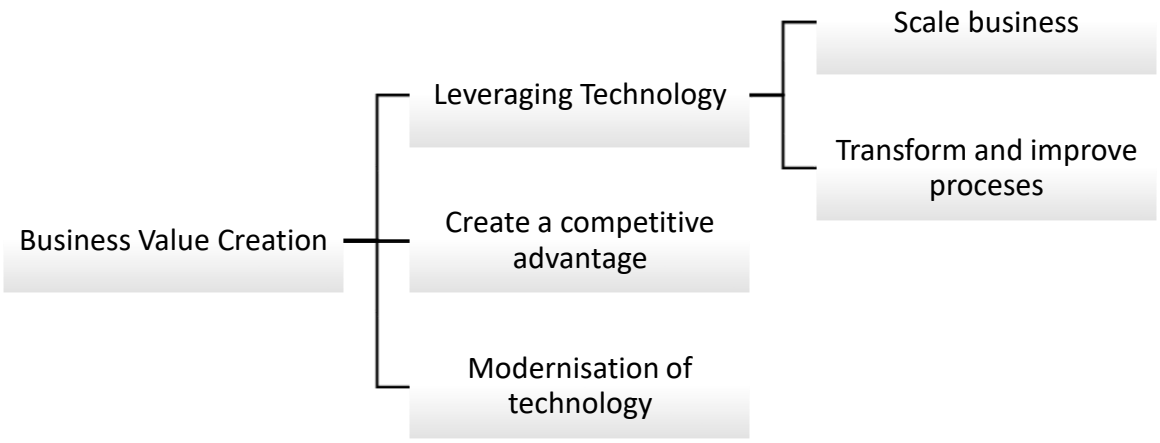


Figure 10: Elements of the business value creation. Source: Author (2021)

Figure 10 shows that although one of the perceived meanings of digital transformation was business value creation, there were various elements that participants pointed to. The first element was leveraging technology to (a) scale the business, and (b) transform the business and improve processes. The second element was creating a competitive advantage and, finally, the modernisation and integration of technology.

The following narrative captured all the aspects of leveraging technology, which was collaborated by other participants:

Respondent 10: *"Digital transformation for me talks to, one, transforming your business model to leverage technology in order to best deliver your value proposition to your clients, and this could be in terms of your products, it could be in terms of services and then the whole thing also links to leveraging technology to drive efficiencies through automation of processes in order to drive down your costs, and lastly I think to scale your business."*

Various narratives collaborated leveraging technology as a meaning to digital transformation. They added that it also involved simplifying different aspects of the business, such as workforce tasks, the product range and the technology utilised in the business.

Although the narrative given by Respondent 10 expressed how digital transformation creates business value, it also points to leveraging technology to create value for clients, that is*, "best deliver your value proposition to your clients."* The value creation for clients emerged strongly amongst the participants, mainly because of the abilities digital transformation could provide. The other elements attached to adding value to clients are shown in Figure 11 (below).

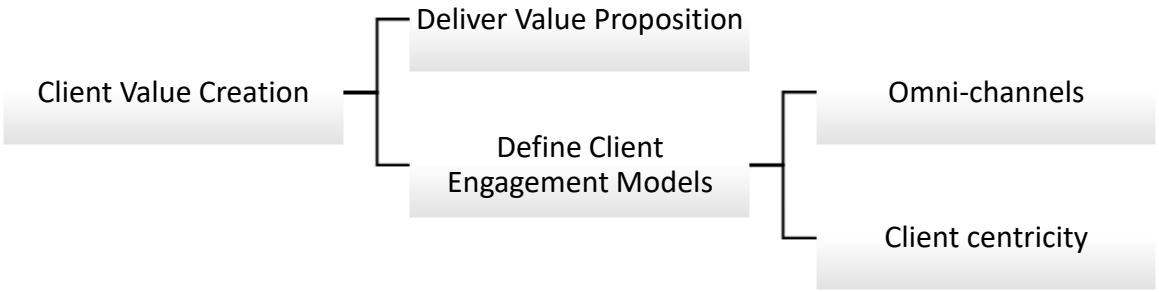


Figure 11: Elements of client value creation. Source: Author (2021)

The findings showed creating value through how clients were engaged, mainly because digital transformation allowed the business to redefine client journeys into a more digital form, ideally an end-to-end digital client journey. Those identified by the business included a change in the number of channels the client had at his/her disposal to engage the business. Clients engaging the business on several channels required the business to ensure that they had a consistent experience, irrespective of which channel they utilised. Two executives described this in financial services in the following manner:

Respondent 4: *"For me, digital transformation is how you make your customer journeys digital end-to-end, both inside and outside of the company, so that it is not just a digital interface, but it is actually. You are able to service the client both internally and externally, using digital platforms, and trying to minimise the human intervention, but also digital transformation is customisation and personalisation, so it is using the digital platforms to be more customer-centric and more customisation, as opposed to making it stock standard."*

Respondent 8: *"Digital transformation is giving the clients the option to engage with us digitally for all their needs that they need to engage with us, and in the platforms of their choice."*

The above quotations address the ability for digital transformation to enable omni-channels for the business' clients and start to describe what the client experience will look like across the various channels. Personalisation and customisation are essential anchors of the client experience described by participants.

The expression of digital transformation as a business value creation or client value creation means businesses assign results to the definition of digital transformation more specifically:

i. Simplified business operations through automation, consolidation of products and services, integration, and modernisation of technology
ii. A digitised client value proposition offers digital products and services through numerous channels with a consistent client experience
iii. Increased market share through an ability to scale the business.

4.3.2 Response to an external trigger

The results further pointed to digital transformation as a response to external triggers. The external triggers were identified as a changing environment, a changing client base and a disruptive force. The expression of digital transformation as a response to an external trigger was described as follows by a respondent:

Respondent 1*: "The understanding of digital transformation is in the context of a response to a disruptive force. Our organisation is operating in an environment which is rapidly changing*

as a result of new technology. We are pretty much being forced to respond, and that response is the digital transformation."

This was collaborated by another respondent as follows:

***Respondent 11**: "Digital transformation is leveraging technology to transform all aspects of the business in response to a changing industry landscape."*

The above quotations illustrated that the business needed to go through the process of developing an ability to adapt to a rapidly changing environment. Respondent 1 further identifies that the environment changes rapidly due to technology, thus identifying the external trigger as technology, making digital transformation an IT-induced response.

4.3.3 Holistic business transformation

Finally, the results described digital transformation as an holistic business transformation that involved people, processes, and values. The results showed that digital transformation informed the whole value chain and was described as a coordinated transformation from the top level. A narrative that referenced digital transformation as an organisational transformation found in the results was:

***Respondent 9**: "Digital transformation is all about transforming your business using digital, and when we talk about transformation we refer to people, process and value. It is about how you put in your process, how you do your change management, how do you update your processes, your standard of creating processes, how do you upskill your people so that they are able to continue doing that, how do you embed it so that it's sustained going forward? When you talk about transformation you're talking about all those lenses, it's the whole transformation journey of people, process and values. If you get those three things then you end up with a transformed business that's sustainable and embedded, which is very important."*

Another respondent corroborated the above narrative and gave the following description for digital transformation:

Respondent 10: *"There is a whole digital transformation, and you will probably be familiar with what you see at [organisation name] as well. You will be aware of the fact that it does not get isolated to a specific pillar or cluster or segment, it kind of gets driven from a group level to say the digital strategy is X, Y, Z, and then it filters down. It gets adopted by the various clusters, because at the end of the day I think the most important thing is to ensure that, one, you do not have a lot of duplication, so you always try and drive it at a group level, and have these overarching bodies and forums that coordinate and facilitate across the different clusters, and with that said, there will be specific clusters."*

Both the above quotations indicate that digital transformation involves the transformation of the business as a whole. The first quotation argues that the aspects that digital transformation affects the business are people, processes, and value. In contrast, the second quotation shows how digital transformation should be driven throughout the business, that is, from top to bottom, governed by various bodies and forums.

4.4 Objective 2: Digital Maturity

The study's second objective sought to explore the perceived meaning of digital maturity to South African businesses. Similar to digital transformation, the results showed that different meanings were attached to digital maturity suggesting lack of a common understanding amongst participants of digital maturity.

The three meanings that emerged from the results of digital maturity were: (1) ability to adapt to a changing environment; (2) digital embeddedness in the business; and (3) measurement of the status quo of digital transformation. The articulation of digital maturity as an ability to adapt to a changing environment, and digital embeddedness by participants, is similar to the meanings of digital transformation as a response to an external trigger and digital transformation business value creation. This suggests confusion, interchangeability, or intertwining of the two terms.

4.4.1 Adapting to changing environment

The results showed that there was a changing environment, characterised by advancing technology, to which businesses needed to adapt. Thus, the meaning to digital maturity related to this was the business's ability to respond to the altered market. Verbatim, one of the executives, described this as follows:

Respondent 11*: "Our ability to respond to and capitalise on technological advancements that alter the way the market operates."*

In addition to identifying digital maturity as above, Respondent 11 identified digital transformation as *"Leveraging technology to transform all aspects of the business in response to a changing industry landscape."* This is an indication that the terms digital maturity and digital transformation are intertwined, in this instance the latter addresses changing the business whilst the former refers to the ability to respond to the external environment, that is, digital transformation is how technology changes the business and digital maturity is can the business respond to the changing environment as a result of technology.

The findings showed how the business could set itself up to adapt to the changing environment with speed. This involved how it set up its IT architecture, its coding capabilities and how it utilised the data collected. This was described by an executive as follows:

Respondent 4: "*One of the things around digital maturity is being able to pivot on your platforms as quickly as possible, and the way you design and code, where you're using the most up to date way of coding, where you're using service-orientated architectures where you're using building blocks as opposed to hard coding stuff in, so that it does allow you to pivot in your digital journey.*"

The executive above indicated the need to modularise software when building IT architecture, that is, using building blocks. Modularisation of technology was corroborated by another executive:

Respondent 10*: "We have modularised specific core capabilities into components that can be exposed as services that can be consumed, so we've transitioned to that type of architecture*

and moved away from legacy integration architecture which would not allow us to easily have our core platforms sharing information. We've adopted what we refer to as two-speed architecture, so that's basically architecture that talks to being able to rapidly respond to change in the digital space in terms of your client engagement platforms, because that's where you're constantly going to be needing to evolve."

The above response identifies how IT architecture should be enabled such that it gives the business the ability to respond with speed to the external environment. Both the above quotations describe the ability of the business to adapt rapidly, with the second one being specific to client engagement platforms, an indication of digital maturity being the ability to respond quickly to client expectations.

4.4.2 Digital Embeddedness in the business

A second meaning that emerged for digital maturity was the extent to which digital systems were embedded within the business.

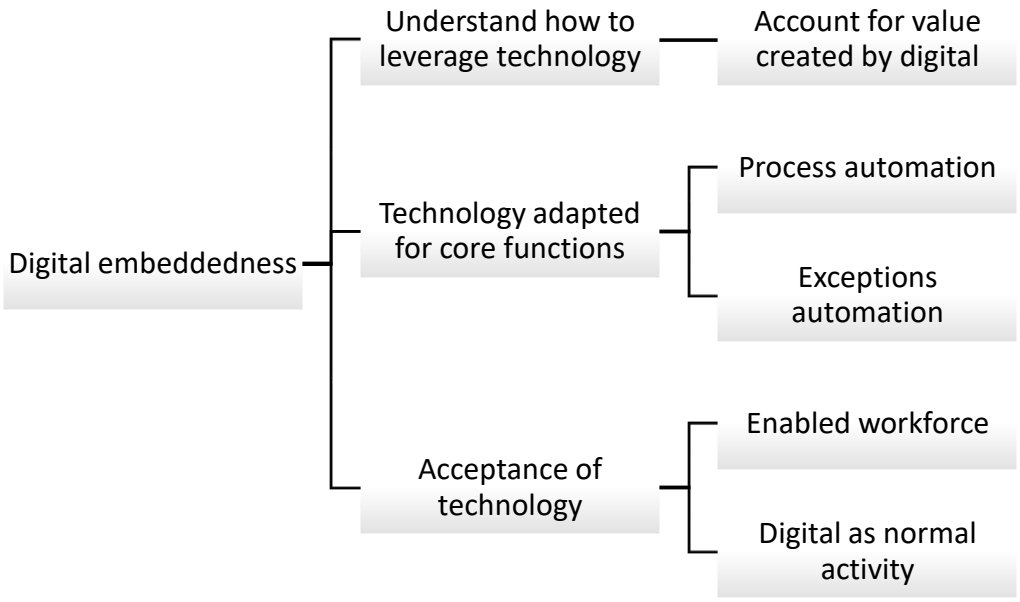


Figure 12: Elements from digital embeddedness. Source: Author (2021)

The results showed various elements of digital embeddedness, as illustrated in Figure 12, notably an understanding of how it could leverage technology to improve continuously. More specifically, understanding of how to leverage continually evolving technology, the

technology needed to be adapted for core functions within the business, processes needed to be digitised including exceptions. Technology needed to be accepted and used within the workforce and the business needed to be able to account for the value created by digitalisation. This meaning of digital maturity pointed to observing various elements in the business at a given time, that is the workforce, technology, and processes.

The narratives below described how core processes and exceptions needed to be digitalised:

Respondent 4: *"Digital maturity is making the exceptions to the standard process more smooth as well, so not just working through your stock standard customer journey, but understanding, well, actually, if the person has a passport and does not have an ID because they are not a South African citizen, but they still want to open an account, can they still go through a digital journey, because then you get kicked out of the digital journey."*

Respondent 8: *"Digital maturity is when we do have the bulk of our processes being digitised. In other words, the client always has a digital path to engage with us and on all of the processes."*

Both participants agreed that processes needed to be digitised. Participant 4 also included the digitisation of the exceptions to the standard process, whilst Participant 8 pointed to the client being digitally enabled to engage with the business as part of digital maturity. Thus, digitalisation needed to be embedded within the business and in the ways the client engaged with it, similar to value creation as identified by participants as a meaning of digital transformation.

Another aspect of digital embeddedness shown here was the importance of its adoption and usage by the workforce, highlighting some of the enablers of digital maturity, an enabled workforce, promoting a digital-first mind-set and fostering a learning organisation. Participants described a digital-first mind-set as "digital as normal activity". The sentiments of an enabled workforce were described in the quotation below:

Respondent 9: *"From an overall enterprise perspective, digital maturity is when you have clearly understood your strategy, when you clearly understand your data strategy, which is quite important when you have embedded learning throughout the organisation. So you have*

upskilled your people to be able to work in a digital environment, and you also have people that think about digital as a normal activity. If you look at a lot of digital transformations, businesses start by forming a CDO (Central Digital Office), like what I had, but once you reach that level maturity that you should not even have a CDO in the same format because people should have embraced the way you are working and see it as a normal ongoing activity."

The above quotation indicates that working in a digital manner should be thought of as a regular activity by a workforce, and stresses the necessity for understanding both the digital and data strategy throughout the business. Further, the narrative shows that embedding learning within the business is essential for the upskilling of the workforce. It further emphasises how in the initial stages of the digital transformation there is a role to be played by a central digital office. However, as the business becomes more digitally mature the outcomes of the central digital office changed, with most of its activities being farmed out to the rest of the business. This was an indicator that different digital maturity levels existed in practice.

The results also pointed to a digitally mature business as one that could engage all aspects in its the ecosystem digitally. A quotation emanating from the participants describing this was as follows:

Respondent 3: *"A digitally mature organisation engages with their customers and their suppliers, their ecosystem, digitally, and can sell, conduct business, get feedback, deal with queries, again, in a digital form."*

The above illustrates that digital maturity was attained when digitalisation was embedded within the business and external stakeholders, that is, clients and suppliers, notably the business's ecosystem.

4.4.3 Measurements of status quo

The last theme deduced from the findings on the perceived meaning of digital maturity was a measurement of the status quo, specifically digital transformation. Though several participants implied it, especially in the extent of digital embeddedness within the business,

only one respondent articulated digital maturity as a measurement of the status quo. This was captured in the following response:

Respondent 1: *"Digital maturity would be the measure of how far we have gone in our transformation journey. It is like a dipstick analysis, okay, this is how far you have gone, and what you need to improve, and what you need to go further."*

The quotation assigned the meaning that digital maturity allowed the business to determine how far it had come and so identify any gaps in their digital transformation, thus determining where there was a need to improve. It could benchmark their digital transformation journey, which indicates there are certain aspects or elements that it needs to attend to. Therefore, the business would have to determine the best measurements around these aspects or elements and determine how they would be undertaken.

4.5 Objective 3: Building dynamic capabilities

The third research objective sought to determine which dynamic capabilities South African businesses built to improve or use to achieve digital maturity. These would be in response to the rapidly changing environment due to the so-called fourth industrial revolution, resulting in there being pressure to undergo digital transformation. This resulted in a change in the level of digital maturity, which assessed or gauged the status quo of digital transformation.

Understanding of which dynamic capabilities were built by the business was reached by utilising dynamic capability theory. The responses from the interviewees, based on lived experiences within their respective businesses, looked for capabilities they had built in response to a rapidly changing digital environment. These capabilities were classified into three capability groups, namely: (1) sensing, (2) seizing, and (3) transforming. Each informed the relevance of digital maturity factors identified in different digital maturity models for businesses in South Africa.

4.5.1 Sensing

Sensing encapsulates business's understanding of the market and how it begins to respond to it. The market in which the business operates constitutes of clients, existing and emerging technologies in the market, and competitors both known and unknown to the business. From the market arise opportunities and threats that it should be able to identify.

To understand sensing, a thematic analysis was carried out on the participants' lived experiences in how businesses built sensing capabilities to attain or improve on digital maturity.

The results illustrated in Table 3 (below) show that sensing was achieved through the following capabilities: (1) mapping the landscape, (2) deep client understanding, and (3) planning for the future.

Table 3: Sensing codes and categories

Categories	Code	Theme
Continuous market scanning	Mapping the landscape	Sensing
Screening competitors		
Identify trends (market, technology, clients)		
Client relationship management	Deep client understanding	
Understanding client journeys		
Client data analytics		
Formulating digital strategies	Planning for the digital environment	
Identifying skill sets for the future		

4.5.1.1 Mapping the landscape

One of the capabilities identified in sensing, namely, mapping the landscape, consisted of three elements: identifying trends, screening the competitors, and continually scanning the market.

The first element of mapping the landscape shown by the results was continuous market scanning, which was achieved through internal research or assistance from external providers or market intelligence studies. This exercise helped the business identify opportunities in the market as well as threats to the business. This was relayed by one of the participants as follows:

***Respondent 10**: "We rely on the likes of McKensey, PWC, NMG, Deloitte UK, etcetera, to constantly do a scan of what the opportunities are in the market, and also identify how we can leverage those opportunities."*

This narrative was corroborated by several participants who added market research, market intelligence studies and benchmarking to how the business went about scanning the market. Benchmarking is closely related to screening the competitors, which formed the second element of mapping the landscape.

With respect to screening the competitors, the second element of mapping the landscape, the results pointed to the understanding of current competitors and new entrants. One of the aspects around the competitors, both existing and new entrants, that was important to understand was its product offering, developments in its current offerings. The results pointed to understanding of possible competitors from adjacent markets and not necessarily the stock standard competitors within the immediate market or industry. A description of competition in a different market by a financial services executive was described as follows:

***Respondent 8:** "Sometimes, players who are not our competition start having products that are aligned to us. So when [Company X] in a different industry, launches [Product Name], we have to notice and say effectively you've got a telco that is now doing our business (financial services). Whilst there is an appreciation that there are new players on the block, I don't think*

we've got infrastructure of tracking them and getting full detail about their solution as much as we do on the traditional players."

An essential aspect of the above quoted narrative is that the emergence of a different kind of competition has added complexity to competitor analysis.

The participants also indicated that other aspects concerning screening of the competition were understanding where the competition was weak, where it lay on the value chain, and what type of competitive advantage it held, for example, pricing or product differentiation.

The third element of mapping the landscape in the findings was identifying trends, the significant ones of which were in market/industry, technology and clientele. In order to understand the market and industry, global trends were tracked with the intention to identify potential opportunity or disruption that lay within the business portfolio. This was articulated by an executive as follows:

Respondent 8: *"We track global mega-trends very carefully, and especially with the disruption that we've seen in the environment, like with Covid and the hurricanes in the US and the freezing in Texas in February this year. So there's a lot of mega-trends that we see now that have really brought opportunity as well as potential disruption to our market. We then link those to size of market and growth rate of market globally, so again aligned with the economic recovery post Covid, the GDP rates globally. That gets tracked, and then we look at market application of our products. For example, packaging. There's been a boom in packaging because during Covid a lot of people went onto ecommerce, food got doubly packed and everything that gets online delivered needs to be properly packed, and so we found a real boom in packaging and that we could actually directly link to Covid."*

The above narrative shows that tracking of market trends also included economic metrics such as GDP, inflation, growth rate, market size and, most importantly, the business needed to align this information to the portfolio of products within their stable, thus seeking a product market fit or an opportunity to pivot their products. Other megatrends that were identified by businesses included sustainability and climate change.

Another set of trends included understanding of technological trends. The results showed businesses achieved this in various ways, some of which were collaboration with universities and research institutes, and being part of a technology ecosystem, for example, Plug and Play, utilised by two financial services companies. Others were open innovation platforms, visiting technology hubs, specifically Silicon Valley, and the utilisation of management consulting companies.

The final set of trends to which the findings pointed were in clients. As a result of understanding these the set changed how the business decided on the best digital solutions for their clients, for example, a banking institution thus only has an app and not a website because of the realisation that consumers had moved from laptops to telephones and utilised these more, as detailed by their executive:

Respondent 4: "We were running dual journeys for the web as well as the 'phone, and then there was also this thing around iPads, people were going to be using iPads, so now you had a 'phone journey, an iPad journey, and, remember, the user experience for each of these are different and all of that, so it gets complex, and by the time we were sitting in 2017/2018 we decided we should prioritise just the phone journey. We had seen people starting to shift and only use the phone, the phone journey became the journey because people do their banking on phones, but in 2015, when we started the bank, that was not the case."

Understanding client trends was closely aligned to deep client understanding, which is discussed in the following section.

4.5.1.2 Deep client understanding

The results showed a deep understanding of clients was achieved in three ways, namely, through client relationship management, understanding client journeys and client data analysis.

Client relationship management featured strongly amongst the participants as a tool to gain a deeper understanding of the client. Most businesses indicated there was a client relationship management (CRM) tool to assist in managing the relationship, however, the importance of interacting with the clients through regular meetings and staying close to the

client was apparent. Deeply entrenched relationships gave clients the platform on which to share future endeavours, as described below by a respondent:

Respondent 7: *"Through our relationships with our customers, they share with us what they are looking for in the future, for example, detergents needing less water or no water and no heat, so you save water and electricity, and they want it ultra, super clean so that it can go into our water bodies and not pollute. So customer intimacy is so important because only when your customer trusts you will they share with you what their cutting edge breakthroughs are that they are looking for, and they also need to be in touch with their customers."*

The above illustrates that a profoundly entrenched client relationship increased trust and afforded business opportunities. In this instance it illustrated how opportunities were afforded in a business-to-business relationship, with the results showing that technology had not taken over the role of relationships but had enhanced how client engagements were facilitated, especially during the global pandemic and the frequency of the engagements, a sentiment shared by several participants.

The results also identified an understanding of client journeys, which enabled the business to understand better its client needs. Client journeys were defined as step-by-step experiences when he/she interacted with the business via various channels. They helped the business understand various pain points when clients engaged with the business, not necessarily negative but sometimes areas of improvement. These potentially unearthed opportunities for the business. A management consultant stated this as follows:

Respondent 9*: "A client journey has to be understood by everyone that is a part of the business, at the end of the day. Clients are the main thing you focus on. Mapping out your client journey and then understanding along the journey where the pain points are, where clients are expecting more from you is quite important."*

This shows the importance of everyone within the business understanding the client journey, an understanding which drove solving for the clients' needs. This was termed by some as "client-obsession." Participants suggested an internal resource was most suited to map client journeys, sometimes with the help of external experts.

The third element of deep client understanding revealed in the results was the utilisation of data analytics, which gave the business an ability to categorise and classify clients then monitor and manage them. Thus, businesses were in a position to offer more products to clients and improve how they serviced them. The results showed that data analytics involved mining existing clients' data, to understand clients' behaviour and pre-empt their needs. One respondent described this utilisation of data as follows:

Respondent 8: *"The biggest opportunity is the fact that we have got the bank, we see things in the bank, we see the clients in the bank, and we can see that there are these clients that are not serviced and the like. We also sometimes see them engaging with our competition in their bank account."*

The response above suggested that the existing client base held opportunities, and data analytics could reveal these. It also revealed how clients were engaging the competition. That the existing client base held further opportunities for the business was corroborated by another respondent:

Respondent 3*: "The primary or most important way is tapping into the customer base that we have and understanding what their needs are currently, and their future needs."*

In order to achieve successful results with data analytics, participants suggested it was vital to share data between various business units or data being held in a central place to optimise client understanding. This was more apparent in financial services institutions in which a business sold varying financial products for many client needs. Analysing client data across different business units allowed other ones to cross-sell additional financial services products to clients. As well as identifying product opportunities the results showed data analytics was used to enrich the client's experience of the business, described by one participant as follows:

Respondent 3: *"We are a very data-rich environment which therefore means we need to be a very analytical environment, and we must analyse that data for the benefit of the customer, so they come out and say "Wow, this is a great experience that I am having, and it is personal, and my interest rates are for me because of my behaviour." That is what we want from our customer base."*

The above narrative identifies that businesses can identify opportunities in client experience using data analytics, which also ties into client journeys discussed above. The narrative also shows how data analytics allow the business to understand a client's behaviour then move towards a personalised model informed by behavioural patterns.

Further to enriching the service to clients the utilisation of data to understand client pain points were suggested by participants:

***Respondent 4**: "So there's a lot of data collection in terms of where the breakout points are, when people do the WhatsApp bot, where they … so what you're actually doing is you're checking what the big points are that people are calling in and complaining about, and that's what gets solved. So I think that's what they look at, is they let data drive the business. So remember when we decided where the KYC issue was and how we solve it, is to say, where were our big drop off points in terms of the onboarding journey? So because it's all digital, you can see how many people started the journey and you can see all the points along the journey when somebody drops off."*

The response also illustrates how data analytics is used to understand client journeys, an element of deep client understanding, previously discussed.

4.5.1.3 Planning for the digital environment

The third capability for sensing that the results showed was planning for the digital environment, which included formulating digital strategies and identifying skill sets for the future, a more internal aspect of sensing. The results showed that planning for the future digital environments also involved the business understanding the future skill set needed. Some of the skills the results revealed are illustrated in Figure 13.



Figure 13: Skills for a digital environment. Source: Author (2021)

Figure 13, shows that the skills needed were mainly technology skills, with some soft skills, namely critical thinking and entrapreneurial skills.

4.5.2 Seizing

To capitalise on opportunities or to mute threats identified during sensing, businesses needed to develop seizing capabilities. The results show that businesses use two levers to be able to seize opportunities and mute threats. The levers identified from the findings were (1) digital portfolio balance, and (2) redefining how the business produced solutions and products

Table 4 (below) illustrates what constituted the two levers of seizing derived from the lived experience of the participants within their businesses. The participants' experience informed the responses concerning how the business converted opportunities identified during the sensing stage, how businesses abated threats and how the business solved for client needs.

Table 4: Seizing codes and categories

Categories	Code	Theme
Role of partnerships	Digital portfolio balance	Seizing
Balancing internal and external options		
Enhancing external options	Redefining solutioning	
Promoting innovation		
Prototyping		

4.5.2.1 Digital portfolio balance

The findings positioned two elements that the businesses had to develop for digital portfolio balance to be well-positioned to derive value from opportunities identified. The two elements were (1) the role of partnerships, and (2) the balancing of external and internal options. Participants recognised that the era in which businesses could rely solely on in-house capabilities to grow had long passed. The balancing of the digital portfolio brings to the fore the role of partnerships and businesses recognised that they could not achieve the delivery of the value proposition alone. Therefore, participants indicated, that businesses had engaged partners to expedite the delivery of the business' propositions and fully exploit opportunities identified along the value chain. The role of partnerships was described in the findings in the following manner:

Respondent 8*: "I think we are faster because we have been partnering a lot with our clients and sometimes with our competition to deliver solutions and to optimise the opportunities that we get."*

Respondent 10*: "Partnerships are going to be quite diverse. We're not a jack of all trades, we don't know it all. [Company name] is constantly partnering or acquiring businesses that are*

specialists within a particular area, and that then is used to complement what we have and enhance our value proposition."

The above narratives indicated that partnerships were not only for product delivery but also to enhance operations. Respondent 8 also speaks to partnering with clients, which is co-creation, contributing to the second capability of redefining solutions. Further findings showed that businesses created a partnership ecosystem that enabled them to organise quickly and respond to opportunities that could arise. Mostly, however, the role of partnerships was to enhance the business's value proposition. Partnerships were also identified as part of digital ecosystems in transforming, discussed in section 4.5.3.1.

With the need to rapidly respond and the need to enhance the value proposition with items outside of the business' speciality, this introduced the complexity of balancing external options with internal options, not only from a product perspective but also from an operations perspective. A management consultant gave the following narrative concerning internal and external options:

Respondent 9: *"Based on that they understand what they're pain point is and then decide which type of solution can best suit them to meet that aspiration that they put forward. In some cases there may not be a specific technology, they could use things like advanced analytics and actually build a model themselves as well. So it doesn't have to be something specific that someone has already built. So it's always about understanding your problem that you're trying to solve, mapping that out and then saying which type of technology can help you solve the problem. So that's the way companies would normally look at it."*

The above finding shows that the business has to find a balance internally and externally, depending on the intentions of the business. It has to focus on building models and enhancing analytics.

4.5.2.2 Redefining Solutioning

Seizing opportunities brought about the need for businesses to redefine how solutions for clients were created. Enhancing external options, promoting innovation, and prototyping were some of the suggested ways. In certain instances, businesses used accelerators to

enhance external solutions such that they were suitable for the business needs. In other instances, it was reported that external solutions were enhanced outside of an accelerator because it was more straightforward for the business to enhance the solution rather than start from scratch. An example of enhancing external solutions was explained by a respondent as follows:

Respondent 10*: "How we came about the startup that provided us with a platform that we launched to build our artificial intelligence fund of funds, they positioned a solution that they claimed outperforms a lot of the fund managers out there, and obviously that caught our attention, and then we spent time with them to see what the solution is about, and then we started positioning a few problem statements and they picked the solution to meet our requirements."*

Innovation hubs and accelerators were mainly for finding new ideas or scaling ideas. The utilisation of innovation hubs and accelerators not only assists the business in reaching a digital balance but is also integral in changing how the business creates solutions for its clients. It was suggested that accelerators helped the business scale innovation ideas and assist with the speed to a fully formed solution. A few examples were given around the utilisation of accelerators, one of the examples cited being as follows:

Respondent 7: *"We have a funnel of ideas, and those ideas get screened, and we look at what the potential value could be of those ideas. If we don't know enough, we have something call accelerators, where we take two to three months and form agile teams of five to six multi-functional people, which go through what could be, in a very structured process. For example, we took on the aspect of electric vehicles, the battery and created the battery materials accelerator, which looked at what makes up a battery? We got the whole battery pack delved into where our products could find application. Out of that, three or four ideas came out as very lucrative. From there, we took a bet on a start-up and again accelerated our learnings through the start-up."*

The narrative given also shows another contributor of accelerators was expedited learning for the business. It also suggests that the business looks at partnering with start-ups to deliver their solution. In addition to promoting innovation within innovation hubs and accelerators

in some instances, prototyping was an important aspect of building solutions. A description of how prototypes were used in the business was given by a financial services executive as follows:

***Respondent 10**: "We certainly do build a prototype which we eventually productionalise, and once it's productionalised we then, obviously for us to be able to expand and cover other areas, there needs to be a business case and typically within a space of six months there would be a team that focuses on gathering data with regards to, has there been any value add, are we seeing any significant spike in terms of usage or in terms of any particular improvements with regards to processes, any efficiencies being introduced, etcetera. For significant investment to be made, there always needs to be a business case, so that is how you would kind of initiate that whole process around a business case and eventually scaling the whole solution that's been prototyped. So a lot of it links to a particular business area that's been used as a pilot, working on building out this business case and gathering the necessary stats, etcetera,. as input into the business case numbers, to request that significant investment into a full-on solution."*

From the above, prototypes provide learnings around usage, areas of improvement in processes and input into a business case, should significant investment be necessary to scale the prototype.

4.5.3 Transforming

The third pillar of dynamic capabilities is transforming, which is the business's ability to reinvent itself and, in certain instances, inform how it navigates the external environment. How the business builds its transformation capability has elements of overlap with how it builds its seizing capability, indicating the three capabilities are interlinked and lie on a continuum. The results revealed three categories that constituted how the dynamic capability concerned with transforming was built. The three categories identified by the participants were: (1) forming a digital ecosystem, (2) improving digital maturity, and (3) internal business redesign.

Table 5: Transforming codes and categories

Categories	Code	Theme
Joining a digital ecosystem	Digital ecosystems	Transforming
Having a partnership network		
Promoting digital citizenry	Improving digital maturity	
Employing digital natives		
Optimising operations through data transformation and digitisation		
Central digital and data offices	Internal structure business redesign	
Emphasising integration		
Redesigning teams		

Table 5 shows the codes and categories participants identified as part of how the business built transforming capabilities. Each of the categories identified in Table 5 is discussed below.

4.5.3.1 Digital Ecosystems

The results showed digital ecosystems consisted of two elements: joining a digital ecosystem and having a partnership network, quite similar to how the business built seizing capabilities discussed in 4.5.2.1. A description of the digital ecosystems by a respondent was as follows:

Respondent 10*: "The entire group has gone quite aggressively into the fintech space, be it through partnering with fintech companies and exploiting opportunities that could potentially be leveraged through those partnerships. We have been part of a fintech ecosystem called Plug and Play, it's basically an ecosystem that provides you with access to some of the top fintech and insuretech start-ups globally, where you can position specific problem statements*

with and then they provide you with solutions to literally accelerate the provisioning of platforms or solutions that can solve for those particular problem statements."

The quotation above shows the ecosystem is a technology ecosystem that forms part of how the business possibly solves specific problems in an accelerated manner. The partnerships are not only local but also global. Rapid response, and utilisation of external options for business solutions, were also aspects of seizing featured in 4.5.2.

Results showed that partnerships were both internal and external. The participants gave the following examples given in how businesses had utilised partnerships were as follows:

Respondent 8*: "Partnerships internally are an absolute must. If you think about one of our solutions that has been successful last year, we utilise that solution to partner with other BUs to meet their other problems in their space, and that's when we are very effective. So partnering is extremely important. Then with external parties, that helps us to not to have to develop every solution, it helps us to be quicker and faster and it helps us to reach clients who are effectively not necessarily our clients. It also allows us to get other versions of revenue that are not necessarily the old income that we were working with."*

Respondent 10*: "We have access to the [Company X] digital platforms, because of the partnership we have with them. Our whole [name] platform, the self directed [name] app and website where you go on and you buy ETFs and unit trusts, is running on that platform. So that's a typical example of a partnership that's worked really well, where we needed to respond and get into the self directed space, because we realised that we were being disrupted. We were able to launch a platform as quickly as possible that would allow clients to go direct and we cater for that tech-savy client base."*

The above narratives illustrate that in financial services, partnerships are necessitated to attract a different type of client, introduce new revenue streams, reduce client pain points, enhance client's value propositions, accelerate solutions and also be in a position to respond to a changing external environment.

4.5.3.2 Improving digital maturity

Results showed improving digital maturity concerned itself with: (1) promoting digital citizenry, (2) employing digital natives, and (3) optimising operations through data transformation and digitisation.

Promoting digital citizenry was a significant aspect of improving the overall digital maturity of the business, identified by all participants. The main levers identified by promoting digital citizenry were culture, transitioning from a manual to a digital world, and upskilling the workforce.

It was found that three elements of culture were vital in promoting digital citizenry, namely, collaboration, intrapreneurship, and a learning organisation. Collaboration could be achieved using various digital platforms on which employees could work together and share ideas. Collaboration and utilisation of digital platforms grew exponentially with the advent of the global pandemic COVID-19.

Part of promoting digital citizenry involved the inclusion of employees as businesses must transition from being a manual business to a digital one. For businesses with blue-collar workers the results showed this was a gradual journey involving continual learning and helping employees understand the benefit of a digital world to both the business and themselves.

The results suggested that a change in mind-set to a more digital one involved all levels of the business and was a gradual transition, especially in organisations in which there were blue-collar workers. Employees' buy-in and understanding the value that digitalisation adds to the employee are paramount in framing a digital-first mind-set within an organisation. An example of how a business had gone about achieving buy-in from blue-collar workers was given by a respondent as follows:

Respondent 7: *"We believe in just transition as an organisation and anything we do we want to transition with our people in mind, so even in the mining techniques that we use, where robots can go and do it better and quicker and safer, we have not launched a fully-fledged robotic system in underground mining. It is always in conjunction with our people, and we*

always give them a sense of the upside for them. So if you are wearing a wearable, it is not because we want to track where you are and whether you are productive all the time; it is actually for your wellness and health. I mean, of course, productivity is a part of it, but it is for your health, your wellness, and even we created an app where they can fill in the overtime that they have worked, and that gets tracked, and automatically they get their payment into their bank account or onto their phones. So we have created digital solutions, where they can see the value very quickly, and it saves time and tracking on their own and being challenged by a supervisor. The wearable also is further confirmation that they worked this overtime and are deserving of that pay. So it is a journey, and again I think the company has been responsible in the way we have managed that."

The finding above shows that in the journey of digital transformation, different considerations need to be taken. People form an integral part of the journey, and employees have to understand the need for it and to be brought along on it. This emphasises the importance of change management in digital transformation and formulating digital strategies. The specific strategies that this finding points to are: (1) how does the business incorporate its staff on the journey, (2) what digital solutions do you avail for employees to simplify their tasks, and (3) how do you start considering the balance between technology and people, especially in a country with high unemployment and poverty. Other strategies that the results revealed included digital marketing strategies and a data strategy.

It was also reported that improving digital maturity involved employing digital natives, who brought the technological know-how into the business and fulfilled roles defined to reflect that it was moving in a direction in which an execution was more technologically enabled. The skillset identified, though, in the digital-natives businesses was the solid technological grounding.

An aspect of how digital maturity could be improved that emerged from the participants was optimising operations through data transformation and digitisation. An example of data transformation involved real-time data and being flexible around the number of necessary personnel based on demand. An executive from financial services described it as follows:

***Respondent 8**: "In the call centre we use some real-time data for operations, so, for instance, for seeing that our claims are behind we need more people on this product line and those types of things, what is abandonment rate and those types of things."*

The participants acknowledged that their businesses were not at the desired levels in digitisation and data transformation and described the desired future state of how it should look. This included using data for predictive analysis and a desire to have a digital twin for the entire value chain. An executive expressed this in the following manner:

***Respondent 7:** "We need almost to become this seamless organisation and be able to have a digital twin of the entire value chain, to be able to predict better from all the history and the data, a clean set of data, and then run scenarios and sensitivities for the future, and so my ultimate would be to have this kind of fully integrated humming value chain that could have a digital twin, you can just say, okay, if COVID hits again tomorrow in Germany and everything shuts down, what do we do, and we could run that scenario."*

Elements of optimising operations through data transformation and digitisation begin to overlap into the third capability found within transformation, which is discussed in the following section.

4.5.3.3 Internal business redesign

Three elements were recognised under the category of internal structure business redesign, namely, (1) emphasis on consolidation and integration, (2) constitution of a central digital and data office, and (3) redesigning teams and roles.

An essential element that featured strongly in the results of internal structure business redesign was emphasis on consolidation of products/capabilities and client data, and the integration of functions and technology to promote efficiencies across the business and add to the business's bottom line.

The results showed that an essential aspect of restructuring the business was the consolidation of products and technology internally. An executive in financial services described this as follows:

Respondent 10: *" Simplification of your overall estate, both in the technology space and in the product space, one, product duplication. Let's get rid of product duplication, then the different clusters would then work together to achieve that particular objective. For example, you would have probably three, four different tax-free savings accounts sitting in different businesses. The businesses must then engage to look at which place is best suited to be the one area that is a provider of this type of product. We can't have duplication. Then simplification from a technology perspective, you have duplication where because of legacy and federated model, different clusters and product houses within those clusters will have their own line of business systems that they use to do both the management of the investments and the administration of the investments, but you look broadly to start identifying the duplication and opportunity to really rationalise and consolidate."*

This finding illustrates that the motivation behind eradicating duplication is for simplification purposes. Because businesses were previously structured in silos, duplication of products, technology and capabilities existed, thus transforming involved the elimination of silos and promoted a more integrated business. In the integrated business model, products and capabilities resided in the business units with expertise serving that product or capability well. The quote also highlighted a need for simplification and integration from the point of view of technology, because owing to how the business was previously structured, various units had their own systems doing similar functions to systems in other units. Part of the transformation journey involved understanding these systems and deciding how to structure IT, such that systems became streamlined. Other participants identified the structure of IT, when giving the perceived meaning of digital maturity as discussed in section 4.4.1. Here the structure of IT gave a digitally mature business the ability to adapt rapidly to a changing environment.

Integration and consolidation of systems proved to be an influencer of how an end-to-end digital journey was constructed for the client. The following quotation shows how the integration of systems affected the business:

Respondent 8: *"The integration is important in a number of ways. Firstly, you have the client who wants to jump from one piece of technology to the other, so they start at USSD but they want to finish off on the Web and the like, so that is important. The second bit is the integration*

is also important on our back end, because we need to still have the same MI for the client if our data analysis is going to be crucial and the like, then you also want that integration on the back end as well. Thirdly, for our staff, when they're servicing the client, they should be able to see that some client contacted us via WhatsApp and submitted a normal claim, and the claim that I'm processing now was already been addressed by WhatsApp and the like. So I think it's important for the client engagement, for the customer engagement, for the client, for the staff, and also for the data integration in the background."

The above narrative shows that the integration of systems affects client engagement, processes, workforce enablement and data integration.

Another aspect of the business that required consolidation and integration, the results revealed, was the integration of client data to have a holistic view of the client, especially for financial services companies which consisted of multiple business units, which would have gathered various pieces of data from clients. Participants termed this attaining a 360-view of the client. A respondent described this as follows:

***Respondent 10**: "We've introduced a master data management solutions that helps us consolidate client records and provides that three hundred and sixty view, which allows us to apply the relevant analytics that give us a better understanding of the client and we are able to position the right value proposition to the client. All of this is done through data. We've built out this data lake, where client data and transactional data is consolidated and artificial intelligence techniques and algorithms are applied to extract value from that data. Data analytics is used to automate how you profile your client, how you extract as much value as possible from data pertaining to your client, how you identify potential opportunities while allowing you to increase your share of wallet, by cross selling different products to that particular client."*

The above finding shows why there is a necessity to consolidate data around the clients across different business units. The primary purpose of the exercise was for the business to gain a better understanding of the clients and ultimately increase its share of the client's wallet. The finding further highlighted the importance of data analytics and the application of artificial

intelligence to convert data to an asset. Signficantly, the finding also pointed to how this was achieved by centralising data within a data lake, thus giving rise to a central data office.

The findings indicated that a central digital office and a central data office drove transformation throughout the business from a digital and a data perspective, with these offices run by a central digital officer and a central data officer respectively. An executive, however, felt that a central digital officer was for a business early on their digital transformation journey, and as the business matured the need for a chief digital officer fell away. The business thus began to take ownership of digital transformation in the respective departments. Although a central digital and data office were specific to transformation, results pointed to the centralisation of standard support functions, for example, human resources, information technology, finance and legal, across business units to a central unit so that other business units could focus on their primary functions was important. Centralisation of support function also afforded the business the opportunity to optimise support across its business units, for example a single finance person could service several business units. Some businesses outsourced functions that were not primary to their product offerings.

The third element of internal business redesign noted in the results was the redesign of roles and teams. In a digital world the results pointed to teams being constituted to drive a particular outcome in the business, which necessitated a multi-functional team. This was described by a respondent as follows:

Respondent 9: *"Digital demands a different way of working, which is agile. It's about putting together teams that have the right capability and competency to drive a specific issue. What this means is that you need to end up having very fluid structures or matrix type structures that people can be easily moved, depending on what work is priority for the organisation."*

The above narrative emphasises a multi-functional team and points to the change in reporting structures to a matrix type structure and the ability to reshape teams quickly as organisation priorities change. The above quotation speaks to diversity in teams with respect to function. Another respondent collaborated on the diversity in teams and added a generational aspect:

Respondent 7: *"Tapping into multi-generational, multi-disciplinary teams. I'm a big fan of agile, because it really brings that and there's no hierarchy and people are free to speak up, and we're free to fail. Really knowing that the older team members, have a competence that's equally important to the young millennial, the Gen Z coming in with the super coding capability, because they will just look at the data, the code, and come up with an output, but the more experienced team meamber can sense check and make sure that that output is what it should be or … and then how it can be applied."*

The narrative shows how experience brings in the business lens, whereas the "millenials" brought in a new set of skills that had become predominant with the advent of the "fourth industrial revolution." Teams thus have to be agile and diversified in order to achieve the best results.

The results further showed that redesigning teams also involved changing job descriptions to be more reflective of the digital maturity aspirations of the organisation. Some of the changed roles included the roles of the chief operating officer (COO) and the call centre. The change in the COO's role was captured as follows:

Respondent 4: *"I think one of the big areas that was impacted was the operations, the COO role, and we really struggled with that COO role because there was no backend operations anymore. There was a lot more focus around technology and designing user journeys. The way we structured the bank wasn't largely different to how a typical bank could be structured but the role of the COO was quite minimised, was very minimised because it was only exceptions that fell into her space."*

Internal business redesign in the results addressed the integration of IT systems, the consolidation of products and services, and the centralisation of capabilities workforce enablement and performance.

4.5.4 Contextual Factors

Based on the participants' experience, internal enablers, barriers, and external triggers and barriers contributed to a context in which businesses tried to achieve digital transformation. Table 6 (below) shows the elements and enablers or barriers derived from the narrated

experiences of participants concerning how the business went about building dynamic capabilities in response to achieving digital maturity.

Table 6: Contextual factors codes and categories

Categories	Code	Theme
Lack of enabling environment	External barriers	Contextual Factors
Lack of client digital skills		
Changing client behaviour	External triggers	
COVID-19		
Disruptive competitors and technologies		
Executive Support	Internal enablers	
Enabling culture		
Fear and resistance to change	Internal barriers	
Lack of skills		
Legacy systems		

4.5.4.1 External barriers

Externally it was found that both barriers and triggers were affecting digital maturity, as shown in Table 6. The external barriers found in the results were two-fold: a lack of an enabling environment and a lack of client digital skills as barriers to improving levels of digital maturity.

Concerning a lack of enabling environment, the results concerned themselves with the role of government in enabling businesses to achieve their digital maturity goals. The main issues identified here were regulation, legislation, policies, oversight, and infrastructure.

The main concern around legislation was the extent to which it was outdated and its relevance to the digital environment in which businesses functioned. The result illustrated these issues in the following manner:

Respondent 8*: "Facilitating legislation around the digital processes that have come through. If you think about it, there's a lot of legislation that talks about advisor's insurance, but what has happened is that a lot of that legislation is irrelevant because now you have robo-advisors, you now have people buying your things online. We've seen quite a lot of new legislation coming through that tries to deal with these things. I don't think they are there yet, and there's a lot of work that also needs to happen retrospectively, to go and change the old legislation to bring in the new legislation that is coming through."*

Respondent 11*: "Speed up the development of regulatory frameworks for example. regulating virtual currencies and the adoption of digital in government monitoring agencies like the SARB to enable banks to move from legacy systems. Lessen the regulatory burden on financial instructions through leveraging digital ways of working – monitoring and reporting."*

For businesses in highly regulated industries, the above response also pointed to the necessity of the government to accelerate the digitisation of oversight procedures to facilitate a more efficient oversight process. This was corroborated by another respondent in financial services in the following manner:

Respondent 8*: "The government could change firstly some of their structures in terms of their oversight structures, probably there needs to be more emphasis on digital. When they visit, when they do onsite visits in the different offices, they probably could focus more on the digital processes. I also think that a lot of their data gathering mechanisms could be more real and their intervention could be faster. For instance, we traditionally submit returns quarterly and the like. Some of those things probably can be done monthly or even more frequently and the data is generated, they can get the information as they go."*

This suggests that with digital transformation, partnerships are vital, and involved partnerships of big business and partnership between big businesses and small-medium enterprises (SMEs). The results also suggest that the private sector could partner to assist this with the growth of SMEs.

Respondent 10*: The role that government needs to play is to simplify the process of getting businesses registered, how businesses access funding, etcetera. There's a lot of potential start-ups that you could potentially see spring up within the South African ecosystem; these start-ups could potentially assist or complement the big companies in terms of solving for some of the digital transformation challenges that we see in this current environment. I like what [Company name] did with that innovation hub, where they've set up this start-up or type of environment to nurture start-ups. So, I think the government needs to invest more in that. We don't expect funding; the organisations can fund their digital transformation initiatives, but in terms of supporting that ecosystem that can spawn FinTechs and InsureTechs that can partner with a financial services company or any other company in any sector; to drive the digital transformation agenda."*

Infrastructure was a common response amongst the participants and inspired passionate narratives. Infrastructure affected the business's end clients, thus affecting the extent to which they could offer more digitised products and services. The results raised data coverage, data quality and data pricing as elements that would benefit their end clients. This was articulated as follows by an executive:

Respondent 7*: "Data must fall. Business needs data and everything we do is so data based, working from home, and it's just going to unlock such value because the talent of the future that we need in business today has to be digitally wired. How can you expect our people to access the data and to have that access to smart phones and tablets and schooling that the rest of the world have, how are we ever going to compete? The pipeline of talent that we need of data engineers and data analyst and coders and just thinking of the new digital solutions that we're going to need, artificial intelligence, Internet of things, the works for the future need data. Schooling needs to change in a radical way, data needs to fall in a big way. Every township, every child must have access to data and to a tablet and to be able to get onto the*

internet and Google any question that's on their mind, and get that answer and also have chats and collaborate and talk to each other and just grow those skills. It must be in our DNA."

The above quote also shows that infrastructure had a role to play in improved education and begin to address the skills shortage that businesses faced, which was found to be an internal barrier (see 4.5.4.4).

However, some participants disputed that the government had a role to play in assisting businesses to achieve their digital maturity aspirations, and to focus on delivering to the general population, which ties into the narrative above. A respondent gave the following refutation of the role of government in assisting a business to achieve any form of digital maturity:

Respondent 9*: "I think government has so much of thing to do to help itself and its digital transformation. To be quite frank I think that if government had to focus on digital transformation it shouldn't be on the businesses, it needs to be on things like education, it's about creating access to information to different areas. So to be honest I can't think of anything that government would have to do to drive a digital transformation in a company you don't really need any specific regulation or anything to move ahead so I would say government must focus on things that are relevant to the general population of the country, like job creation, looking at education and maybe looking at stuff around medical sector because there's a lot of efficiency that can come out of digitising those sectors."*

The above narrative also highlights the government's need to transform itself, which most participants alluded to in different ways, for example, digitising their oversight processes and the services to the citizens of the country.

The second element of external barriers that the results pointed to was lack of digital skills in clients the business served. This proved to hinder businesses from delivering more digital products and services to its clients. An executive described this as follows:

Respondent 1*: "When we introduce a self-service mechanism online, our clients didn't like that. They would come in sit with somebody, take them to the boardroom and show them to log in, so that was a challenge, so we need to skill the staff and the customers."*

***Respondent 6**: "Getting our brokers on this digital journey has been really spending a lot of time with them and we've made a huge amount of progress but we're nowhere near where we want to be, and there's two or three brokers where we made very good progress and we use them as flagships for trying to grow elsewhere."*

The quotations illustrate how digital products cannot be introduced into the market without familiarising clients with the product, but time and effort need investment.

4.5.4.2 External triggers

The external landscape also brought to the fore external triggers that had compelled businesses to concern themselves with their digital maturity. The triggers the results showed were changing client behaviour, as well as the pandemic.

With respect to changing client behaviour, the results showed the end client was becoming more digitally savvy and was interested in being engaged more digitally, compelling the business to reconsider how it engaged with clients and what products were made available to them. The participants shared the following experiences:

***Respondent 10**: "For a long time [Company Name] has always been what you refer to as a fully intermediated business, relying on a very strong financial advice force. But recently, over the past few years, we are starting to see a self-directed trend emerging where clients want to go direct, they want to manage their own investments, they want to handle and manage their own risk portfolio, etcetera, and not necessarily always rely on an advisor."*

***Respondent 1:** "Our retiring member line was growing and the student member line at the other end of the scale was not, so it was clear we needed to make a move into digital to reach the tech-savvy youngster who is in the industry."*

The above responses also show that, in addition to the changing behaviour of the current client, the future clientele demographic of the business was more digitally savvy and the business needed to transform to attract this client.

The second trigger that was identified was the pandemic. An executive in financial services described the change brought about by the pandemic as follows:

***Respondent 8**: "The biggest change came through Covid. Now we do all the meetings digitally, and I also think that going forward, working from home has now become normal and that's why I think that has been the most dramatic change. Having said that, a lot of other things have changed, we don't get paper, we do things online, and obviously that is a change that is coming because of digitisation. Also the fact that our consultants can now engage clients remotely means they engage them whenever they can at their own time. I've seen clients being serviced over the weekends, over the holidays, because we do have that digital ability, and we do have a lot of transactions that go through over the weekends and holidays because clients can engage."*

The above narrative shows that the pandemic has also changed how, where and when the workforce works when the employees' work has become more suited to the client.

4.5.4.3 Internal enablers

The internal enablers identified from the participants' lived experiences were executive support and enabling culture.

The participants indicated that for digital maturity to be attained, executive support was essential. To impress the importance of digital transformation, a participant gave the following example of how governing forums had group exco representation:

***Respondent 10:** "There's also a formation of formal governing forums that support the digital strategy and the data strategy. On those forums there's group exco representation, one, to highlight the importance and the fact that there is support of a broader digital transformation."*

The second internal enabler identified in the findings was an enabling culture. A flexible culture, a culture tolerant to failure and a learning organisation, were encapsulated in the culture that drove digital maturity.

Embarking on a journey of continual learning entailed the business transforming itself into a learning organisation. This was described by a respondent as follows:

Respondent 11: *"We are leaning towards becoming a learning organisation. To acquire the skills needed in the future we have outlined the required capabilities, conducted a skills assessment and have built learning pathways for upskilling."*

Respondent 8: *"What skills we are providing, I think the banking is doing a lot so there is Degreed [a learning platform] has got a lot of training that you can do. We also have training that is coming on Salesforce so those Trailhead trails [a gamified learning platform] and the like are going a long way in training people."*

The above responses illustrate how businesses have identified skills needed for the future and have built learning pathways for employees to acquire these skills. It also illustrates how new ways of learning have been introduced, which involves a learning platform and gamification, enabling learning at scale within the business.

4.5.4.4 Internal barriers

Various internal barriers were identified in the results that slowed the progress of data maturity. The internal barriers that were revealed were: (1) fear and resistance to change, (2) lack of skills, and (3) legacy systems.

The findings showed that fear and resistance to change existed within businesses, which hindered the progress to digital maturity. Fear affected the level of funding for innovation and the extent to which employees adopted digitalisation within their jobs. This was described in a narrative as follows:

Respondent 9*: "A big thing is resistance of people to adopt digital. A lot of people still have a perception that digital is related to things like robots or robotics and if I embrace this it's going to take my job. So that's a big concern in the general population, and from a business perspective they see a lot of push back from the employees because of that. The second thing is getting investments because even though people know they have to do, they don't see it as important enough in their strategic agenda, so it is done by the way until it catches up with and then they realise you know what, I should have done something about this"*

The issue on funding was collaborated by another executive who said:

Respondent 6: *"Funding is a big challenge and skills, they're the two biggest challenges, and embracing the digitalisation, but I think the embracing part of it was a bigger problem in the past, with cell phones, with iPads, with Covid, Covid has forced people to embrace it. That remains a factor, but I wouldn't say it's a challenge, the two big challenges are skills and funding."*

Respondent 6, however, highlights that embracing digitalisation is a problem of the past, with which Respondent 9 disagrees. This could be a result of the definition of which aspects of digitalisation are to be embraced by employees. Respondent 6 adds a further challenge to digital maturity, namely a lack of skills. Although businesses had identified those necessary for digital maturity, the executives acknowledged that these skills did not necessarily exist within the business.

The third hindrance to improved digital maturity was legacy systems. The older businesses had multiple systems which had been utilised. Legacy systems posed a problem of migration for the business and the integration of data across the systems. The findings with regards to legacy systems were narrated as follows by financial services executives:

Respondent 8: "The important one is the fact that we've got legacy systems. So we've done a lot of work but we sit with a lot of legacy systems and we are effectively … we need to change them and digitise them and some of them are specialists and the like, there's still a lot of work that we're still working on to sort that out."

Respondent 10: *"Digital transformation is not as easy as one would state it to be, because you're dealing with organisations that have a big legacy, [Company X], a hundred and three years this year, there's technology that's been running there for seventy years, how do you uproot that and replace it? So migrations are a big challenge. So I think for me that's the biggest challenge, the legacy that financial services sit with. An example is the banks, banks are still running its core banking on mainframe, the thought of migrating that to a modern platform is a nightmare so as you evolve your digital engagement channels, you need to cater for integration into that big monster of legacy."*

The above narratives confirm that legacy systems cannot be easily switched off, especially those particular to a specialised product. These systems brought about the problem of migration to newer systems. Inevitably, the inability to switch off systems brought about the problem of multiple systems. This problem was also experienced in the non-financial services business, as narrated by a chemicals industry executive:

Respondent 7: *"We are a global organisation and we've got seventeen to twenty different systems. It's SAP systems but it's not integrated and we've had to spend a lot of time on our master data and creating consistency in the master data, because you wouldn't … the most basic things, like the naming of a product, it's different in different geographies, and they use letters and numbers and an underscore and a … you know, so it's things like that in the naming conventions that are different so our fields and SAP are used differently, our customer names, we're different, so we're trying to create again some sort of consistency."*

4.6 Conclusion of findings

The assignment of different meanings to digital transformation points to a lack of shared understanding of what is perceived as digital transformation. Participants described digital transformation in terms of how it could be executed, the results that could be achieved, that is, value creation from digital transformation, and the reason for digital transformation, notably, digital transformation as an external trigger.

As with digital transformation, several meanings were assigned to the meaning of digital maturity, indicating a lack of a consistent definition of the term. Some of the findings assigned an identical meaning to digital maturity to digital transformation, indicating the terms were either used interchangeably or there was confusion between the two.

The businesses built multi dynamic capabilities on the digital transformation journeys on which they had embarked. Though the capabilities were split into sensing, seizing, transforming and the context in which the capabilities were built, some capabilities were found in buckets. These capabilities may change in nature from bucket to bucket. In other instances, some capabilities enabled another capability.

Chapter 5. Discussion of Findings

5.1 Introduction

This chapter is a discussion of the key findings presented in the previous chapter concerning the three research objectives of the study, namely:

i. To explore the perceived meaning of digital transformation to South African businesses
ii. To explore the perceived meaning of digital maturity to South African businesses
iii. To determine which dynamic capabilities South African businesses built in order to achieve digital maturity.

5.2 Objective 1: Definition of Digital Transformation

Different meanings and scopes characterise digital transformation in South Africa within businesses. This observation is in line with observations internationally, with digital transformation characterised by differences in meaning, terminology, and concepts. Vial (2019) noted 28 definitions of digital transformation, of which 23 were unique in literature.

The three meanings of digital transformation derived from South African businesses are:

i. Digital transformation is a process of value creation for the business and its clients. Business value is created by leveraging technology to scale the business, transform and improve processes, modernise technology and create a competitive advantage. Client value is created through the way a business enhances the delivery of its value proposition and its client engagement models. Client value focuses on client centricity and omni-channels.
ii. Digital transformation is a response to an external disruptive force, notably technology that has changed the business's environment and the client expectations the business serves. Therefore, it becomes an IT-induced transformation that results in the business simplifying and modernising technology, products and how the workforce executes its tasks.

iii. Digital transformation is an organisational transformation that involves the whole value chain, coordinated from the top level, affecting people, processes and value, and resulting in a redefinition of the business.

The first meaning of digital transformation refers to results through a change in processes and how the business client was served. It is thus seen as the value created by it from both a business and client perspective, in line with the work of Morakanyane, Grace, and O'Reilly (2017), who identified value being created through models, processes and creating new business models. Similarly, findings in the South African context identified the mechanisms of creating value to be processes, technology modernisation and changes in business models. Business value creation involved leveraging technology (Berghaus & Back, 2016) to scale the business and to transform and improve processes, as argued by Thordsen et al. (2020), who identified digital transformation as an organisational effort to enable the business to optimise for the changed environment in which it would inevitably operate. In this study, the optimisation of the business evolved around processes and the ability to scale the business. However, Berghaus and Back (2016) also include exploring innovation as part of understanding digital transformation, which was not prominent within the results.

Fitzgerald, Kruschwitz, Bonnet, and Welch (2014) and Liere-Netheler, Packmohr, and Vogelsang (2018) posited the idea of enhancing client experience and streamlining operations as part of the definition of digital transformation, similar to the one derived from the study's findings. This corroborates findings by Piccinini, Hanelt, Gregory, and Kolbe (2015), who emphasised the leveraging of technology to enhance client experience. Emergent in the study are client engagement models, which have elements of client centricity and omni-channels. Client centricity covers personalisation, achieved through incorporating data and driving client experience to be about what suits the client, thus making the experience specific. Omni-channels look at the multiple points of access to the business by the client with the overlay of consistent experience, irrespective of channels.

Within the first definition, significance is placed on two digital maturity factors identified by Bumann and Peter (2019), namely, technology and client focus. On technology, the authors identified leveraging modern technology and exploitation of new technology, thus aligned to

the findings of this study. In client focus the authors identified the elements of hybrid client interaction channels and client experience, both of which align to omni-channels and client engagement models in this study. Thus, within the definition assigned by managers to digital transformation, digital maturity factors are positioned as meanings of the phenomenon.

The second definition of digital transformation within the South African context is a response to an external trigger, mainly technology. Similar to the first definition, there is a combination of the concept of digital transformation and the results derived from it. The conflation between concepts and results or impact in definitions is a common thread found by Vial (2019). A changing customer and environment has been identified by several authors (Teichert, 2019; Vial, 2019; Warner & Wäger, 2019), and the need to respond to this. Therefore, the definition recognises that the business is not dealing with a stagnant client or environment and will have to respond continuously to an environment constantly adapting to advancing technologies, and a client who is becoming increasingly advanced technologically. As such, the business must redefine itself (Teichert, 2019; Vial, 2019b), an indicator that digital transformation is a continual exercise and not once-off.

Identification of digital transformation as an IT-induced phenomenon in South African businesses echoes findings of Berghaus and Back (2016), who identified it as a technology-driven change. However, the notion is also identified in the literature to describe digital maturity by Thordsen and Bick (2020). As theory suggests that digital maturity and digital transformation are used interchangeably, even though they do not mean the same thing (Kane et al., 2018), it is not surprising that this meaning was found in digital transformation. The second definition also includes outcomes of digital transformation, which are simplified, and modern technology, which is simplified, along with modern products and changed workforce tasks. These outcomes emphasise three digital maturity factors, namely, technology, product and services, and operations and processes (Teichert, 2019).

Thirdly, digital transformation was identified as an holistic business transformation coordinated from the top, affecting people, processes, and value, and resulting in a different business. Teichert (2019) stated that digital transformation was an holistic concept affecting several levels and parts of the organisation, as corroborated by this study. Defining digital

transformation as a coordinated effort from the top indicates businesses should tackle it from a central top level, emphasising the importance of leadership and organisation, with digital maturity factors requiring leaders to align from top to bottom (Teichert, 2019).

Throughout the fieldwork it was observed that the business leaders described digital transformation in certain instances in terms of the results it offered, the activities undertaken, and the various strategies the business had in place to achieve digital transformation. This finding corroborates those of Vial (2019a); Warner and Wäger (2019), who posited that definitions of digital transformation had several instances of a mixture between its impact and the concept. Thus, digital transformation in South African businesses has operational and conceptual definitions.

5.3 Objective 2: Definition of Digital Maturity

Similar to digital transformation, digital maturity is assigned different meanings by South African businesses. In certain instances, the meaning had commonalities with those assigned to digital transformation. The definitions constructed from the results were as follows:

i. Digital maturity is the ability to respond to a changing environment, with change driven by technology in an agile manner.
ii. Digital maturity is when digital is embedded in the business. It can be identified through technology adapted for core functions, digitised processes, an enabled workforce who have accepted and use technology, and digital value can be accounted for.
iii. Digital maturity is the measure of the progress of digital transformation and a determination of what was needed for further improvements.

The first definition identifies an ability to adapt to a constantly changing environment in which the change is primarily driven by technology (Eremina et al., 2019; Kane et al., 2017), synonymous with definitions found in the literature. The environment to which the business must adapt is characterised by evolving technology which inherently alters the operating business environment. The capability that the business needs to have in place to adapt rapidly is building its IT architecture such that it allows flexibility and speed in pivoting. Capability

building is in line with Warner and Wäger (2019) and Vial (2019a), who posited it was vital to build capabilities in order to be able to create, implement and transform business models rapidly.

The definition of digital maturity relating to the business's ability to respond implies capability building the IT stack to achieve flexibility and speed, that is, agility and the status quo of that capability. This perception of digital maturity begins to highlight digital maturity factors identified by various models. More specifically, it is exploitation of new technologies and leveraging modern architectures, which Bumann and Peter (2019) identified as part of the technology digital maturity factor. Armstrong (2020) identified this capability as IT agility, forming part of the IT Excellence digital maturity factor.

The second definition of digital maturity assigned by South African businesses looked at specific aspects of the business, including digitised core functions and processes, an enabled workforce, and accounting for the value that digital maturity adds to the business. This definition measures the status quo of these aspects of business and could form part of the third definition. However, it singles out particular elements which form part of varying digital maturity factors found in the literature, namely, the elements of the process digitisation (Berghaus & Back, 2016); operational excellence, in which core functions are adapted for the environment (El-Telbany et al., 2020); and workforce enablement, in which technology is accepted and utilised, implying there is employee awareness, alignment, and empowerment (Armstrong, 2021).

The final definition described digital maturity as the status quo of digital transformation in line with several authors (Chanias & Hess, 2016; Remane et al., 2017; Thordsen et al., 2020b), a recurring explanation in literature. Trying to understand this begins to illustrate the relationship between digital maturity and digital transformation.

South African businesses described digital maturity in varying ways, pointing to digital maturity factors in certain instances and showing the significance of digital maturity factors within the country’s context.

5.4 Objective 3: Building dynamic capabilities

The third research objective sought to understand the dynamic capabilities South African businesses have built to achieve increased digital maturity levels. Grouped into sensing, seizing, transforming and contextual factors, they were similar to elements of various digital maturity factors found in literature. South African businesses build dynamic capabilities to sense and adapt to the external environment (Vial, 2019a), as well as to allow the business to adapt to the continually changing digital environment.

5.4.1 Sensing Capabilities

South African businesses focused on three competencies for sensing, namely, mapping the landscape, deep client understanding, and planning for the future, with each containing several elements. The competencies found within sensing enabled the business to be aware of the changes originating from within and outside the business' competitive environment. They further allowed the business to understand what needs to be in place for existing and new clients and prepare for this. Thus, in sensing/scanning capabilities, the business sought to understand what opportunities and threats were present in the environment in which it operates and how the business can begin to equip itself to operate in the future. Weritz et al. (2020) highlighted the ability to discover, exploit, process, obtain and transform new and internal knowledge as the absorptive capacity, vital for the early detection of opportunities and threats in the market. This aligns with the competencies built as part of sensing capabilities in the South African context found in this study. Table 7 (below) shows the dynamic capabilities built for sensing, as well as the relevant digital maturity factors which had elements similar to those of the dynamic capability the business had built.

Table 7: Relevant digital maturity factors for sensing dynamic capabilities

Capability	Elements of dynamic capability	Relevant digital maturity factor(s)
Mapping the landscape	Continuous market scanning	Data and Information (Schumacher, Nemeth, & Sihn, 2019)
	Screening competitors	
	Identify trends (market, technology, clients)	
Deep client understanding	Client relationship management	Client focus (Berger, Bitzer, Häckel, and Voit (2020)
	Understanding client journeys	
	Client data analytics	
Planning for the digital environment	Formulating digital strategies	Workforce enablement and performance (Armstrong, 2021)
	Identifying skill sets for the future	

In order to understand the landscape in which the business operates it has to continuously scan the market, screen the competitors, and identify trends in the market. This is achieved through both internal and external resources and has fundamentally changed for businesses, as digitisation has changed the nature of the competitor. This adds complexity to what a competitor analysis looks like, as competition emerges from outside of the business's traditional industry and there are blurred lines between industries. However, the blurred lines imply businesses can now look outside of their industry for opportunities based on its unique set of abilities, with this unique set applicable differently in different industries. Screening of the competition involved different data points, namely products or services, pricing, competitive weakness and strengths, and position on the value chain of the competition. The knowledge of this is essential for the identification of threats and opportunities. Trends play

a vital role in understanding the business landscape as these impact on both short-term and long-term planning. The businesses thus need to track not only mega trends but also market trends, emerging technologies trends and changing client trends.

Scanning of the market is found in literature, where the fast-changing markets require continuous scanning of the external business environment to identify new or untapped technologies, unexploited market needs and changes in customer experiences, as well as threats through innovation of new or existing competitors (Helfat & Raubitschek, 2018). Similar to this research, studies show the business's competencies to map the landscape in which it functions contains a significant aspect of data, from collection and aggregation to transforming and utilising the data as information on competitors, client's opportunities and threats. These data elements are similar to aspects of the data and information digital maturity factor, assessed accordingly (Schumacher et al., 2019). Identification of the correct data is crucial in support of digital transformation and maturity.

Client understanding is an essential capability within sensing as it gives direction to product development and where the business can improve its client value proposition. To understand the client better requires not only a client relationship management system enriched with data and up-to-date material, but also deeply entrenched relationships with clients. This strengthens trust and thus provides more opportunities for the business. Understanding of clients in order to pre-empt their needs is aligned to recommendations by Mhlungu et al. (2019), and can be used as a mechanism to stay updated on changes in behaviour, an element of the client centricity digital maturity factor.

The role of technology in client understanding in the South African instance is to enhance the relationship but not replace it, especially in business-to-business relationships. Data and information are factors of digital maturity that include automated data collection and analysis as some of their elements (Schumacher et al., 2019). Mhlungu, Chen, and Alkema (2019) suggest additional elements of client-centricity, namely process digitalisation and re-engineering, experimentation with new technologies and customer-centred approach to design offerings. These elements were discovered in this study in both seizing and transforming capabilities.

The business needs to understand how the client interacts with it digitally at different touchpoints, which it achieves through client journey mapping. Not only do client journey maps help the business understand how the client interacts with it but they also pinpoint potential pain points, good or bad. This gives the business an idea of improvement areas to improve client experience, thus increasing the probability of retaining clients and enhancing "client obsession." In a study on digital transformation, Berghaus and Back (2017), illustrated that client journeys were used to streamline, simplify, and innovate around client-centred experiences and user journeys. This ties into the findings of this study, in which client-centred activities are described as "client obsession."

Berger et al. (2020) identify a client focus area within digital maturity factors which focuses on insights, integration, interaction, and experience. This factor starts with the business collecting and analysing data to create client insights, after which the client pillar of digital maturity evolves to integration, the client co-creating with the business, interaction, and experience. Co-creation with clients is identified under seizing, the implication being that observing elements of a digital maturity factor in different capability buckets, thus a digital maturity factor possibly requires sensing, seizing, and transforming elements.

Client obsession, defined as the business' activities being centred around clients, was further enhanced by using data analytics, which provided the business with the ability to categorise and classify clients and monitor and manage clients. Advanced analytics afforded the business an ability to understand client behaviour and even pre-empt it. The utilisation of data analytics, especially in a business with multiple business units which wants to achieve an holistic view of the client and harness cross-selling opportunities, thus increases its share of wallet, warrants a central data office. The office allows business units to utilise the same data on the client, thus reducing data requests from the client and standardising the data used by different business units. Data utilisation in this manner contributes to creating a seamless and consistent client experience across the different business units, as they tap into the same source of truth.

Sensing also involves planning for the business's digital environment, which is two-pronged, namely formulating digital strategies and identifying the skill set needed for a future-ready

business. The skills identified are both technical and soft. Schwarzmüller, Brosi, Duman, and Welpe (2018) identified macro-level changes in the business as a result of digital transformation, namely, structure of work and the importance of relationship-oriented leadership. Change in the structure of work includes changes in job profiles and new types of jobs. Identifying the skills needed is the first step in changing the structure of work, which South African businesses develop as a capability during sensing. Knowledge of the skills needed informs who the business hires and the skills development areas for the current workforce so that it is in a position to thrive in the digital environment (Cascio & Aguinis, 2008). The changes in the job structure and the new jobs are observed in the transforming capabilities, namely improving digital maturity and promoting digital citizenry. The human resources focus capability measures human resource management, which includes how an organisation manages the workforce and the capacity to accomplish a business's work and a supportive or secure work climate (Park & Mithas, 2020). In digital maturity models, the human resources focus capability aspects are aligned to workforce enablement and performance, characterised by understanding the breadth and depth of current digital skills, digital skills development and employee empowerment (Armstrong, 2021). However, once again, elements of a digital maturity factor are observed in different capability buckets, implying that a factor has to be developed such that it contains sensing, seizing and transforming elements.

Therefore, in sensing, the pertinent digital maturity factors in South African businesses are workforce enablement and performance, client focus or client centricity, and data analytics and information as shown in Table 7.

5.4.2 Seizing Capabilities

The ability to commercialise opportunities and constantly keep threats abated is encapsulated in the seizing capabilities. Two main capabilities are essential for seizing, namely, constructing a digital portfolio balance and redefining how businesses create solutions, products, or services. Table 8 (below) shows the dynamic capabilities South African businesses built for seizing, as well as the relevant digital maturity factors which had elements similar to those of the dynamic capability the business had built.

Table 8: Relevant digital maturity factors for seizing dynamic capabilities

Capability	**Elements of dynamic capability**	**Relevant digital maturity factor(s)**
Digital portfolio balance	Role of partnerships	Processes (Berger et al., 2020); New Business Models (Armstrong, 2021); Partnerships and Ecosystems (Berghaus & Back, 2017)
	Balancing internal and external options	
Redefining solutioning	Enhancing external options	Innovation (Valdez-de-Leon, 2016)
	Promoting innovation	
	Prototyping	

A rapidly changing digital environment requires speed to market for changes to the client value proposition. To enhance a business's client value proposition, it can opt to do it internally or co-opt external partners to fulfil certain areas of its client offering. Internally, business units do not rely entirely on their own businesses but collaborate and partner with other business units within the business. Externally, partnerships are varied and in certain instances the partners can be competitors. The implication of enhancing the business's value proposition through internal and external partnerships is that the business has to determine the correct digital portfolio balance. Partnerships allow the business or a business unit to focus on its speciality whilst expanding its value proposition. Partnerships thus fill the missing competencies the business needs for fast and dynamic developments of solutions (Berghaus & Back, 2017). For a business to maximise the utilisation of partnerships it must possess integrative capabilities. Dynamic integrative capabilities allow the business to provide reliable, repeatable communication and coordinated activity to introduce and modify solutions (Helfat & Raubitschek, 2018). A partner network forms part of the inter-organisation collaboration found within the process's digital maturity factor (Berger et al., 2020). The

enhancement of the value proposition and co-opting competitors to add value to clients form elements of a new business model's digital maturity factor (Armstrong, 2021).

For solutions to be close to market expectations the reinvention of how solutions are developed is critical, in certain instances changing the internal structure of the business. Innovation, co-creation with clients, and prototyping are ways businesses send new products and services to the market. Innovation is two-fold, as the next great big idea and as incremental innovation to everyday tasks and processes. To accelerate innovation, research and development has been replaced or enhanced by accelerators, innovation hubs and hackathons, all with a primary aim of rapid development incorporating the client's voice. Hackathons, traditionally known to be coding events for programmers, have expanded to include design thinking and other innovation techniques (Berghaus & Back, 2017). Innovation requires the dynamic capability of organisational flexibility and agility, which affords the business rapid response to customer needs and market changes, making it proactive to new opportunities and market trends as well as an ability to implement changes into business models and processes (Weritz et al., 2020). Possessing this capability allows the business to rapidly detect and optimise new opportunities to achieve digital maturity. In the South African context, cross-functional teams that were given autonomy, along with accelerators, hackathons, and innovation hubs, were utilised to achieve this. In digital maturity models the elements of flexibility and agility form part of the innovation variable (Valdez-de-Leon, 2016).

The crucial digital maturity factors are innovation, ecosystems or partner networks, new business models, and processes within seizing capabilities, as shown in Table 8.

5.4.3 Transforming Capabilities

The transforming capabilities within South Africa show businesses reinvent in three ways, forming a digital ecosystem, improving digital maturity, and redesigning the business internally. Table 9 (below) shows the dynamic capabilities South African businesses built for transforming, as well as the relevant digital maturity factors which had elements similar to the elements of the dynamic capability the business had built.

Table 9: Relevant digital maturity factors for transforming dynamic capabilities

Capability	Elements of dynamic capability	Relevant digital maturity factor(s)
Digital ecosystems	Joining a digital ecosystem	Organisation (Bumann and Peter (2019); Digital ecosystems (Teichert (2019)
	Having a partnership network	
Improving digital maturity	Promoting digital citizenry	Strategy; Governance; Processes; Digital ethics; Workforce enablement and performance (Armstrong, 2021)
	Employing digital natives	
	Optimising operations through data transformation and digitisation	
Internal structure business redesign	Central digital and data offices	Data Analytics; Integration; New Business Models (Armstrong, 2021)
	Emphasising integration	
	Redesigning teams	

Digital ecosystems were first realised in seizing and continue to be necessary within transforming capabilities. The seizing capabilities focused primarily on forming an ecosystem or partnership network to enhance the client value proposition. However, this evolves in transforming to address the speed to market and any weaknesses the business has, that may prolong the time it takes for solutions to reach clients, that is, time to market for solutions. Partners enable the business to accelerate the delivery of solutions, improve its platforms, and enhance the client value proposition. In big business, partnerships are not only external but are also internal. Teichert (2019), identified an organisation being part of a digital ecosystem as a sign of digital maturity, involving digitisation or integration of the horizontal and the vertical value chains and interoperable technology platforms enabling customisable solutions configured by end-users. Thus, ecosystems and partnerships are interlinked to form a factor that corroborates Bumann and Peter (2019), as organisation action field element;

partnerships leverage off each other's strengths to meet increasing client needs, and the partner ecosystem. As a result, it includes competitors and relevant digital maturity factors are thus digital ecosystems and organisation.

Improving digital maturity in South African is a multifaceted exercise involving staff, operations and processes, data, and transformation. A standout element is the promotion of digital citizenry. Within the business this is essentially about the employees and the extent to which the business has managed to make them digital fanatics. From a cultural perspective, collaboration, intrapreneurship, and learning are aspects of digital citizenry.

Collaboration is achieved both digitally and physically, with COVID-19 having accelerated digital collaboration. The importance of collaboration and communication is found in Weritz et al. (2020), whose study shows business units can use the advantage of better coordination and easier knowledge sharing if the business units work together.

Digital citizenry was also identified as the participation of employees in the transition from manual processes to digital processes. In organisations with a significant number of blue-collar workers the process has to be carefully managed and allay any fears from workers around job security. This boils down to a well-run change programme throughout the business's digital transformation journey, part of it involving an education piece that helps employees understand the benefits of digitisation. Several implementation strategies must be included in the change programme, namely, how the business incorporates its staff on the journey, what digital solutions are made available for employees to simplify their tasks, and how one starts considering the balance between technology and people, especially in a country with high unemployment and poverty. Berghaus and Back (2016) identify the importance of digital commitment and affinity among employees as prerequisites for digital transformation. Digital commitment, like digital citizenry, requires managers to adapt their leadership style and carefully manage the change process (Berghaus & Back, 2016), as identified by the study’s findings.

The transformation capabilities of the business also include the ability to transform data, which implies a data strategy. The impetus is for data to reach a level on which it can be

utilised for decision-making within the business, varying from optimising operations to predictive analysis.

The third capability found within transforming is the ability to redesign the business internally. The elements of this capability are consolidation and integration, building a digital and data office and redesigning teams and roles. Consolidation and integration are across products and technology, allowing the business to remove unnecessary duplications in various units, thus streamlining product manufacturing and centralising technology.

Within transforming, several digital maturity factors come to the fore, namely, organisation, digital ecosystem, workforce enablement and performance, strategy, data analytics, processes, governance and digital ethics as shown in Table 9 (above).

5.4.4 Contextual factors

Contextual factors primarily dealt with the external and internal antecedents that promoted or hindered digital transformation. Externally government came into the spotlight as a contributor to slowing the pace of digital transformation, specifically in the role government played in creating an enabling environment via legislation, policies, regulation, infrastructure, and the promotion of digital skills development. Various triggers prompt South African businesses to start the journey of digital transformation. The internal environment is also pivotal in determining the success of digital transformation and inevitably the level of digital maturity the business will attain. Table 10 (below) shows the contextual factors that affect digital maturity on South African businesses, as well as the relevant digital maturity factors which had elements similar to those of the internal and external environment which businesses faced in the quest for digital maturity.

Table 10: Relevant digital maturity factors for contextual factors

Capability	Elements of dynamic capability	Relevant digital maturity factor(s)
External barriers	Lack of enabling environment	Not found in digital models
	Lack of client digital skills	
External triggers	Changing client behaviour	Not found in digital models
	COVID-19	
	Disruptive competitors and technologies	
Internal enablers	Executive Support	Culture (Berghaus & Back, 2016); Leadership (Berger et al., 2020);
	Enabling culture	
Internal barriers	Fear and resistance to change	Data Strategy; Innovation (Armstrong, 2021);
	Lack of skills	
	Legacy systems	

An external barrier that came to the fore was the lack of skills by the business clientele. The businesses in this study mainly had as their clientele ordinary citizens of South Africa, thus they were referring to their e-skills and e-literacy. In a study of inclusive digital transformation in South Africa, Manda and Backhouse (2018) identify three pillars that the government has adopted in its approach to an inclusive digital society, namely, digital transformation of government, digital access, and digital inclusion. The aspect of e-skills forms part of the digital access pillar, which Manda and Backhouse (2018) found to be a challenge in developing countries such as South Africa. It was found in this study that though programmes had been put in place by the government the benefits were yet to be realised. The lack of results in

government programmes impacted business, as business clientele were now found to have an e-readiness gap. The implication of lack of e-readiness meant businesses could not produce digital products at the rate which could result in higher levels of digital maturity, but instead at a rate that suited its clients. This, in turn, slowed other digital transformation initiatives, which are built to support digital products. Further, the business was forced to continue supporting legacy businesses and systems due to clients' slow acquisition of e-skills.

Various external triggers drive the digital transformation journey amongst South African companies, including changing client behaviour, COVID-19 and disruptive new (old) competitors and technologies. In a systematic review, Osmundsen, Iden, and Bygstad (2018) corroborate the triggers found in this study. In their study, the authors found the external drivers of digital transformation to be customer behaviour and expectations, digital shifts in the industry, changing competitive landscape and regulative changes. Businesses have to keep up with digital shifts affecting their landscape and customers, and the response to this is digital transformation. This finding was also noted as a definition of digital transformation in South African businesses.

External influences are not synonymous with digital maturity models and, as such, are generally not identified in digital maturity factors. Yet, it would appear they do influence the level of digital maturity the business inevitably attains.

Internally, the contextual factors focused on the culture within the business, leadership and elements of skills and IT. A common adage is that “culture eats strategy for breakfast,” which in the instance of digital maturity and digital transformation journey denotes the importance of a flexible culture, tolerance of failure (Berghaus & Back, 2016) and a learning organisation cannot be overemphasised. These aspects of culture are identified within several maturity models which further emphasise the importance of learning opportunities to acquire new skills (El-Telbany et al., 2020). This cultural trait inevitably begins to solve one of the internal barriers, that is, lack of skills identified in the study. Promoting learning through creating learning paths and making available learning modernises it and scales learning gives the business an ability to solve skills shortages faster. Thus, for big business, one of the aspects is learning at scale.

An internal contextual factor that positively impacted digital maturity was the support of the top suite in South African businesses of digital transformation journeys. Leaders should not just pay lip service to digital transformation but through their actions in the business. The need for the top suite to immerse itself in digital transformation supports findings in literature that identify support of digital maturity from top leadership as part of the leadership digital maturity factor in the model by (Berger et al., 2020) and a few other digital maturity models.

Other internal contextual factors found in the research were fear and resistance to change, lack of skills within the workforce and legacy systems which negatively affected digital maturity in the business. Fear and resistance to change are cultural elements, thus, to be successful in digital transformation the cultural element that should exist is one that embraces change or is flexible to it. A need for employees to accept new ways of working is identified in business for digital maturity to be attained. Teichert (2019) identified the ability to reinvent and accept change as a category of digital culture, namely, changeability. Within the South African context this fear of change inevitably affected funding for innovation. The resistance to funding is further compounded by utilisation of traditional financial metrics to evaluate projects, yet, in a digital environment, having capital at risk was more desirable. Capital at risk speaks to behaviour that supports risk-tolerance and, ideally failure tolerance, with cultural aspects necessary for innovation. Access to funding and the level of funding is an element of innovation in digital maturity factors (Armstrong, 2021), a challenge in South African businesses. With funding a challenge in South African businesses, the implication is that digital maturity is at lower levels, and innovation has not matured as a factor.

Legacy systems added complexity to digital transformation, especially in financial services. Not only do they come with the complexity of the business needing to build an integration ability of old and new systems, but these systems also come with the complexity of integrating multi-systems that handle data differently. Legacy systems thus pose new challenges to the digital transformation journey, such as systems migration (the need to move legacy business from older systems to newer systems) and the need for a data strategy to drive data consistency across systems, which inevitably contributes to the whole idea of holistic client view and client experience. Thus, the data strategy needs to deal with new data as well as

mining the old data. Legacy systems are still an active business tool in specialised financial services businesses and have not been decommissioned.

5.5 Conclusion of discussion

In South African businesses, different terminology around digital transformation and digital maturity exists for businesses. In assigning meaning to these terms, digital maturity factors emerge, pointing to the businesses placing relevance on these terms.

Whilst digital maturity factors were found in how South African businesses defined digital maturity and digital transformation, and how South African businesses built dynamic capabilities in response to digital transformation also identified elements of digital maturity factors. A digital maturity factor contains several elements, found in multi-capability buckets, implying that digital maturity factors needed a sensing, seizing, and transforming element from a dynamic capability theory framework.

The breadth of digital maturity factors is vast, so the dynamic capability theory framework used as a lens to understand digital maturity highlighted the significance of some of the factors in a South African context. The identified maturity factors corroborated various factors within digital maturity models. The role of government and the external environment was an essential factor. As a digital maturity factor within digital maturity models there is little observation of it, yet it was found to be vital in determining what level of digital maturity could be observed. In general, digital maturity models, aside from clients, are not cognisant of the external environment. As these models are created in an environment different from a South African environment in terms of client skills, government legislation and policy, the factors applicable to South Africa could thus be different.

The framework of the dynamic capability theory, that is, sensing, seizing, transforming and the contextual factors, begins to lend understanding of how some aspects of digital maturity factors exist in the organisation. As it builds dynamic capabilities to respond to the fourth industrial revolution and remain competitive, the dynamic capabilities are elements of digital maturity. Thus, utilising the dynamic capability theory shows the relevance of some digital maturity factors in the South African context. An emerging observation is that a digital

maturity factor needs to have sensing, seizing, and transforming capabilities, as some elements of the same factor were found in different capabilities buckets.

Chapter 6. Conclusions and Recommendations

6.1 Introduction

The study set out to explore the relevance of digital maturity factors to South African businesses. It focused on senior managers from different institutions of different sizes in South Africa. The choice of the participants was based on the role they played and their oversight in digital transformation. The managers provided insights based on the experiences of the digital transformation journey, one undertaken to attain digital maturity.

Firstly, based on differing definitions and terminology in digital maturity and digital transformation, the study looked at the definition of these two phenomena in the South African context. Secondly, against a lack of theoretical foundation in digital maturity models in which digital maturity factors are generally observed, the study looked at how businesses in South Africa built dynamic capabilities in response to digital transformation, and as a result, what elements of digital maturity factors exist as a result of these capabilities. It, therefore, had the following objectives:

i. To explore the perceived meaning of digital transformation to South African businesses
ii. To explore the perceived meaning of digital maturity to South African businesses
iii. To determine which dynamic capabilities South African businesses built in order to achieve digital maturity.

This chapter integrates the findings from the study as they relate to the objectives above. It provides the main findings and conclusion of each objective. Key recommendations are presented for business, government, and academia. The chapter concludes with a discussion on the limitations of the study and suggestions for further research.

6.2 Conclusion pertaining to research objective 1

Digital transformation is a phenomenon elevated as a result of the fourth industrial revolution. Many businesses in South Africa are undergoing what they call digital

transformation, yet the perceived meaning of digital transformation varies across businesses. Leaders in various businesses inconsistently used "digital transformation" to describe various strategizing and ongoing activities (Warner & Wäger, 2019). A conflation between the concept of digital transformation and the results achieved as a result of digital transformation exists in South Africa (Vial, 2019a).

The results identified in the perceived meaning of digital transformation were mainly around adding value to both clients and the business. Value in South Africa was created through leveraging technology to change processes, business models, and client experience.

Digital transformation was also a response to an external trigger, mainly technology, that changes client behaviour and the business environment. The business was thus compelled to react to this in a rapid and agile manner. Further digital transformation was acknowledged as an holistic organisational effort affecting several parts of the organisation, and one that should be driven from the top down.

Thus, in a South African context, the study concludes the divergence in the meaning of digital transformation is similar to definitions globally as well as the conflation between conceptual and operational definitions. The study also concluded by articulating the meaning of digital transformation, business leaders illustrated the relevance of several digital maturity factors: leadership, organisation, technology, product and services, operations and processes, and client focus.

6.3 Conclusion pertaining to research objective 2

Parallel to digital transformation, digital maturity has gained momentum, as the fourth industrial revolution has gained momentum. Several meanings have been assigned to both, some interchangeable. In describing digital maturity, business leaders alluded to the capabilities the business had built during the journey of digital transformation in order to adapt to the rapidly changing technological environment. The most substantial relationship to digital transformation was the definition of digital maturity as the status quo of digital transformation (Chanias & Hess, 2016; Remane et al., 2017; Thordsen et al., 2020b).

Thus, in a South African context, the study concludes the divergence in the meaning of digital maturity is similar to definitions globally as well as the conflation between conceptual and operational definitions. Further like global findings there is a confusion between the meanings of digital maturity and digital transformation. Business leaders describe elements of digital maturity factors as the definition of digital maturity. Elements of IT excellence, workforce enablement, processes, and operational excellence, were used to describe digital maturity by South African businesses.

6.4 Conclusion pertaining to research objective 3

The third objective of the research looked at how South African businesses build dynamic capabilities for improving digital maturity. It appeared to be an effort to ensure elements of digital maturity factors existed within the businesses as they built various ones that were grouped into sensing, seizing, transforming capabilities and contextual factors. The findings revealed that elements of certain digital maturity factors could be found in all dynamic capability bucket, namely, sensing, seizing, transforming and contextual factors.

Sensing capabilities built by South African businesses concern themselves with understanding their landscape and their clients and planning for operating in an environment that would be changed in the future. In understanding the landscape, the business seeks to keep up with competitors and technology, which essentially is digital scouting (Warner & Wäger, 2019). Sensing capabilities further looked at understanding client trends and needs, which gave the business valuable information on future products and services direction. An essential part of sensing capabilities is formulating digital strategies and identifying the skill sets needed for the future, forming part of digital scenario planning (Warner & Wäger, 2019). Thus, the sensing capabilities were mainly digital scouting and digital scenario planning.

Two main capabilities exist for the purpose of seizing, that is, the ability of the business to commercialise opportunities and keep down threats, namely, a balanced digital portfolio and redefining product development. The former arises from the need to co-opt external partners to configure a competency that can respond with speed and agility to opportunities. Speed and agility are also the basis of redefining how the business goes about its development. The

business now does rapid prototyping, which involves co-creation with clients, accelerators, hackathons, innovation labs, and cross-functional teams with autonomy.

Improving digital maturity, forming a digital ecosystem, and redesigning the business internally are the digital transforming capabilities found in South African businesses. They show how businesses have reinvented themselves in the face of an increasingly digital environment. Forming a digital ecosystem allows the business to integrate value chains vertically and horizontally, thus enabling customisable client solutions (Bumann & Peter, 2019). Improving digital maturity involves employees, operations, processes, and data transformation. Culture is a vital part of improving digital maturity when the organisation sees itself transitioning to a learning organisation that promotes collaboration. The business redesigned itself internally and h to do this rapidly in response to the changing environment, with product integration and consolidation, integration and modernisation of technology, building a data and a digital central office to drive transformation in the business, and redesigning teams and roles and new roles.

External and internal antecedents form the contextual factors for digital transformation. External antecedents include the government's development of policies and legislation that support digital transformation, as well as skills development that businesses needs to support its digital maturity ambitions. They include the COVID-19 pandemic, disruptive technology and competitors and changing client behaviour. Internal barriers are culture, leadership, skills shortage, change resistance, legacy systems, and IT architecture design. Digital transformation is enhanced when supported by the top level of the organisation and enabling culture.

Within the dynamic capability theory framework, elements associated with the digital maturity factors include workforce, IT, processes, organisation, client centricity, data analytics, innovation, ecosystems, partner networks, new business models, strategy, change management, culture, governance, and digital ethics. In analysing the business's journey to achieve digital maturity factors, the applied framework revealed capabilities and contextual factors that were not necessarily considered digital maturity factors. These included the role

of a government framework, the extent of digital access, and the digital skills of the country's citizens.

6.5 Managerial Implications

This study shows that an holistic business perspective is vital for achieving digital maturity results. The journey of digital transformation involves people, processes, value, and the dynamic capabilities the business builds promote these three areas.

People are an essential aspect of achieving digital maturity but have to be involved in the journey. The business therefore needs a robust change management programme that emphasises an alteration in culture within the business. Understanding the current level of digital maturity is imperative, especially on elements to do with the workforce. The dynamic capabilities built for people bring to the fore the relevance of leadership, strategy, workforce enablement, culture, and governance digital maturity factors

Processes concern themselves with the digitisation of manual processes and the continual improvement of processes. It brings in the incorporation of data to improve processes and to change how the business goes about creating the right solutions for its clients. It looks at the manner by which technology is incorporated into the business and the appropriate technology architecture for the business. Thus, dynamic capabilities should be built in such a manner that they promote speed and agility. These dynamic capabilities built for processes show the significance of IT agility, technology, core processes and data analytics digital maturity factors.

Value evolves around dynamic capabilities that illustrate the value added to the business as a result of digital transformation and this is mainly client centricity.

6.6 Government Recommendations

Government has an important role to play in furthering the ambitions of digital maturity within businesses. It is responsible for the policy and legislation framework of the country and through its National Development Plan for the digital inclusion of the country's citizens. The

nature of digital maturity implies that citizens who are business clients contribute to the levels of digital maturity they may experience. Therefore, the government's contribution is how it executes digital skills development, infrastructure, and eradication of the digital divide (Manda & Backhouse, 2018).

The way government sets out policy and legislation can be an enabler or a hindrance to digital transformation. However, the scope of this study does limit the extent of these recommendations, and further research would be required to understand the exact framework needed from the government that lends support to the digital maturity desires of South African businesses.

6.7 Academic Contributions

The study augments the body of knowledge around digital maturity by:

i. Contributing to the conversation towards a conceptual and operational definition of the phenomena of digital maturity and digital transformation. These have no consensus in their definition in extant literature (Mettler & Pinto, 2018; Warner & Wäger, 2019).
ii. Contributing towards possible theories that can underpin digital maturity factors, which form an integral part of digital maturity models, an area that has been identified as lacking in extant literature. By applying the dynamic capability theory framework to the ongoing digital transformation process, this study adds to the conversation.
iii. Advancing the theoretical framework of dynamic capabilities by applying it to digital transformation identified how businesses attained capabilities in practice. Varying capabilities were identified, including collaboration capabilities, human resource capabilities and innovation capabilities. Thus, the study provided insights into how dynamic capabilities were built and what capabilities were built, extending the dynamic capability theory beyond the exclusivity of theoretical discourse.
iv. Providing empirical evidence for the understanding of the relevance of digital maturity factors to South Africa. Differing digital environments imply that not all digital

maturity factors may be relevant or effective for businesses operating in emerging or developing economies (El-Telbany et al., 2020).

v. Providing empirical evidence for the connection between dynamic capabilities and digital maturity.

The study may provide a foundation for the development of the research into dynamic capabilities built by the organisation to retain its competitive advantage as the world goes through change in its relation to digital maturity factors in businesses or industries.

6.8 Limitations of the study

The limitations of this study include the availability of key individuals in the research sample due to COVID-19. Key executives and board members were the sample of choice, but due to the pandemic they had a myriad of issues with which to contend, thus impacting on their availability. This resulted in the study tilting towards financial services though different parts of financial services were studied.

Though saturation was reached, the study was based on 11 participants, which limited the generalisability (Queirós, Faria, and Almeida (2017). It was exploratory research and not designed to be generalised across large populations. The focus of the research was a manager's perspective; thus, a qualitative method was used to extract meaning from the digital transformation process rather than using quantitative methods to measure its effects.

During data collection it was identified that not one individual had an in-depth understanding of all aspects of digital maturity. Thus, individuals described areas with which they were comfortable, for example, in-depth knowledge of IT infrastructure was minimal, a crucial digital maturity factor. To mitigate this limitation the researcher asked questions that did not require technical knowledge but provided sufficient insights to understand the capability built by the business.

6.9 Suggestions for further research

The fourth industrial revolution continues to affect business and places the impetus on business response. Businesses thus need to be in a position to do so with agility and speed. Although the research achieved its objectives of a better understanding of the relevance of digital maturity factors in South Africa, it should motivate additional research in the field of dynamic capabilities and digital maturity. To assist business, government and to contribute to the body of knowledge on digital maturity, the following areas for further research are proposed:

i. Digital maturity factors appear to have a strong relationship with dynamic capabilities. Minimal research exists in the understanding of the relationship between dynamic capabilities and digital maturity. Emerging findings in the research suggest that digital maturity factors need to possess elements of sensing, seizing, and transforming to be complete.
ii. The research applied a qualitative approach to the relevance of digital maturity factors, and thus, the results cannot be generalised. Quantitative research to generalise this would complement the body of knowledge.
iii. Digital-native companies are often assumed to be digitally mature. The study included digital-native companies, which also needed a digital transformation journey to improve digital maturity because of the multifaceted nature of digital maturity, which goes beyond technology. Thus, further research could be conducted in understanding the digital transformation journeys of digital-native organisations.
iv. The extent to which government policies, legislation and how much government is digitised influences digital maturity within the business.

The impact of lack of digital skills within society or the digital divide has on organisational digital maturity levels.

References

Achtenhagen, L., Melin, L., & Naldi, L. (2013). Dynamics of business models–strategizing, critical capabilities and activities for sustained value creation. *Long Range Planning, 46*(6), 427-442.

Ambrosini, V., & Bowman, C. (2009). What are dynamic capabilities and are they a useful construct in strategic management? *International journal of management reviews, 11*(1), 29-49.

Antwi, S. K., & Hamza, K. (2015). Qualitative and quantitative research paradigms in business research: A philosophical reflection. *European journal of business and management, 7*(3), 217-225.

Archibald, M. M., Ambagtsheer, R. C., Casey, M. G., & Lawless, M. (2019). Using zoom videoconferencing for qualitative data collection: perceptions and experiences of researchers and participants. *International Journal of Qualitative Methods, 18*, 1609406919874596.

Armstrong, B., & Lee, G., John. (2021). *Digital Business* (2nd ed.).

Arndt, F., & Pierce, L. (2018). The behavioral and evolutionary roots of dynamic capabilities. *Industrial and corporate change, 27*(2), 413-424.

Attride-Stirling, J. (2001). Thematic networks: an analytic tool for qualitative research. *Qualitative research, 1*(3), 385-405.

Becker, J., Niehaves, B., Poeppelbuss, J., & Simons, A. (2010). Maturity models in IS research. *ECIS 2010 Proceedings*. 42.

Berger, S., Bitzer, M., Häckel, B., & Voit, C. (2020). APPROACHING DIGITAL TRANSFORMATION-DEVELOPMENT OF A MULTI-DIMENSIONAL MATURITY MODEL. *In Proceedings of the 28th European Conference on Information Systems (ECIS)*, An Online AIS Conference, June 15-17, 2020.

Berghaus, S., & Back, A. (2016). *Stages in Digital Business Transformation: Results of an Empirical Maturity Study.* Paper presented at the MCIS 2016 Proceedings, 22.

Berghaus, S., & Back, A. (2017). *Disentangling the fuzzy front end of digital transformation: Activities and approaches. CIS 2017 Proceedings*. 4. https://aisel.aisnet.org/icis2017/PracticeOriented/Presentations/4.

Bumann, J., & Peter, M. K. (2019). Action fields of digital transformation–a review and comparative analysis of digital transformation maturity models and frameworks. *Digitalisierung und andere Innovationsformen im Management. Innovation und Unternehmertum, 2*, 13-40.

Carcary, M., Doherty, E., & Conway, G. (2016). *A dynamic capability approach to digital transformation: a focus on key foundational themes.* Paper presented at the The European Conference on Information Systems Management.

Cascio, W. F., & Aguinis, H. (2008). 3 Staffing Twenty-first-century Organizations. *Academy of Management Annals, 2*(1), 133-165.

Chanias, S., & Hess, T. (2016). How digital are we? Maturity models for the assessment of a company's status in the digital transformation. *Management Report/Institut für Wirtschaftsinformatik und Neue Medien*(2), 1-14.

Creswell, J. W., & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*: Sage publications.

Creswell, J. W., & Poth, C. N. (2016). *Qualitative inquiry and research design: Choosing among five approaches*: Sage publications.

Crick, J. M. (2020). Qualitative research in marketing: what can academics do better? *Journal of Strategic Marketing, 29(5), 390-429.*

Davidsen, A. S. (2013). Phenomenological approaches in psychology and health sciences. *Qualitative research in psychology, 10*(3), 318-339.

Day, G. S., & Schoemaker, P. J. (2016). Adapting to fast-changing markets and technologies. *California management review, 58*(4), 59-77.

De Bruin, T., Rosemann, M., Freeze, R., & Kaulkarni, U. (2005). *Understanding the main phases of developing a maturity assessment model.* Paper presented at the Australasian Conference on Information Systems (ACIS):.

Deloitte. (2019). *Pivoting to digital maturity: Seven capabilities central to digital transformation.* Retrieved from https://www2.deloitte.com/insights/us/en/focus/digitalmaturity/digital-maturity-pivot-model.html

Denrell, J., & Powell, T. C. (2016). Dynamic capability as a theory of competitive advantage: contributions and scope conditions. In *The Oxford Handbook of Dynamic Capabilities*.

Di Stefano, G., Peteraf, M., & Verona, G. (2014). The organizational drivetrain: A road to integration of dynamic capabilities research. *Academy of Management Perspectives, 28*(4), 307-327.

Eisenhardt, K. M., & Martin, J. A. (2000). Dynamic capabilities: what are they? *Strategic management journal, 21*(10-11), 1105-1121.

El-Telbany, O., Abdelghaffar, H., & Amin, H. (2020). *Exploring the Digital Transformation Gap: Evidence from Organizations in Emerging Economies.* Paper presented at the PACIS.

Eppich, W. J., Gormley, G. J., & Teunissen, P. W. (2019). In-Depth Interviews. In *Healthcare Simulation Research* (pp. 85-91): Springer.

Eremina, Y., Lace, N., & Bistrova, J. (2019). Digital maturity and corporate performance: The case of the Baltic states. *Journal of Open Innovation: Technology, Market, and Complexity, 5*(3), 54.

Fitzgerald, M., Kruschwitz, N., Bonnet, D., & Welch, M. (2014). Embracing digital technology: A new strategic imperative. *MIT Sloan Management Review, 55*(2), 1.

Grewiński, M. (2017). Digitalization and Social Innovations-Prospects and Risks for the Society. *International Journal on Global Business Management & Research, 6*(2), 58.

Groenewald, T. (2004). A phenomenological research design illustrated. *International Journal of Qualitative Methods, 3*(1), 42-55.

Helfat, C. E., & Raubitschek, R. S. (2018). Dynamic and integrative capabilities for profiting from innovation in digital platform-based ecosystems. *Research Policy, 47*(8), 1391-1399.

Hess, T., Matt, C., Benlian, A., & Wiesböck, F. (2016). Options for formulating a digital transformation strategy. *MIS Quarterly Executive, 15*(2).

Jaquire, V., & von Solms, S. (2017). *Developing a cyber counterintelligence maturity model for developing countries.* Paper presented at the 2017 IST-Africa Week Conference (IST-Africa).

Kallio, H., Pietilä, A. M., Johnson, M., & Kangasniemi, M. (2016). Systematic methodological review: developing a framework for a qualitative semi-structured interview guide. *Journal of advanced nursing, 72*(12), 2954-2965.

Kane, G. C., Palmer, D., Nguyen-Phillips, A., Kiron, D., & Buckley, N. (2017). Achieving digital maturity. *MIT Sloan Management Review, 59*(1).

Kane, G. C., Palmer, D., Phillips, A. N., Kiron, D., & Buckley, N. (2018). Coming of age digitally. *MIT Sloan Management Review and Deloitte Insights, 5*.

Konlechner, S., Müller, B., & Güttel, W. H. (2018). A dynamic capabilities perspective on managing technological change: A review, framework and research agenda. *International Journal of Technology Management, 76*(3-4), 188-213.

Lahrmann, G., Marx, F., Mettler, T., Winter, R., & Wortmann, F. (2011). *Inductive design of maturity models: applying the Rasch algorithm for design science research.* Paper presented at the International Conference on Design Science Research in Information Systems.

Lasrado, L. A., Vatrapu, R., & Andersen, K. N. (2015). *Maturity models development in is research: a literature review.* Paper presented at the IRIS Selected Papers of the Information Systems Research Seminar in Scandinavia.

Lennon-Dearing, R., & Neely-Barnes, S. (2014). Quantitative research. *Evidence-based practice: an integrative approach to research, administration, and practice, Jones & Bartlett Learning, Burlington, Mass*.

Li, F. (2020). Leading digital transformation: three emerging approaches for managing the transition. *International Journal of Operations & Production Management, 40(6), 809-817*.

Liere-Netheler, K., Packmohr, S., & Vogelsang, K. (2018). Drivers of digital transformation in manufacturing. In *51st Hawaii International Conference on System Sciences (HICSS), Waikoloa, Hawaii (2018) (pp. 3926-3935).*

Lincoln, Y. S., & Guba, E. G. (2013). *The constructivist credo*: Left coast press.

Lobe, B., Morgan, D., & Hoffman, K. A. (2020). Qualitative data collection in an era of social distancing. *International Journal of Qualitative Methods, 19*, 1609406920937875.

Manda, M. I., & Backhouse, J. (2018). *Inclusive digital transformation in South Africa: an institutional perspective.* Paper presented at the Proceedings of the 11th International Conference on Theory and Practice of Electronic Governance.

Mapp, T. (2008). Understanding phenomenology: The lived experience. *British Journal of Midwifery, 16*(5), 308-311.

Marks, A., AL-Ali, M., Atassi, R., Abualkishik, A. Z., & Rezgui, Y. (2020). Digital transformation in higher education: a framework for maturity assessment. *International Journal of Advanced Computer Science and Applications, 11*(12), 504-513.

Mettler, T., & Pinto, R. (2018). Evolutionary paths and influencing factors towards digital maturity: An analysis of the status quo in Swiss hospitals. *Technological Forecasting and Social Change, 133*, 104-117.

Mettler, T., Rohner, P., & Winter, R. (2010). Towards a classification of maturity models in information systems. In *Management of the interconnected world* (pp. 333-340): Springer.

Mhlungu, N. S., Chen, J. Y., & Alkema, P. (2019). The underlying factors of a successful organisational digital transformation. *South African Journal of Information Management, 21*(1), 1-10.

Morakanyane, R., Grace, A. A., & O'Reilly, P. (2017). Conceptualizing Digital Transformation in Business Organizations: A Systematic Review of Literature. *Bled eConference, Proceedings 21*.

Moser, A., & Korstjens, I. (2018). Series: Practical guidance to qualitative research. Part 3: Sampling, data collection and analysis. *European Journal of General Practice, 24*(1), 9-18.

Murphy, J., Hill, C. A., & Dean, E. (2014). Social media, sociality and survey research. *Social media, sociality and survey research*, 1-33.

Osmundsen, K., Iden, J., & Bygstad, B. (2018). *Digital Transformation: Drivers, Success Factors, and Implications.* Paper presented at the MCIS.

Padilla-Díaz, M. (2015). Phenomenology in educational qualitative research: Philosophy as science or philosophical science. *International journal of educational excellence, 1*(2), 101-110.

Park, Y., & Mithas, S. (2020). Organized Complexity of Digital Business Strategy: A Configurational Perspective. *MIS Quarterly, 44*(1).

Piccinini, E., Hanelt, A., Gregory, R., & Kolbe, L. (2015). Transforming industrial business: The impact of digital transformation on automotive organizations. *ICIS 2015 Proceedings*. 5.

Pietkiewicz, I., & Smith, J. A. (2014). A practical guide to using interpretative phenomenological analysis in qualitative research psychology. *Psychological journal, 20*(1), 7-14.

Pöppelbuß, J., & Röglinger, M. (2011). What makes a useful maturity model? A framework of general design principles for maturity models and its demonstration in business process management. *ECIS 2011 Proceedings*. 28. https://aisel.aisnet.org/ecis2011/28.

Queirós, A., Faria, D., & Almeida, F. (2017). Strengths and limitations of qualitative and quantitative research methods. *European Journal of Education Studies, 3(9), 370*.

Ransbotham, S., Kiron, D., Gerbert, P., & Reeves, M. (2017). Reshaping business with artificial intelligence: Closing the gap between ambition and action. *MIT Sloan Management Review, 59*(1).

Reis, J., Amorim, M., Melão, N., & Matos, P. (2018). *Digital transformation: a literature review and guidelines for future research.* Paper presented at the World conference on information systems and technologies (pp. 411-421). Springer, Cham.

Remane, G., Hanelt, A., Wiesboeck, F., & Kolbe, L. (2017). Digital maturity in traditional industries–an exploratory analysis. In Proceedings of the 25th European Conference on Information Systems (ECIS), Guimarães, Portugal, June 5-10, 2017 (pp. -). ISBN 978-989-20-7655-3 Research Papers. https://aisel.aisnet.org/ecis2017_rp/10.

Roy, K., & Khokle, P. (2016). Staged development of dynamic capabilities: A study of international joint ventures in India. *Thunderbird International Business Review, 58*(6), 537-554.

Ryan, F., Coughlan, M., & Cronin, P. (2007). Step-by-step guide to critiquing research. Part 2: Qualitative research. *British journal of nursing, 16*(12), 738-744.

Sandkuhl, K., Shilov, N., & Smirnov, A. (2019). Facilitating digital transformation by multi-aspect ontologies: approach and application steps. *IFAC-PapersOnLine, 52*(13), 1609-1614.

Sanjari, M., Bahramnezhad, F., Fomani, F. K., Shoghi, M., & Cheraghi, M. A. (2014). Ethical challenges of researchers in qualitative studies: The necessity to develop a specific guideline. *Journal of medical ethics and history of medicine, 7*.

Saunders, M., Lewis, P., & Thornhill, A. (2016). Research methods for business students (Seventh). *Nueva York: Pearson Education*.

Schumacher, A., Nemeth, T., & Sihn, W. (2019). Roadmapping towards industrial digitalization based on an Industry 4.0 maturity model for manufacturing enterprises. *Procedia Cirp, 79*, 409-414.

Schwarzmüller, T., Brosi, P., Duman, D., & Welpe, I. M. (2018). How does the digital transformation affect organizations? Key themes of change in work design and leadership. *mrev management revue, 29*(2), 114-138.

Schwer, K., Hitz, C., Wyss, R., Wirz, D., & Minonne, C. (2018). Digital maturity variables and their impact on the enterprise architecture layers. *Problems and perspectives in management*(16, Iss. 4), 141-154.

Stuckey, H. L. (2014). The first step in data analysis: Transcribing and managing qualitative research data. *Journal of Social Health and Diabetes, 2*(01), 006-008.

Sutton, J., & Austin, Z. (2015). Qualitative research: Data collection, analysis, and management. *The Canadian journal of hospital pharmacy, 68*(3), 226.

Tadeu, H. F. B., Duarte, A. L. d. C. M., Taurion, C., & Jamil, G. L. (2019). Digital transformation: Digital maturity applied to study brazilian perspective for industry 4.0. In *Best Practices in Manufacturing Processes* (pp. 3-27): Springer.

Teece, D., Peteraf, M., & Leih, S. (2016). Dynamic capabilities and organizational agility: Risk, uncertainty, and strategy in the innovation economy. *California management review, 58*(4), 13-35.

Teece, D. J. (2007). Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance. *Strategic management journal, 28*(13), 1319-1350.

Teece, D. J. (2016). Dynamic capabilities and entrepreneurial management in large organizations: Toward a theory of the (entrepreneurial) firm. *European Economic Review, 86*, 202-216.

Teece, D. J. (2019). A capability theory of the firm: an economics and (strategic) management perspective. *New Zealand Economic Papers, 53*(1), 1-43.

Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic management journal, 18*(7), 509-533.

Teichert, R. (2019). Digital transformation maturity: A systematic review of literature. *Acta universitatis agriculturae et silviculturae mendelianae brunensis, 67*(6), 1673-1687.

Thordsen, T., & Bick, M. (2020). Towards a holistic digital maturity model. *ICIS 2020 Proceedings*. 5. https://aisel.aisnet.org/icis2020/governance_is/governance_is/5.

Thordsen, T., Murawski, M., & Bick, M. (2020b). *How to Measure Digitalization? A Critical Evaluation of Digital Maturity Models.* Paper presented at the Conference on e-Business, e-Services and e-Society (pp. 358-369). Springer, Cham.

Tobin, G. A., & Begley, C. M. (2004). Methodological rigour within a qualitative framework. *Journal of advanced nursing, 48*(4), 388-396.

Valdez-de-Leon, O. (2016). A digital maturity model for telecommunications service providers. *Technology innovation management review, 6*(8).

van Dyk, R., & Van Belle, J.-P. (2019). *Factors influencing the intended adoption of digital transformation: a South African case study.* Paper presented at the 2019 Federated Conference on Computer Science and Information Systems (FedCSIS).

Vial, G. (2019). Understanding digital transformation: A review and a research agenda. *The Journal of Strategic Information Systems, 28*(2), 118-144.

Warner, K. S., & Wäger, M. (2019). Building dynamic capabilities for digital transformation: An ongoing process of strategic renewal. *Long Range Planning, 52*(3), 326-349.

Weritz, P., Braojos, J., & Matute, J. (2020). Exploring the Antecedents of Digital Transformation: Dynamic Capabilities and Digital Culture Aspects to Achieve Digital Maturity. *AMCIS 2020 Proceedings*. 22. https://aisel.aisnet.org/amcis2020/org_transformation_is/org_transformation_is/22

Zinder, E., & Yunatova, I. (2016). *Synergy for digital transformation: Person's multiple roles and subject domains integration.* Paper presented at the International Conference on Digital Transformation and Global Society.

Appendix A: Interview guide

Introduction

- Thank you for agreeing to meet and speak with me.
- I would like to collect information on your understanding of digital maturity, how you have implemented it, challenges faces and your response to these.
- Everything you say will be kept in confidence and your name will be kept anonymous.
- The interview will take about 45mins – 60mins and I would like you to assist me with as much information as you can.
- Would you mind if I recorded the interview?

A. Introduction– this section collects descriptive information about the respondent and the company.	
Q1	a. Name of Company b. Name of Respondent c. Position of the Respondent d. Age of the company (years)? e. Size of the company (number of • Number of Employee • Amount of Profits(R) f. What business are in? g. What type of clientele does your business serve?
C. Industry and Environment changes - in this section we shall talk about how your business, scans the external environment for threats and opportunities.	
Q2	a. How does your business identify opportunities in the market it operates in and adjacent markets? b. How does the business identify threats in your business ecosystem? c. How do you acquire information about competitors? d. How do you acquire information about emerging technologies?

	e. How does your business gain a deeper understanding of customer needs? f. What tools do you use to understand your customer's needs?
B. Company Response to Environment changes– this section collects information on how the company has responded to changes in the digital environment.	
Q3	a. What would you consider to be the digital environment? b. In response to changes in the digital environment, has there been any change to the business' strategy?
Q4	In response to changes in the digital environment, has there been any change to the leadership? a. Have there been any new roles? What is the purpose of the newly created roles? b. How have existing roles changed? c. Have there been reductions in roles? (prompt: what type of roles)
Q5	In response to changes in the digital environment, has there been any change to the operating model? a. How have processes changed? b. How has the integration of technology changed in your business?
Q6	How does your business grab the opportunities it has identified from scanning the ecosystem? (Prompt: Cross-Collaboration, Task Force, Prototyping, R&D) a. Is there any co-creation with clients in solving for their needs? (What I mean by co-creation is when you bring your customer in to help in defining the solution that they want to receive). What form does it take? b. What kind of external partnerships do you have to assist you in delivering your value proposition? c. To what extent have you introduced new digital products/services specifically?

E. Transformation – this section collects information about how business adapts to changes in the digital environment.	
Q7	What do you understand digital transformation to be? What do you understand digital maturity to be?
Q8	How is your business organising to stay flexible to digital disruptions?
Q9	What skills will be needed in the new digital environment? What is your company doing in ensuring that these skills exist?
Q10	What changes have there been to company culture?
Q11	How is your organisation currently adapting its business model(s)?
Q12	What has been the role of innovation in adapting to the digital environment?
Q13	Is your organisation currently investing in any new digital businesses for creating new revenue streams (if yes, what are these)? (if no, why not)
Q14	What would you say is the role of government in assisting with digital transformation (prompt: legislation, regulation, infrastructure, policy)? a. To what extent has government performed this role?
Q15	What main challenges has your business faced in attaining digital maturity? Are there any other considerations/issues that have been important in achieving your current level of digital maturity (what are these)?

Thank you very much for your time and sharing your insights with me.

Appendix B: Cover letter to participant

Dear Participant

Ref: Interview Request Letter

TOPIC: Exploring the relevance of digital maturity factors in South African Businesses

My name is Qoqanani Mkhwanazi, I am currently a Master of Management in the field of Digital Business (MMDB) student at Witwatersrand Business School (WBS). A requirement for graduating is the completion of a research report. I have undertaken to research digital maturity by exploring the relevance of digital maturity factors in South African businesses.

Digital Maturity and Digital Transformation are IT-induced phenomena that have ceased from being corridor chat and moved into many South African businesses' boardrooms. These are defined differently from institution to institution and entail several moving parts. I would like to understand your ongoing organisational digital transformation journey, what has been influential to the journey and consequently, your digital maturity level.

I kindly request a one-on-one interview with you that will last no longer than 60 minutes conducted through Zoom. With your permission, I would like to record the interview. The discussion will be confidential and anonymous, and I will only be using the institution as a representation of industry participation in my final research report.

The study will be written up as a research report and available online through the University library website. A copy of the report will be made available upon request.

Please confirm which dates, will work best for your diary.

Yours Sincerely,

Appendix C: Consent form

CONSENT FORM

STUDENT NO: 2029630

NAME OF RESEARCHER: Ms Qoqanani Mkhwanazi

TOPIC: Exploring the relevance of digital maturity factors in South African Businesses

I, ……., agree to participate in this research project. The research has been explained to me and I understand what my participation will involve. Please circle the relevant options below.

I agree that my participation will remain anonymous	YES	NO
I agree that the researcher may use anonymous quotes	YES	NO
I agree that the interview may be audio recorded	YES	NO

…… (signature)

…… (name of participant)

…… (date)

Appendix D: Ethics approval

UNIVERSITY OF THE WITWATERSRAND JOHANNESBURG

SCHOOL OF GRADUATE SCHOOL OF BUSINESS ADMINISTRATION ETHICS COMMITTEE
CONSTITUTED UNDER THE UNIVERSITY HUMAN RESEARCH ETHICS COMMITTEE (NON-MEDICAL)

CLEARANCE CERTIFICATE	**PROTOCOL NUMBER: WBS/BA2029630/336**
PROJECT TITLE	Exploring the relevance of digital maturity factors in South African Businesses
INVESTIGATOR	Ms. Qoqanani Mkhwanazi
SCHOOL/DEPARTMENT OF INVESTIGATOR	MM (Digital Business)
DATE CONSIDERED	20 July 2020
DECISION OF THE COMMITTEE	Approved unconditionally
RISK LEVEL	MINIMAL RISK
EXPIRY DATE	Date of submission of the project report. ~~30 JUNE 2021~~ 2021-08-18

ISSUE DATE OF CERTIFICATE 4 August 2020 **CHAIRPERSON** _____
(Dr MDJ Matshabaphala)

cc: Supervisor: Professor Armstrong

DECLARATION OF INVESTIGATOR

To be completed in duplicate and ONE COPY returned to the Chairperson of the School/Department ethics committee.

I fully understand the conditions under which I am are authorized to carry out the abovementioned research and I guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee.

_____ 07 / 07 / 2020
Signature **Date**

PLEASE QUOTE THE PROTOCOL NUMBER ON ALL ENQUIRIES