Investigating the relationship between business model components utilised in firms and the digital business strategy

Mahomed Shaik

18360034

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Abstract

With the advent and rise of digital technologies over the past decades, firms are faced with the dilemma of how to adopt these technologies to remain competitive. As a result, business strategies are being impacted due to business leaders navigating the transformation of the traditional business to one that can compete in a digital economy. To do so, business managers are required to design and implement new digital business models in an effort to identify new opportunities and become differentiated.

Therefore, this study aimed to explore and create a deeper understanding of the relationship between a set of business model components utilised in firms and the digital business strategy. This research analysed responses from 107 participants that had experience in business model and digital strategy design and implementation.

Using a partial least squared structural equation model, this study found that the five business model components identified for this study have a positive correlation with the digital strategy. Furthermore, the results from multiple linear regression analysis of the collective effect of the business model components on the digital business strategy, indicated that two of the five business model components are a significant predictor of success of digital business strategy. As a result, business managers are able to build stronger business cases by focusing on the business model components that will result in a successful digital strategy design and implementation.

Keywords

Digital business, digital business strategy, business models, digital business models

Declaration

I declare that this research project is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination in any other University. I further declare that I have obtained the necessary authorisation and consent to carry out this research.

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Table of Contents

List of Figures

List of Tables

List of abbreviations

AWS −	Amazon Web Services
BTS −	Barlett's Test of Sphericity
BusMod –	Business Model
CFA –	Confirmatory Factor Analysis
CTS –	Customer Target Segment
DCV –	Dynamic Capabilities View
DigBus −	Digital Business
EFA –	Exploratory Factor Analysis
IT –	Information Technology
IoT –	Internet of Things
FA –	Factor Analysis
MM –	Measurement Model
RAC –	Resources and Competencies
RBV –	Resource Based View
RM –	Revenue Model
SRMR −	Standardised Root Mean Square Residual
VIF –	Variance Inflation Factor
VN –	Value Network
VP –	Value Proposition

CHAPTER 1: INTRODUCTION TO RESEARCH PROBLEM

1.1. Background to the Research Problem

In a constantly changing world, digital disruption has and will continue to redefine industries and firms. Significant advancement in digital technologies, particularly over the last two decades, has resulted in business models (BusMod) being disrupted at pace, and in the process creating a dilemma for firms.

Information technology (IT) changed the value chain of firms in the 1960s and 1970s when they commenced automating the manual mechanical way of producing products and supporting activities (Porter & Heppelmann, 2014). This resulted in a significant improvement in productivity and standardisation of business processes, but it also created a dilemma for some firms' competitive strategy and differentiation. One of the reasons for this dilemma was that these firms' competitors had applied the learnings of how to capture the value of the operational benefits of IT. Firms therefore had to learn how to capture this operational value and at the same time, try to create further distinct and differentiating strategies and competitive advantages (Porter et al., 2014).

The next phase saw the rise of the internet during the 1990s, which allowed firms to integrate their value chain activities across the globe, further expanding the dilemma for firms that had not geared up for such innovations. Prior to this development, firms largely competed with similar firms in similar geographies. With the rise of the internet, firms had to learn how differentiate even further to compete with other global firms by integrating their supply chains, customers, external suppliers and even across different channels (Porter et al., 2014).

The last decade saw the rise of the digital revolution, where business strategies are being transformed by digital technologies, resulting in new business processes and capabilities. New functionalities are being created for products and services (Bharadwaj, Sawy, Pavlou & Venkatraman, 2013a). For example, cloud computing, which uses the internet to deliver software and infrastructure capabilities, creates an opportunity for firms to improve their speed of responding to changes to their internal and external environments (Barthelus, 2016). Smart-connected products, commonly known as the Internet of Things (IoT), have now transcended the traditional product boundaries, expanding new opportunities for new functionality and capability (Porter et al., 2014). To

deliver this new functionality and capability, firms are required to transform from a traditional siloed structure to a more integrated one. This means that firms must become more agile and flexible (Al-Debei, El-Haddadeh & Avison, 2008) and support the increase of inter-connectivity, linking products, processes and services, by building and deploying business infrastructure (Bharadwaj et al., 2013a).

As business processes, products and services, inter-connectivity and customer engagement transform, Bharadwaj et al, (2013a) state that there is a need to rethink the positioning of the IT strategy in relation to the business strategy. A traditional IT strategy used to be a functional level strategy that remained within the domain of IT. However, as new digital technologies transform major business processes across functional areas, the IT strategy must become infused with the business level strategy. This fusion between digital, IT and strategy is termed a digital business (DigBus) strategy. It is described as the ability to create differential value by leveraging digital resources as part of the organisational formulation and execution (Bharadwaj et al., 2013a).

Lerner (2015) further describes the DigBus strategy as becoming a differentiation factor to ensuring a firm's competitiveness and success. Pagani (2013) argues that because of a DigBus strategy, there is an emergence of a digital ecosystem forming as processes can be executed across time and distance boundaries. This means that traditional ways of conducting business are evolving and in order for firms to remain relevant and be sustainable over longer periods, firms need to re-look and re-invent their BusMods through the design and implementation of the DigBus strategy.

Commenting on the digitally disrupted world, Zott, Amit and Massa (2011) state that firms are searching for ways to create and capture value through the business model (BusMod). This would then become a critical intermediary between business processes and the business strategy and should be assessed continuously to ensure that there is fit in an uncertain, disruptive and changing environment (Al-Debei et al., 2008). For example, Amazon disrupted the traditional retail business model of in-store buying with an online store that leverages cloud computing as a key digital asset in the form of Amazon Web Services (AWS). Other examples include that of Netflix, which started as a subscription-based service that sold DVDs online and competed with the traditional bricks and mortar stores of Blockbuster (Teece, 2010). Today, Netflix is competing with on-demand television streaming services such as Hulu and Amazon, and is creating its own movie content with the aim of becoming a global entertainment distribution company, while Blockbuster is no longer in existence. The effects of digital disruption

have nowhere been impacted as much as in the print and media industry (Karimi & Walter, 2015). Most of these firms now provide online news services and have created new digital platforms to attract more customers and new revenue models, while taking away advertising revenue from traditional newspapers. Firms that are investing in e-businesses are seeing a significant increase in revenue and are finding new ways to be competitive (Amit & Zott, 2001).

While digital disruption is impacting many industries and firms, there is still an apparent lack of a clear definition, purpose, and interpretation of BusMods, including the lack of understanding regarding the relationship between BusMods and strategy (Massa, Tucci & Afuah, 2017). Hedman and Kalling (2003) stated that BusMod components, their interactions and the impact of technology are obscure, while Garcia, Tarbio, Bonnet and Buvat (2015) further argue that there is not enough emphasis on BusMods by firms. This is a major handicap when they are faced with digital disruption. Heikkilä, Bouwman, Heikkilä, Solaimani and Janssen (2016) also state that there is lack of clarity and utilisation of the metrics for designing and evaluating BusMods. Many measures do not include the non-financial measures, which highlights the need to combine the evaluation metrics for a business model (Busi & Bititci, 2006). Furthermore, literature reflects a wide range of different perspectives on BusMod definitions, coupled with a lack of consistency of the components that make up the BusMods.

The success of the of DigBus strategies has far-reaching consequences for a BusMod. The most striking example of these consequences was that of Kodak. The traditional business model focused on product improvement, selling Kodak products, and the developing of print photographs through its stores globally. However, with the introduction of digital cameras and ultimately cameras on mobile phones, Kodak's core products became obsolete. Finally, through the popularisation of the internet, customers wanted to capture their favourite moments and share them with family and friends (Bereznoi, 2015). Kodak ignored all the shifts in the industry, the changing customer needs, and most importantly, the shift to new digital BusMods, resulting in Kodak filing for bankruptcy in 2012. The key point to lift from this example is that even the most dominant firms cannot escape the disruption that comes with new digital technologies.

Historically, business managers understood how to translate business strategy into business processes to create a competitive advantage and differentiation. However, with the advent of digital technologies, business models now function as the link between business strategy and business processes (Al-Debei et al., 2008). Business managers

tend to lack the knowledge of how to translate the more complex BusMod into the more uniquely complex digital business (Al-Debei et al., 2008). This implies that business managers require a new layer of information to support them in designing the new DigBus strategies and the resulting digital BusMod.

In summary, digital technologies are impacting firms in the way they compete, the way they are managed and how they earn revenue. The digital revolution is causing a shift and firms need to respond appropriately by integrating their IT and business strategies. Business managers need to work on and have an understanding of complexity and the influence of digital BusMods on the firm's success. One way of doing so is for business managers to understand how these new BusMods work in a new digital world.

1.2. The Research Problem

Business managers are tasked with making critical choices as a result of the digital disruption (Zott & Amit, 2010). Each choice made will result in a new set of activities internally and externally to the firm and have implications for the performance of the firm. The coordinated set of activities within and outside of the company informs a firm's BusMod (Pagani, 2013). A BusMod describes the way a firm creates and captures value for its customers, while at the same time managing costs, increasing revenue and profits (Teece, 2018). Chesbrough (2010) states that through a BusMod, firms can find new ways to earn revenue, further highlighting its importance.

However, in contrast to the important impact of the BusMod on the firm's future sustainability, performance, competitive advantage, improved network value and finding new ways to create wealth for the firm (Morris, Schindehutte & Allen, 2005; Pagani, 2013), literature on the BusMod has not captured the central issues of this phenomenon. It provides very little in the form of toolkits or key performance measures for business managers to design and build their future BusMods (Al-Debei et al., 2008; Baden-Fuller & Haefliger, 2013; Massa et al., 2017; Teece, 2018). Business managers have to understand the relationship between BusMods and strategy, both independently and cumulatively (Zott & Amit, 2008) to improve business performance in the new digital world.

Using the case studies' analysis conducted by Gassmann, Frankenberger and Csik (2013), which identified the industries that have been transformed through the use of IT, Fleisch, Weinberger and Wortmann (2014) illustrate a visual representation of the

significance, role and influence that IT has played over a time period as illustrated in Figure 1. There is gradual increase in BusMod patterns that have transformed industries since the introduction of IT in the 1960s and the internet in the 1990s. However, there is a significant increase of BusMod patterns beyond the year 2000, highlighting that BusMod patterns have transformed industries through the use of IT, and particularly digital BusMods in recent years.

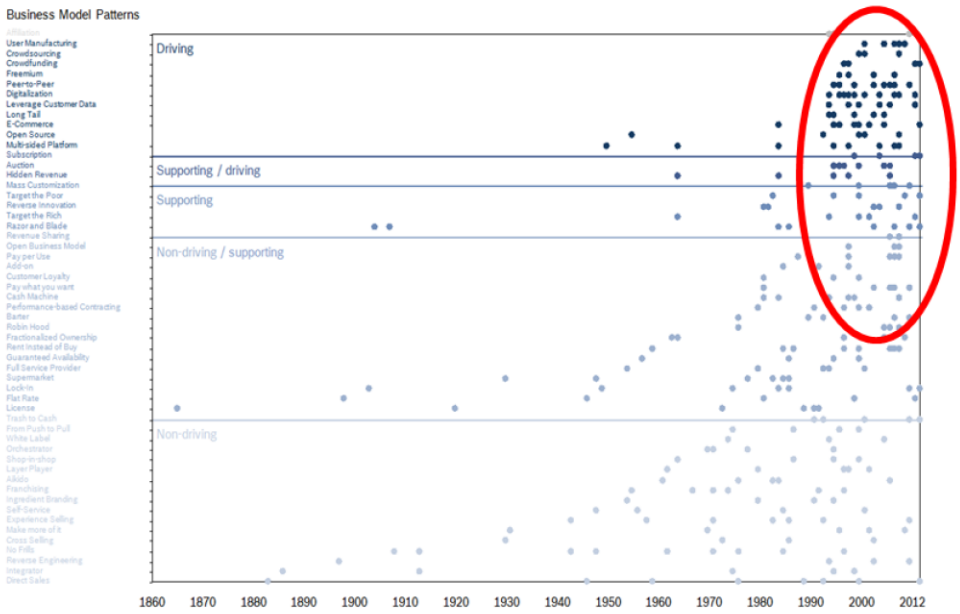


Figure 1 - IT influence on transforming industry BusMods over time (Fleisch et al., 2014)

Business models are an overarching description of the business. They can be better understood once one gains a deeper knowledge of the components and the inner workings that make up the BusMod (Gassmann et al., 2013). Literature has not yet reached a consensus on which of the components make up, are common to, or are generally accepted established components of BusMods (Wirtz, Pistoia, Ullrich & Göttel, 2016). This makes it increasingly difficult for business managers to gain the knowledge and understanding of how their firms can be successful when designing and implementing a DigBus strategy (Teece, 2007).

This creates a major challenge for businesses. While the success of the firm depends, in part, on the design and implementation of the digital BusMod, the BusMod has not reached a converging, common definition due to it still being described from different perspectives (Al-Debei et al., 2008; Massa et al., 2017). Empirical research is lacking, and this has led to the limited the advancement of the BusMod concept (Lambert & Davidson, 2013; Morris, Schindehutte, Richardson & Allen, 2006). Wirtz et al. (2016)

identify that while the research methodology for conceptual research (46% of papers analysed) and empirical research (49% of research analysed) is largely balanced, only 5% of research included a multivariate analysis, thereby demonstrating a clear need for future theoretical and practical research for business managers embarking on designing and implementing a successful DigBus strategy.

Therefore, this research aims to contribute to both, the theoretical and practical aspect, by investigating and seeking to understand the relationship between the components of the BusMod and the DigBus strategy.

1.3. Research Aim

While a firm's competitive advantage can be improved through digital technologies (Bharadwaj et al., 2013a) and each BusMod can be a differentiator (Zott et al., 2011), business managers need to know more about the about which components of the BusMod can be changed or adapted because of digital disruption (Wirtz, Schilke & Ullrich, 2010).

A number of different BusMod components were identified in literature (Baden-Fuller et al., 2013; Demil & Lecocq, 2010; Krumeich, Bukhart, Werth & Loos, 2012; Wirtz et al., 2016). Wirtz et al. (2016) identifies four central themes that have 19 BusMod sub-components, while Krumeich et al. (2012) identify 20 sub-components based on analysing 34 literature sources. Given the timeline of this research, the aim was to analyse a set of BusMod components that emerged from literature and its relationship with the DigBus strategy.

The first digital BusMod component that emerged from the analysis of the literature is the value proposition (VP). Demil et al. (2010) stated that the VP is the value delivered by a firm through its unique products and services to the customer. The second digital BusMod component is the customer target segment (CTS). This is about understanding the needs of the customer within each segment and offering value to that segment (Baden-Fuller et al., 2013). The third digital BusMod component is the value network (VN), which is described by Pagani (2013) and Zott et al. (2011) as the external stakeholders of the firm, referring to the partners and suppliers that collaborate to deliver the value. The fourth digital BusMod component is the revenue model (RM). It describes the willingness and ways for the customer to pay for that value (Baden-Fuller et al., 2013;

Osterwalder, Pigneur & Tucci, 2005). The resources and competencies (RAC) is the fifth digital BusMod component. Resources are the people, products and technology of the firm, while skills, intellectual property and the ability of knowledge workers in a firm are its competencies (Demil et al., 2010).

The success of a firm requires the implementation of new BusMods (Teece, 2007) and for business managers to have a deep understanding of all of its components (Al-Debei et al., 2008). The research aim, encapsulated below (Figure 2), is to explore and understand the relationship between a set of BusMod components that are utilised in firms and the DigBus strategy. The study has set out the following objectives:

- To analyse the relationship between a set of individual BusMod components and the DigBus strategy;
- To assess the collective effect of the set of BusMod components on the DigBus strategy; and
- To provide a ranking of importance of the components that determine the success of the DigBus strategy.

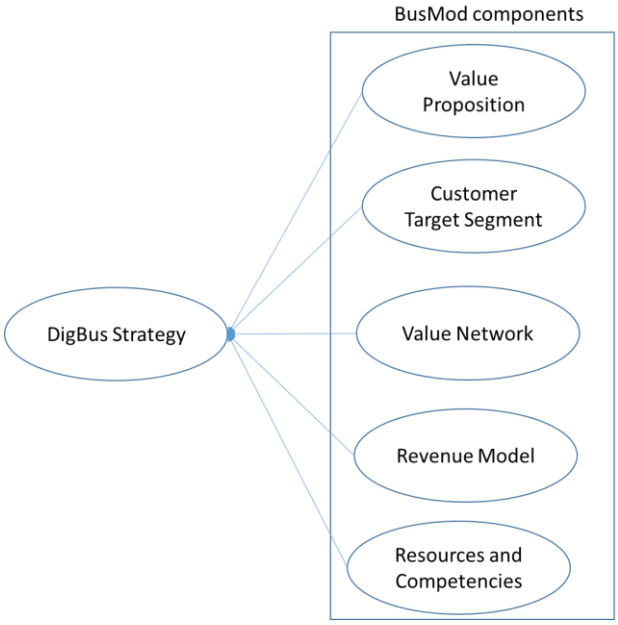


Figure 2 - Research model

It is believed that this study will provide firms and business managers with the know-how of the identified BusMod components that can be used as the guide to design and implement a DigBus strategy as firms face digital disruption. Based on the ranked importance of the BusMod components to the DigBus strategy, business managers will

have a better view of where to begin their digital journey when formulating the new DigBus strategy. It will add to extant literature by providing a view of the success predictors for a DigBus strategy. Furthermore, it will address the call for more multivariate analysis required for this type of research and topic.

1.4. Scope of the Research

The digital evolution is changing the way products, services, networks and customers interact and are causing disruption of the business model across industries (Pagani, 2013). Therefore, it is believed that analysing a set of BusMod components will provide rich insights for firms that are designing or implementing the DigBus strategy. This study will be restricted to understanding the five identified BusMod components within firms that have digital products and services.

1.5. Conclusion

This section highlighted the increased importance of a digital business strategy and the business model in an environment that is increasingly digitally disrupted. The success, competitive advantage and the sustainability of firms lies in business managers understanding how the model functions as the link between the business strategy and processes (Al-Debei et al., 2008). Yet, there is a paradox between the business model importance, and the inconsistency in the way the business model is defined and applied. To address this paradox, this research will seek to explore and understand the relationship between a set of BusMod components that are utilised in firms and the DigBus strategy.

As per Figure 3 below, this section provided a background to and described the research problem, and highlighted the need and aims for the research. It further highlighted the scope of this study and closes with a summary of the layout for the rest of this paper. This study will proceed with an analysis of the literature on the DigBus strategy and BusMod in Chapter 2, while Chapter 3 will contain a discussion of the research hypotheses. The research methodology and design are described in Chapter 4, followed Chapters 5 and 6 that present and discuss the results of the study, respectively. This study will close with the overall principle findings, including the implications for business managers, this study limitations, and suggestions for future research in Chapter 7.

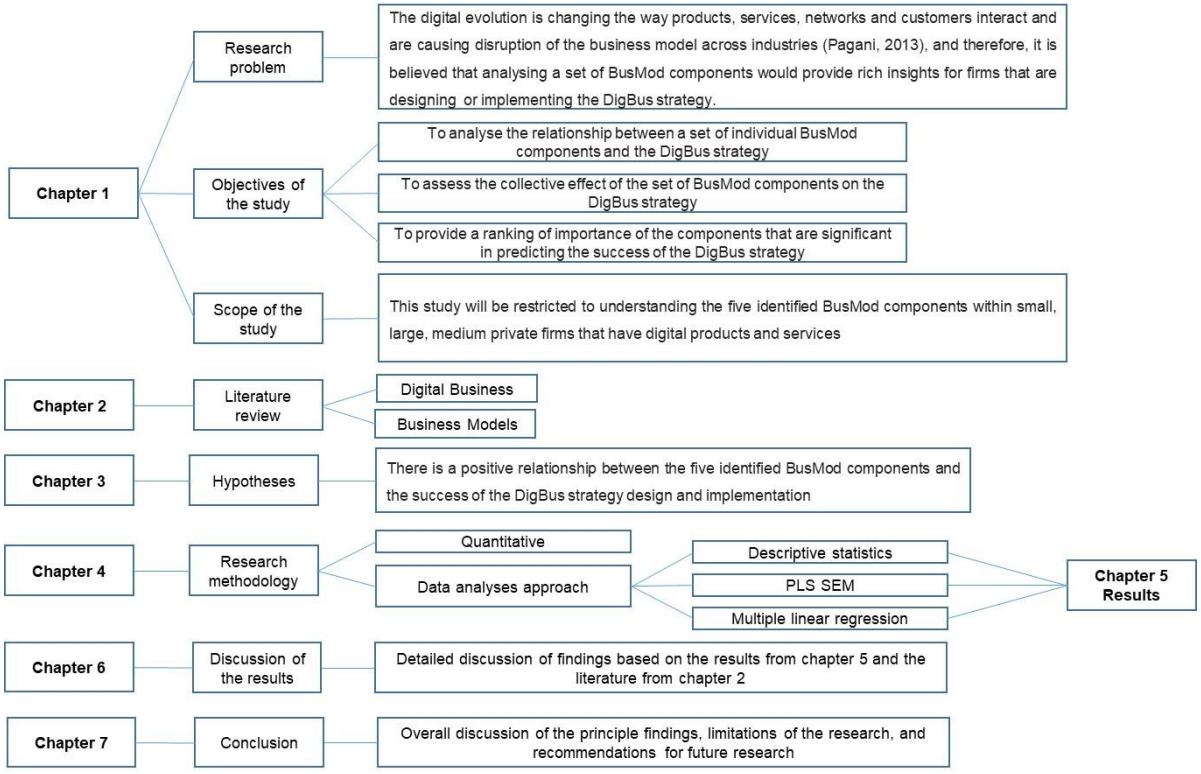


Figure 3 – Overview of the research layout

CHAPTER 2: LITERATURE REVIEW

2.1. Introduction

In this chapter, the relevant state of theory and literature relating to digital business (DigBus) strategy and business models (BusMods) will be reviewed in three parts. First, the chapter commences by defining the term ‘digital business’ and builds on that by providing a comprehensive explanation of the term ‘digital business strategy’. It further unpacks the role of information technology (IT) and describes the impact of the DigBus strategy by using the dynamic capability theory. Second, although BusMods are key contributors to competitive advantage, there is no clear definition of the BusMods. This is largely due to scholars having been unable to reach agreement on whether business models are a stand-alone term or whether the term is synonymous with strategy. BusMods are also seen from three different perspectives: (1) as an attribute of a firm, (2) as a cognitive / linguistic schema and (3) as a description of how a firm does business. Therefore, some the different views of the definition of BusMods over the last two decades are reviewed and a comprehensive definition is selected as a basis for this study.

Third, there has been a lack of consensus on the common components that make up the BusMod thus far in literature. However, there have been some positive developments and some consensus among scholars on the more strategic and significant components of the BusMod. Due to the large number of components available, BusMod components will be identified, reviewed and a selection of five common components will be used as the basis for this study. The section closes with the key performance measure themes for each of the BusMod components and provides the link between the BusMod and DigBus strategy.

2.2. Digital Business

Over the last decade, the emergence and pace of new digital technology adoption is placing many firms under pressure to change or pivot to remain competitive and continue meet new customer demands. Digital technologies are connecting an increasing number of people, sensors and devices. Pioneering firms that are adopting these digital technologies are changing the way their firms see themselves and thus, they are starting to push the boundaries by tapping into digital businesses, digital customers and digital network and products (Daugherty, Banerjee & Blitz, 2015). For example, Uber, Airbnb, Apple and Netflix have not only changed the way of doing business in their respective

industries, but have also offered new digital products and services (Teece, 2018). Apple has completely transformed the music industry by offering digitised services and content through the iTunes application. These firms realise that “every business is a digital business” (Daugherty et al., 2015, p.4) and that the rules of the game have changed and are disrupting industries (Pagani, 2013; Bereznoi, 2015).

Consequently, firms that failed to become a DigBus have faded out of the competitive landscape and in some cases are no longer existing (Bharadwaj, El Sawy, Pavlou & Venkatraman, 2013b). For example, Research in Motion (RIM) and Nokia failed to respond to the changing customer need and competitive environment. Bharadwaj et al. (2013b) found that while RIM and Nokia did not do much wrong in their strategy, they failed to add value, which is a key factor that drives digital business.

These disruptions and new digital technologies are resulting in firms that apply them being enabled to function across time, distance and boundaries. By reshaping the traditional business processes, a new term called ‘digital business’ emerged. Digital businesses are starting to disrupt almost all industries. Business leaders who understand how these digital technologies are impacting their industry and firm will be able to navigate their firm through the disruption to win in the new era. The new era will allow the rapid development of new capabilities that will result in a new competitive advantage for the firm. The disruptions and new digital technologies will either present an opportunity to create new BusMods, or they will threaten the existing BusMods, as they did for Blockbuster and Kodak (Mithas & Lucas, 2010).

Lopez (2015) defines DigBus as the blurring between the physical and digital world, when there is a convergence of people in a connected, integrated and intelligent way. McDonald, McManus and Henneborn (2014) further refine the definition of DigBus as a firm that generates new sources of value, revenue and performance by using information and connectivity technologies (p.5). Value generated for a firm through the ability of its digital technologies is known as the digital capability (Cigaina & Riss, 2017). It is from this perspective that this study will evaluate whether the BusMod components identified have a positive relationship with the DigBus, and whether any value can be generated from each of the individual components or all the identified components collectively.

E-business is distinct from the DigBus strategy as e-business describes a way to enhance the efficiencies of the business by using technology and does not provide a customer experience that is vastly different to the traditional business. On the other hand,

DigBus focuses on how value is created, and customer experiences are enhanced through the use of technology that gives firms a competitive advantage. Remaining with Uber as an example, an e-business taxi service would take the form of a customer having the ability to order a taxi online (through a web page), while the taxi company would still own and maintain its fleet of vehicles, and it would employ drivers and have operational overheads (Teece, 2018). On the other hand, Uber uses a platform to connect the supply (the drivers) to the demand (the customers that need a taxi) without owning any of the vehicles or being liable for staff costs. This approach is therefore considered a DigBus. Furthermore, the entire customer experience is enhanced through the features of the mobile application such as tracking how far the vehicle is before picking the customer up, the ability to share driver and route information to a customer third party, and to pay immediately through electronic means once the service is rendered.

A much simpler example of the differentiation between e-business and digital business is that of Netflix. Netflix started off as an e-business, where customers used technology to order a DVD online, which was then delivered to the customer by Netflix. Netflix still managed its own inventory and had higher operational costs such as postage and inventory costs. When Netflix transitioned its business to streaming movies and television shows, Netflix became a DigBus as it allowed customers to watch movies and television shows at any time, provided that customers had an internet connection and a Netflix subscription. The business model was changed to a subscription-based model that enabled Netflix to disrupt an entire DVD-hiring industry.

The digital revolution has forced countries, governments, firms and individuals to rethink their traditional view of the economy, giving rise to another concept called the digital economy. A digital economy is defined as the digitalisation that impacts multiple aspects of an economy, for example, a firm's offerings, consumer behaviour and experience, and labour markets (Cigaina et al., 2017). Firms must continuously scan their environment and innovate their business models and / or digitise their products or services to remain competitive in the new digital economy.

To create this new advantage, leaders and firms must understand the context of the new DigBus strategy, which is discussed next.

2.3. Digital Business Strategy

As price and performance of computer hardware, software, storage and bandwidth improve, there will be an increase in products and services that have embedded digital technologies (Bharadwaj et al., 2013a). Firms will have to reconsider their strategic posture and determine the role and investment strategy of digital technologies. Business managers will need to understand the DigBus strategy implications, as most firms' strategies will be significantly affected (Weill & Woerner, 2016). As firms increase the extent of their engagement in any of the digital technologies, there is a resulting increase in information technology (IT) and therefore the role and positioning of the IT strategy within a firm will need to be reconsidered (Bharadwaj et al., 2013a). When firms transition from the traditional view of IT as a support function toward business and IT strategies blending because of digital technologies, this is considered as a DigBus strategy (Bharadwaj et al., 2013a).

However, Mithas, Tafti and Mitchell (2013) define a DigBus strategy in broader terms, stating that it comprises the extent of the engagement in any IT activity. This is driven by the firm's environment and its strategic posture, meaning that if firms want to create a competitive advantage, they should synchronise their IT and business strategy, rather than trying to align their two individual strategies of IT and business.

On the other hand, Woodard, Ramasubbu, Tschang and Sambamurthy (2012) define a DigBus strategy as a set of deliberate actions that a firm takes to create digital products and services to remain competitive.

The most appropriate definition for this study is provided by Bharadwaj et al. (2013a), stating that differentiated value is created by leveraging digital resources for firm strategy formulation and execution. The digital resources are described as pervasive across the functional areas such as HR, operations and supply chain, instead of the traditional view of IT as a function in a firm. The capture and creation of value is a key construct of the BusMod, which is discussed in later sections of this research report.

Bharadwaj et al. (2013a) cement the term DigBus strategy by describing four themes to capture the key attributes of the term: 1) scope, 2) scale, 3) speed and 4) sources of value capture and creation. Scope defines the boundary of the DigBus strategy as trans-functional, meaning a cross-functional strategy that transcends the traditional functional areas such as human resources, finance, marketing, supply chain, and so forth

(Bharadwaj et al., 2013a). Furthermore, digital technologies and platforms break traditional industry boundaries, forcing firms to operate in a broader ecosystem.

As connectivity increases between partners due to digital technologies, scale becomes increasingly important regarding the degree to which the network effects are leveraged in a firm. For example, cloud computing has allowed firms to scale their infrastructure up or down to create strategic dynamic capability for firms.

Improved connectivity, together with digital technologies, has increased the speed of business activities. DigBus strategies have increased the speed with which a firm can launch new products and make decisions, and they create further efficiencies in the supply chain. For example, Apple, Facebook and Amazon launch time-based products based on the improvement of hardware, software and connectivity. Apple launches new iPhone products in the month of September of every year.

Firms can drive competitive advantage and differentiation when they move from the traditional view of IT to using digital resources in ensuring a firm's success (Bharadwaj et al., 2013a; Lerner, 2015; Pagani, 2013). Instead of business managers constantly attempting to answer what the IT return on investment is, there should be a mind-shift change to ask how technology, particularly digital technologies, can become a strategic asset to create competitive advantage (Mithas et al., 2010).

To assist business managers, some clarity needs to be derived at on some of the terms that are used interchangeably with the term DigBus strategy, namely, digital transformation and IT strategy. The term digital transformation strategy is often confused with, or used as a synonym, for a DigBus strategy. Digital transformation strategy cuts across the functional level strategies of a firm such as operational strategy or human resources strategy. It describes the implications for products, services and the firm, as it embarks on the implementation of digital technologies by providing the blueprint to achieve that transformation (Matt, Hess & Benlian, 2015). Digital transformation strategies have four dimensions in common: (1) the use of technologies, (2) changes in value creation, (3) structural changes and (4) financial aspects. The use of technologies establishes and addresses the firm's approach and attitude as to whether it wants to become a market leader through its technology usage or whether the technology is seen as a means to fulfil a business operation or requirement. The changes in value creation are a result of the digital transformation changes on the value chain, meaning how the products and services have been expanded and enriched through the use of technology

(Matt et al., 2015). As a result of the changes in value creation, a new structural change is required to support the new business operations (Matt et al., 2015). The above three dimensions are all dependent on the financial pressures and constraints faced by the respective firms and their need to digitally transform. A financially stronger business supports firms' decision to digitally transform (Matt et al., 2015).

A DigBus strategy describes the future business opportunities of a firm and that it will create new value based on digital technologies (Matt et al., 2015). It does not describe how a firm should reach this future state.

The other term that is used interchangeably with the DigBus strategy is IT strategy. An IT strategy differs from a DigBus strategy in that the IT strategy is focused on the management of IT application systems and IT infrastructure to achieve the business operations' requirement of a firm (Matt et al., 2015). IT strategies focus on the future use of the latest technologies in a firm and do not focus on how products, services and processes will be transformed.

2.4. Impact of a Digital Business Strategy

Competitive advantage paradigms have evolved over the years (Teece, Pisano & Shuen, 1997). Porter's 5-Forces framework is well documented and was the dominant framework used in the 1980s to describe the actions that firms took to defend against competitive forces. The strategic conflict approach followed Porter's 5-Forces framework uses a game theory to throw its competitors off balance (Teece et al., 1997). As the impact of the second industrial revolution grew, firms started to use the resource-based view (RBV) framework, which describes how resources that are rare, specific to a firm, and cannot easily be copied by competitors create a competitive advantage (Barney, 1991; Bharadwaj, 2000). Firms' resources are its assets, capabilities, processes, information and knowledge, and the effective and efficient use of these resources results in superior firm performance (Barney, 1991).

However, Teece et al. (1997) stated that in a rapidly changing and disrupted environment, firms using RBV cannot rely on existing knowledge to create differentiation, which thus can be become a disadvantage. Instead, they need to be able to create new knowledge rapidly when the disruption occurs (Eisenhardt & Martin, 2000). In the context of a constantly disrupted environment and the new digital technologies, the dynamic capabilities view (DCV) is more suited for such firms. Teece (2007) described DCV as

referring to distinct skills, organisation structure, decision rules and processes. To create competitive advantage, these need to be made tough for competitors to imitate. A business model by itself cannot create any competitive advantage and therefore requires that a competitive strategy analysis is completed when designing the BusMod so that it cannot be easily replicated (Teece, 2010).

As described in Figure 4 below, the BusMod components act as an intermediary between the businesses process model and the business strategy (Al-Debei et al., 2008). However, constant changes in an ever-volatile environment, coupled with recent advances and the pace of digital technology development and adoption, has made BusMods an important tool in a firm to support general managers in a digital world (Al-Debei et al., 2008). The BusMod components provide an additional layer of information for managers to control their business and adapt their strategies to cope with the ever-changing digital business.

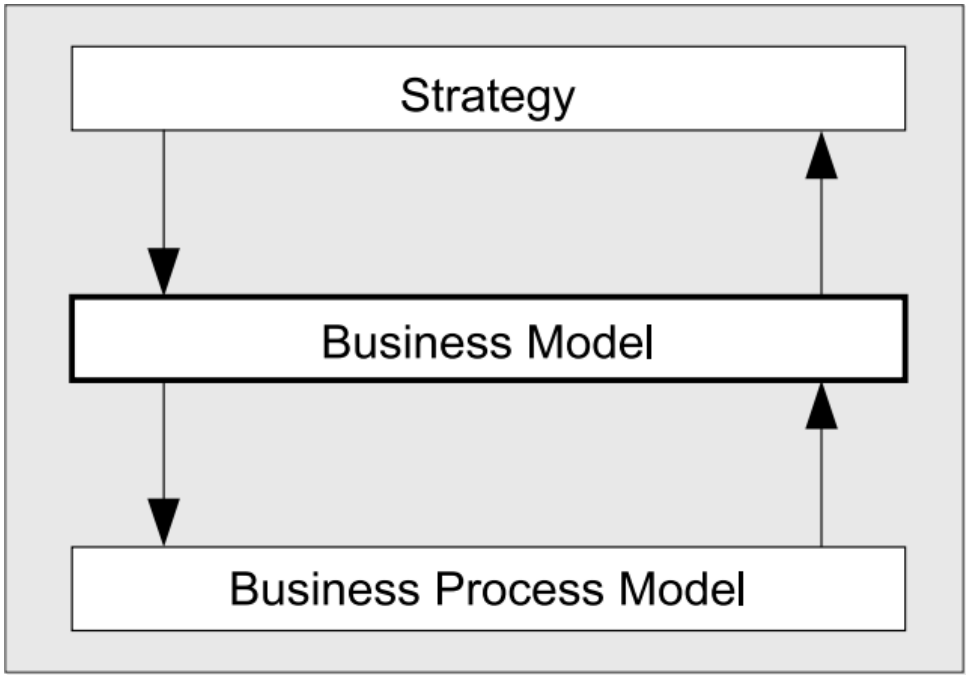


Figure 4 - Business model as an intermediary (Al-Debei et al., 2008, p.5)

Yet, given the BusMods' importance and significant contribution to firm performance, the relationship between the BusMod and other constructs such as the DigBus strategy is relatively unknown (Zott et al., 2011). More recently, Kahre, Hoffmann and Ahlemann (2017) state that neither the antecedents, the environmental factors nor the relationship between factors affecting the DigBus strategy are well understood. If strategies that leaders build and deploy are more important than the actual technologies (Ismail, Khater

& Zaki, 2017), and if the BusMod is the intermediary between strategy and business processes, then it becomes critical to extend one's understanding of the variables and the relationship with the DigBus strategy (Kahre et al., 2017).

This forms the basis of this study, which asks the question what is the relationship that exists between the DigBus strategy and the BusMod components, so that when firms embark on a digital transformation, they have a view of which components to critically assess and apply in an effort to create new digital BusMods. Prior to addressing this question, an understanding of the BusMod must be undertaken, and is discussed in the next section.

2.5. Business Model

In this section, three steps toward achieving clarity are used for the term business model. First, it starts by providing the different views and definitions of what a business model is. Second, after having established a definition for the purposes of this study, it describes the position of the BusMod within a firm. This is done to provide further clarity on the differences between the business strategy and processes. Third, this section identifies the BusMod components and makes a selection of the five common components that will be used as the basis of this study. This section further clarifies the concepts by emphasising the importance of the BusMod and its contribution to a firm's performance. A view of the different definitions of the BusMod is provided in the next section.

2.6. Business Model Definitions

Whether explicitly stated in strategic documents or not, a business model exists in every firm (Teece, 2010). Given its importance, the theory and literature on BusMods has expanded since the rise of e-commerce and the invention of the internet; however, it still lacks a concise definition, structure and common language (Al-Debei et al., 2008; Baden-Fuller et al., 2013; Bereznoi, 2015; Magretta, 2002; Massa et al., 2017; Teece, 2010; Zott et al., 2011;). The varying definitions are shown in Table 1 to create the first level of clarity on the term business model.

Table 1 – BusMod definitions

Researcher	**BusMod definition**
(Amit & Zott, 2001)	A value creation source for participants in the value chain (p.493).
(Osterwalder, Pigneur & Tucci, 2005)	Describes the relationship of business objects and concepts, referring to the business logic, and describes the way it offers and delivers value (p.17).
(Zott & Amit, 2007)	A description of how a firm engages and creates value by exploiting opportunities (p.4).
(Teece, 2007)	It is a description of the architecture and the financial model of the firm to capture value (p.1329).
(George & Bock, 2011)	The narrative and design of the firm that links its resources and partners to business outcomes (p.19).
(Bereznoi, 2015)	It is the logic of and a basic mechanism of the operations of the firm (p.16).
(Massa et al., 2017)	A description of how a firm achieves its goals (p.73).

This excerpt shows that different authors hold different perspectives on what a BusMod is. Some describe it as the way a firm conducts its business, while others describe it as a model, which is not necessarily implemented.

Apart from the differing perspectives used for the definition, there are three differing views on its function (Massa et al., 2017). In the first instance, some authors view the BusMod as real attributes of a firm, meaning first, the set of activities performed by the firm, and second, as the outcome produced by the firm. The outcome of the firm can be described as the value captured or created by the firm. It is in this view of a BusMod that gave rise to the terms razor-blade and freemium models (Baden-Fuller et al., 2013), subscription models (Teece, 2010), platform (Bharadwaj et al., 2013a), and crowd sourcing (Howe, 2006) to describe various business models. However, there are still disagreements on which activities are to be performed by any of the models (Massa et al., 2017).

Regarding the second view of the BusMod function, some authors viewed the BusMod as a cognitive schema, meaning that managers of a firm create a shared mental image of the BusMod that is shared and communicated by using that shared image (Chesbrough & Rosenbloom, 2002). For example, Polaroid's senior managers believed

in pursuing the impossible technology innovations, and in doing so, developed strong digital imaging capability (Tripsas & Gavetti, 2000). While at the same time, Polaroid was not able to commercialise the product, because senior managers believed in the razor blade BusMod and were not able to build a standalone camera.

However, lodged between the two functions of a real firm and a cognitive schema, some authors have described the third view of the function of BusMod as a conceptual model (Osterwalder et al., 2005) that captures the way a firm does business. While there is complexity in all three views of how a firm does business, this conceptual model view tries to make sense of the complexity by identifying the most important BusMod components for use by business managers (Massa et al., 2017). This conceptual model is then translated into real world BusMods by applying the components relevant to the firm.

As a result of the differing views, the definition that is most comprehensive is the definition provided by Teece (2018), which will be used in this study. Teece (2018) defines a BusMod as the way profit is made by the firm by getting customers to pay for the value the firm delivers (p.41). This definition is consistent with the definition provided by Zott et al. (2011) that in a constantly changing and disrupted the world, new ways need to be found by firms to capture and deliver value. This definition was selected for the study as it closely encompasses most of the elements of the BusMod identified in the study. Furthermore, as a result of the constant change that is synonymous with digital disruption, the definition used by Teece (2018) aligns to the dynamic consistency view. This means that to get customers to continuously pay for the firm's products and services, the value proposition needs to be constantly reviewed and refined because of the constant change. Following onto the definition as the first layer of clarity, the position of the BusMod in a firm will be discussed as the second layer of clarity.

2.7. Business Model Position in a Firm

The next step needed to provide more clarity regarding the BusMod is to demonstrate its position within a firm. Due to the continuous disruptions in the business environment, Osterwalder et al. (2005) described a business model as a triangular relationship between the strategy, organisation and technology. The BusMod is subject to an impact by Porter's 5 Forces, the customer, legal and technology changes as shown in Figure 5:

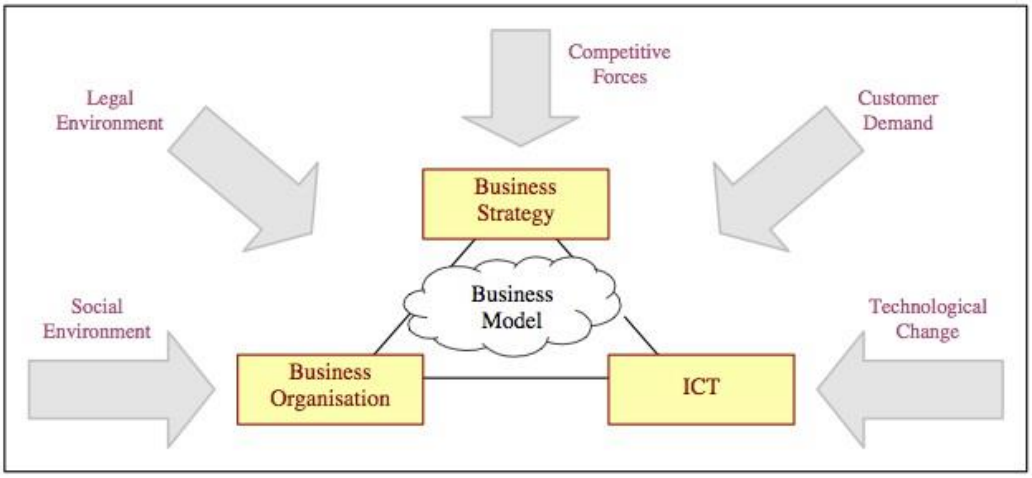


Figure 5 – Position of BusMod (Osterwalder et al., 2005, p.15)

On the other hand, Al-Debei et al. (2008) argues that the BusMod is not a theoretical layer between the business strategy, organisation and IT, but that it plays a more a functional and helpful role, as shown in Figure 4 above, in acting as the interface between business strategy and process model.

While strategy focuses on the firm taking on the competition and winning, the business process model describes how the firm uses its inputs in the creation of a specific output. In contrast, a BusMod describes how the firm effectively co-ordinates its resources to create and deliver the value. The term value is a buzzword in literature and in practice. However, the identification of value is not a simple task (Bernhardt, Helander, Jussila, & Kärkkäinen, 2016). Therefore, the next step to achieve more clarity comprises the BusMod potential sources of value creation available to firms as they insert this layer between the business process model and the strategy.

2.7.1. Business model themes

Amit et al. (2001) identified four themes of e-BusMods as the sources of value creation and that are interdependent, namely, 1) efficiency, 2) complementarities, 3) lock-in, and 4) novelty.

2.7.1.1. Efficiency-based business model theme

In an efficiency-based theme, value is created when the cost per transaction decreases. As each transaction becomes more efficient, the costs are lowered further and as a result, more value is created (Amit et al., 2001). To remain competitive, firms may decide that instead of innovating and creating new products, they imitate the current products

and services, but they enhance the efficiencies (Zott, 2003). One way of realising this is to make information between buyers and sellers readily available, up to date and comprehensive. For example, Amazon's order-tracking feature is an efficiency-designed business model as it allows transparency of the transaction by providing information to the logistics supplier and by having more customers check on the status of their delivery (Brynjolfsson & Hitt, 2005). Readily available information increases the speed of decision making and customers making a purchase, thereby further enhancing transaction efficiencies (Amit et al., 2001).

2.7.1.2. Complementarities business model theme

Products that are purchased together as a bundle and have more value than buying each of the products separately, are referred to complementarities (Amit et al., 2001). The complementarities are often related to the core product sold by the firm. For example, Flight Centre, an Australian-based international travel company with outlets and an online presence in South Africa, offers its customers a destination guide, travel insurance, travel accessories and travel news. These services create additional value by enhancing the basic value of the purchase of an airline ticket. Consequentially, when customers have access to this information, further efficiencies are enhanced, including reduced search costs for the customer, quicker decision making and purchases that result in increased revenue for the company.

2.7.1.3. Lock-in business model theme

When customers engage in repeat transactions with a firm, the value-creating potential is increased as the repeat transactions increase volume, and therefore provide an increased incentive for strategic partners and suppliers of the firm (Amit et al., 2001). These partners and suppliers become motivated to maintain their relationship with the firm because of the increased volume, which results in lower costs and better efficiencies for the firm, which are then transferred to the customer. As a result, when the customer is prevented from migrating to a competitor's product because of the above, this is known as lock-in (Amit et al., 2001). Lock-in is particularly obvious in cases where the original supplier is the only one that can supply consumables, parts or enhancements. Further value is enhanced when customers become the unofficial ambassadors of the firm, product and brand, which is known as network externalities (Zott et al., 2010).

2.7.1.4. Novelty-centred business model theme

The fourth source of value creation is novelty-centred, which refers to new products, markets and methods of distribution (Bernhardt et al., 2016). However, digital business

takes this a step further by connecting buyers and sellers that were unable to connect previously. This is largely known as the platform economy. For example, the Uber application connects drivers of taxis to customers looking for a lift to their destination (Teece, 2018). When firms adopt this innovative way of transacting, they create new markets and increase their firms' performance (Zott & Amit, 2007).

2.7.2. Business model components

A discussion and the outline of some of the different BusMod components are discussed in this section by identifying some of the most common BusMod components in literature. One way of creating understanding and simplifying complexity is through the use of conceptual models (Massa et al., 2017). While understanding the model is necessary, it is more important to be able to predict, measure and communicate such model in a way that everyone in the organisation understands it.

For business managers to respond to the digital disruption, they must have a comprehensive understanding of what the BusMod components are and the model's relationships (Teece, 2007). However, after more than ten years of research, there is still dissent regarding the BusMod components, providing no unified framework (Burkhart, Krumeich, Werth & Loos, 2011). Different authors provided different descriptions of the BusMod components:

- Morris et al. (2005) described BusMods as the strategic, the economic and operational models, with each category having a set of decision variables that creates differentiation;
- Osterwalder et al. (2005) identified nine building blocks that centre on activities and the network of a firm. The activities are the specific processes of the firm and the network refers to relationships with suppliers and partners to deliver value;
- Teece (2010) believed that the components were mechanisms to capture value, the product offering, value proposition, the target market segment, and revenue streams;
- Demil et al. (2010) identified the components as value proposition, structure, resource and competencies;
- Krumeich et al. (2012) developed a four-component framework that consisted of value creation, value offering, value capturing, and a financial model aspect, with each component framework having additional sub-components;

- Baden-Fuller et al. (2013) identifies four dimensions, where the firm identifies its customer, gets a sense of what the customer wants through engagement, finds ways to deliver what the customer wants, and gets paid by the customer for that value;
- The study by Wirtz et al. (2016) analysed the database of literature related to the BusMod components and its value as a strategic component. The study found that the top five most strategic BusMod components were, 1) the network, 2) customer, 3) strategy, 4) revenue, and 5) resources models

BusMods components are referred to as either an element, building block, function or attribute. There is a lack of agreement among researchers as to which components are critical, of strategic importance to the success of a firm, and utilised in a firm.

After assessing the different components from the above authors, this research will be guided by, and adapt, the common BusMod components emerging from Baden-Fuller et al. (2013), Demil et al. (2010), Teece (2010, 2018) and Wirtz et al. (2016). Furthermore, Krumeich et al. (2012) identified the following components in more than 88% of literature analysed, while some of the other components described by the authors above, appear in less than 50% of the literature. The common, identified BusMod components for this study are therefore:

- Value proposition (VP);
- Customer target segment (CTS);
- Value network (VN);
- Revenue model (RM); and
- Resources and competencies (RAC).

These BusMod components will therefore form the basis for this study and be used as the set of components that have been analysed to understand the relationship with the DigBus strategy, as shown in Figure 6, and each component will be discussed in more detail next.

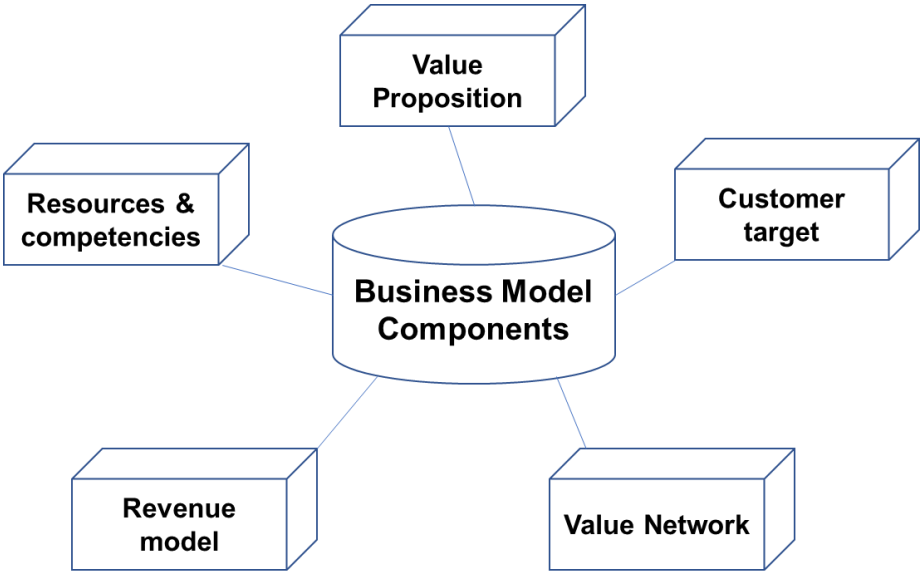


Figure 6 – Identified components of a BusMod

2.7.2.1. Value proposition

Firms are faced with constant disruption, particularly through the rate of change of technology development. As a result, customers have more choice and varying customer needs can be catered for through the development of newer technologies (Teece, 2010). Firms, therefore, need to consider the value propositions they offer to customers in order to remain competitive.

Demil et al. (2010) stated that the value proposition refers to the value delivered by a firm to the customer through its unique products and services. This was supported by Amit et al. (2001) who stated that as firms change their business models based on the novelty theme, new markets and products are created that are centred on the value proposition.

While the above focuses on the internal view of the firm in creating a unique value proposition for the customer, Hedman et al. (2003) argued that looking at one's own firm is not sufficient, as competitors must be taken into account so that customers do not switch to competitors' products. The value proposition must therefore describe why customers would buy a product or service from a particular firm and not from a competitor firm. Holotiuk and Beimborn (2017) stated that one of the value propositions critical success factors is for firms to enhance the customer interaction with its products and services.

Chesbrough et al. (2002) argued that the starting position in designing a BusMod is the value proposition, therefore making it a central component of the digital BusMod design and implementation. Given that the value proposition is designed for a specific customer segment, this will be discussed next.

2.7.2.2. Customer target segment

To deliver the value proposition described above, a firm must understand and know its customer target segment well so that the value proposition can be adapted according to their preferences (Krumeich et al., 2012). This implies that organisations have to understand the needs of the customer within each segment and offering value to that segment (Baden-Fuller et al., 2013).

Apart from adapting the value proposition, firms must be able to identify the correct communication and distribution channels for the correct customer segment (Krumeich et al., 2012). DigBus and technologies offer differentiated channels to meet even a customer-specific need. A distribution channel describes how a firm connects with its customers. There are multiple types of channels that a firm can use. For example, options include a mobile application, the firm's website, a bricks and mortar store, resellers and intermediaries, agents or brokers.

Pralahad and Ramaswamy (2004) stated that firms need to move from a firm-centric view of creating products and services for a specific target, to a positioning, where the firms adopt a personalised customer view to meet the needs of its target customer segment. This interaction between the firm and the customer becomes the focus of value creation.

Boons and Lüdeke-Freund (2013) suggest the target market can either be segmented through mass market production or firms can follow a different approach by co-creating products and experiences with customers. This not only results in enhanced customer-firm relationships, but sustainable value propositions and firm performance.

As firms improve their value proposition to the customer target segment, a key role for the value network, together with the firm, is the delivery of that value. The value network component is discussed next.

2.7.2.3. Value network component

Zott et al. (2011) describe the value network as the external stakeholders of the firm that collaborate to deliver the value. Partners, suppliers and distribution channels make up the value network.

The advent of new digital technologies has changed the rules of the game for many firms and their business models. Firms' traditional core competencies and resources are no longer adequate or skilled to deliver the value in the new economy (Pagani, 2013). Therefore, firms need to create strategic partnerships and operate in an environment that is more complex and dynamic.

Firms need to manage the partnership capabilities as each partner in the ecosystem becomes responsible for their contribution to the overall value delivered to the customer (Pagani, 2013). Firms' digital business strategies must therefore address the co-ordination of activities across multiple firms that are seen as a symbiotic relationship with high interdependence (Adner, 2017). As firms outsource some activities within the value chain as part of their strategic partnership, they need to consider the financial model. The next BusMod component, the revenue model, will be discussed in the next section.

2.7.2.4. Revenue model component

The financial model is the ability of firms to generate revenue and manage costs in the delivery of value. It describes the willingness of and ways for the customers to pay for that value (Baden-Fuller et al., 2013; Osterwalder et al., 2005).

The revenue model component describes when the revenue is collected, whether this is before, during or after the sale (Baden-Fuller et al., 2013). There are varying ways to price a product as there is a dependency on the type of model employed. For example, a firm can use a rent-only model or sell its products and services outright. In the digital context, a firm can offer a freemium model, where the product or service is given away free, such as a mobile app, but to use the enhanced functionality, customers have to pay a specific amount (Demil et al., 2010). In the digital economy, other revenue models include a subscription model (Teece, 2010), where customers pay a subscription to use the firm's product or service. For example, Netflix charges customers a subscription fee to rent an unlimited number of movies and TV shows for the month. BMW have recently introduced a subscription-based fee with different tiers that allows customers to use any

BMW vehicle of their choice. Dubbed as “Access by BMW”, it allows customers to pay a monthly fee that enables them to switch between different BMW models during that month. Although the monthly fee is higher than the usual instalment sale or leasing amount, it will enable BMW to have a more consistent revenue stream and provides a solution to the peak and trough nature of its revenue. This peak and trough is due to customers replacing vehicles once every three to five years on average (Matousek, 2018).

2.7.2.5. Resources and competencies model component

Demil et al. (2010) stated that to deliver value, a firm’s activities and resources must be organised. Resources and competencies describe the way they are organised to deliver that value. Demil et al. 2010 state that resources are the people, products and technology of the firm, while skills, intellectual property and the ability of knowledge workers in a firm are its competencies.

While the characteristics of resources and competencies are different, meaning that resources are non-firm specific and can be tradeable, competencies are firm specific and cannot be traded (Krumeich et al., 2012). It is for this reason that resources alone cannot deliver the value to customers, and therefore resources and competencies are an important component of the BusMod. In the next section, the combination of the above key components is discussed as it relates to firm performance.

2.7.3. Business models and firm performance

Osterwalder et al. (2005) stated that when the common critical components are used in a firm, it provides business managers with a common language to design, build and implement a successful BusMod. It enables decision makers to respond faster to changes in the environment. There are many contrasting views of which performance measurements to use in the BusMod design (Busi et al., 2006; Heikkilä et al., 2016; Kim & Min, 2015; Voelpel, Leibold & Eckhoff, 2006; Zott et al., 2007). Performance management measures have been used over the last decade to create focus in a firm and communicate management priorities in the firm (Kaplan & Norton, 2001, p.102). Dubosson-Torbay, Osterwalder and Pigneur (2002) stated that a set of measures will help firms manage and control their activities. The BusMod, the environment and change drive a firm’s performance as shown in Figure 7 (Afuah & Tucci, 2001, p.4).

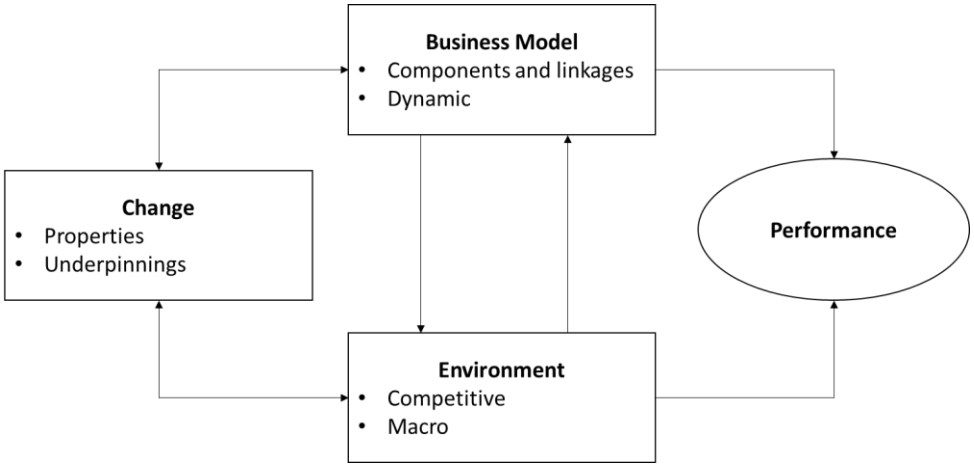


Figure 7 - Performance elements (Afuah & Tucci, 2001, p.4)

The first element of performance is the BusMod (Afuah et al., 2001). The competitive and macro environment, and change make up the other two elements. If the BusMod components and their interactions (linkages) offer the intended value, then firm performance should improve and create a competitive advantage. This means that business managers can only exploit new technology, if they understand the measures of a firm's performance (Afuah et al., 2001). This can be described as the way the firm makes a profit through offering better value and using its resources (p.3). For each of the components identified above, Table 2 shows the key themes (Heikkilä et al., 2016).

Table 2 - Key metric themes for business model components

Business model component	**Key metric themes**
Value proposition	Number of competitors, number of competing products, pricing strategy.
Customer target segment	Created customer value, share of market, website/app usage.
Value network	Size of partner network, contracts, value conflicts.
Revenue model	Profitability, costs, risk.
Resources and capabilities	Access to partners, complexity and variety of internal partners, characteristics of network.

It is clear from the above that the choice of digital technologies influences a firm's success and the BusMod (Teece, 2018). Successful BusMods have different interlocking components and when the complexity between the components are managed well, together with a common language of the BusMod, it results in a benefit for the firm.

However, a BusMod by itself cannot be regarded as successful or unsuccessful (Osterwalder et al., 2005), it has to be designed and implemented to be considered as successful or not. Furthermore, as discussed previously, the BusMod cannot create competitive advantage by itself (Teece, 2010). Therefore a successful BusMod implementation requires that conceptual model is translated into more tangible outcomes, such as, business units, digital systems, and business processes. With BusMods being very complex, all the elements must be mutually reinforcing, that have interacting components. Therefore, when designing a new DigBus strategy, not only must the success measures be included in design, the relationship between the BusMod components and DigBus strategy must be well understood so that implementation can be successful (Osterwalder et al., 2005).

2.8. Conclusion

An overview of the theory on the DigBus strategy and the BusMods were presented in this section, which supported the case for this research. As part of the literature review, the various definitions and components of the DigBus strategy and the BusMod were reviewed, and five BusMod components were selected for this study. This will guide the research to analyse and explain the type of relationship between the identified BusMod components and the DigBus strategy. This section also highlighted the importance of the BusMod as it is one of the elements that contributes to a firm's performance. This section closed by providing the link between the BusMod and DigBus strategy. The aim of the study and the hypotheses are discussed in the section that follows.

CHAPTER 3: RESEARCH HYPOTHESIS

3.1. Introduction

The BusMod has been highlighted as an important and significant contributor to firm success in the previous chapter. However, there is a need to evaluate the BusMod's importance in the new digital world. Despite some consensus regarding the BusMod definition and the identification of the key strategic components, there is still some lack of clarity of its role and influence in an environment, where IT is advancing and changing rapidly. Zott et al. (2011) state that very few academic papers examine the relationship between the BusMod components and other constructs, such as the digital business strategy. It is difficult for practitioners and business managers to know which components are utilised in and contribute to the success of the DigBus strategy.

This study therefore aimed to examine the relationship between set of five BusMod components prevalent in literature and the DigBus strategy. Because the BusMod is not a single component, but comprises all the elements together (Zott et al., 2011), therefore to demonstrate the relationship between the collective set of BusMod components and the DigBus strategy was one of the objectives of this study. Furthermore, another objective of the research was to rank in order of importance the BusMod components that are significant to the DigBus strategy.

The overall research question is highlighted next.

3.2. Research Question

The primary research question for this study was:

- ***What is the relationship between the business model components of a firm and the digital business strategy?***

For this study to address this question, it defined the dependent and independent variables that make up the study, and the hypotheses to be tested. These are discussed in the next section.

3.3. Variables in this Study

A dependent variable is that variable, which is being explained by the behaviour of an independent variable (Hair, Black, Babin & Anderson, 2010). In this study, the DigBus strategy was the independent variable, which measured the extent of the relationship of the BusMod and its components.

On the other hand, an independent variable can influence a dependent variable (Hair et al., 2010). Therefore, the BusMod components, 1) VP, 2) CTS, 3) VN, 4) RM, and 5)

RAC are the independent variables in this study. Figure 8 demonstrates the independent and dependent variables of this study:

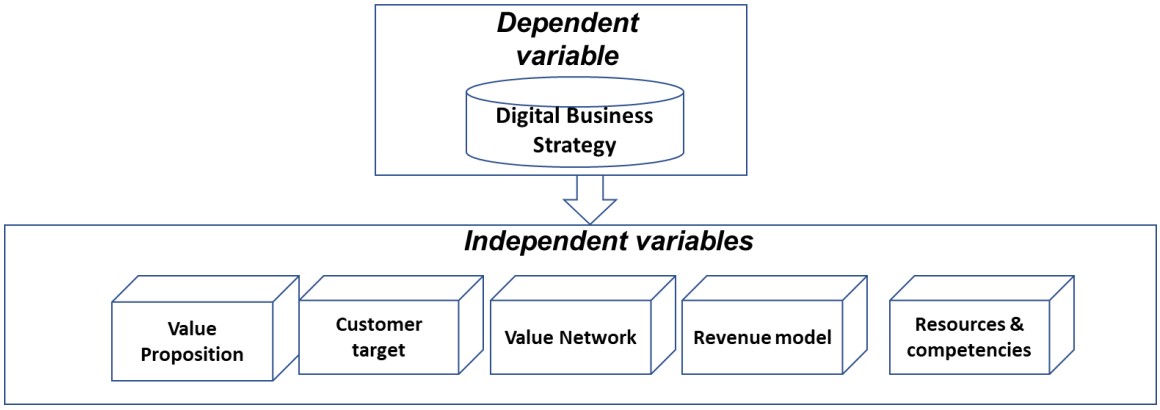


Figure 8 - Dependent and independent variables

3.4. Hypotheses

The main aim of this study was to determine the relationship between a set of identified BusMod components and the DigBus strategy. The hypotheses were considered as six distinct analyses, meaning that the five hypotheses analysed each of the individual BusMods and the DigBus strategy, while the sixth hypothesis assessed the relationship between the collective BusMod components and the DigBus strategy. In Figure 9, the hypotheses are shown between the individual BusMod components and the DigBus strategy, while Figure 10 shows the cumulative effect of the BusMod on the DigBus strategy.

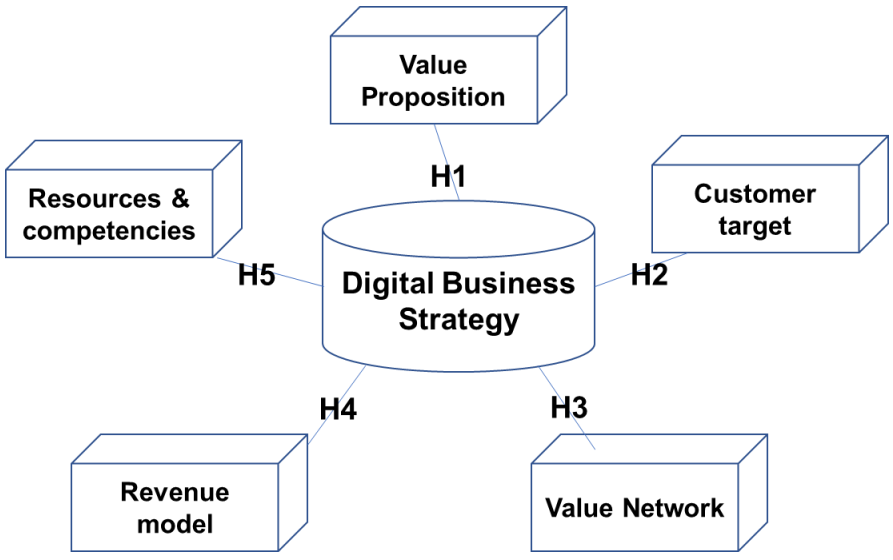


Figure 9 - Hypotheses 1-5

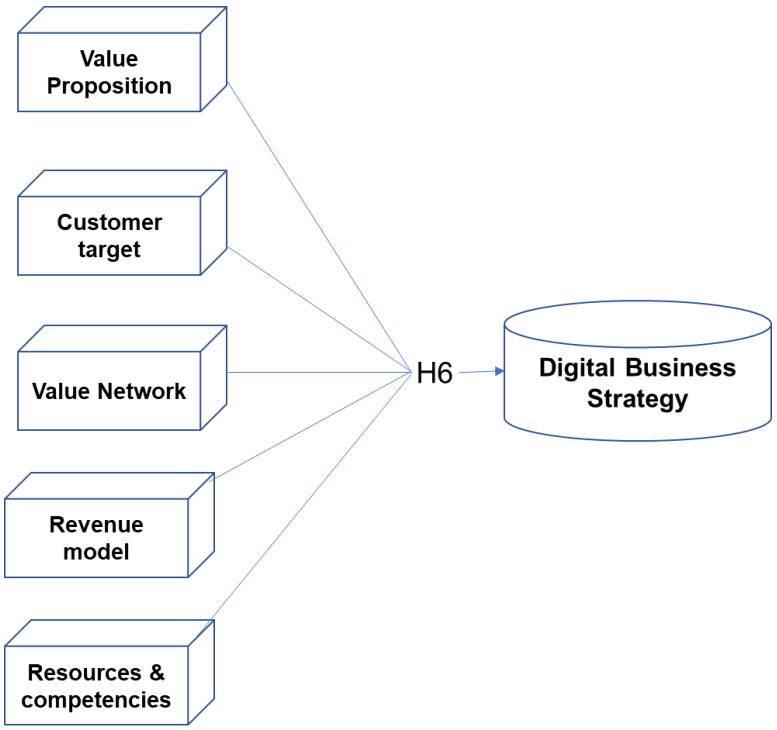


Figure 10 – Hypothesis 6: BusMod components' cumulative effect on DigBus strategy

3.4.1. Hypothesis 1

H1: There is a positive relationship between the value proposition and the DigBus strategy.

The value proposition is one of the reasons customers switch from one firm to another. Its importance had been highlighted as a significant contributor to a firm's success. To confirm the assumption that the value proposition has a positive relationship with the DigBus strategy as commented on by Demil et al. (2010), Krumeich et al. (2012), Teece (2010), and Wirtz et al. (2016), the following hypothesis was used to provide a confirmation measure:

$H1_0$: There is a positive relationship between the value proposition of a firm and the DigBus strategy.

$H1_1$: There is a negative relationship between the value proposition of a firm and the DigBus strategy.

3.4.2. Hypothesis 2

H2: There is a positive relationship between the customer target segment and the DigBus strategy.

According to Teece (2018), a critical capability of a firm is to identify its customer target market and use the learnings to run a proof of concept on the viability of the new BusMod. Therefore, the hypotheses are:

$H2_0$: There is a positive relationship between the customer target segment of a firm and the DigBus strategy

$H2_1$: There is a negative relationship between the customer target segment of a firm and the DigBus strategy

3.4.3. Hypothesis 3

H3: There is a positive relationship between the value network and the DigBus strategy.

There has been a shift over the last decade among firms starting to move from a centralised hierarchical method of operations to a more decentralised distributed network (Pagani, 2013). Digital technologies have accelerated this shift to a more strategic partnership and ecosystems that span across time and distance boundaries. This results in value creation not only for the firm, but for the partners and multiple users (Zott et al., 2011). The aim of the study was therefore to assess the importance of the value network when firms use this advantage to create unique digital products and services.

$H3_0$: There is a positive relationship between the value network of a firm and the DigBus strategy.

$H3_1$: There is a negative relationship between the value network of a firm and the DigBus strategy.

3.4.4. Hypothesis 4

H4: There is a positive relationship between the way a firm makes money through its revenue flows and the DigBus strategy.

Alt and Zimmerman (2001) argued that the main reason that start-ups fail in the new economy is due to the revenue model lacking or has a poor design. Baden-Fuller et al. (2013) further stated that there are multiple to dimensions to the price of product, for example, the price based on the value received by the customer. The aim was therefore to test the importance of this BusMod component as it relates to the DigBus strategy. The hypothesis was:

$H4_0$: There is a positive relationship between the way a firm makes money through its revenue flows and the digital business.

$H4_1$: There is a negative relationship between the way a firm makes money through its revenue flows and the DigBus strategy.

3.4.5. Hypothesis 5

H5: There is a positive relationship between the resources and competencies of a firm and the DigBus strategy

The changes generated in the value proposition and the value network result in changes in the resources and competencies available in the firm (Demil et al., 2010). It is therefore important to understand the flexibility of the firm's organisational structure and its importance in the design and implementation of the DigBus strategy. The hypothesis was:

$H5_0$: There is a positive relationship between the resources and competencies of a firm and the DigBus strategy.

$H5_1$: There is a negative relationship between the resources and competencies of a firm and the DigBus strategy.

3.4.6. Hypothesis 6

H6: There is a positive relationship between all five business model components cumulatively and the DigBus strategy.

Linder and Cantrell (2000) stated that when reference is made to the BusMod, firms often refer to the individual components of the BusMod. The parts are not the whole (Osterwalder et al., 2005) and therefore, one of the objectives of the study was to examine the cumulative effect of all five components of the BusMod on the DigBus strategy.

$H6_0$: There is a positive relationship between all five components of the BusMod and the DigBus strategy.

$H6_1$: There is a negative relationship between all five components of the BusMod and the DigBus strategy.

3.5. Conclusion

This study was guided by the hypotheses above to gain a better understanding of the relationship the identified BusMod components and the DigBus strategy. The hypotheses assessed the type of relationship that existed between the each of the individual BusMod components, namely, 1) VP, 2) CTS, 3) VN, 4) RM, and 5) RAC, and

the DigBus strategy. Furthermore, this research assessed the BusMod components collectively relationship with the DigBus strategy. To test the hypotheses, the next section will outline the research methodology, the population and sample, the data collection and analyses approaches.

CHAPTER 4: RESEARCH METHODOLOGY

4.1. Proposed Research Design and Methodology

4.1.1. Introduction

The importance of the BusMod had been highlighted already as an important contributor to a firm's success; however, there remained the need to evaluate the BusMod's importance in the new digital world. While there had been some consensus regarding the BusMod definition and the identification of the key components, it remained unclear what its role and influence was in a business environment, where information technology (IT) was rapidly changing and advancing. Zott et al. (2011) state in their research that very little academic literature examined the relationship between the BusMod components and other constructs, such as the DigBus strategy. Because business managers traditionally knew how to translate the business strategy into business processes, they tended to lack the knowledge of how to translate the more complex BusMod into the more uniquely complex digital business (Al-Debei et al., 2008). It is not only difficult for business managers and practitioners to know, which BusMod components are utilised in the design and implementation of a DigBus strategy, it is also difficult to know the ranking of the importance of the relevant BusMod components relating to the DigBus strategy.

Therefore, the purpose of this study was to analyse the set of five BusMod components identified from literature and its relationship with the DigBus strategy. To achieve this aim, the study set of three objectives. The first objective of this study was to analyse the relationship between the individual set of BusMod components identified in literature and the DigBus strategy. Second, because the BusMod is not a single component, but comprises all the elements (Zott et al., 2011), one of the objectives of this study was to analyse the relationship between the collective BusMod components and the DigBus strategy. The third objective was to establish a ranking in order of importance of the BusMod components to the DigBus strategy. This will offer business managers and practitioners a starting point to build stronger business cases when designing and implementing their DigBus strategy, and to provide a layer of information required for firms starting their digital journey.

An online questionnaire, using the Google Form's tool, was used to collect data. Statistical analyses, such as descriptive analysis and structured equation modelling (SEM), were used to describe and understand relationships between the BusMod components and the DigBus strategy. Through a multivariate analysis, the relationship between the identified BusMod components collectively and the DigBus strategy was determined. The researcher believed that richer insights will provide business managers and practitioners the next layer of understanding (Al-Debei et al., 2008) and contribute to the need for more multivariate analysis for this type of study as commented by Wirtz et al. (2016).

This chapter outlines the design and rationale of the study, provides a description of the population, and the sampling size and measurement. It describes the unit of analysis, the measurement instruments, the data gathering process, the data analysis approach, and the limitations of this research. The researcher was cognisant of how the validity, reliability and limitations, as described below, influenced this research.

The next section begins by describing the design of the study, including the research approach method, paradigm of the study, and research design and reasoning.

4.1.2. Design of the study

4.1.2.1. Research method

Of the three common types of research methods, which are quantitative, qualitative and mixed methods (Leedy & Ormrod, 2001; Creswell & Creswell, 2017), the appropriate choice for this study was the quantitative approach, as it is capable of effectively testing the relationship between variables. One of the aims of this study was to understand the type of relationship between the BusMod components identified in Chapter 2, individually and collectively, and the DigBus strategy. To test whether there was a positive relationship, this study set out six hypotheses as described in Chapter 3 above. Therefore, a quantitative study was selected as it was more suited to test a hypothesis (Saunders & Lewis, 2018).

This approach was informed by the extant lack of clarity regarding which of the components that had been identified for the BusMod in literature had a positive relationship with the DigBus strategy (Al-Debei et al., 2008), and was guided by similar studies in literature by Baden-Fuller et al. (2013), Bharadwaj et al. (2013a), Krumeich et al. (2012), Teece (2010, 2018), and Wirtz et al. (2016).

This research was cross-sectional because the data was collected at a point in time ("snapshot") due to the constraints of the submission timelines for this research (Saunders et al., 2018). Furthermore, due to this research being cross-sectional, the common five BusMod components that were identified in literature were used as the basis of the study.

4.1.2.2. Paradigm of the study

Three common philosophies are post-positivism, constructivism and pragmatism (Creswell et al., 2017). Different authors use different philosophies, however, Scotland (2012) uses the "basic set of beliefs that guide action" in the research study (Guba, 1990, p.17).

In this study, the research philosophy was positivism, as this research examined the relationship that exists between the dependent (DigBus strategy) and independent variables, 1) value proposition, 2) customer target segment, 3) the value network, 4) revenue model, and 5) resources and competencies. Post-positivism is also referred to as positivist / post-positivist research or empirical science. Saunders et al. (2018) states that the positivism approach studies measure observable and measurable variables in a controlled environment, being uninfluenced by human interpretation or bias.

Furthermore, this study uses existing theory to develop a hypothesis and test the relationships between the independent and dependent variables by using statistical analysis to assess whether the hypotheses would be accepted or not. Therefore, this philosophy was aligned to the objectives of the study.

4.1.2.3. Research design and reasoning

For this study, a descripto-explanatory approach was used. First, the study can be classified as descriptive as it sought to identify the common BusMod components identified in literature. Second, it can be described as explanatory as the study aimed to determine the most significant relationships between the identified common BusMod components and the DigBus strategy.

The research critically analysed the five proposed BusMod components identified in literature as the basis of the framework to test whether there is a positive relationship with the DigBus strategy. Given this objective, the approach that was selected for this

research was deductive. According to Saunders et al. (2018), when testing of a theoretical proposition uses a research strategy specifically designed to collect data for the purpose of its testing, it is referred to as a deductive research approach. Data were collected using self-completed questionnaires to test the hypotheses outlined in Chapter 3 above (Blumberg, Cooper & Schindler, 2008). The hypotheses and questionnaire were guided by the extant literature mentioned above. For example, the statement "*There has been a volume increase of products and services through our partners and alliances*" was guided by in the study conducted by Bharadwaj et al. (2013a), which attempts to address the scale and value network. A further example of a statement adapted for this study was derived at from the study of Achtenhagen, Melin and Naldi (2013), that addresses the future research and development of resources through the question of "*Do you reinvest profits into the company to facilitate further expansion and development?*" By using this highly structured method, the deductive approach was adopted, replication can be facilitated, resulting in law-like generalisations (Saunders et al., 2018).

The mono method was followed in this study, based on the time constraints of this research. It is a single data collection technique and corresponding analysis procedure (Saunders et al., 2018). This method was considered suitable for this study as the only data collection method used was the online survey questionnaire through Google Forms. This method, consisting of a questionnaire, was similar to the study conducted by Rivard, Raymond and Verreault (2006) who had aimed to assess the contribution of IT to business performance.

In summary, this study followed a descripto-explanatory, quantitative design, which tested the theory expanded on in Chapter 2, using hypotheses described in Chapter 3, so as to confirm or reject the theory within the provided research setting.

4.2. Population

A population is defined as a collection of individuals that form the focus of the study (Zikmund, 2003). The population of middle to senior managers who held a strategic role and influence within a firm (Floyd & Wooldridge, 1992) was selected for this study. Furthermore, it was important that the population had experience with DigBus strategy design and implementation, digital BusMods and / or digital products and services. The reason for selecting this population was to address the aim of this study, which was to analyse the relationship between the components of the BusMod identified in literature

and the DigBus strategy. Responses were therefore required from professionals that held a strategic role, who had influence within a firm and could provide informed responses to enhance the quality of this study. This was tested for in the questionnaire of this study by asking the question "*Are you aware of or associated with a DigBus strategy and digital BusMods in your organisation?"* which addressed whether participants were suitably qualified and experienced in answering the survey. Furthermore, it is believed that lower level management would not have the deeper insights into the strategy and BusMod changes and they were therefore excluded from this study. The second qualifying question was based on the level of the role of the participant, which was *"Please select from the following that best describes your current job level"*.

The population of this study was selected from multiple industries that included small, medium and large firms that had designed and implemented a DigBus strategy and / or offered digital products and services. This selection had many advantages, including that the results of this study can be applied across multiple industries.

As defined by the National Small Business Act of 1996, small firms have between 20 – 50 employees and between R500 000 and R25m in annual turnover. Medium sized firms have between 51 – 200 employees and between R26m – R50m in annual turnover, while large firms have more than 201 employees and more than 51m in annual turnover (National Small Business Act, 1996).

4.3. Unit of Analysis

The level at which objects are researched is the unit of analysis (Blumberg et al., 2008). For this study, the unit of analysis was middle to senior business managers who represented small, medium and large firms. Although individuals responded as a representative of the firms, the questions posed (shown in Appendix A) are general characteristics of a firm.

4.4. Sampling Method and Size

A sampling frame is a complete list of all members of the population (Saunders et al., 2018). Given that the selected population held different job levels, ranging from junior to senior management, and stemmed from differently sized firms and industries, it was not possible for the researcher to know or access all the members that made up the population. Therefore, the sample could not be selected at random (Saunders et al.,

2018, p.141). The researcher used non-probability purposive sampling to select the participants for this study. When a population is chosen that can best answer the research question, this is known as purposive sampling so that research objectives are met (Saunders et al., 2018, p.145).

The researcher selected the sample in two parts. In the first instance, the researcher selected middle to senior managers as they were expected to have a better and deeper understanding of DigBus strategy and BusMods than lower level employees and junior management (Floyd et al., 1992). They also would have been faced with strategic decision making in the context of the digital technologies, disruption, and were fairly familiar with how the BusMod works. Based on these criteria, the researcher leveraged his formal professional network, having professionally worked with clients that held these job levels, and with firms that had implemented a DigBus strategy and / or digital products and services, to identity the initial view of the population. The researcher was aware that the initial list of participants in the researcher's formal network could have introduced some bias. This was however, a small sample size (Saunders et al., 2018).

As there was no reliable list of this population available, the researcher further identified the population through social media tools and informal professional networks. Social media tools, for example, LinkedIn, Facebook, WhatsApp, and Twitter, were used to select participants that held the appropriate job level and seniority within a firm. To increase the number of participants through social media sites, the researcher used the 'like' and 'comment' functions, which encouraged others to do the same. Furthermore, the link to the Google Form survey was on professional groups that the researcher belongs to on social media platforms (through the permission of the Group Admin).

In the second instance, the study used purposive sampling, in particular judgement sampling (Sekaran & Bougie, 2013). The researcher acknowledged that there were instances, where access to the appropriate management levels for this study was a challenge. The researcher therefore asked the participants to volunteer a peer level participant to take part in the survey, as they would possibly belong to similar professional networks. This was a snowball process that is applied when the target population members are difficult to find (Wegner, 2016; Saunders et al., 2018).

Furthermore, the researcher reached out to his personal professional network to distribute the survey link to appropriate individuals with the appropriate job levels, including the researcher's supervisor being asked to distribute the survey link to

appropriate individuals. Care was taken to provide instructions for the distribution of the survey. The upfront demographic questions that tested for job level and firm engagement in DigBus were used as the gatekeeper to validate any participants that were inappropriate for this study.

The aim was to derive at a heterogeneous population to ensure that there was a maximum variation in the data (Saunders, Lewis & Thornhill, 2009). Through heterogeneous sampling, the researcher is able to observe key themes so that they can be described and explained further, thereby making the outcome of the study more valuable and unique (Saunders et al., 2009).

Considering that the population could have been more than 100 000 individuals, the guidelines provided by Israel (1992, p.3) and Leedy et al. (2001), quoting Gay, Mills and Airasan (2012. p.139), proposed that a sample size of 400 be used.

As stated by Barret (2007), SEM requires a large sample size and therefore should be avoided, if the sample is less than 200. Furthermore, Westland (2010) suggested a guideline of 10 times the sample size to the number of measured variables. This study had a theoretical model that measured 28 variables. Therefore, based on the 10:1 ratio guidelines, the sample size should be 280. However, the fit to the theoretical model was not sufficient, as the final usable sample size was 107 for this research.

Based on the above, the researcher selected the partial least square structured equation modelling (PLS-SEM) for this study. The PLS-SEM is part of the SEM family that uses covariance-based techniques that do not require large sample sizes or normally distributed data (Urbach & Ahlemann, 2010). Based on the guideline of the latent variable having 10 times the number of measured variables with the largest number of indicators, as provided by Henseler, Ringle and Sinkovics (2009), the sample size of 107 was sufficient, as the largest number of indicators was five for the latent variable for this study. Therefore, the study required a minimum sample size of 50 to use the PLS-SEM.

4.5. Measurement Instrument

4.5.1. Questionnaire

Given the objectives and hypotheses of this study, the measuring instrument was the pre-tested online self-administered questionnaire (Appendix A). Online questionnaires

are a more cost-effective and structured way to collect data from a sizeable collection (Saunders et al., 2018).

A detailed description of the four themes of the DigBus strategy by Bharadwaj et al. (2013a) was provided in Chapter 2, referring to the scope, scale, speed and sources of the DigBus strategy. These scholars provided research questions that assisted with the design and implementation of a DigBus strategy by leveraging digital resources with the intent of improving the performance of a firm.

Teece (2010, p.189) suggested that the current business ecosystem must be evaluated to design the new BusMod. Questions on the value proposition, the customer, the market, the technology and the industry must be asked. For example, Teece (2010, p.189) suggested that to evaluate the improvement in the value proposition component of the business model, a firm must ask whether the digital product or service will bring enhanced utility to the customer. More recently, Teece (2018, p.42) stated that a good design of a BusMod includes asking and determining, which market segments to target.

The study done by Krumeich et al. (2012) identified the frequency of the various single BusMod components in literature and used this as a basis to create a broad framework of the most common BusMod components. Krumeich et al. (2012) analysed a broad set of literature by searching for the term BusMod. From the 50 papers found, high quality literature and journals were selected. High quality was defined as literature and journals that were ranked as ‘A’ level. To satisfy the citation frequency, literature and journals that were recent and had potential, but was still ranked low, were manually selected. This study identified that in more than 88% of analysed literature, the following components can be found: 1) the value proposition, 2) customer target segment, 3) structure and position, and 4) the revenue model. These common components formed the basis of the current study and were used to evaluate the relationship with a DigBus strategy.

The study by Achtenhagen et al. (2013) focuses on how firms need to create sustained competitive advantage by shaping, adapting and renewing the BusMod. Supporting the view of Al-Debei et al. (2008) that business managers require new information on how to adapt to the new digital BusMod, which is addressed by the questionnaire used in the study by Achtenhagen et al. (2013). The questionnaire concentrated on five areas, 1) value creation strategic actions, 2) new business opportunity identification and experimentation, 3) resource use, 4) leadership, culture and employees, and 5) complementarities.

The study by Baden-Fuller et al. (2013) focused on how the technological innovation is linked to business performance through the BusMod as the intermediary. The framework for this link was based on four components, 1) customer and user identification, 2) customer value proposition, 3) value delivery and linkages, and 4) the revenue model.

As described in chapter 2, the study by Bharadwaj et al. (2013a) identified four themes as a framework to guide the thinking on the DigBus strategies. The key questions were centred on the four themes of 1) Scope, 2) Scale, 3) speed, and 4) sources of value creation. For example, to assess the speed of the DigBus strategy, Bharadwaj et al. (2013a) asked "*How effective is the DigBus strategy in accelerating new product launches*".

4.5.2. Scale

The aim of the study was to determine the type of relationship between a set of BusMod components identified in literature and the DigBus strategy. In this study, Likert-type scales were used to establish the type of relationship between the components of the BusMod and the DigBus strategy.

A five-point Likert scale was used for this study, based on research from the previously stated scholars, to obtain the responses to the questions of the survey. The format of the five-point Likert scale was given as per Table 3 below:

Table 3 - Likert scale format

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	2	3	4	5

Brace (2008) demonstrated that a questionnaire with between five and nine response alternatives will provide sufficient discrimination, and participants would easily understand them. It should be noted that the researcher used the same order of the scale, from negative to positive, across all questions, except where yes or no questions were asked, so that participants did not become confused by different scales and as a consequence then report inaccurately.

In preparation for the data analysis, one of the first steps was to translate the data collected numerical codes. The five-point Likert scale was coded as per Table 3 above,

where coded values of 1 to 5 represented strongly disagree to strongly agree. The entire translated codes of the questionnaire were detailed in the code book in Appendix N.

4.5.3. Validity and reliability

According to Zikmund (2003), validity is defined as the accuracy of a measure to measure what it was designed to measure. To ensure validity in this study, it was necessary to ensure that the questionnaire actually measured the BusMod and DigBus strategy constructs accurately. Saunders et al. (2018) state that validity can be answered by testing the variables for a causal relationship. This means that the findings comprehensively describe what they are about and are described as construct validity (Saunders et al., 2018). This is crucial in research as there are many factors that influence research and render the research invalid. The research questions were adapted from previous studies by authors mentioned above, thereby asking valid questions based on previous research.

Reliability is described as the measure providing consistent results, and thereby reproducing the same outcome of the measuring process (Zikmund, 2003). Saunders et al. (2018) state that when consistent findings are produced because of the data collection and analysis methods used, then research will be considered reliable. Therefore, the same conclusions should be arrived at by other researchers when following the same research processes and re-using the data. One way of ensuring reliability is to conduct a pilot test of the questionnaire (Zikmund, Babin, Carr & Griffin, 2012). This removes any ambiguity in the questions so that they are clear when distributed to a broader sample (Saunders et al., 2018). By conducting a pilot survey, the researcher can use feedback from the pilot group to not only refine the questions so that they are not leading, but also to remove any wording, ambiguity, bias and misinterpretation of the questions (Saunders et al., 2018).

A pilot study was conducted by distributing the questionnaire to 10 people who were at similar job levels as those described in the larger population above. The feedback collected information relating to the time it took to complete the survey, the level of difficulty in the language used to ask and understand the questions, whether any questions were ambiguous, and whether any of the questions should be removed or further questions added to enhance the quality of the research. Nine responses were received through a feedback form (Appendix B), which was very positive. One recommendation was made to change the email address of the supervisor in the

introduction section of the question from a generic gmail.com address to a proper business email address. The feedback was that a generic gmail.com email address could reduce the credibility of the research. The supervisor's email address for this study was updated accordingly to a business email address.

Convergent and discriminant validity are two forms of validity (Hair, Black, Babin & Anderson, 2014). Convergent validity addresses the extent of the correlation of the measured variables. When there is a high correlation, it implies that the scale is measuring what in intended to. Discriminant validity shows the degree of how a single construct is distinct from other constructs (Hair et al, 2014). In that case, the correlation should be low to show that there is a difference to any other similar concept.

While the reviewed literature sources provided deep insights into the constructs and the questionnaire to be used, their authors have not calculated the Cronbach's alpha for the individual components that make up the constructs of the BusMod. To ensure reliability of a test, Cronbach's alpha was developed by Lee Cronbach in 1951 to measure the internal consistency of a test (Tavakol & Dennick, 2011) and how well items of a scale are related to one another. For this study, five BusMod components were proposed as the constructs, 1) VP, 2) CTS, 3) VN, 4) RM, and 5) RAC. To calculate the internal consistency of each of the five constructs above, Cronbach's alpha was used. Furthermore, a comparative analysis was done against the DigBus strategy, ensuring the reliability of the questionnaire by using the Cronbach's alpha. According to Hair et al. (2014), the lower level limit for Cronbach's alpha should be 0.70, which was confirmed by George and Mallery (2003). In Section 5.3 below, the detailed findings and Cronbach's alpha results are discussed further.

However, an assumption that all indicators are equally reliable is made with Cronbach's alpha (Urbach et al., 2010). Therefore, to overcome this deficiency in Cronbach's alpha, an alternative measure of composite reliability was also used in this study. The different loadings of the indicators are taken into account by the composite reliability, which is described further in Section 4.7.4 below.

4.6. Data Gathering Process

This research used a single data collection method, meaning, a questionnaire that was completed through a self-administered online Google Forms tool. Given that the survey was conducted across different sizes of firms and different job levels, the size of the

number of participants was large and therefore the responses were collected over a two-month period. The survey was first distributed on 11 October 2018 and was closed on 21 November 2018. Saunders et al. (2009) stated that self-completed questionnaire surveys are usually completed, when there is a large set of participants, based on the same set of questions.

As participants needed to be of middle to senior management level within the firms, the questionnaire used qualifying questions to establish the demographics of the participants and whether the firm participated in a DigBus strategy, product or service. The demographic questions established the participants' job level, the size of the firm, and the time the participant has been with the organisation. Based on the job level of the population selected, there was sufficient knowledge, experience and proficiency to complete the self-administered questionnaire online.

The questionnaire was distributed as an internet link to the survey on Google Forms. The landing page of the questionnaire was a consent form that informed the participants about the purpose of this research, the time it was estimated to take to complete the survey, and most importantly, the confidentiality and anonymity of the participants. The researcher emphasised that participants had the option to voluntarily participate or decline participating in the survey. Response rates are discussed in more detail in Section 5.2.1 below.

Participant's rights should not be infringed upon and it was therefore important to follow proper netiquette (Saunders et al., 2018). Therefore, the researcher ensured that this study was completed in an ethical way, by obtaining ethical clearance (Appendix P) from the GIBS Ethics Committee, once the proposal for this study had been accepted.

4.7. Analysis Approach

This research followed a six step analysis approach: 1) data preparation, 2) preparation of the descriptive statistics, 3) testing the internal reliability of the questionnaire, 4) assessing the measurement model (MM), 5) assessing the structural model (SM), and 6) conducting a multivariate analysis (MA).

4.7.1. Step 1 – Data preparation

First, the collected data were prepared by ensuring that missing values were within acceptable levels (maximum 5%), as proposed by Schafer (1999), and that any question

that was discarded as an outlier through the box and whisper plot evaluation was taken care of. Zikmund (2003) described an outlier as that data value that is not within the normal range of the data set, as it lies outside the normal range. This study found one outlier and is discussed further in Section 5.2.3. The dataset did not have any missing values or inconsistencies in the data received, and therefore there was no need to plug in data with predetermined values (Zikmund et al., 2012).

4.7.2. Step 2 – Descriptive statistics

The collected data were in digital format and therefore easily exported from the Google Forms tool to Microsoft Excel 2016, which enabled the researcher to use the IBM Statistical Program for Social Science (SPSS) version 25 and Smart-PLS v3 for further analysis. The data collected were quantitative, ordinal and categorical.

With the data suitable for analysis, the central tendency and the spread of both the demographic and construct variables were established through an assessment of the descriptive statistics. The central measures included the mean, median and mode, while the spread was described by the frequency, percentage frequency, skewness and kurtosis (Zikmund et al., 2012). This included assessing the total size of the sample the questionnaire was distributed to, total responses received, and the usable size of the qualified and completed responses. Although the PLS-SEM was used, which assumes non-normality of data, for this study, the normality of the data was tested through the skewness and kurtosis. The skewness and kurtosis of the data represents its distribution (Wegner, 2016). The results of this analysis are discussed in more detail in Section 5.2.3 below.

The data were described by using graphs and charts, where possible, to provide more insights into the data and becoming familiar with the results. The results are discussed in more detail in Section 5.2.1 below. The next step was to test the internal reliability of the questionnaire.

4.7.3. Step 3 – Test the internal reliability of the questionnaire

This study tested the internal consistency of the variables measured in two ways. First, by assessing the Cronbach's alpha of each variable and second, through a factor analysis (FA). This section focuses on Cronbach's alpha assessment, while the FA is discussed in Section 4.7.4.

Assessing the degree of consistency between various measurements of a variable is known as reliability (Hair et al, 2014). There are two forms of reliability, the test-retest and the internal consistency. The test-retest measures the consistency for an individual item at two points in time (Hair et al, 2014). The internal consistency tests the consistency among the constructs of a scale, where the individual items of the scale should be measuring the same construct and be inter-correlated (Hair et al, 2014). The questionnaire of this study was based on a Likert scale and therefore the internal consistency reliability test was selected.

Cronbach's alpha is the common and generally accepted reliability coefficient to measure internal consistency, where Likert scales are present (Kline, 2016). The generally accepted lower limit for Cronbach's alpha measure, as per the recommendation by George et al. (2003), is 0.70. However, in exploratory research, the lower limit can be 0.60 (Hair et al., 2014). Cronbach's alpha is described by:

$$\alpha = \frac{k}{k-1}\left(1 - \frac{\sum s_i^2}{s_T^2}\right)$$

The number of scale items is represented by k, with the variance of the i^{th} represented byS_i^2, while S_T^2 represents the sum of all the item's variance (Bland & Altman, 1997). As in the case of this study, Likert scales were used. The Cronbach's alpha results are described further in Section 5.3 below.

4.7.4. Step 4 − Assessing the measurement model (MM)

Having defined the variables that are to be measured, the assessment of the MM validity was the next step in the process, by conducting statistical tests to measure the relationship between the measured variables and the latent construct. Furthermore, reliability and the validity of the MM were checked. The results of the tests measure how well the theory fits the data, testing the measurement theory against the reality (Hair et al., 2014).

The MM was considered to be reflective due to the changes in the latent constructs being reflected in the changes in the measured variables (Hair et al., 2014). Therefore, the model assessment also required that the convergent validity measure and the discriminant validity be tested (Hair et al., 2014). To test the construct validity of the measurement theory, a confirmatory factor analysis (CFA) was used. According to Hair

et al. (2014), reliability measures can be derived at, for example, the composite reliability and the average variance extracted (AVE), from the CFA.

Convergent validity is measured through the AVE (Hair et al., 2014), and calculated by:

$$AVE = \frac{\sum_{i=1}^{n} L_i^2}{n}$$

Where L_i represents the standardised factor loading and i is the number of items. For n of items, the AVE is the sum of all standardised factor loadings (Hair et al., 2014). To determine, if the convergence is adequate, a good rule of thumb is an AVE of 0.50 (Hair, Sarstedt, Ringle & Mena, 2012). Further guidelines for composite reliability and indicator reliability (Hair et al., 2012) are provided in Table 4 below:

Table 4 - Rule of thumb guidelines

Criterion	Rule of thumb
Composite reliability	> 0.70 Although 0.60 to 0.70 in exploratory research is acceptable
Indicator reliability	Indicator loadings should be > 0.70

The standardised root mean square residual (SRMR) was used to analyse the quality of the model fit, using the guideline of having the upper threshold of less than 0.80, when sample sizes are less than 250 (Hu & Bentler, 1999; Hair et al., 2014). The SRMR is the overall residual value needed to compare fit across models, unlike standardised residuals (SR) and the root mean square residual (RMR), which are deviations of the individual covariance (Hair et al., 2014).

Discriminant validity for this study was assessed using the Fornell-Larcker criterion and cross loadings (Fornell & Larcker, 1981) as they are commonly used measures. The guideline provided by Hair et al. (2012) states that for discriminant validity, the Fornell-Larcker criterion is that the square root of the AVE for each latent construct must be lower than the correlation with any other latent construct.

Cross-loading values are obtained by checking the correlation of the component scores of each latent variable with all other items (Urbach et al., 2010). The indicator loadings should be higher than all its cross loadings (Hair et al., 2012). The above guidelines have

been used to assess reliability and validity and are presented in Sections 5.4.2.1 and 5.4.2.2.

Although the CFA results were above the recommended metrics, this study further conducted an exploratory factor analysis (EFA) to measure the unidimensionality. Unidimensionality is part of the MM assessment that checks, if the latent variable measurement items are related to it more than any other variable (Urbach et al., 2010). To gain better insights and understanding of the data results, the EFA was conducted using Barlett's Test of Sphericity (BTS) statistical test and the Kaiser-Meyer-Olkin (KMO) measure. BTS allowed for the identification of the redundancy of the variables, the reduction of the number of factors, and more specifically, to check for the correlations among variables (Hair et al., 2014). It described the suitability and validity of the responses received to the problem being analysed. Furthermore, it provided an analysis of the significance of the study (Hair et al., 2014).

To ascertain if any of the variables were factorisable, the KMO measure of sampling adequacy was performed. The guidelines provided in Table 5 were used to determine the degree of intercorrelations of the variables, where the measure is between 0 and 1, with 1 being a perfectly predicted variable without any errors by other variables (Kaiser, 1974; Hair et al., 2014).

Table 5 - KMO measure guidelines

Measure	Description
Greater than or equal to 0.80	Meritorious
Greater than or equal to 0.70	Middling
Greater than or equal to 0.60	Mediocre
Greater than or equal to 0.50	Miserable
Less than 0.50	Unacceptable

In this study, the KMO was 0.885. It is discussed in more detail in Chapter 5 below.

There are many assumptions made about the variables used and the sample size when conducting an FA (Hair et al., 2014). The first assumption was that there was some underlying structure between the BusMod component variables and the DigBus strategy, meaning, a linear relationship between the BusMod components and the DigBus strategy. This is described in more detail in Appendix O through the scatter plot diagrams. The scatter plot diagram describes the nature of the relationship between the

two variables, i.e. strength, shape, and direction (Wegner, 2016). In Appendix O, the BusMod components display a positive relationship with the DigBus strategy.

The sample was assumed to be homogenous related to the factor structures (Hair et al., 2014). Further assumptions included that the variables were assumed to be continuous or ordinal (Hair et al., 2014), as confirmed in this study that used Likert scales in the questionnaire. The third assumption was that the data were assumed to have no outliers, while having a large enough sample size was the fourth assumption. The initial sample size for this study was 123 participants, which was reduced to the final usable sample of 107, based on the qualifying criteria described above.

Multicollinearity is a further assumption in regression testing, used to test whether the independent variables are correlated (Hair et al., 2014). Ideally, the independent variable should be highly correlated with the dependent variable, but with very little correlation among the independent variables themselves. The variance inflation factor (VIF) is one way to measure multicollinearity by translating the VIF tolerance value. This tolerance value is the degree of multicollinearity (Hair et al., 2014). The guideline provided by Hair et al. (2014) is a VIF value of 10, indicating a tolerance value of 0.1. The results are discussed in more detail in Section 5.4.2.3 below.

4.7.5. Step 5 − Structural model assessment

The structural model assessment followed the testing of the MM validity and reliably, assessing that the CFA provides the foundation for further tests (Hair et al., 2014). With the structural assessment, the focus shifted from the CFA to test the relationship of the latent constructs. This study set out to investigate the possible relationship between the BusMod components and the DigBus strategy so that business managers will be able to establish a view of the most common important components of the BusMod that should be addressed, based on their rankings and importance in relation to the DigBus strategy.

The assessment of the structural model was done in two steps. In the first step, the coefficient of determination (R^2) was calculated. R^2 measured the latent variable and explained the variance to its total variance (Hair et al., 2012). The coefficient rule of thumb cited by Hair et al. (2012) is:

Table 6 - Criterion for coefficient of significance (R^2)

Criterion	Rule of thumb
R^2 (coefficient of significance)	0.75 → Substantial 0.50 → Moderate
	0.25 → Weak

The hypotheses in this study were represented by the relationship path in the structural model and theorised paths were validated through the path coefficient, which demonstrated the significance and the proposed causal relationship (Hair et al., 2012) and was the second step in the assessment process. The strength of the relationship between the latent variables is describe by the size of the path coefficient's (Urbach et al., 2010); it is significant at the 0.50 level and should exceed 0.10. One of the aims of this study was to establish the rankings of the most important BusMod components identified to the DigBus strategy. To do so, the path coefficient's significance was used to establish the rankings. These are discussed in Section 5.6 in more detail.

4.7.6. Step 6 – Multivariate linear regression analysis

Multiple regression is the use of two or more independent variables that predict the dependent variable (Hair et al., 2014). It is used as a statistical technique to determine the relationship between a single dependent variable and multiple independent variables (Hair et al., 2014). Using the dependent and independent variables, meaning the collective influence of all five BusMod components, 1) VP, 2) CTS, 3) VN, 4) RM, and 5) RAC, and the DigBus strategy, the multivariate linear regression model for this study was:

DigBus strategy = VP + CTS + VN + RM + RAC.

4.8. Research Ethics

The researcher ensured that this study was completed in an ethical way, by firstly obtaining an ethical clearance from the GIBS Ethics Committee (Appendix P) to continue with this study, once the proposal for the study had been accepted. Second, the researcher emphasised to the participants that participation in this study was completely voluntary, that no private or proprietary information would be required, and that they were allowed to withdraw from the research at their convenience without any negative

consequences. The researcher further emphasised that the research responses were confidential and anonymous, as the researcher did not collect data on the participants who completed the survey and did not analyse data collected at an individual level.

4.9. Research Limitations

In every research, there are limiting factors to a study, which it will not be able to compensate for. In this study, there were many factors that could have caused the results to have favoured one direction or another. These factors are detailed below.

4.9.1. The research was not industry specific

This study was not intended to be industry specific and may therefore limit how this study's findings can be used in other contexts. The BusMod design and measures may be influenced by the industry type.

4.9.2. Sample

This study used non-probability sampling and the findings may not necessarily represent the entire population. Although care was taken to obtain a large sample size, the results may not represent the generalised population, as the sample size was 123 initially and reduced to 107 after applying the qualifying criteria of the questionnaire.

4.9.3. Researcher and participant bias

The researcher's judgement and experience might have influenced the findings of this study. To make the findings usable, the researcher made decisions about which data were more important and which were less important (Thomas, 2016). The researcher has some experience in designing DigBus strategies, which may have resulted in researcher bias.

Furthermore, participants could have made errors and answered the survey questions based on their own bias and perception of their environment. Although the questionnaire design was carefully considered, there may still have been a limitation to the study.

4.9.4. Other predictors of a successful DigBus strategy

The study did not assess the leadership capability, skills and experience required to implement either a DigBus strategy or any of the individual or collective BusMod components. The resulting limitation could therefore be that the quality and the skills of

leadership may impact the success of the DigBus strategy and the BusMod implementation.

4.9.5. Research experience

The researcher is not an academic and has no research experience. This study required that the researcher use non-probability sampling techniques, conduct statistical analysis techniques and present the findings. The researcher's lack of research experience may be a limiting factor.

4.10. Conclusion

This section presented the choice of the methodology for this study. Due to the need of understanding and creating a clearer view of which of the components business managers utilise in the BusMod, this section highlighted that a quantitative, descripto-explanatory research approach was required, and that the population and sample had to consist of senior and middle management in a firm that understand BusMods and have faced digital disruption.

The data were collected in line with the methodology choice and analysed by using the relevant statistical software tools. This section highlighted the need to conduct the research in an ethical manner and closed by discussing limitations of this study that the researcher must be cognisant of.

CHAPTER 5: RESULTS

5.1. Introduction

The purpose of this section is to present the results from the analysis of the data collected through the online self-administered survey. The chapter begins by restating the aim of this research and the hypotheses that were tested. The chapter presents the data results as per the six-step data analysis approach discussed in Chapter 4 and shown in Figure 11 below.

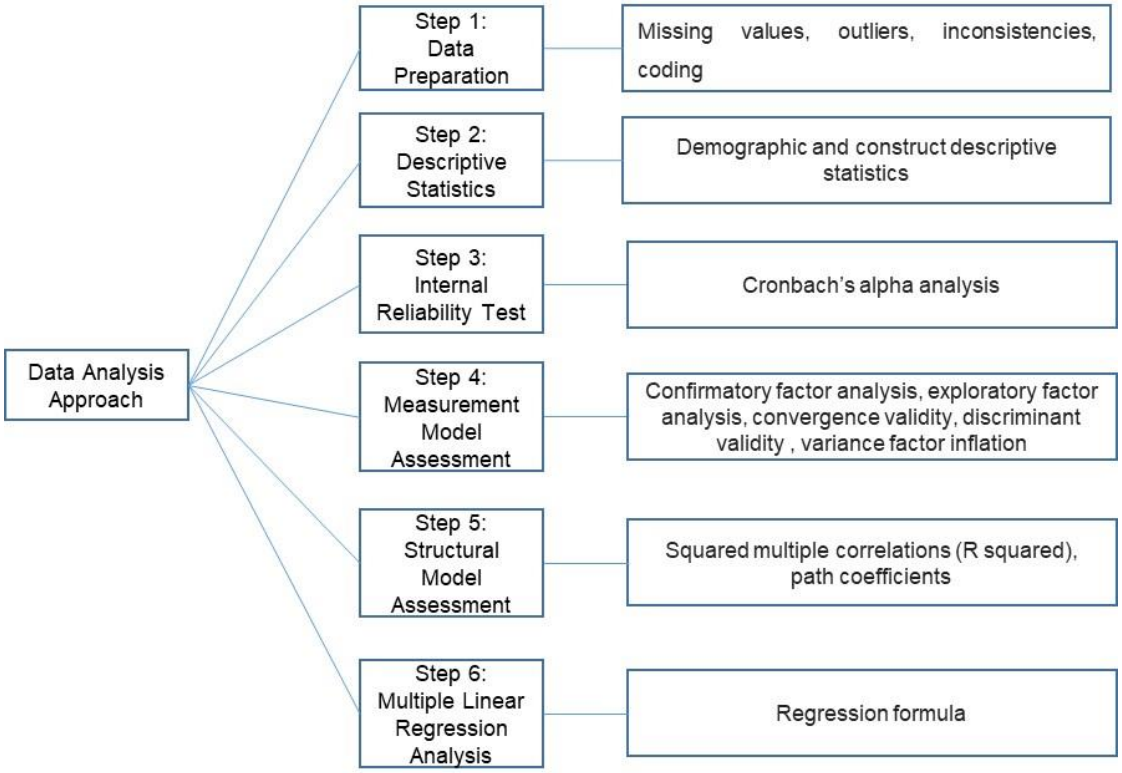


Figure 11 - Data analysis steps

Step 1 described how the data were prepared by applying the qualifying criteria of participants, checking for any outliers, and assessing the normality of the data. This was followed by step 2, which provided the demographic and construct descriptive statistics. Step 3 tested the internal reliability of the questionnaire by conducting an assessment of the constructs internal reliability using Cronbach's alpha. Step 4 conducted a factor analysis (FA) through an exploratory factor analysis (EFA) and CFA, using PLS-SEM to assess the measurement model (MM), while step 5 assessed the structural model by calculating coefficient of determination (R^2) to determine the strength of the relationships between the BusMod components and the DigBus strategy. The final step 6 presents

the outcome of the multiple regression analysis, which tested the cumulative effect of the five BusMod components on the DigBus strategy. The chapter closes with an assessment of the research hypotheses and whether the study met its objectives.

The main aim of this research was to determine of the nature of the relationship between the DigBus strategy and a set of the five identified BusMod components, 1) value proposition, 2) customer target segment, 3) the value network, 4) revenue model, and 5) resources and competencies. Given this aim, the first objective was to analyse the relationship between the individual components of the BusMod and DigBus strategy. The second objective was to examine the collective effect that the five identified BusMod components have on the DigBus strategy. The third objective of this study was to rank the importance of the identified BusMod components to the DigBus strategy.

As described in Chapter 3, the following individual hypotheses (H1 – H5) and the collective hypothesis (H6) in Figure 12 were tested to establish whether there was a positive relationship to the DigBus strategy.

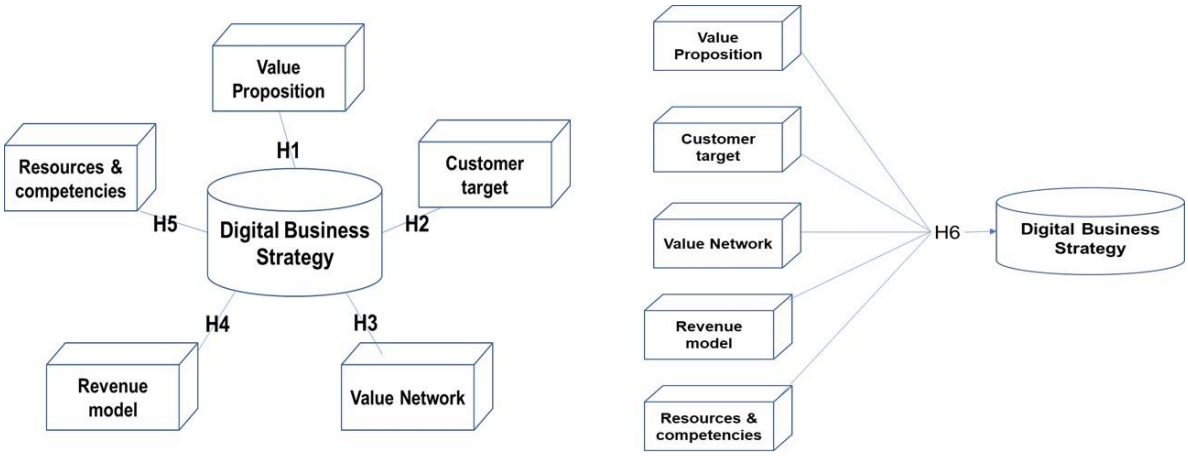


Figure 12 - Individual and collective hypotheses

As described in Chapter 4, the hypotheses above were tested through the six-step analysis approach, of which the results are discussed next.

5.2. Step 1 – Data Preparation

5.2.1. Number of responses and response rates

Considering that the population could be more than 100 000, based on the sample size and distribution of the questionnaire described in Chapter 4, the guidelines provided by Israel (1992, p.3) and Leedy et al. (2001), proposed that a sample size of 400 be used. An initial sample size of 400 was targeted; however, it had to be increased to attempt to

improve the response rate. Although the distribution was higher than the recommended sample size required for a PLS-SEM, the study had a very low response rate.

The actual total number of the sample that the survey was distributed to cannot accurately be given, as different social media platforms were used (Linkedin, Facebook and WhatsApp), as well as direct emails and messages. Participants were asked to share the survey with their professional network that was of similar seniority as the participants the survey was directly distributed to. However, as per Table 7 below, the survey for this study was directly distributed to 854 individuals. Despite the many attempts to obtain a higher response rate by distributing the survey to this larger sample size than the recommended number of 400, this proved to be very difficult and challenging, given the limited timeframe of the survey. A total of 123 participants completed the responses in total. An expected response rate should be approximately 10% based on similar research (Zikmund et al., 2012).

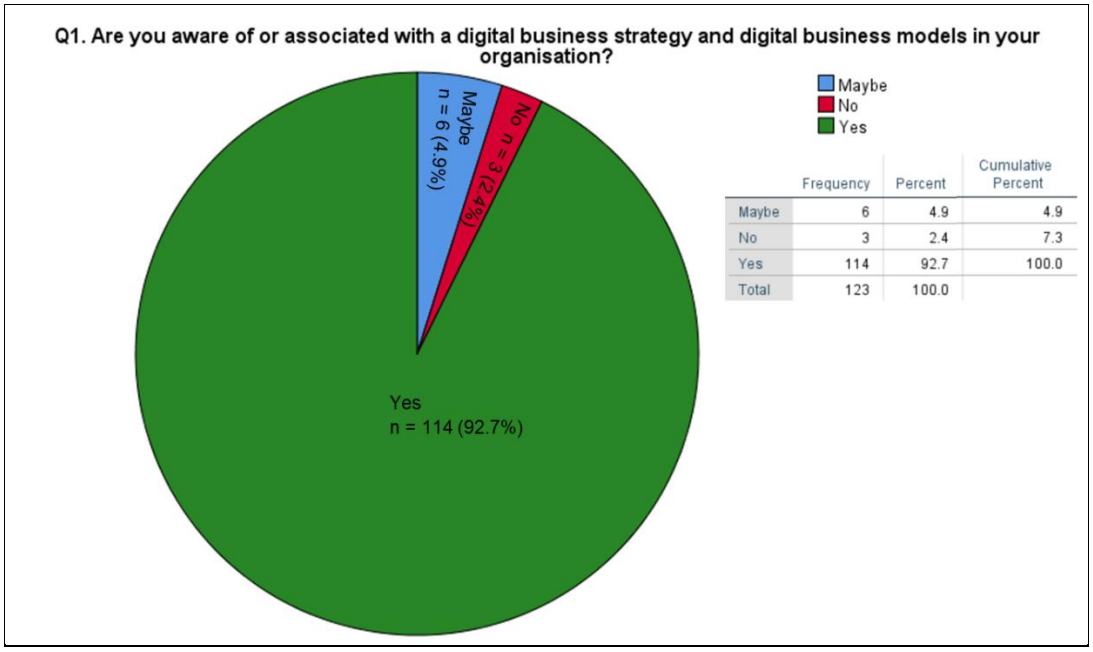
Table 7 Data collected and data used in analyses

	Total number responses	Percentage as the total data
Total number survey distributed to	854	
Total number of respondents	123	100%
Total number of potential answers	31 598	
Total number of answers	4 551	100%
Total number of useable responses	107	86.9%
Total number of qualified answers	3959	86.9%

However, the completion rate was considered as good, as King, Honaker, Joseph and Scheve (2001) stated that 50% of participants have one of more questions incomplete on average. In this study, the completion rate for 123 responses was regarded as 100%, largely due to the questions being mandatory to be answered by the participant. Therefore, there was no need to remedy or impute any of the data sets. The summary of the data collected, as per Table 7 above, was based on the direct distribution of the survey to the sample by the researcher. The total number of questions in the questionnaire was 37, therefore making the total number of potential answers 31 598. However, the total number of usable qualified responses was 3 959, based on the final sample size of 107, being 86.9% of the sample used after applying the qualifying criteria, which is discussed in more detail in the next section.

5.2.2. Descriptive characteristics of participants and the organisation

114 participants (92.7%) pass the first screening question *"Are you aware of or associated with a DigBus strategy and digital BusMods in your organisation?",* which addresses whether participants are suitably qualified and experienced in answering the survey. 2.4% say no (n = 3), meaning they are not aware or associated with any DigBus strategy and digital BusMod in their organisation, while 4.9% (n = 6) say maybe, as described in Figure 13 below.



	Frequency	Percent	Cumulative Percent
Maybe	6	4.9	4.9
No	3	2.4	7.3
Yes	114	92.7	100.0
Total	123	100.0	

Figure 13 - Awareness of a digital strategy

The second qualifying question was based on the level of the role of the participant, which was *"Please select from the following that best describes your current job level"*. A middle to a senior manager would have experience in and understand a DigBus strategy and BusMod, as these job levels play a more strategic design and execution in a firm (Floyd et al., 1992). Based on the first qualifying criteria above, 116 responses out of the 123 responses were suitably qualified to participate in the survey based on the second qualifying criteria.

The highest participant job level is senior management 58.5% (n = 72), followed by middle management 27.6 (n = 34), and junior management at 5.7% (n = 7). As can be seen in Table 8 below, an advisory consultant is grouped as middle management, while CEO, director, executive, executive manager and general manager are grouped into

senior management. Therefore, the total senior management responses are 81, while middle management level responses are 35, making the usable responses 116.

Table 8 - Second qualifying question response

		Frequency(n)	Percent (%)
Please select from the following the one that best describes your current job level	Junior Management	7	5.7
	Middle Management	34	27.6
	Senior Management	72	58.5
	Advisory consultant	1	.8
	CEO	2	1.6
	Director	2	1.6
	Executive	3	2.4
	Executive Manager	1	.8
	General Manager	1	.8
	Total	123	100.0

However, to obtain the final usable number of participants, the seven responses from participants that are in a junior management role were excluded from the 114 responses in the first qualifying question. The total usable responses are therefore 107 (123 – 9 (first qualifying question) – 7 (second qualifying question) = 107). The researcher assumed a statistical significance of 95% for this study.

5.2.3. Outliers

Before checking the normality of the data, the researcher first checked for any outliers in the data. As per Figure 14 below, question 5 from the customer target segment section of the questionnaire was identified as an outlier. Zikmund (2003) described an outlier as that data value that is not within the normal range of the data set, indicating that it lies outside the normal range of 1.0 to 1.5 quartiles from the box and extreme values of greater than 1.5 quartiles from the box (Hair et al., 2014). This question was therefore subsequently removed from any further analysis.

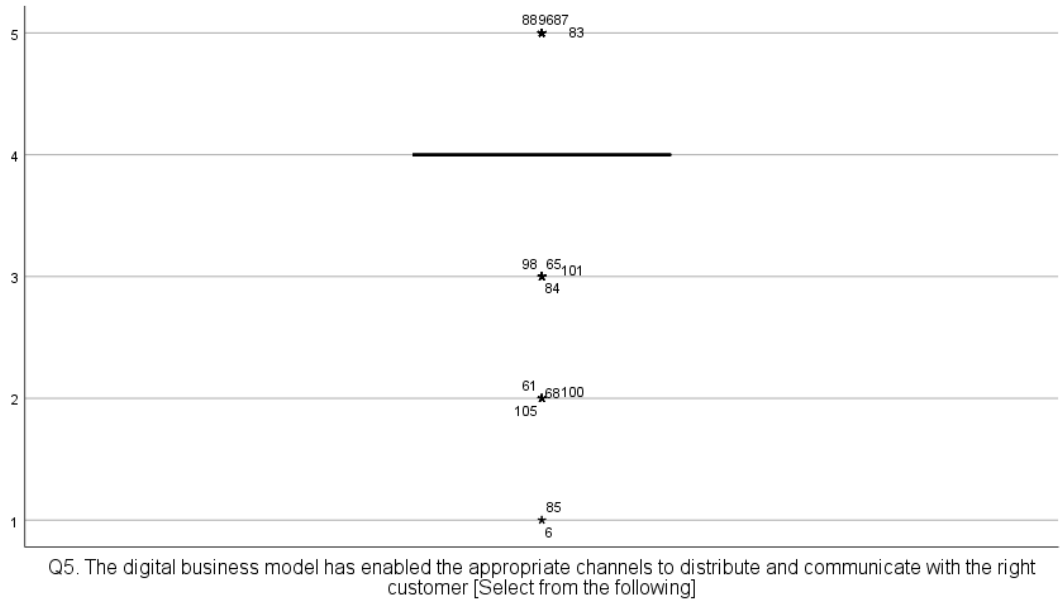


Figure 14 − Outlier for question 5 from the customer target segment

5.2.4. Normality of data per survey question

Given that the sample size is larger than 30, there is no significant impact on the results of survey results (Hair et al., 2014). Although PLS-SEM was selected in this study, which assumes non-normality of data, the skewness and kurtosis describes the normality of data. As discussed in detail in Chapter 4, PLS-SEM was selected due to the sample size allowances.

Kurtosis refers to how high the distribution curve is, compared to the normal distribution, while skewness refers to balance of the distribution (Hair et al., 2014). The critical values for the normality of data is ±1.96 for a statistical significance of 95% (Hair at al., 2014). The data are considered to be normal in this study as the average skewness standard error is 0.234 and the kurtosis average standard error is 0.463. The results are discussed in next in more detail.

5.3. Step 2 − Descriptive Statistics

5.3.1 Descriptive statistics of demographic questions

Seven demographic questions addresses the profile of the participants, including the two initial screening questions discussed above. The first initial screening question addressed whether participants knew of or linked with a digital strategy in their firm, while the second screening question assessed the job level of the participants. Participants

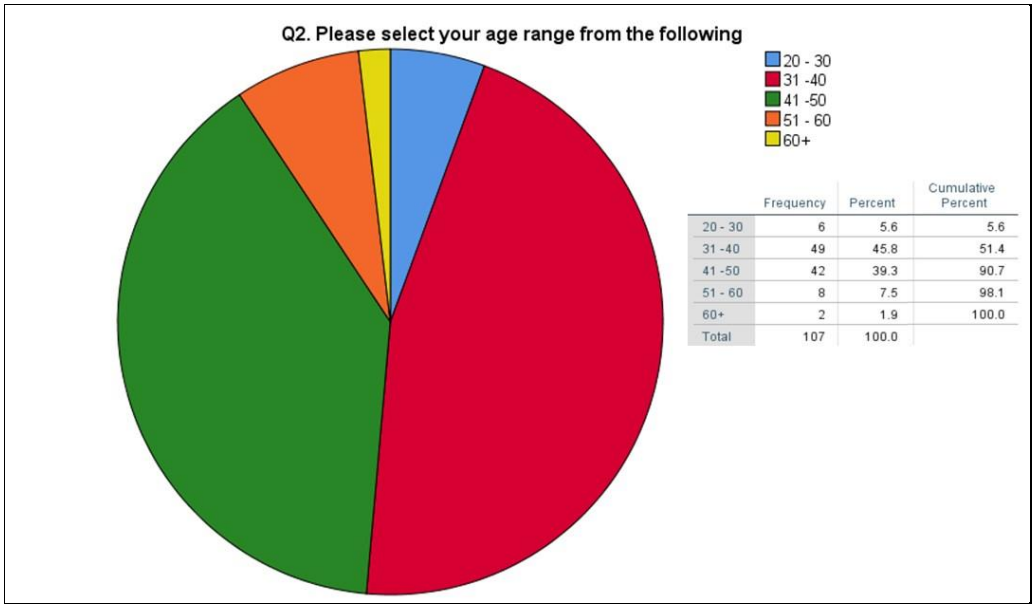
who did not qualify, meaning were not aware of or linked with a digital strategy in their firm and that were in a junior management role, were excluded from the analysis.

The remaining five questions included further measures on the participants age, the number of years at the current job level, the size of the firm that the participant is employed at, the number of years that the participant's firm has been involved in a DigBus strategy or digital product implementation, and the industry that the firm is in.

In each of the diagrams and charts displayed in the following the section, the diagram includes the question asked in the survey (labelled at the top of the diagram), the choice of potential answers (labelled on the top right of the diagram), the number of responses (frequency = n) of each answer, and the percentage of each answer as a contributor to the total number of responses in brackets.

5.3.1.1. Age

In this study, the age ranges of the 107 participants are between the ages of 20 to 60+, with a total of 85.1% of participants being between 31-50 years of age. The highest number of participants are aged between 31-40, while the lowest number of participants are in the 60+ range. The age group (31-40) that participated in the survey is the highest at 45.8% (n = 49), followed by ages 41-50 (39.3%, n = 42). The lower participant age ranges are from the 51-60 (7.5%, n = 8), the 20-30 range (5.6%, n = 6), with the lowest participant age range being 60+ (1.9%, n = 2), as shown in Figure 15 below.

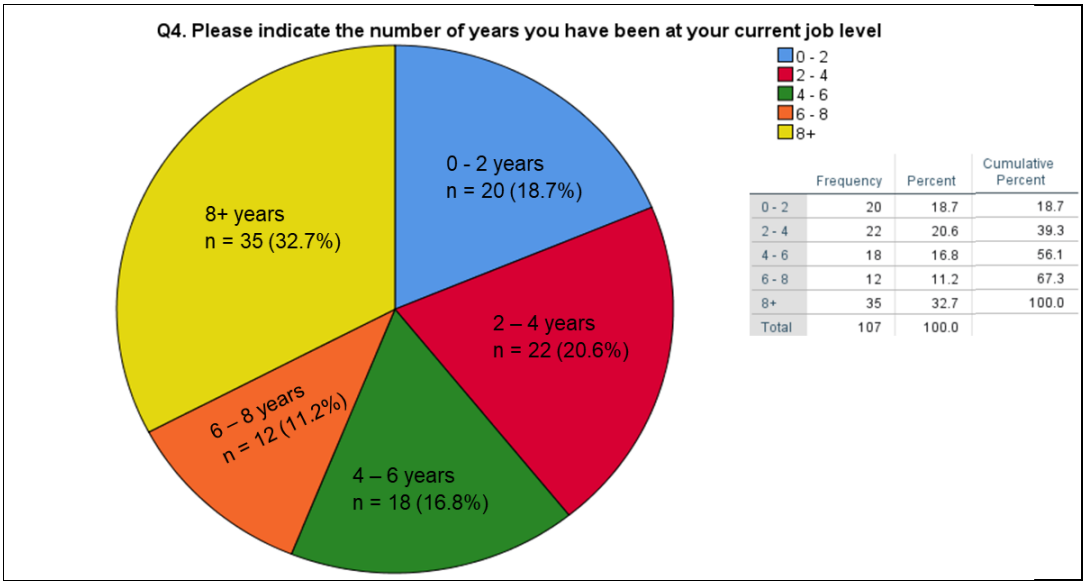


	Frequency	Percent	Cumulative Percent
20 - 30	6	5.6	5.6
31 -40	49	45.8	51.4
41 -50	42	39.3	90.7
51 - 60	8	7.5	98.1
60+	2	1.9	100.0
Total	107	100.0	

Figure 15 − Age of participants

5.3.1.2. Number of years at job level

As per Figure 16 below, the data collected in this study demonstrates that the majority of participants (81.3%) are in their current role for longer than two years at the time of this research. The largest number of participants (n = 35) surveyed are 8+ years at their current job level, making up 32.7% of the responses. This is followed by participants who are 2-4 years (20.6%, n = 22) in their current role. Together with the tenure of 8+ years, this makes up for just over 50% of the responses. This is followed by participants who are new to their role, being 0 – 2 years (18.7%, n = 20) in their role, then 4-6 years (16.8%, n = 18). The lowest number of years that participants are at their current job level is between 6-8 years (11.2%, n = 12).

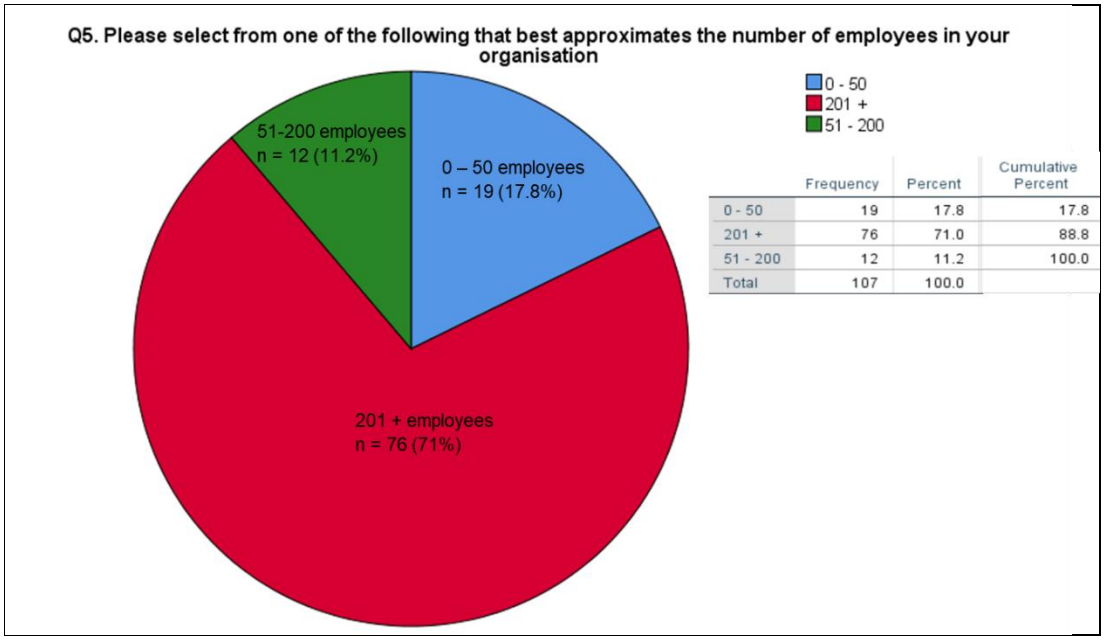


	Frequency	Percent	Cumulative Percent
0 - 2	20	18.7	18.7
2 - 4	22	20.6	39.3
4 - 6	18	16.8	56.1
6 - 8	12	11.2	67.3
8+	35	32.7	100.0
Total	107	100.0	

Figure 16 - Number of years at job level

5.3.1.3. Number of employees in the organisation

This study, as per Figure 17 below, shows that the majority of the 107 participants work for companies that are either small or large sized firms (88.8%). Using the firm size definitions described in Chapter 4, the majority of the participants (71%) work for large firms. This is followed by the number of participants (n = 19, 17.8%) in small sized firms. The lowest number of participants work for medium sized firms (n = 12, 11.2%).



	Frequency	Percent	Cumulative Percent
0 - 50	19	17.8	17.8
201 +	76	71.0	88.8
51 - 200	12	11.2	100.0
Total	107	100.0	

Figure 17 - Number of employees in an organisation

5.3.1.4. Number of years digital strategy being designed and implemented in the firm

In Figure 18 below, the study shows that the majority of firms (86%) have designed or implemented a DigBus strategy or digital product for either less than 6 years or longer than 8 years. The largest number of years that a firm has designed or implemented a digital strategy is 8+ years (n = 29, 27.1%), followed by 0-2 years (n = 26, 24.3%). Combined, this makes up for more than 50% of the responses. Just less than half of responses (48.7%) are from firms that have been designing and / or implementing a digital strategy between 2-8 years. This means that 73% have been designing or implementing a digital strategy for anything between 0 and 8 years. 18.7% of firms have designed and / or implemented a digital strategy or a product between 4-6 years (n = 20), followed by 2-4 years (n = 17, 15.9%). The lowest number of years are 6-8 (n = 15, 14%).

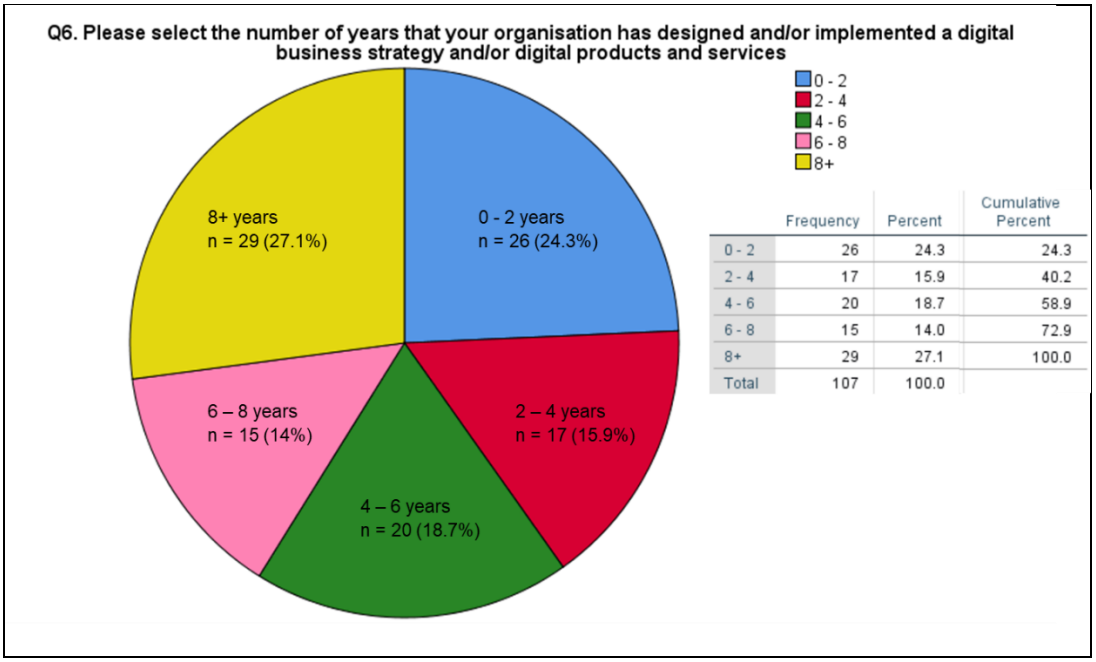


Figure 18 - Number of years digital business strategy being designed and implemented in the firm

5.3.1.5. Industry

As per Table 9 below, this study was conducted cross-industry. The top three industries in this study, making up 59.8% of the total, are from the information and communication technology industry sector (n = 26, 24.3%), financial services (n = 25, 23.4%), and retail (n = 13, 12.1%).

Table 9 – Industries represented by participants

Q7. Which industry is your organisation in?				
	Frequency	Percent	Valid Percent	Cumulative Percent
Agriculture	1	0.9	0.9	.9
Automotive	1	0.9	0.9	1.9
Construction	1	0.9	0.9	2.8
Financial Services	25	23.4	23.4	26.2
Fintech	5	4.7	4.7	30.8
FMCG	5	4.7	4.7	35.5
Human Capital	1	0.9	0.9	36.4
ICT	26	24.3	24.3	60.7
Insurance	2	1.9	1.9	62.6
Manufacturing	4	3.7	3.7	66.4
Marketing	1	0.9	0.9	67.3
Marketing, Advertising and Media	5	4.7	4.7	72.0
Professional Services	8	7.5	7.5	79.4
Public Sector	3	2.8	2.8	82.2
Real estate	1	0.9	0.9	83.2
Research	2	1.9	1.9	85.0
Retail	13	12.1	12.1	97.2
Travel and Tourism	1	0.9	0.9	98.1
Utilities	1	0.9	0.9	99.1
Wholesale	1	0.9	0.9	100.0
Total	107	100	100	

5.3.2. Descriptive statistics per construct

In this section, a detailed discussion is conducted of descriptive statistics per construct, including mean scores, kurtosis and skewness of each of construct variables.

5.3.2.1. Value proposition

The value proposition is made up of five variables: 1) *our organisation can meet the customer needs through our digital solutions* (VP1), 2) *our organisation invests in research and development and embeds this innovation in its products* (VP2), 3) *our organisation bundles complementary products and services into the main products* (VP3), 4) *our organisation has the flexibility to adjust prices when competitors adjust their prices* (VP4), and 5) *our organisation can hold imitators and competitors at bay* (VP5).

As per Table 10 below, the mean scores range from a low of 3.25 to 4.21. The overall median is 4, except for the median for the variable "*Our organisation can hold imitators and competitors at bay*", which is 3.

The highest mean value is 4.21 (SD = 0.929) of variable "*Our organisation can meet customer needs through our digital solutions*", followed by a mean score of 3.96 (SD = 0.971) of variable "*Our organisation bundles complementary products and services into the main products*".

The lowest mean score of this construct is mean 3.25 (SD= 1.108) of variable "*Our organisation can hold imitators and competitors at bay*", and a further mean score of 3.67 (SD = 1.097) of variable "*Our organisation has the flexibility to adjust prices when competitors adjust their prices*".

The skewness and kurtosis prove the data to be normal or near normal, based on the guidelines of ±1.96 as proposed by Hair et al. (2014). The range of skewness is from -0.094 to -1.503, with a standard error of 0.234, and the range for kurtosis is 2.647 to -0.994, with a standard error of 0.463.

Table 10 Descriptive statistics for Value Proposition

Variables		Mean	Median	Std. Deviation	Skewness	Std Error	Kurtosis	Std Error
Our organisation can meet customer needs through our digital solutions	VP1	4.21	4	0.929	-1.503	0.234	2.647	0.463
Our organisation invests in research and development and embeds this innovation in its products	VP2	3.80	4	1.085	-0.682	0.234	-0.290	0.463
Our organisation bundles complementary products and services into the main products	VP3	3.96	4	0.971	-0.934	0.234	0.580	0.463
Our organisation has the flexibility to adjust prices when competitors adjust their prices	VP4	3.67	4	1.097	-0.540	0.234	-0.557	0.463
Our organisation can hold imitators and competitors at bay	VP5	3.25	3	1.108	-0.094	0.234	-0.994	0.463

5.3.3. Target customer segment

The target customer segment comprises of five variables, 1) *The digital business model has improved the way we target customers* (CTS1), 2) *Our organisation has increased its size of the market after implementing the digital strategy* (CTS2), 3) *Our new digital product offering in the market is superior to the competition* (CTS3), 4) *The digital business model has resulted in the ability of our organisation to expand into new markets and geographies* (CTS4), and 5) *The digital business model has enabled the appropriate channels to distribute and communicate with the right customer* (CTS5).

As per Table 11 below, there is not much difference between the mean scores of these variables. The highest mean score is 4.02 (SD = 0.981) for the variable "*The digital business model has improved the way we target customers*", followed by a mean of 3.86 (SD = 0.926) for "*The digital business model has enabled the appropriate channels to distribute and communicate with the right customer*", and a further mean score of 3.81 (SD = 0.933) for the variable "*The digital business model has resulted in the ability of our organisation to expand into new markets and geographies*". The lowest mean score is 3.40 (SD = 1.115) for the variable "*Our new digital product offering in the market is superior to the competition*" and a mean of 3.58 (SD = 1.046) "*Our organisation has increased its size of the market after implementing the digital strategy*".

The skewness ranges from -0.592 to -1.077 with a standard error of 0.234, while the kurtosis ranges from 1.071 to -0.951, with the standard error being 0.463.

Table 11 - Descriptive statistics for Target Customer Segment

Variables		Mean	Median	Std. Deviation	Skewness	Std Error	Kurtosis	Std Error
The digital business model has improved the way we target customers	CTS1	4.02	4	0.981	-1.077	0.234	0.816	0.463
Our organisation has increased its size of the market after implementing the digital strategy	CTS2	3.58	4	1.046	-0.592	0.234	-0.208	0.463
Our new digital product offering in the market is superior to the competition	CTS3	3.40	3	1.115	-0.102	0.234	-0.951	0.463
The digital business model has resulted in the ability of our organisation to expand into new markets and geographies	CTS4	3.81	4	0.933	-0.966	0.234	1.071	0.463
The digital business model has enabled the appropriate channels to distribute and communicate with the right customer	CTS5	3.86	4	0.926	-1.023	0.234	0.971	0.463

5.3.4. Value network

A total of four variables were developed to prove the corporative relationship (value network) construct: 1) *Our suppliers play a critical role that allows our organisation to deliver on the DigBus strategy* (VN1), 2) *Our partners play a critical role that allows our firm to deliver on the DigBus strategy* (VN2), 3) *The DigBus strategy enables our firm to create new networks quickly* (VN3), 4) *There has been a volume increase of products and services through our partners and alliances* (VN4).

As per Table 12 below, the overall median value of this construct is 4, with the mean score ranging from a high of 4.14 to a low of 3.76.

The highest mean score is a mean of 4.14 (SD = 0.806) of variable "*Our partners play a critical role that allows our firm to deliver on the DigBus strategy*", followed by a mean of 3.95 (SD = 0.955) "*Our suppliers play a critical role that allows our organisation to deliver on the DigBus strategy*". The lowest mean value is 3.76 (SD = 0.878) for the variable "*There has been a volume increase of products and services through our partners and*

alliances" and a mean of 3.88 (SD = 0.968) "*The digital business strategy enables our organisation to create new networks quickly"*.

The skewness ranges from -0.525 to -1.228, with a standard error of 0.234, while the kurtosis ranges from 1.836 to 0.121, with the standard error being 0.463.

Table 12 - Descriptive statistics for Value Network

Variables		Mean	Median	Std. Deviation	Skewness	Std Error	Kurtosis	Std Error
Our suppliers play a critical role that allows our organisation to deliver on the digital business strategy	VN1	3.95	4	0.955	-1.228	0.234	1.836	0.463
Our partners play a critical role that allows our organisation to deliver on the digital business strategy	VN2	4.14	4	0.806	-1.142	0.234	2.059	0.463
The digital business strategy enables our organisation to create new networks quickly	VN3	3.88	4	0.968	-0.832	0.234	0.386	0.463
There has been a volume increase of products and services through our partners and alliances	VN4	3.76	4	0.878	-0.525	0.234	0.121	0.463

5.3.5. Revenue model

The revenue model variable, guided by the study of Baden-Fuller et al. (2013), consists of five variables divided into two sections. Table 13 consists of the following variables: 1) *Our organisation receives money upfront before the delivery of the digital product or service* (RM1), 2) *Our organisation receives money during the delivery of the digital product or service* (RM2), 3) *Our organisation receives money after the delivery of the digital product or service* (RM3).

Table 14 consists of the following variables: 4) *Digital products and services have increased the revenue of our organisation* (RM4), 5) *The digital products and services have reduced the cost structures our organisation* (RM5).

The construct presented in Table 13 consists of the first three variables (responses to yes/no/unsure questions), which have a median score ranging from 1 to 3, while the highest mean score is 2.48 (SD = 0.927) for variable RM3. This is followed by a mean of 2.14 (SD = 0.966) for RM2, while the lowest mean score is 1.77 (SD = 0.927) for variable RM1.

The skewness ranges from -1.097 to 0.485, with a standard error of 0.234, while the kurtosis ranges from -0.705 to -1.677, with the standard error being 0.463.

Table 13 - Descriptive statistics for Revenue Model A

Variables		Mean	Median	Std. Deviation	Skewness	Std Error	Kurtosis	Std Error
Our organisation receives money upfront before the delivery of the digital product or service	RM1	1.77	1	0.927	0.485	0.234	-1.677	0.463
Our organisation receives money during the delivery of the digital product or service	RM2	2.14	3	0.966	-0.287	0.234	-1.890	0.463
Our organisation receives money after the delivery of the digital product or service	RM3	2.48	3	0.851	-1.097	0.234	-0.705	0.463

The second section of the construct revenue model (B) in Table 14 has a total of two variables, which profile this construct. The mean scores do not have much difference between them and the overall median is 4. The highest mean score is 4.10 (SD = 0.812) for the variable RM4, followed by a mean of 3.52 (SD = 1.152) for the variable RM5.

The skewness ranges from -1.054 to -0.379, with a standard error of 0.234 and the kurtosis ranges from 1.754 to -0.860, with a standard error of 0.463.

Table 14 - Descriptive statistics for Revenue Model B

Variables		Mean	Median	Std. Deviation	Skewness	Std Error	Kurtosis	Std Error
The digital products and services have increased the revenue of our organisation	RM4	4.10	4	0.812	-1.054	0.234	1.754	0.463
The digital products and services have reduced the cost structures our organisation	RM5	3.52	4	1.152	-0.379	0.234	-0.860	0.463

5.3.6. Resources and competencies

Table 15 represents the descriptive statistics of the RAC construct, which consists of five variables: 1) *Our organisation has required skills and knowledge to lead in the digital world* (RAC1), 2) *Our organisation is structured in a way that combines activities to deliver value to our customers* (RAC2), 3) *Our organisation can with speed learn and adapt new technologies* (RAC3), 4) *Our organisation allocates sufficient funding to take*

advantage of digital opportunities (RAC4), and 5) *Our organisation has the tools and infrastructure to operate in the new digital world* (RAC5).

This construct has an overall median of 4, with the mean of each variable very close to each other. The highest mean of 3.73 (SD = 1.069) is noted for the variable "*Our organisation is structured in a way that combines activities to deliver value to our customers*". This is followed by the mean of 3.67 (SD = 1.204) for the variable "*Our organisation has required skills and knowledge to lead in the digital world*", and further by a mean of 3.60 (SD = 1.204) for the variable "*Our organisation has the tools and infrastructure to operate in the new digital world*". The lowest mean score is 3.41 (SD = 1.165) for the variable "*Our organisation allocates sufficient funding to take advantage of the digital opportunities*", while the variable "*Our organisation can with speed learn and adapt new technologies*" has a mean score of 3.59 (SD = 1.228).

The skewness ranges from a high of -0.433 to a low of -0.698, with the standard error being 0.218. The kurtosis ranges from -0.425 to -0.862 and its standard error is 0.433. The skewness and kurtosis prove the data to be normal, based on the guidelines of ±1.96 as proposed by Hair et al. (2014).

Table 15 - Descriptive statistics for Resources and Competencies

Variables		Mean	Median	Std. Deviation	Skewness	Std Error	Kurtosis	Std Error
Our organisation has required skills and knowledge to lead in the digital world	RAC1	3.67	4	1.204	-0.698	0.234	-0.425	0.463
Our organisation is structured in a way that combines activities to deliver value to our customers	RAC2	3.73	4	1.069	-0.711	0.234	-0.235	0.463
Our organisation can with speed learn and adapt new technologies	RAC3	3.59	4	1.228	-0.598	0.234	-0.704	0.463
Our organisation allocates sufficient funding to take advantage of the digital opportunities	RAC4	3.41	4	1.165	-0.310	0.234	-0.808	0.463
Our organisation has the tools and infrastructure to operate in the new digital world	RAC5	3.60	4	1.204	-0.433	0.234	-0.862	0.463

5.3.7. Digital business strategy

To profile the DigBus strategy construct, a total of five variables were developed: 1) *Through the digital business strategy, our organisation exploits the digitisation of*

products of services, 2) *Our organisation's digital business strategy has been effective in accelerating new product launches*, 3) *Our organisation's digital business strategy has been effective in accelerating new product launches*, 4) *Our organisation has successfully aligned its IT strategy with its business strategy*, and 5) *Our organisation has the tools and infrastructure to operate in the new digital world.*

As per Table 16 below, the overall median for this construct is 4. The highest mean score is 3.90 (SD = 0.931) for the variable "*Our organisation's digital business strategy has been effective in accelerating new product launches*". This is followed by a mean of 3.81 (SD = 0.992) of variable "*Through the digital business strategy, our organisation exploits the digitisation of products of services*", and a further mean score of 3.66 (SD = 1.173) for the variable "*Our organisation has the tools and infrastructure to operate in the new digital world*". The variable "*Our organisation's digital business strategy has been effective in accelerating new product launches*" has a mean of 3.62 (SD = 1.070). Meanwhile, the lowest mean score is for the variable "*Our organisation has successfully aligned its IT strategy with its business strategy*" which is 3.48 (SD = 1.200).

The skewness ranges from a high of -0.328 to a low of -0.915, with the standard error being 0.218. The kurtosis ranges from 0.705 to -0.991, with the standard error being 0.433. The skewness and kurtosis prove the data to be normal, based on the guidelines of ±1.96 as proposed by Hair et al. (2014).

Table 16 - Descriptive statistics for Digital Business Strategy

Variables		Mean	Median	Std. Deviation	Skewness	Std Error	Kurtosis	Std Error
Through the digital business strategy, our organisation exploits the digitisation of products of services	DBS1	3.81	4	0.992	-0.915	0.234	0.552	0.463
Our organisation's digital business strategy has been effective in accelerating new product launches	DBS2	3.62	4	1.070	0.593	0.234	-0.270	0.463
Our organisation's digital business strategy has been effective in accelerating new product launches	DBS3	3.90	4	0.931	-0.864	0.234	0.705	0.463
Our organisation has successfully aligned its IT strategy with its business strategy	DBS4	3.48	4	1.200	-0.328	0.234	-0.991	0.463
Our organisation has the tools and infrastructure to operate in the new digital world	DBS5	3.66	4	1.173	-0.564	0.234	-0.609	0.463

5.4. Step 3 − Reliability of the Questionnaire

As described in Section 4.7.3, the questionnaire of this study is based on a five-point Likert scale and therefore, to measure the quality of the questionnaire, the internal consistency reliability test was selected. To do so, a Cronbach's alpha analysis was conducted.

5.4.1. Cronbach's alpha analysis

Cronbach's alpha is the most widely used reliability coefficient to measure internal consistency, where Likert scales are present (Hair et al., 2014; Kline, 2016). As discussed in Chapter 4 above, the generally accepted lower limit is 0.70 (George et al., 2003) for the Cronbach's alpha measure.

In this study, a Cronbach's alpha analysis for reliability was conducted to check the reliability of all 28 items of the questionnaire. As per Table 17 below, the reliability coefficient is high at 0.936, which is above the guideline of the lower accepted limit of 0.70, and can therefore be deemed as the constructs being reliable.

Table 17 – Cronbach's alpha

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.936	.934	28

However, it should be noted, as per individual construct, Cronbach's alpha in Table 18 below, the revenue model construct yields a Cronbach's alpha of lower than 0.70 on the first attempt (0.355). As per Appendix C (Figure 33 and Figure 34), two questions had to be removed from the revenue model construct to meet the lower limit of 0.60 (Hair et al., 2014) for the Cronbach's alpha measure. The first question that was removed was for element RM1, which has an original Cronbach's alpha of 0.355 and after being removed, the Cronbach's alpha improved to 0.548 (Figure 33). This was still below the lower limit and therefore the test was re-rerun and the resulting recommendation was to remove the second element RM2, which improves the revenue model Cronbach's alpha to 0.624 (Figure 34). As per Hair et al. (2014), the Cronbach's alpha can be decreased to the lowest limit of 0.60 for exploratory research. Table 18 shows the final outcome of each individual constructs Cronbach's alpha:

Table 18 – Cronbach's alpha calculation per construct

Construct	Number of items before Cronbach's Alpha	Number of items after Cronbach's Alpha	Mean	Std. Dev	Variance	Cronbach's Alpha	Internal consistency
Value proposition	5	5	18.90	3.688	13.603	.752	Good
Target market segment	4	4	14.81	3.286	10.795	.818	Good
Value network	4	4	15.73	2.694	7.256	.732	Good
Revenue model	5	3	12.24	1.912	3.657	.624	Met lower exploratory limit
Resources and competencies	5	5	18	4.829	23.321	.880	Good

The Cronbach's alpha for the VP is 0.752, for CTS 0.818, for VN 0.732, for RAC 0.882, which are all above the recommended 0.70. The researcher made the choice to include the revenue model construct, as the CFA would indicate whether the revenue model construct would be an issue or not.

5.5. Factor Analysis of Constructs

As discussed in Chapter 4, factor analysis (FA) is a way to summarise the multiple variables into a smaller set of abstract variables known as factors (Hair et al., 2014). Due to the complexity of the relationship of the original set of variables, FA assists with determining the linear combinations to understand these complex relationships (Zikmund et al., 2012).

5.5.1. Exploratory factor analysis (EFA)

Excluding the seven demographic questions, EFA was conducted on each of the remaining constructs, as described in Chapter 4. The EFA was further used to assess the unidimensionality of the MM, and to determine whether the variables factorisable using KMO and BTS. As per Figure 19 below, the overall KMO sampling adequacy (0.885) is described as meritorious, being above 0.80 (Kaiser, 1974) and BTS is p = 0.000, indicating that the data are factorisable (Hair et al., 2014).

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.885
Bartlett's Test of Sphericity	Approx. Chi-Square	1762.772
	df	378
	Sig.	.000

Figure 19 -Overall KMO and Bartlett's test

Each of the constructs, VP, CTS, VN, RM, and RAC, were extracted from literature. However, the length of the questionnaire for this survey was a restriction and therefore the EFA was run per construct, as per Table 19 below:

Table 19 - KMO and Bartlett's test per construct

Scale	Number of items	KMO measure of sampling adequacy	Bartlett's test	Percentage of variance extracted	Number of factors extracted	Validity correlation	Outcome
Value proposition	5	0.712	0.000	50.547	1	p < 0.01	Proceed
Customer target segment	5	0.803	0.000	65.048	1	p < 0.01	Proceed
Value network	4	0.592	0.000	56.108	1	p < 0.01	Proceed
Revenue model	5	0.602	0.000	59.497	2	p < 0.01	Proceed
Resources and competencies	5	0.865	0.000	67.861	1	p < 0.01	Proceed

Based on the guidelines discussed in Chapter 4, Section 4.7.4, all constructs show a significant score in the BTS at p = 0.000. The KMO measure of sampling adequacy are all above the acceptable level of 0.50 (Kaiser, 1974). Therefore, the decision to proceed was made by the researcher as the data met the requirements for analysis (Zikmund et al., 2012).

In Appendix D, EFA shows that through the total variance explained, five components with an eigenvalue are greater than 1 and the total cumulative variance is 62.23%, using the varimax orthogonal rotation. The results are validated through the scree plot diagrams (Appendix E).

5.5.2. Step 4 – Confirmatory factor analysis and assessment of the measurement model (MM)

The convergent and the discriminant validity of the MM was validated through the confirmatory factor analysis (CFA). The CFA was analysed with Partial Least Square (PLS) Path-modelling algorithm, using the Smart-PLS v3 software.

5.5.2.1. Measurement model and convergence validity

The PLS estimated the model using latent variables, which in this model are value proposition (VP), customer target segment (CTS), value networks (VN), revenue model (RM), resources and competencies (RAC) and DigBus strategy (DBS), as shown in Figure 20 below. Each of the codes of the construct indicators are described in detail in Appendix N.

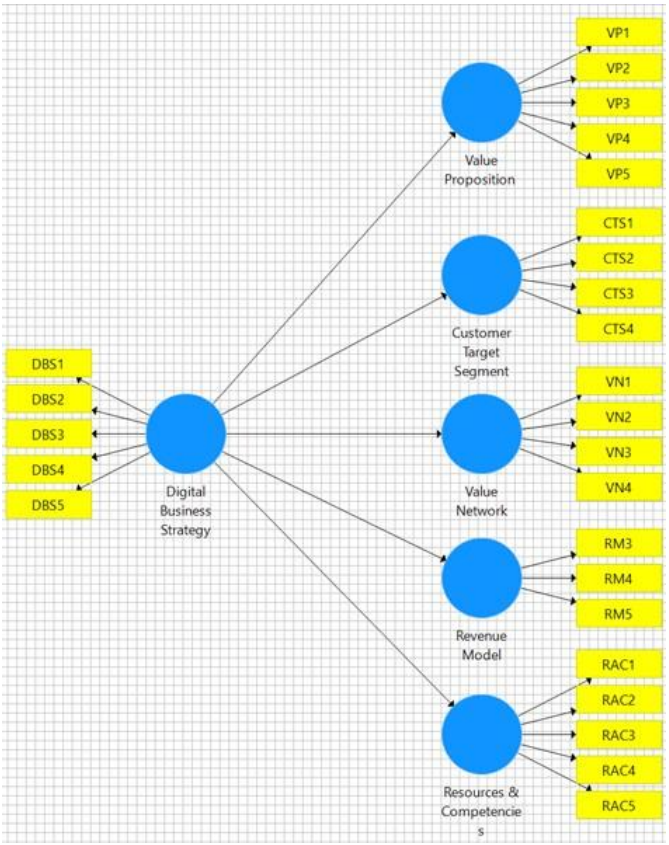


Figure 20 - Measurement model for CFA

Using the above model and coding of the variables, the model fit was analysed, using the standardised root mean square residual (SRMR). The SRMR is the overall residual value needed to compare fit across models, unlike standardised residuals (SR) and the root mean square residual (RMR), which are deviations of the individual covariance (Hair et al., 2014). The SRMR is 0.090, which is above the upper threshold of 0.080 as proposed by Hu et al. (1999).

The initial model had good factor loadings, which were all high. However, as described in Chapter 4, Table 4, the loadings needed to be above the recommended 0.70 (Hair et al., 2014) and below the SRMR threshold of 0.080. Therefore, the model had to be revised to exclude indicators that are less than 0.70 as shown in Figure 21 below:

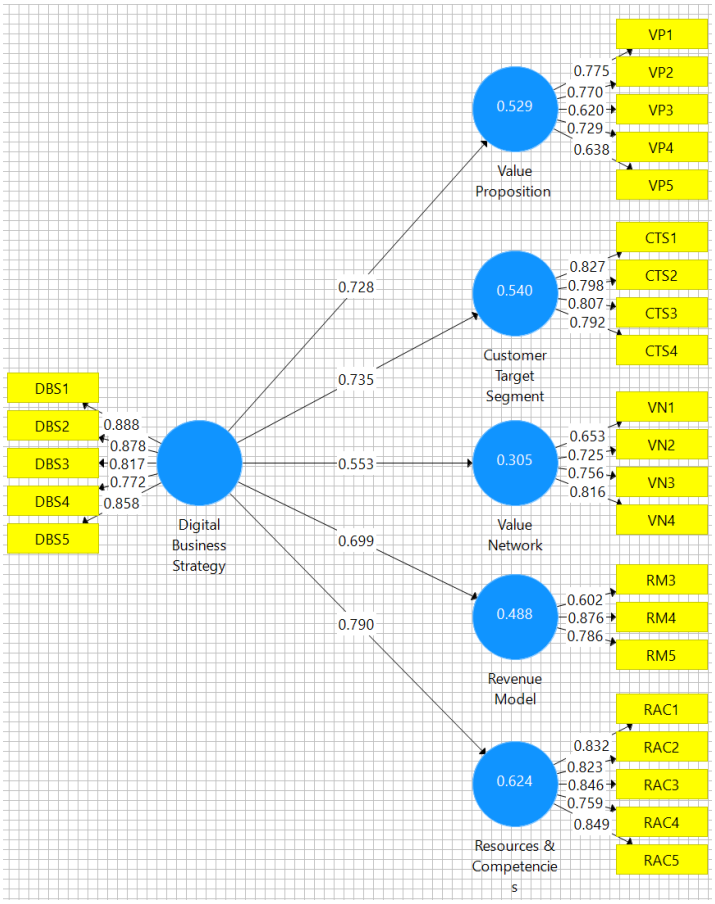


Figure 21 - Model fit

The indicators that were removed from the model were VP3, VP5, VN1, and RM3, as these indicators are below the recommended guideline of 0.70. The new revised model, presented in Figure 22 below, has factor loadings that are higher than 0.70 per constructs, ranging from 0.759 to 0.896, bringing this model within the acceptable range and having a SRMR of 0.072, which is below the acceptable range of 0.080.

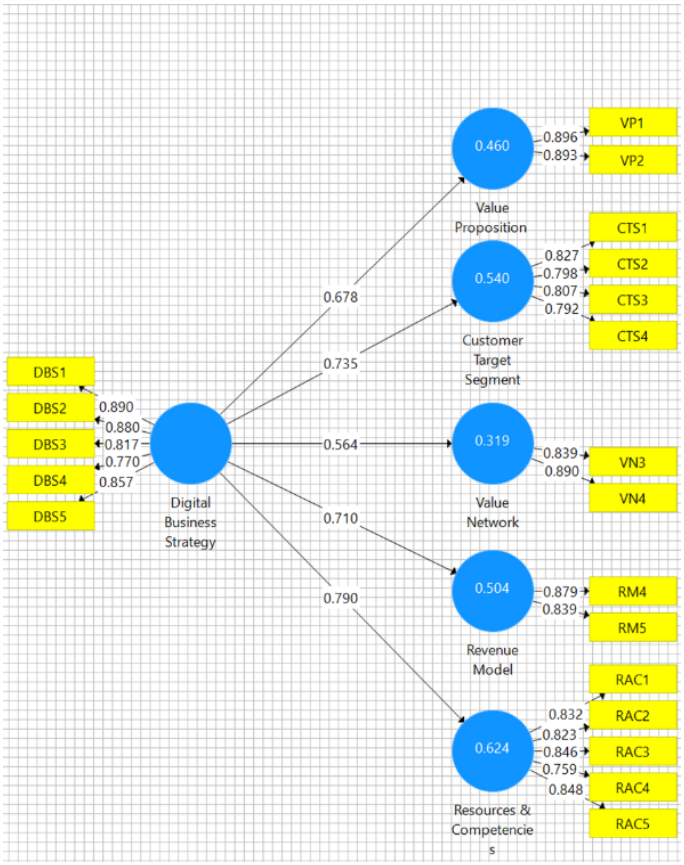


Figure 22 - Revised measurement model for constructs

The quality of the MM was assessed for scale reliability, followed by convergence and discriminant validity of the constructs' measures as described in Chapter 4.

In Table 20 below, the overall composite reliability is shown to be higher than the recommended 0.70 for each of the constructs. The value proposition construct is 0.834, customer target segment is 0.881, value networks is 0.828, revenue model is 0.804 and resources and competencies is 0.912.

Table 20 - Reliability and convergence validity of constructs

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Customer Target Segment	0,821	0,825	0,881	0,650
Digital Business Strategy	0,898	0,903	0,925	0,712
Resources & Competencies	0,880	0,888	0,912	0,676
Revenue Model	0,646	0,710	0,804	0,583
Value Network	0,737	0,769	0,828	0,547
Value Proposition	0,754	0,772	0,834	0,503

The convergence validity is confirmed through the results of the average variance extracted (AVE). Using the guideline of 0.500 for the AVE, the results are higher, ranging from 0.503 – 0.712. The value proposition AVE is 0,503, customer target segment is

0.650, value network is 0.547, revenue model is 0.583, resources and competencies is 0.676, and the DigBus strategy is 0.712.

5.5.2.2. Discriminant validity

Discriminant validity, which analyses the degree to which a single construct is different from other constructs (Hair et al., 2014), was assessed using the Fornell-Larcker criterion and cross loadings as discussed in Chapter 4. The AVE for each latent construct should be higher than the constructs' highest square correlation with any other latent construct. The Fornell-Lacker shows good discriminant validity, with each construct distinct from the others, meaning the highest value to itself when compared to other constructs (Table 21).

Table 21 - Fornell-Lacker criterion for discriminant validity of constructs

	Customer Target Segment	Digital Business Strategy	Resources & Competencies	Revenue Model	Value Network	Value Proposition
Customer Target Segment	0,806					
Digital Business Strategy	0,735	0,844				
Resources & Competencies	0,616	0,790	0,822			
Revenue Model	0,619	0,710	0,547	0,859		
Value Network	0,568	0,564	0,469	0,560	0,865	
Value Proposition	0,609	0,678	0,605	0,513	0,480	0,895

The discriminant validity of the construct is further confirmed with cross loadings, with each variable distinctly belonging to one construct, as per Table 22 below. The variable indicator loadings should be higher than all its other cross loadings, for example, the CTS1 - CTS4 mapped to customer target segment should be higher than all the other variables.

Table 22 - Cross loading for discriminant validity of construct

	Customer Target Segment	Digital Business Strategy	Resources & Competencies	Revenue Model	Value Network	Value Proposition
CTS1	0,827	0,597	0,550	0,522	0,484	0,476
CTS2	0,798	0,539	0,480	0,438	0,491	0,430
CTS3	0,807	0,662	0,543	0,577	0,369	0,567
CTS4	0,792	0,559	0,403	0,442	0,505	0,477
DBS1	0,636	0,890	0,721	0,654	0,514	0,631
DBS2	0,652	0,880	0,655	0,677	0,560	0,566
DBS3	0,679	0,817	0,520	0,648	0,479	0,516
DBS4	0,508	0,770	0,642	0,466	0,381	0,490
DBS5	0,617	0,857	0,788	0,535	0,435	0,646
RAC1	0,538	0,680	0,832	0,528	0,463	0,535
RAC2	0,487	0,604	0,823	0,464	0,381	0,461
RAC3	0,516	0,620	0,846	0,442	0,416	0,468
RAC4	0,449	0,558	0,759	0,372	0,308	0,451
RAC5	0,534	0,757	0,848	0,438	0,357	0,558
RM4	0,596	0,648	0,500	0,879	0,574	0,498
RM5	0,460	0,568	0,437	0,839	0,376	0,375
VN3	0,488	0,443	0,376	0,474	0,839	0,370
VN4	0,496	0,528	0,433	0,494	0,890	0,454
VP1	0,577	0,611	0,527	0,506	0,479	0,896
VP2	0,513	0,603	0,556	0,411	0,380	0,893

In Table 22, CTS1 to CTS4 have the highest loadings when compared to the other BusMod components such as DBS, RAC, RM, VN and VP. CTS1 has the highest loading of 0.827, while CT4 has the lowest at 0.792. DBS1 to DBS5 have the highest loadings when compared to the other BusMod components, being CTS, RAC, RM, VN and VP. DBS1 has the highest loading of 0.890, while DBS4 has the lowest at 0.770. RAC1 to RAC5 have the highest loadings when compared to the other BusMod components, being CTS, DBS, RM, VN and VP. RAC5 has the highest loading of 0.848, while RAC4 has the lowest at 0.759. RM4 and RM5 have the highest loadings when compared to the other BusMod components, being CTS, DBS, RAC, VN and VP. RM4 has the highest loading of 0.879, while RM5 has the lowest at 0.839. VN3 to VN4 have the highest loadings when compared to the other BusMod components, being CTS, DBS, RAC, RM and VP. VN4 has the highest loading of 0.890, while DBS4 has the lowest at 0.839. VP1 and VP2 have the highest loadings when compared to the other BusMod components, being CTS, DBS, RAC, RM and VN. VP1 has the highest loading of 0.896, while VP2 has the lowest at 0.893. Based on the above results, the reliability and validity of the constructs have been confirmed.

5.5.2.3. Variance inflation factor

While the reliability and validity of the constructs are established above, it is critical to conduct a variance inflation factor (VIF) analysis to check, if these constructs (components of BusMod) are highly correlated to each other, meaning to assess multicollinearity (Hair et al., 2014).

Initially, an outer VIF was conducted and it shows no high correlation, with VIF less than 5.0 and below the threshold of 10 (Hair et al., 2014) for all variables, as per Table 23 below. There are no problems with the inner VIF for the constructs.

Table 23 - Outer VIF values

	VIF
CTS1	**1,866**
CTS2	**1,734**
CTS3	**1,613**
CTS4	**1,692**
DBS1	3,221
DBS2	3,564
DBS3	**2,317**
DBS4	**2,167**
DBS5	**2,757**
RAC1	**2,136**
RAC2	**2,207**
RAC3	**2,371**
RAC4	**1,800**
RAC5	**2,163**
RM4	**1,294**
RM5	**1,294**
VN3	**1,329**
VN4	**1,329**
VP1	**1,568**
VP2	**1,568**

5.6. Step 5 − Structural Model Assessment

5.6.1. Step 5a − Structural model assessment, using R^2

The hypothesised relationship was analysed with squared multiple correlations (R^2) for the constructs in the model as the first step. The R^2 values range from 0.319 – 0.624, while the adjusted R^2 ranges from 0.312 to 0.620 (Table 24). These results show a moderate relationship, with the R^2 around the significant level of 0.50. The coefficient guideline provided by Hair et al. (2012) indicates that the relationship is moderate at this level as described in Chapter 4, Table 6.

Table 24 - R-square value of the measurement model

	R Square	R Square Adjusted
Customer Target Segment	0,540	0,536
Resources & Competencies	0,624	0,620
Revenue Model	0,504	0,499
Value Network	0,319	0,312
Value Proposition	0,460	0,455

5.6.2. Step 5b − Structural model assessment using path coefficients

Having conducted the MM, which relates the observed variables to their own latent variables (value proposition, customer target segment, value networks, and resources and competencies), the structural model was tested to understand the relationship between these latent constructs and the DigBus strategy construct as the second step in the structural assessment model and is presented in Figure 23 below:

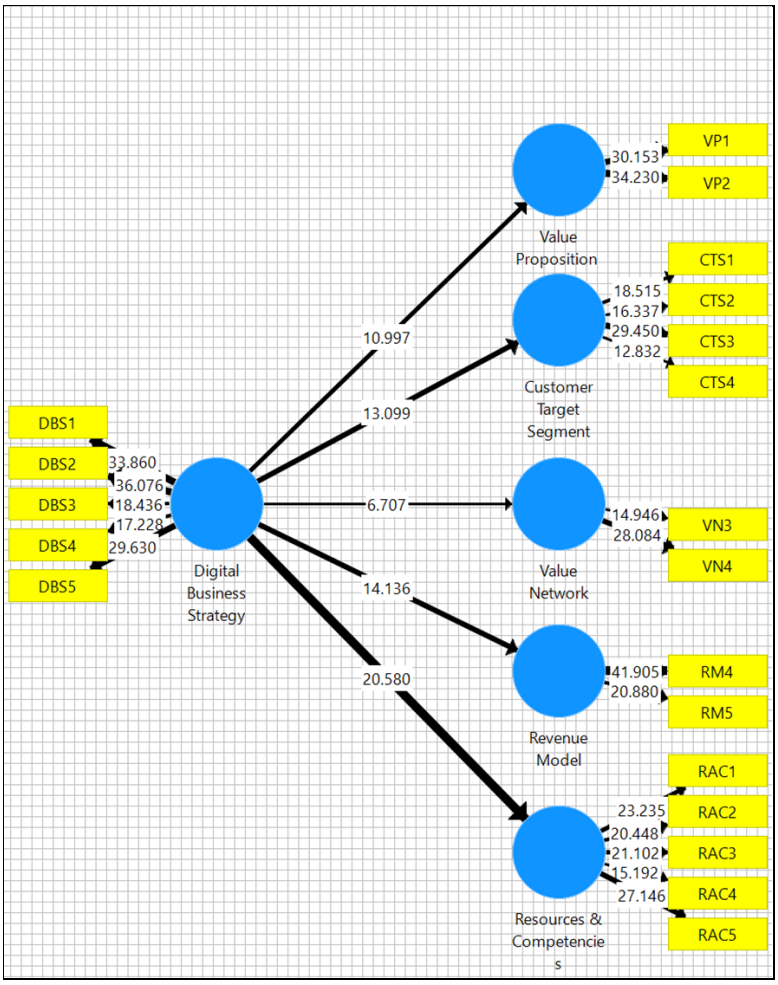


Figure 23 - Structural model using path coefficients

Using the dark arrow lines in figure 23 above as a guide to demonstrate the strength of the relationship between DigBus strategy and the BusMod components, it is evident that the BusMod component that has the strongest positive significant relationship with the DigBus strategy is the resources and competencies component. This is followed by the revenue model, then the customer target segment, the value proposition, and the weakest positive significant relationship is the value network. This is summarised in Table 25 below and described further in more detail per hypothesis below.

Table 25 - Results of PLS-SEM bootstrapping

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values	Hypothesis
Digital Business Strategy -> Customer Target Segment	0.735	0.733	0.056	13.099	0.000	Accept null
Digital Business Strategy -> Resources & Competencies	0.790	0.797	0.038	20.580	0.000	Accept null
Digital Business Strategy -> Revenue Model	0.710	0.713	0.050	14.136	0.000	Accept null
Digital Business Strategy -> Value Network	0.564	0.561	0.084	6.707	0.000	Accept null
Digital Business Strategy -> Value Proposition	0.678	0.681	0.062	10.997	0.000	Accept null

To derive at the standard errors and significance tests of coefficients, bootstrapping in Smart-PLS is one non-parametric method in the PLS model (Hair, Hult, Ringle & Sarstedt, 2016). All t-values above 1.96 are significant at the 95% confidence level. In the next section, the results of the hypotheses tests relating to Table 25 above are discussed in more detail.

5.6.3. Hypothesis 1 – Value proposition

Hypothesis 1 states that there is a positive relationship between the value proposition of a firm and DigBus strategy design and implementation.

The PLS-SEM bootstrapping results shown in Table 25 above demonstrate the t-statistics value is 10.997 and p-value = 0.000, indicating a positive significant relationship at greater than ±1.96 at a 95% confidence level. This means that the study fails to reject the null hypothesis.

5.6.4. Hypothesis 2 – Customer target segment

Hypothesis 2 states that there is a positive relationship between the customer target segment of a firm and the DigBus strategy design and implementation.

The PLS-SEM bootstrapping results shown in Table 25 above demonstrate the t-statistics value is 13.099, and a p-value = 0.000. This indicates that there is a positive significant relationship between customer target segment and DigBus strategy at greater

than ±1.96 at a 95% confidence level. This means that the study fails to reject the null hypothesis.

5.6.5. Hypothesis 3 – Value network

Hypothesis 3 states that there is a positive relationship between the value network of a firm and the DigBus strategy design and implementation.

The PLS-SEM bootstrapping results shown in Table 25 above demonstrate the t-statistics value is 6.707, with a p-value = 0.000. Although the value network component displays the lowest positive significance relationship to the DigBus strategy at greater than ±1.96 at a 95% confidence level, this means that the study fails to reject the null hypothesis.

5.6.6. Hypothesis 4 – Revenue model

Hypothesis 4 states that there is a positive relationship between the revenue model of a firm and the DigBus strategy design and implementation.

The PLS-SEM bootstrapping results shown in Table 25 above demonstrate the t-statistics value is 14.136, with a p-value = 0.000, indicating a positive significant relationship at greater than ±1.96 at a 95% confidence level. This means that the study fails to reject the null hypothesis.

5.6.7. Hypothesis 5 – Resources and competencies

Hypothesis 5 states that there is a positive relationship between the RAC of a firm and the DigBus strategy design and implementation.

The PLS-SEM bootstrapping results shown in Table 25 above demonstrate the t-statistics of 20.580 and a p-value = 0.000, indicating that there is a positive relationship between RAC component and DigBus strategy. The RAC and DigBus strategy display the highest positive significance relationship at greater than ±1.96 at a 95% confidence level. This means that the study fails to reject the null hypothesis.

5.6.8. Step 6 - Hypothesis 6 – Cumulative effect of BusMods on DigBus strategy

The collective effect of all five BusMod components on the DigBus strategy was tested through the multiple regression analysis. In Table 26 below, the multiple regression analysis results, demonstrated by the R^2 value, is 0.777, and according to Hair at al. (2012), this displays a substantial relationship because it is greater than the rule of thumb

of 0.750. The adjusted R^2 of 0.766 provides a further insight, in that 76.6% of the variance is explained by the model. Furthermore, the individual R^2 calculated in Section 5.6.1 is at the moderate level of 0.50. The cumulative effect of the five BusMod components is therefore more significant collectively than individually.

Table 26 - Cumulative effect of BusMod components on the DigBus strategy

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.881[a]	.777	.766	.43769	1.643

a. Predictors: (Constant), Resources_Compet, Value networks, Revenue_Model, Value Proposition, Cusrtomer Targ Seg

b. Dependent Variable: Dig_Strategy

The regression model for the success of the DigBus strategy below is based on Table 27 below:

Table 27 - Regression coefficients

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95,0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	-.560	.288		-1.944	.055	-1.132	.011		
	Value Proposition	.108	.082	.092	1.321	.189	-.054	.270	.453	2.209
	Value networks	.102	.077	.076	1.321	.189	-.051	.256	.665	1.505
	Cusrtomer Targ Seg	.221	.084	.201	2.644	.009	.055	.387	.383	2.611
	Revenue_Model	.334	.073	.265	4.570	.000	.189	.479	.656	1.524
	Resources_Compet	.420	.061	.448	6.827	.000	.298	.542	.512	1.952

a. Dependent Variable: Dig_Strategy

DigBus success = -0.560 + 0.092 (value proposition) + 0.076 (Value networks) + 0.201 (Customer target segment) + 0.265 (Revenue model) + 0.448 (Resources and competencies).

The results of the ANOVA analysis in Table 28 confirm that the regression model is statistically significant in determining the DigBus strategy success, $F(5,101) = 13.463$, $p < 0.05$.

Table 28 - ANOVA results

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	67.316	5	13.463	70.276	.000[b]
	Residual	19.349	101	.192		
	Total	86.665	106			

a. Dependent Variable: Dig_Strategy

b. Predictors: (Constant), Resources_Compet, Value networks, Revenue_Model, Value Proposition, Cusrtomer Targ Seg

However, the value proposition, value networks and customer target segment are noted as not being statistically significant. Therefore, the resulting model is:

DigBus success = 0.265 (Revenue model) + 0.448 (Resources and competencies), which indicates that resources and competencies are the strongest contributor/s to the DigBus strategy (β = 0.448), followed by the revenue model (β = 0.265).

Therefore, the results show that the model is sound and upheld by the proposition that resources and competencies, and the revenue model of a firm are significant contributors to the model and a predictor of the success of the DigBus strategy.

5.7. Conclusion

The objective of this chapter was to present the findings of the data collected through a descriptive analysis, FA and a PLS-SEM. The results indicate that each of the identified individual BusMod components for this study has a positive relationship with the DigBus strategy. Furthermore, the results demonstrate that cumulatively, the most significant relationship to the DigBus strategy are the resources and competencies, and the revenue model components, while the least significant is the value network component. This study therefore meets its aim and objectives of analysing the relationship between the BusMod components and the DigBus strategy. In the next section, the results are discussed in more detail and in context of how they relate to Chapter 2.

CHAPTER 6: DISCUSSION OF RESULTS

6.1. Introduction

The purpose of this chapter was to enhance the understanding of the relationship between the five identified BusMod components and the DigBus strategy. This chapter will provide a discussion of the findings in two parts. In the first part, a reminder of the study thus far is provided as a summary that describes the aim, the approach, and the hypotheses that were tested. In the second part, a more detailed discussion is provided based on the data results from Chapter 5 and from the literature in Chapter 2. It does so by providing a view of the results per hypothesis, then compares the results to literature and concludes with an overall evaluation per hypothesis. It begins with the summary of the study in the next section.

6.2. A reminder of the study thus far

As shown in Figure 24 below, the aim of this study was to address the research question, *"What is the relationship between the business model components of a firm and the digital business strategy?"*

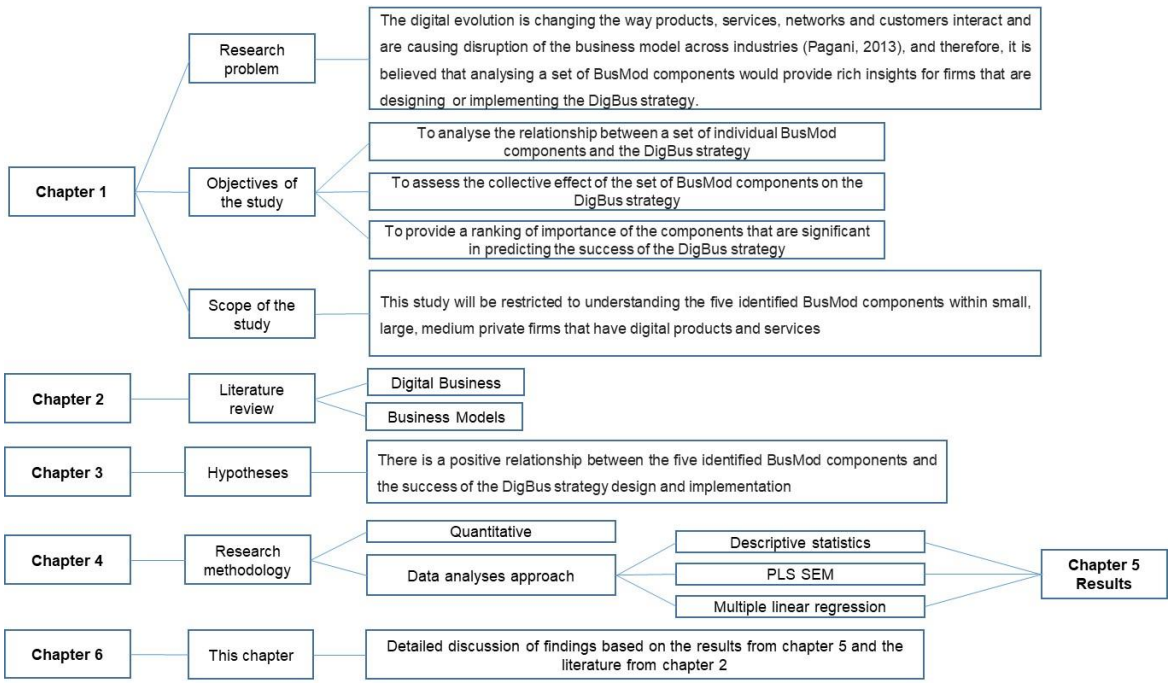


Figure 24 - Summary of this study thus far

To address the research question, this study set out the following research objectives:

- To analyse the relationship between a set of individual BusMod components and the DigBus strategy;
- To assess the collective effect of the set of BusMod components on the DigBus strategy; and
- To provide a ranking of importance of the components that determine the success of the DigBus strategy.

The study used an online self-administered questionnaire using Google forms to collect the required responses. The participants were middle to senior managers that were experienced in BusMods and / or the design and implementation of a DigBus strategy. The participants were from small, medium and large firms in South Africa and across multiple industries. The data was transformed from Google Forms to SPSS version 25 to quantitatively analyse the data.

A total of 123 responses were received, however, based on certain qualifying criteria, 107 responses were selected for analyses. The first qualifying criteria was whether the firm was participating in the design or implementation of a DigBus strategy. The second qualifying criteria was ensuring that the responses were from the right level of management within the firm. 16 participants did not meet the above criteria, either by not being above middle management level and having the required experience in BusMods and DigBus strategies (Floyd et al., 1992) or the firm not being involved in designing or implementing a digital BusMod or DigBus strategy.

The study was based on the following six hypotheses that examined the relationship between components of the BusMod, individually and collectively, and the DigBus strategy (Table 29):

Table 29 - Hypotheses of this study

Hypothesis	Description
Null Hypothesis $H1_0$	There is a positive relationship between the value proposition of a firm and DigBus strategy design and implementation.
Alternate Hypothesis $H1_1$	There is a negative relationship between the value proposition of a firm and the DigBus strategy design and implementation.
Null Hypothesis $H2_0$	There is a positive relationship between the customer target segment of a firm and the DigBus strategy design and implementation.
Alternate Hypothesis $H2_1$	There is a negative relationship between the customer target segment of a firm and the DigBus strategy design and implementation.
Null Hypothesis $H3_0$	There is a positive relationship between the value network of a firm and the DigBus strategy design and implementation.
Alternate Hypothesis $H3_1$	$H3_1$: There is a negative relationship between the value network of a firm and the DigBus strategy design and implementation.
Null Hypothesis $H4_0$	There is a positive relationship between the revenue model of a firm and the DigBus strategy design and implementation.
Alternate Hypothesis $H4_1$	There is a negative relationship between the revenue model of a firm and the DigBus strategy design and implementation.
Null Hypothesis $H5_0$	There is a positive relationship between the resources and competencies of a firm and the DigBus strategy design and implementation.
Alternate Hypothesis $H5_1$	There is a negative relationship between the resources and competencies of a firm and the DigBus strategy design and implementation.
Null Hypothesis $H6_0$	There is a positive relationship between all five components of the BusMod and the DigBus strategy design and implementation.
Alternate Hypothesis $H6_1$	There is a negative relationship between all five components of the BusMod and the DigBus strategy design and implementation

To test the above hypotheses, quantitative analyses were performed on the data. Various statistical tests were performed, including a descriptive analysis of the demographic questions and the six constructs, being 1) value proposition (VP), 2) customer target segment (CTS), 3) value network (VN), 4) revenue model (RM), 5) resources and competencies (RAC), and 6) DigBus strategy. Further statistical analyses were conducted through EFA, CFA and a partial least squares structured equation modelling (PLS-SEM). These results were comprehensively illustrated in Chapter 5.

In the next section, the findings are discussed in more detailed by analysing the nature of the results from Chapter 5 in the context of the literature review in Chapter 2. Each of the BusMod components have been discussed in the context of the hypothesis and the

data results, which have been compared to prior research and literature. Each section closes with an overall explanation of the findings.

6.3. Discussion of the Findings

A more detailed discussion on the individual and collective effect of the BusMod constructs and the DigBus strategy are described in this section. The findings are discussed in the context of the literature review in Chapter 2 and the data results from Chapter 5.

6.3.1. Value proposition

6.3.1.1. Hypothesis H1

The VP describes the benefits received by a firm's customers, and the value-add of the firm's partners and suppliers (Krumeich et al., 2012). The VP is one of the reasons customers switch from one firm to another because of the utility yielded is more than the price paid (Teece, 2010). Its importance has been highlighted as a significant contributor to a firm's success. The findings of this study confirm the outcomes from Chesbrough et al. (2002), who consider the VP as the key central component in designing new BusMods.

For example, Goldman Sachs increased their value proposition for external-structured notes issuers by allowing them access to Goldman Sachs' financial advisors through a mobile app (Teece, 2018). This made Goldman Sachs the largest issuer of structured notes in the market, where previously, it was just a small player.

The VP component of the BusMod was assessed across five elements that represented the VP component, as per Figure 25 below.

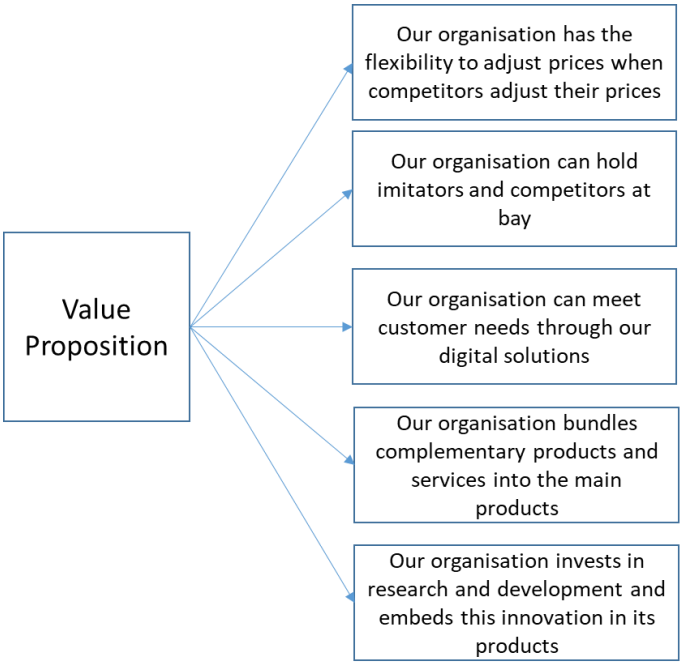


Figure 25 - Value proposition elements assessed

The first two elements represented whether the firm had the ability to hold imitators and competitors at bay, particularly when competitors adjusted their prices. Second, the next two elements represented whether the firm was able to meet customer needs through its digital solution. The final element represented the firm's ability to embed innovation from the investment in research and development into digital products that exceed customers' expectations and changing needs.

The first hypothesis (H1) stated that there is a positive relationship between the value proposition and the DigBus strategy. To confirm the assumption that value proposition has a positive relationship with the DigBus strategy as described by Chesbrough et al. (2002), Krumeich et al. (2012), Teece (2018) and Wirtz et al. (2016), the following hypothesis was used to provide a confirmation measure:

$H1_0$: There is a positive relationship between the value proposition of a firm and the DigBus strategy.

$H1_1$: There is a negative relationship between the value proposition of a firm and the DigBus strategy.

The data results from Chapter 5, Table 25, showed that there is a positive relationship between the VP and the DigBus strategy. Therefore, at a 95% confidence level, this study failed to reject the null hypothesis $H1_0$.

6.3.1.2. Overall evaluation

The results of this study show that the VP component of the BusMod has a positive statistically significant relationship with the DigBus strategy. Although some studies considered the VP as the central component in the design of new digital BusMods (Chesbrough et al., 2002), this study found, based on the PLS-SEM tests conducted in Chapter 5, that the VP component was only the fourth strongest of the five BusMod components to the DigBus strategy.

Wirtz et al. (2016) confirms in a similar study with multiple other BusMod components that the VP component has a lower value and rank as a strategic component than the other BusMod components. The overall mean in the study conducted by Wirtz et al. (2016) was 4, while in this study, it was 3.78, and therefore required further analysis.

Although the value proposition's importance was highlighted in this study, the reason for it being ranked fourth, on further examination, could be due to the inability of the firms to hold competitors at bay. The results from Chapter 5 show that the mean for the element of "*a firm being able to hold imitators and competitors at bay"* was 3.25, implying that the participants of the survey tended more toward the neutral-to-agree range and that firms found it difficult to keep the first mover advantage through its value proposition. The study conducted by Teece (2018) confirms that pioneering a new business or any of the individual BusMod components does not automatically lead to first-mover advantage, as pioneering firms tend not to secure the lock-in needed from customers. Furthermore, the VP is in constant change and evolving due to its dynamic nature, implying that firms must be able to develop an initial VP that results in a competitive advantage and thereafter constantly update such competitive advantage through and in the DigBus strategy. A firm's strength in its dynamic consistency is a key factor in determining the success in its BusMod design (Teece, 2018).

In addition to the PLS-SEM test in Chapter 5, a multiple regression analysis revealed that while the VP has a positive relationship with the DigBus strategy as an individual component, it was not statistically significant overall to influence the DigBus strategy. The VP was therefore excluded from the final multiple regression equation; however, it is still an important component in the design of a digital BusMod.

The importance of the digital VP BusMod component to the DigBus strategy and the findings of this study is confirmed by the study of Holotiuk et al. (2017), who find that one of the critical success factors for the DigBus strategy is for firms to continue enhancing digital products that reflect customer needs,. Firms that do so are able to build deeper, more meaningful connections between the firm's product, brand and the customer.

Significantly, the VP is not formed in isolation stemming from the customer needs and the customer target segment of the firm, which is addressed in the next section.

6.3.2. Customer target segment

6.3.2.1. Hypothesis H2

Krumeich et al. (2012) state that CTS must be adapted to the VP in order to deliver a product or service that covers the cost of the product or service, makes a profit for the firm, and provides the customer with perceived additional utility compared to the firm's competitors' product or service. To do so, a firm must understand the customer segment that it targets. This means that the stronger the segmentation, the stronger the BusMod needs to be to address a niche market (Krumeich et al., 2012). The importance of defining and understanding the CTS in designing BusMods is emphasised in the study conducted by Krumeich et al. (2012), where the CTS component appeared in more than 88% of literature analysed.

The "power-by-the-hour" model of selling jet engines is a good example of understanding customer target and needs, and a successful BusMod implementation (Teece, 2018). In the 1960s, Rolls-Royce understood that its customers did not want to pay a high capital investment amount upfront for an engine. To attract more customers, Rolls-Royce introduced a new BusMod that allowed customers to pay per hour that the engine was in use. This meant that the customers' upfront costs were reduced and it guaranteed that the engines would be well maintained, thereby reducing maintenance and total operating costs (Teece, 2018).

The CTS BusMod component was assessed across five elements, as per Figure 26 below that represented the digital CTS component.

Figure 26 - Customer target segment elements assessed

Three of the elements addressed the firm's ability to increase its share of the market, expand into newer geographies as a result of a digital BusMod, and whether the offering was superior to the competition. The next two elements determined, if the firm was able to improve the way it targeted customers, and whether the digital BusMod enabled the appropriate channels to distribute and communicate with the right customer.

The second hypothesis (H2) stated that there was a positive relationship between the CTS BusMod component and the DigBus strategy. To confirm the assumption that CTS is an important element for the BusMod, as described by Krumeich et al. (2012), Teece (2018) and Wirtz et al. (2016), and the following hypothesis was used to provide a confirmation measure:

$H2_0$: There is a positive relationship between the customer target segment of a firm and the DigBus strategy.

$H2_1$: There is a negative relationship between the customer target segment of a firm and the DigBus strategy.

The data results from Chapter 5, Table 25, showed that there is a positive relationship between the CTS and the DigBus strategy. Therefore, at the 95% confidence level, this study failed to reject the null hypothesis $H2_0$.

6.3.2.2. Overall evaluation

For this study, the results showed that the CTS component of the BusMod has a positive statistically significant relationship with the DigBus strategy. Although the importance of the CTS had been established in other studies, such as those by Krumeich et al. (2012), based on the PLS-SEM tests conducted in Chapter 5, the CTS was the third strongest of the five BusMod components that impact the DigBus strategy. The results from this study concur with the research done by Wirtz et al. (2016), where the CTS component significance is highlighted when designing a digital BusMod. The study by Wirtz et al. (2016), however, ranked the CTS component as the second most strategic BusMod component, while in this study, the CTS component model was ranked third and therefore warranted further analysis.

The lowest of the mean scores, at 3.40, was given to the statement "*Our new digital product offering in the market is superior to the competition*", indicating that participants were in the range of neutral-to-agree on the five-point Likert scale. It could indicate that while participants felt that their products or services were meeting the needs of the customers and that the digital BusMod improved the way the firm targeted customers (mean = 4.02), there was some uncertainty as to whether the product or service was better than the those of the firms competitors' products or services. Furthermore, these participants stemmed from multiple industries and business functions, and this could indicate that they may not be familiar with their own product or service ranking against that of their competitors, thereby reducing the overall ranking of the customer target segment component to the third most strategic component to the DigBus strategy.

In addition to the PLS-SEM test in Chapter 5, a multiple regression analysis revealed that while the CTS had a positive significant relationship with the DigBus strategy, it was not statistically significant overall to influence the DigBus strategy. The CTS was therefore excluded from the final multiple regression equation. The possible reason for the customer target segment not having a significant cumulative effect on the DigBus strategy was confirmed in the study by Hienerth, Keinz and Lettl (2011). The study stated that firms are still struggling to define their success factors, and attract customers and users in the innovation of core business processes through the use of technology.

This study confirmed the findings of Boons et al. (2013) and Krumeich et al. (2012), which re-iterate the importance of the CTS when designing and implementing a DigBus strategy. Boons et al. (2013) suggest the target market can either be segmented through mass market production or firms can follow a different approach by co-creating products and experiences with customers. This not only results in enhanced customer-firm

relationships, but sustainable value propositions and firm performance. Teece (2018) further suggests that when firms are designing a DigBus strategy, they use the opportunity to conduct a proof of concept and learn about their new customer segment.

6.3.3. Value network

6.3.3.1. Hypothesis H3

The VN often enables BusMods, where third-party partners and suppliers take over some of a firm's value chain activities to provide the value proposition to the firm's customer (Krumeich et al., 2012). It is of strategic importance for firms to understand and know, which activities can be executed internally, through the firm's own resources and competencies, and which activities should be executed by strategic third-party partners and suppliers. Al-Debei et al. (2008) stated that the value network component includes the communication and collaboration mechanisms to deliver value to customers via these strategic partnerships, further highlighting the significance of the value network component in the BusMod.

For example, MSNBC was a joint venture between Microsoft and NBC, created so that NBC could increase its value proposition to its basic television activities, while Microsoft provided the content (Pagani, 2013). In some cases, instead of firms outsourcing to a third-party partner or supplier their activities that are not core to the firm, a firm can buy out another firm to gain access to a different market. For example, Disney bought ABC in 1995 to gain access to the terrestrial and cable TV distribution channels (Pagani, 2013).

The value network BusMod component was assessed across four elements that represented the value network component, as per Figure 27 below.

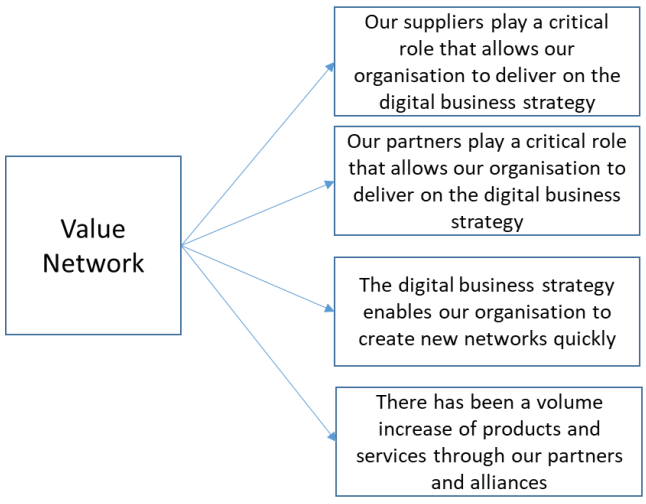


Figure 27 - Value network elements assessed

Two of the elements assessed the influence of the digital BusMods on the firm's suppliers and partners, which played a critical role in delivering the DigBus strategy. The next element examined whether the firm was able to increase the speed at which it created new networks because of the digital BusMod, while the final element represented the partners' ability to increase the volumes of the firm's products as a result of the design and implementation of a digital BusMod.

The third hypothesis (H3) stated that there is a positive relationship between the BusMod component of VN and the DigBus strategy. To confirm the assumption that VN has a positive relationship with the DigBus strategy as described by Krumeich et al. (2012), Pagani (2013) and Wirtz et al. (2016), the following hypothesis was used to provide a confirmation measure:

$H3_0$: There is a positive relationship between the value network of a firm and the DigBus strategy.

$H3_1$: There is a negative relationship between the value network of a firm and the DigBus strategy.

The data results from Chapter 5, Table 25, showed that there was a positive relationship between the VN and the DigBus strategy. Therefore, at a 95% confidence level, this study failed to reject the null hypothesis $H3_0$.

6.3.3.2. Overall evaluation

The results of this study show that the VN component of the BusMod had a positive statistically significant relationship with the DigBus strategy. The findings of this study and the importance of the VN component to the DigBus strategy is also confirmed in the study by Pagani (2013), who argues that the VN, in the form of a more loosely-coupled configuration than a vertically integrated, is of strategic significance to the firm.

In contrast, however, the result of this study does not concur with the research done by Wirtz et al. (2016), where the VN component was ranked as the most important strategic BusMod component. Based on the PLS-SEM tests conducted in this study, the VN was found to be the lowest ranked component of the five BusMod components that impacts the DigBus strategy. Even though the VN was still statistically significant in this study, it

warranted further investigation into the weaker relationship of the value network component as compared to the other BudMod components and the DigBus strategy.

The results of this study indicated that firms do not leverage their networks enough. The statement "*There has been a volume increase of products and services through our partners and alliances"* had the lowest mean score of 3.76, indicating that many participants did not agree that products and services sold through partners and alliances improved the volume of sales. However, Pagani (2013) posits that the value network is significant in the new digital world.

In addition to the PLS-SEM test illustrated in Chapter 5, a multiple regression analysis a multiple regression analysis revealed that while the VN had a positive significant relationship with the DigBus strategy, it was not statistically significant overall to influence the success of the DigBus strategy. The VN was therefore excluded from the final multiple regression equation.

A possible explanation for the low ranking of the value network could be due to participants in this study developing their BusMods, particularity the VN, in isolation and not together with the firm's partners and suppliers. A possible explanation for doing so in isolation could be that the partners and suppliers are not sharing the required resources and competencies to extract the maximum benefit of the ecosystem. Furthermore, firms are still concerned with the security and protection of sharing assets, the protection of intellectual property, customers and competitive market information.

6.3.4. Revenue model

6.3.4.1. Hypothesis H4

The RM is a central component to the BusMod as it determines the product or service is profitable and worth pursuing (Krumeich et al., 2012). The RM was described as the "bottom line" of a BusMod, where the lack of clear and justified RM was highlighted as one of the reasons for the failure of 238 dot.com companies (Alt et al., 2001). It describes the way a firm collects revenue, whether it is before, during or after the sale (Baden-Fuller et al., 2013). There are varying ways to price a product as there is a dependency on the type of model employed. For example, a firm can use a rent-only model or sell its products and services outright. In the digital context, a firm can offer a freemium model, where the product or service is given away free, such as a mobile app, but to use the enhanced functionality, customers have to pay an additional amount (Demil et al., 2010).

In the digital economy, other revenue models include a subscription model (Teece, 2010), where customers pay a subscription to use the firm's product or service.

For example, Netflix charges customers a subscription fee to rent an unlimited number of movies and TV shows for the month. BMW has recently introduced a monthly subscription-based fee with different tiers that allows customers to use any BMW vehicle of their choice. Dubbed as "Access by BMW", customers can switch between different BMW models during that month. Although the monthly fee is higher than the usual instalment sale or leasing amount, it will enable BMW to have a more consistent revenue stream and provides a solution to the peak and trough nature of its revenue. This peak and trough is due to customers replacing vehicles once every three to five years on average (Matousek, 2018). Therefore, the revenue model is seen as an important element of the digital BusMod.

The aim of the study was to assess the relationship between digital BusMods ability to generate revenue and the DigBus strategy. The RM BusMod component was assessed across four elements that represented the revenue model component (Figure 28):

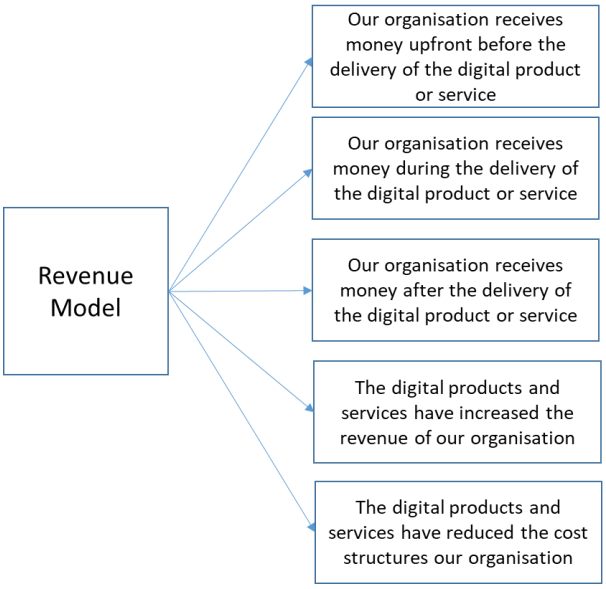


Figure 28 - Revenue Model elements assessed

Three of the elements of the digital BusMod assessed the way the firm receives its revenue, whether this is before, during or after it sold its product or service. The next two elements represented whether the firm was able to improve its revenue, and whether it was able to reduce its costs structures.

The fourth hypothesis (H4) stated that there is a positive relationship between the BusMod component of RM and the DigBus strategy. To confirm the assumption that a revenue model has a positive relationship with the DigBus strategy as described by Baden-Fuller et al. (2013), Krumeich et al. (2012) and Wirtz et al. (2016), the following hypothesis was used to provide a confirmation measure:

$H4_0$: There is a positive relationship between the revenue model of a firm and the DigBus strategy.

$H4_1$: There is a negative relationship between the revenue model of a firm and the DigBus strategy.

The data results from Chapter 5, Table 25, showed that there was a positive relationship between the RM and the DigBus strategy. Therefore, at a 95% confidence level, this study failed to reject the null hypothesis $H4_0$.

6.3.4.2. Overall evaluation

Forthis study, the results showed that the RM component of the BusMod had a positive statistically significant relationship with the DigBus strategy. Based on the PLS-SEM tests, the RM component was the second strongest of the components from the five BusMod components that impact the DigBus strategy.

This result of this study confirmed the importance of the RM component with the research done by Wirtz et al. (2016), where the RM component was ranked as the fourth most significant BusMod component. This study, however, ranked the RM component as the second most important BusMod component, which warranted further analysis.

On further examination, participants of the survey agreed that digital products and services increased the revenue of the firm (mean = 4.10) and reduced the cost structures (mean = 3.52) within the firm, thereby making it a significant stronger strategic component.

The importance of the RM component to the DigBus strategy and the findings of this study were confirmed in the study by Teece (2010) that demonstrated the importance of the firm's ability to generate new forms of revenue from technology. A firm's success is dependent on its ability to monetise its digital products and services. If a firm cannot do so, it will self-destruct (Teece, 2010).

In addition to the PLS-SEM test in Chapter 5, a multiple regression analysis revealed that the RM component had the second statistically significant relationship with the DigBus strategy. The RM component was therefore included in the final multiple regression equation.

6.3.5. Resources and competencies

6.3.5.1. Hypothesis H5

Demil et al. (2010) stated that to deliver value, a firm's activities and resources must be organised. RAC describes the way these are organised to deliver that value. Resources are the people, products, technology of the firm, while skills, intellectual property and the ability of knowledge workers are a firm's competencies (Demil et al., 2010).

While the characteristics of RAC are different, meaning that resources are non-firm specific and can be tradeable, competencies are firm specific and cannot be traded (Krumeich et al., 2012). The strength of the dynamic capability of a firm is determined by how quick and to what level its resources are aligned (Teece, 2018). Dynamic

capabilities and strategy combine to guide the firm through a digital transformation (Teece, 2018). It is for this reason that resources alone cannot deliver the value to customers, and therefore resources and competencies combined are a key component of the BusMod.

The resources and competencies BusMod component was assessed across multiple elements that represented the resources and competencies component, as per Figure 29 below.

Figure 29 - Resources and Competencies elements assessed

The first two elements represented whether the firm had access to the required level of skills, knowledge and the required technology infrastructure to lead in the new digital age. This was linked to whether the organisation can learn at the required speed to gain the knowledge to adapt the latest digital technologies. The third element represented whether the level of capital and investment can take advantage of the new digital opportunities that presented itself.

The fifth hypothesis (H5) aimed to establish whether firms that have the appropriate resources and competencies focused on the BusMod had a positive relationship with the DigBus strategy, as described by Demil et al. (2010), Krumeich et al. (2012), Wirtz et al. (2016) and Teece (2018), and the following hypothesis was used to provide a confirmation measure:

> **$H5_0$: There is a positive relationship between the resources and competencies of a firm and the DigBus strategy.**

$H5_1$: There is a negative relationship between the resources and competencies model of a firm and the DigBus strategy.

The data results from Chapter 5, Table 25, showed that there is a positive relationship between the revenue model and the DigBus strategy. Therefore, at a 95% confidence level, this study failed to reject the null hypothesis $H5_0$.

6.3.5.2. Overall evaluation

The results of this study show that the RAC component of the BusMod had a positive statistically significant relationship with the DigBus strategy. Based on the PLS-SEM tests, the RAC component was the strongest of the components from the five BusMod components in the relationship with the DigBus strategy.

This outcome is supported by the study of Teece (2018), in that RAC needs to be dynamic in order to avoid imitation from competitors, and the study conducted by Ravichandran and Lertwongsatien (2005) agreed that firms will not be able to create sustainable advantage without the correct level of resources and competencies. In this study, participants agreed (mean = 3.60) that their firm had the required skills, knowledge, infrastructure, budget and ability to learn quickly to take advantage of and lead in the digital world.

The results of this study confirmed the importance of the RAC model component and concurred with the research done by Wirtz et al. (2016). However, the RAC model component is ranked as the fourth most strategic BusMod component in the study by Wirtz et al. (2016), while in this study, it was ranked as the most significant BusMod component to the DigBus strategy, which warranted further analysis.

In addition to the PLS-SEM test in Chapter 5, the multiple regression analysis revealed that the RAC component had the highest statistically significant relationship with the DigBus strategy. The RAC component was therefore included in the final multiple regression equation.

The possible reason for the RAC having the most significant relationship with the DigBus strategy could possibly be that participants agreed that firms were able to combine activities successfully to deliver the value to customer (mean = 3.78). Furthermore, it seemed from the responses that firms were already structured in a way that delivered additional value to their customers.

6.4. Conclusion

This chapter discussed the results illustrated in Chapter 5 in context of the literature from Chapter 2. All five of components of the BusMod and their relationship to the DigBus strategy were analysed. The results indicated that there was a positive relationship between the five BusMod components and the DigBus strategy. Furthermore, the study indicated that the RAC and the RM components were significantly stronger than the other components when assessing the collective effect of the components on the success of the DigBus strategy.

Therefore, this study contributes to the knowledge regarding the relationships of the components of the BusMod and the DigBus strategy.

CHAPTER 7: CONCLUSION

The aim of this study was to explore and understand the relationship between the identified BusMod components and the DigBus strategy. As discussed in chapters 5 and 6, and in further detail in this part of the research, this study has met its three objectives. First, by establishing the relationship between a set of individual BusMod components and the DigBus strategy. Second, by understanding the effect of the collective BusMod components on the DigBus strategy. Third, by providing the ranking of importance of the BusMod components to the DigBus strategy to assist business managers with a new layer of information that aids in the successful design and implementation of the DigBus strategies and digital BusMods.

This chapter is the aggregation of Chapters 1 to 6 and highlights the main findings of this study, through a discussion of the principle findings, the study's implication for management, limitations of the study and the recommendations for future research.

It begins by discussing the principle findings, which are linked back to Chapters 1, 2 and 3, particularly the research aim, the literature analysis and the hypotheses. The practical implications are derived from the findings and discussion of data results in Chapter 5 and Chapter 6, respectively. The limitations of the study and the future recommendations for the research are related to Chapters 2 and 4 of this study. The chapter begins by discussing the principle findings in the next section.

7.1. Principle Findings

The main aim of this research was to explore and understand the relationship between the identified components of the BusMod and the DigBus strategy. The hypotheses and results discussed in Chapters 5 and 6 above confirmed that the aims and objectives of this study were met.

As noted in Chapter 2, although there had been an increase in extant literature and research relating the definition, components, integration with technology, business processes and strategy of business models, authors have yet to reach agreement on a widely accepted language and framework that are being used as a base for different authors to further examine the BusMod. This had been noted by Zott et al. (2011), who further stated that the relationship between the BusMod and other constructs, such as the DigBus strategy is relatively unknown (Zott et al., 2011). Furthermore, neither the antecedents, environmental factors nor the relationship between factors affecting the DigBus strategy had been well understood, as stated by Kahre et al. (2017). If strategies that leaders build and deploy are more important than the technologies by themselves

(Ismail et al., 2017), and that the BusMod is the intermediary between strategy and business processes, then it becomes critical to expand one's understanding of the variables and relationships to the DigBus strategy (Kahre et al., 2017).

Therefore, this research supplements previous literature by providing further research on a set of identified BusMods components from literature and the relationship with the DigBus strategy. Furthermore, Wirtz et al. (2016) commented that only 5% of research papers for the similar topic included a multivariate analysis. This study contributes to the need for more multivariate analysis for this type of study by analysing the relationship between the collective BusMods and its effect on the DigBus strategy through a multivariate analysis.

To do so, this research tested six hypotheses, using PLS-SEM and multiple regression analysis to gain a deeper understanding of the relationship between the BusMod components and the DigBus strategy.

First, by testing the hypotheses, the study found that five individual, identified components of the BusMod, being 1) VP, 2) CTS, 3) VN, 4) RM, and 5) RAC, had different levels of positive significant relationships with the DigBus strategy. The resources and competencies component had the strongest positive significant relationship with the DigBus strategy (t-stats = 20.580, p = 0.000), followed by the revenue model component as the second strongest positive significant relationship with the DigBus strategy (t-statistics = 14.136, p = 0.000). Although the relationship between the value network and the DigBus strategy was positively significant (t-statistics = 6.707, p = 0.000), it was the weakest of the relationships from the set of five BusMod components. The customer target segment was the third strongest component (T-statistics = 13.099, p = 0.000), while the value proposition had the fourth strongest relationship with the DigBus strategy (T-statistics = 10.997, p = 0.000).

The testing of the hypotheses was further expanded to achieve the second objective of this study, which was to gain a better understanding of the collective effect of all five of the identified BusMod components' relationship to the DigBus strategy. To do so, a multiple regression analysis was completed. It revealed that the resources and competencies and the revenue model components were significant determinants of the success of the DigBus strategy, while the value proposition, customer target segment and the value network components were not. Although the value proposition's importance was highlighted in this study, the possible reason for the finding was that firms found it difficult to keep the first-mover advantage through its value proposition, as

it was easy to copy by competitors. The study conducted by Teece (2018) confirms that firms pioneering a new BusMod or the individual BusMod components, does not automatically lead to first-mover advantage because of two reasons, 1) pioneering firms do not secure the lock-in needed from customers and 2) the value proposition is in constant change and evolving due to its dynamic nature. This implies that firms must be able to develop an initial value proposition that results in competitive advantage when designing and implementing the DigBus strategy.

The value network was the second component that was not a significant contributor to the success of the DigBus strategy when compared to the other five BusMod components. The possible reason for this is that firms have not yet been able to work out how to develop BusMods in collaboration with partners and suppliers (Pagani, 2013). A further possible explanation for the value network component not being statistically significant could be due to partners and suppliers not sharing the required resources and competencies to extract the maximum benefit of the ecosystem (Pagani, 2013).

The customer target segment was the third component that was not a significant contributor to the overall success of the DigBus strategy. The possible reason for this could be that firms are still struggling to define the success factors and the ability to attract customers in the innovation of core business processes through the use of technology (Hienerth et al., 2011).

While this research provides a contribution to the digital BusMods and the DigBus strategy, there are further practical implications for business managers. These are discussed in the next section.

7.2. Management Implications

This section will build from the foundations of the literature, the data results and the outcomes discussed, to provide the practical implications for business managers who want to redesign a digital BusMod that is feasible and sustainable when designing or implementing a DigBus strategy. The use of a set of ranked BusMod components based on their importance that collectively influences the DigBus strategy will be practical for business managers to know, where to begin their journey, improve their knowledge that supports an often complex unique digital firm and make a BusMod more explicit (Al-Debei et al., 2008).

The results from PLS-SEM analysis in Chapter 5, Table 25, described the strength of the relationship between the BusMod components and the DigBus strategy by highlighting

the ranking from the most influential to the least influential BusMod component contributing to the success of the DigBus strategy.

Resources and competencies was identified as the strongest component that can influence the success of the DigBus strategy. If firms are unable to develop and invest in their resources and competencies, they will struggle to create a sustainable digital business.

The second strongest BusMod component was the **revenue model**. For example, one of the main reasons that start-ups fail in the new economy is due to the revenue model lacking in the firm or has a poor design (Alt et al., 2001). The digital world creates a network of revenues; for example, a two-sided BusMod, which firms must take advantage of while reducing the firm's costs (Krumeich et al., 2012). Established firms that are starting their digital journey are no different to the start-ups of the early 2000's, in that firms need to carefully craft the way value proposition is monetised.

The third component of the BusMod that is important is the **customer target segment**, where firms need to identify the mass market or niche market needs of their customers and create an attractive value proposition that can lock-in customers.

The fourth component that business managers should consider as important is the **value proposition** component. The study by Chesbrough et al. (2002), found this to be the central component when designing and implementing a digital BusMod, thereby highlighting its importance as the ability to generate value in the digital economy.

The fifth important component is the **value network**, which enables firms to co-create value for their customers through the firm's partners and suppliers.

Two of the five BusMod components from this study were identified, through a multiple linear regression analysis, as significant determinants of the success of a DigBus strategy. The resources and competencies element is the strongest determinant and the revenue model the second most important, as summarised in Figure 30:

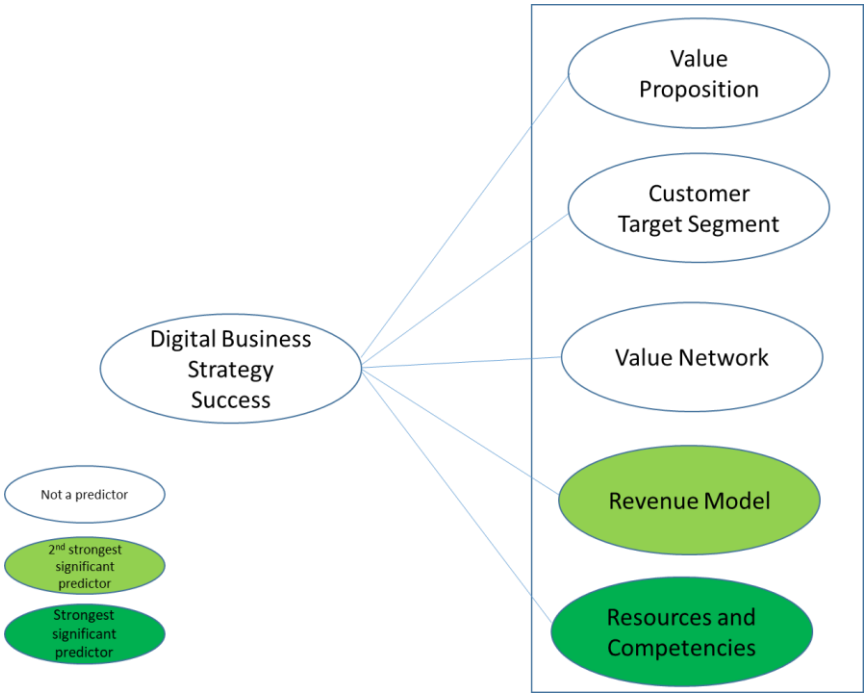


Figure 30 - Summary of findings

One of the reasons for achieving this ranking of the individual BusMod components and the significant determinant for the success of the DigBus strategy was to provide a starting point of prioritisation for business managers who begin their digital journey and are defining their DigBus strategy. When business managers develop business cases for a new DigBus strategy, they should focus more on resources, competencies and the revenue model as significant aspects of developing a successful DigBus strategy. While resources, competencies and revenue are significant predictors of success, the other three BusMod components, being the value network, customer target segment, and value proposition, should not be excluded from the design as they still have a positive significant relationship with the DigBus strategy, however, if resources, competencies and revenue are not available, the latter components automatically become insignificant.

The possible reason for the customer target segment not having a significant cumulative effect of the success of the DigBus strategy was confirmed in the study by Hienerth et al. (2011). The study stated that firms are still struggling to define the success factors and to attract customers and users in the innovation of core business processes through the use of technology.

A possible explanation for the low ranking of the value network could be due to participants in this study developing their BusMods, particularity the value network, in isolation of the firm's partners and suppliers. A possible explanation for doing so in

isolation could be that the partners and suppliers are not sharing the required resources and competencies to extract the maximum benefit of the ecosystem out of a sense of mistrust or not wanting to be locked in with partners and suppliers.

Although the value proposition's importance was highlighted in this study, the reason for it being ranked fourth is possibly explained by the firm's inability of the firm to hold competitors at bay. The results implies that the participants of the survey felt that firms found it difficult to keep the first-mover advantage through its value proposition. The study conducted by Teece (2018) confirms that pioneering a new business or any of the individual BusMod components does not automatically lead to a first-mover advantage, as pioneering firms do not secure the lock-in needed from customers.

In conclusion, this study provides a practical knowledge base for business managers and firms that want to move their business or business units from a traditional business to a business that can compete in the digital world.

7.3. Limitations of the Research

In every research, there are limiting factors that the study will not be able to compensate for. In this study, there were many factors that could have caused the results to have biased in one direction or another. These factors are detailed below.

7.3.1. The research was not industry specific

This study was not intended to be industry specific and may therefore limit how this study's findings can be used in other contexts or in a specific industry context. At the same time, more than 50% of the participants represented three industries, being financial services, ICT and retail, which may have influenced the outcome of the results. Furthermore, there are unique characteristics in each sector that limit the extrapolation of the results.

7.3.2. Sample technique and size

This study used non-probability sampling and the findings may not necessarily represent the entire population. Although care was taken to obtain a large sample size, the results may not be represent the generalised population. The final usable sample size was relatively small with 107 participants. Furthermore, snowball sampling was used, which could have introduced some bias in the responses.

7.3.3. Number of constructs

Five BusMod components were identified and limited to the analysis for this study. This identification was based on the work completed by Krumeich et al. (2012), Teece (2018) and Wirtz et al. (2016), however, it did not include other components such as structure and position of the firm, competitive model and the procurement model. Demil et al. (2010) confirmed that having a small number of components for analysis overcomes the limitation of assuming that all components are equal.

7.3.4. Researcher and participant bias and errors

The researcher's judgement and experience might have influenced the findings of this study. Although the researcher has some experience in designing DigBus strategies, the researcher did not have the advanced level of subject matter expertise.

The survey was completed by using a self-administered online questionnaire. Participants could have made errors and answered the survey questions, based on their own bias and perception of their environment. Although the questionnaire design was carefully considered, this may still be a limitation to the study.

7.3.5. Other predictors of a successful DigBus strategy

The study did not assess the other success factors that may influence the success in designing and implementation of a digital BusMod, for example, leadership capability, skill and experience required to drive the change throughout the firm. These factors could further influence the success of the DigBus strategy design and implementation; this could rotate the firm into a digital business successfully, and may therefore be a limitation.

7.3.6. Research experience

The researcher is not an academic and has no research experience. This study required that the researcher use non-probability sampling techniques, conduct statistical analysis techniques and present the findings. The researcher's experience in this field may be a limiting factor.

7.4. Suggestions for Future Research

This research provided empirical foundation on which future research can be built by exploring the relationship between the value proposition, customer target segment, value

network, revenue model, the resources and competencies BusMod components and the DigBus strategy. Some possible areas of this future research are discussed below.

7.4.1. Include additional constructs

While this research focused on the five proposed BusMod components described above, future research could identify other BusMod components that could grow the literature base by explaining the importance and relevance of further components to the digital BusMod design and implementation.

7.4.2. Industry specific

This research was not based on any specific industry. Future studies could build on the analysis from this research and test the BusMod components in specific industries. This will not only address the limitation of this study, but also increase the digital literacy and knowledge base for business managers within specific industries.

7.4.3. Sustainable BusMods

The focus of this study was largely on how the identified BusMod components contribute to the economic success of the firm through the digital BusMod. However, there are other elements for a BusMod and a firm's success that are gaining significant momentum across the globe. Firms are being placed under increased pressure to respond to sustainability concerns. These elements include the environment layer and social layer, where the environment and stakeholders relate to new DigBus strategy that is being implemented. The assessment of a more holistic, three-layered view of the digital BusMod, meaning economic, environmental and social, could be an element for future research, thus including the triple bottom line element and possibly also governance and ethics in future.

7.4.4. Critical success factors for DigBus strategy

Finally, very little is known about the critical success factors for implementing a DigBus strategy, given that digital strategies and technologies achieve strategic aims and objectives (Holotiuk et al., 2017). While there are different dimensions of critical success factors analysed by literature, there is a need to identify singular critical success themes that result in DigBus strategy design and implementation success.

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Appendix A - Survey questionnaire

Part 1: Demographic questionnaire (to establish whether the firm has a digital business strategy or digital products, level of work, size of organisation and number of years in current job level)

Num	Question	Type
Q1	Are you aware of or associated with a digital business strategy and digital business models in your organisation?	Yes / No
Q2	Please select your age range from the following	Range (20-30), (31-40), (41-50), (51-60), (60-older)
Q3	Please select from the following that best describes your current job level	Junior management, Middle management, Senior management
Q;4	Please indicate the number of years you have been at your current job level	Range (0-2), (2-4), (4-6), (6-8), (8+)
Q5	Please select from one of the following that best approximates the number of employees in your organisation	Range (Number of employees (0-50), (51-200), (201+)
Q6	Please select the number of years that your organisation has designed and/or implemented a digital business strategy and/or digital products and services	Range (0-2), (2-4), (4-6), (6-8), (8+)
Q7	Which industry is your organisation in?	Input free text

Value Proposition: Value proposition forms part of the digital BusMod.

To what extent do you agree with the following statements? (1. Strongly disagree; 2. Disagree; 3. Uncertain; 4. Agree; 5. Strongly agree)

*Please note that the "Adapted from" column in the table below was not included in the questionnaire. It is here for reference purposes only.

Num	Question	Type	Adapted from*
Q1	Our organisation can meet customer needs through our digital solutions	Likert scale (1-5)	Teece, D. J. (2010). Business models, business strategy and innovation. *Long Range Planning, 43*(2-3), 172-194
Q2	Our organisation invests in research and development and embeds this innovation in its products	Likert scale (1-5)	Teece, D. J. (2018). Business models and dynamic capabilities. *Long Range Planning*, *51*(1), 40-49
Q3	Our organisation bundles complementary products and services into the main products	Likert scale (1-5)	Teece, D. J. (2010). Business models, business strategy and innovation. *Long Range Planning, 43*(2-3), 172-194
Q4	Our organisation has the flexibility to adjust prices when competitors adjust their prices	Likert scale (1-5)	Bharadwaj, A., El Sawy, O., Pavlou, P., & Venkatraman, N. (2013). Digital business strategy: toward a next generation of insights. *MIS Quarterly*, *37*(2), 471-482
Q5	Our organisation can hold imitators and competitors at bay	Likert scale (1-5)	Teece, D. J. (2010). Business models, business strategy and innovation. *Long Range Planning, 43*(2-3), 172-194

Customer target segment: Organisations that specify the customer target successfully, design and implement digital business models successfully.

To what extent do you agree with the following statements? (1. Strongly disagree; 2. Disagree; 3. Uncertain; 4. Agree; 5. Strongly agree)

*Please note that the "Adapted from" column in the table below was not included in the questionnaire. It is here for reference purposes only.

Value Network: Business models are enabled by the corporative relationships (value network) that have an influence on value creation and therefore forms part of the design and implementation of the digital BusMod.

To what extent do you agree with the following statements? (1. Strongly disagree; 2. Disagree; 3. Uncertain; 4. Agree; 5. Strongly agree)

*Please note that the "Adapted from" column in the table below was not included in the questionnaire. It is here for reference purposes only.

Num	Question	Type	Adapted from*
Q1	Our suppliers play a critical role that allows our organisation to deliver on the digital business strategy	Likert scale (1-5)	Bharadwaj, A., El Sawy, O., Pavlou, P. & Venkatraman, N. (2013). Digital business strategy: toward a next generation of insights. *MIS Quarterly*, *37*(2), 471-482
Q2	Our partners play a critical role that allows our organisation to deliver on the digital business strategy	Likert scale (1-5)	Bharadwaj, A., El Sawy, O., Pavlou, P. & Venkatraman, N. (2013). Digital business strategy: toward a next generation of insights. *MIS Quarterly*, *37*(2), 471-482
Q3	The digital business strategy enables our organisation to create new networks quickly	Likert scale (1-5)	Bharadwaj, A., El Sawy, O., Pavlou, P. & Venkatraman, N. (2013). Digital business strategy: toward a next generation of insights. *MIS Quarterly*, *37*(2), 471-482
Q4	There has been a volume increase of products and services through our partners and alliances	Likert scale (1-5)	Bharadwaj, A., El Sawy, O., Pavlou, P. & Venkatraman, N. (2013). Digital business strategy: toward a next generation of insights. *MIS Quarterly*, *37*(2), 471-482

Revenue model: The revenue model is part of the digital business model design and implementation.

Do you agree with the following? (Yes/No/Unsure)

*Please note that the "Adapted from" column in the table below was not included in the questionnaire. It is here for reference purposes only.

Num	Question	Type	Adapted from*
Q1	Our organisation receives money upfront before the delivery of the digital product or service	Yes / No / Unsure	Baden-Fuller, C. & Haefliger, S. (2013). Business models and technological innovation. *Long Range Planning*, *46*(6), 419-426.
Q2	Our organisation receives money during the delivery of the digital product or service	Yes / No / Unsure	Baden-Fuller, C. & Haefliger, S. (2013). Business models and technological innovation. *Long Range Planning*, *46*(6), 419-426.
Q3	Our organisation receives money after the delivery of the digital product or service	Yes / No / Unsure	Baden-Fuller, C. & Haefliger, S. (2013). Business models and technological innovation. *Long Range Planning*, *46*(6), 419-426.

To what extent do you agree with the following statements?

(1. Strongly disagree; 2. Disagree; 3. Uncertain; 4. Agree; 5. Strongly agree)

Num	Question	Type	Adapted from*
Q4	The digital products and services have increased the revenue of our organisation	Likert scale (1-5)	Bharadwaj, A., El Sawy, O., Pavlou, P. & Venkatraman, N. (2013). Digital business strategy: toward a next generation of insights. *MIS Quarterly*, *37*(2), 471-482
Q5	The digital products and services have reduced the cost structures our organisation	Likert scale (1-5)	Bharadwaj, A., El Sawy, O., Pavlou, P. & Venkatraman, N. (2013). Digital business strategy: toward a next generation of insights. *MIS Quarterly*, *37*(2), 471-482

Resources and competencies: Resources and competencies forms part of the digital business model.

To what extent do you agree with the following statements? (1. Strongly disagree; 2. Disagree; 3. Uncertain; 4. Agree; 5. Strongly agree)

*Please note that the "Adapted from" column in the table below will not be included in the questionnaire. It is here for reference purposes only.

Number	Question	Type	Adapted from*
Q1	Our organisation has required skills and knowledge to lead in the digital world	Likert scale (1-5)	Teece, D. J. (2010). Business models, business strategy and innovation. *Long Range Planning, 43*(2-3), 172-194
Q2	Our organisation is structured in a way that combines activities to deliver value to our customers	Likert scale (1-5)	Teece, D. J. (2010). Business models, business strategy and innovation. *Long Range Planning, 43*(2-3), 172-194
Q3	Our organisation can with speed learn and adapt new technologies	Likert scale (1-5)	Bharadwaj, A., El Sawy, O., Pavlou, P., & Venkatraman, N. (2013). Digital business strategy: toward a next generation of insights. *MIS Quarterly*, *37*(2), 471-482
Q4	Our organisation allocates sufficient funding to take advantage of the digital opportunities	Likert scale (1-5)	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
Q5	Our organisation has the tools and infrastructure to operate in the new digital world	Likert scale (1-5)	Bharadwaj, A., El Sawy, O., Pavlou, P. & Venkatraman, N. (2013). Digital business strategy: toward a next generation of insights. *MIS Quarterly*, *37*(2), 471-482

Digital business strategy: The digital business strategy design and implementation is influenced by all five key business model components collectively.

To what extent do you agree with the following statements? (1. Strongly disagree; 2. Disagree; 3. Uncertain; 4. Agree; 5. Strongly agree)

*Please note that the "Adapted from" column in the table below was not included in the questionnaire. It is for reference purposes here.

Number	Question	Type	Adapted from*
Q1	Through the digital business strategy, our organisation exploits the digitisation of products of services	Likert scale (1-5)	Teece, D. J. (2010). Business models, business strategy and innovation. *Long Range Planning, 43*(2-3), 172-194
Q2	Our organisation's digital business strategy has been effective in accelerating new product launches	Likert scale (1-5)	Bharadwaj, A., El Sawy, O., Pavlou, P. & Venkatraman, N. (2013a). Digital business strategy: toward a next generation of insights. *MIS Quarterly*, *37*(2), 471-482
Q3	Our organisation's digital business strategy has been effective in increasing the number of revenue streams or increase in revenue itself	Likert scale (1-5)	Bharadwaj, A., El Sawy, O., Pavlou, P. & Venkatraman, N. (2013a). Digital business strategy: toward a next generation of insights. *MIS Quarterly*, *37*(2), 471-482
Q4	Our organisation has successfully aligned its IT strategy with its business strategy	Yes/No/ Unsure	Bharadwaj, A., El Sawy, O., Pavlou, P. & Venkatraman, N. (2013a). Digital business strategy: toward a next generation of insights. *MIS Quarterly*, *37*(2), 471-482
Q5	Our organisation has the tools and infrastructure to operate in the new digital world	Likert scale (1-5)	Bharadwaj, A., El Sawy, O., Pavlou, P. & Venkatraman, N. (2013a). Digital business strategy: toward a next generation of insights. *MIS Quarterly*, *37*(2), 471-482

Appendix B - Pilot feedback form

How many minutes did it take you to complete the survey? *

Short-answer text

How easy or difficult was it to understand the language of the question? *

	1	2	3	4	5	
Very difficult	○	○	○	○	○	Very easy

Are there questions that should be removed? Are the questions that should be added that will significantly contribute to this research? *

Long-answer text

Was there any ambiguity in any of the questions? *

- ○ Yes
- ○ No

If there was a question with ambiguity, which one was it?

Long-answer text

Appendix C – Cronbach's alpha per construct

Figure 31 – Cronbach's alpha for Value proposition

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.752	.754	5

Figure 32 - Cronbach's alpha for Customer Target Model

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.818	.821	4

Figure 33 - Initial Cronbach's alpha for Revenue Model

The first Cronbach's alpha produced an outcome of 0.355, which was below the recommended 0.70.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.355	.372	5

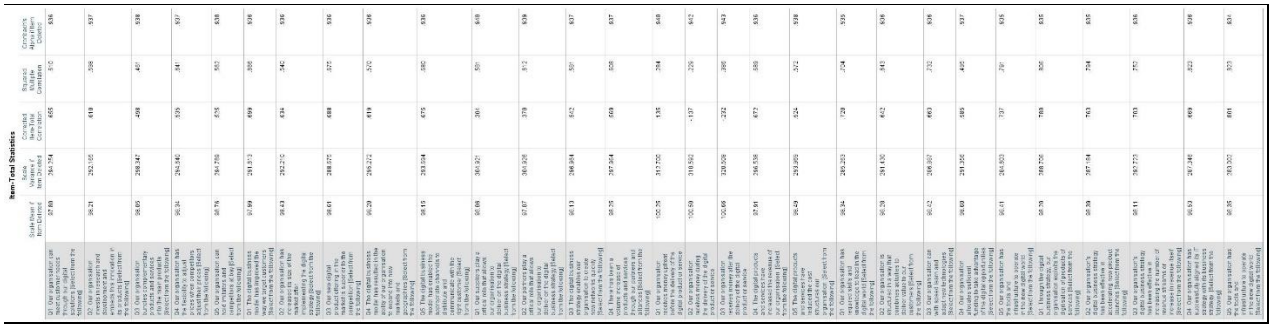


Figure 34 - Items deleted for Cronbach alpha for Revenue Model

To resolve the low Cronbach's alpha, the test was re-rerun to identify, which question should be deleted. In the first re-run, element RM1 was removed to increase the Cronbach's alpha score.

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Q1. Our organisation receives money upfront before the delivery of the digital product or service	12.24	6.186	-.163	.062	.548
Q2. Our organisation receives money during the delivery of the digital product or service	11.87	4.643	.172	.053	.308
Q3. Our organisation receives money after the delivery of the digital product or service	11.53	4.704	.234	.211	.262
Q4. The digital products and services have increased the revenue of our organisation [Select from the following]	9.91	4.010	.499	.364	.055
Q5. The digital products and services have reduced the cost structures our organisation [Select from the following]	10.49	3.837	.250	.237	.230

As per Figure 35 below, element RM2 was removed to bring the Cronbach's alpha within the lower limit of 0.60 (Hair et al., 2014).

Figure 35 - Second question deleted to improve Cronbach alpha

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Q2. Our organisation receives money during the delivery of the digital product or service	10.10	4.640	.147	.046	.624
Q3. Our organisation receives money after the delivery of the digital product or service	9.77	4.275	.337	.189	.476
Q4. The digital products and services have increased the revenue of our organisation [Select from the following]	8.14	3.707	.582	.364	.293
Q5. The digital products and services have reduced the cost structures our organisation [Select from the following]	8.72	3.392	.345	.229	.476

Figure 36 - Cronbach's alpha for value network

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.939	.931	29

Figure 37 - Cronbach's alpha for Resources and Competencies

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.880	.880	5

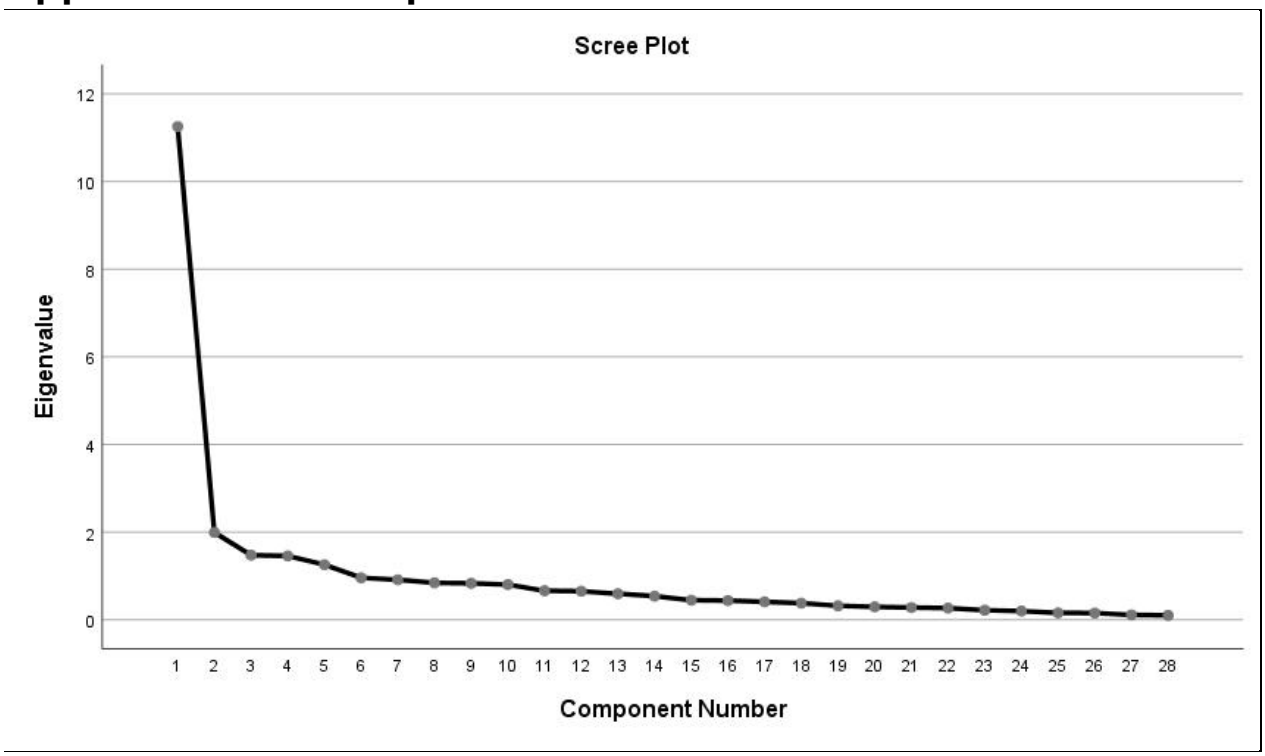
Appendix D - Components with eigenvalues greater than 1

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	11.253	40.188	40.188	11.253	40.188	40.188	6.262	22.364	22.364
2	1.993	7.116	47.304	1.993	7.116	47.304	5.352	19.113	41.477
3	1.473	5.261	52.565	1.473	5.261	52.565	2.230	7.964	49.441
4	1.457	5.203	57.768	1.457	5.203	57.768	1.960	6.999	56.440
5	1.257	4.489	62.258	1.257	4.489	62.258	1.629	5.818	62.258
6	.958	3.422	65.679						
7	.912	3.257	68.936						
8	.843	3.010	71.946						
9	.832	2.970	74.916						
10	.802	2.865	77.781						
11	.663	2.367	80.148						
12	.651	2.325	82.473						
13	.594	2.120	84.593						
14	.540	1.928	86.521						
15	.447	1.597	88.118						
16	.439	1.569	89.687						
17	.409	1.462	91.149						
18	.379	1.354	92.502						
19	.319	1.140	93.642						
20	.295	1.052	94.694						
21	.279	.998	95.692						
22	.267	.955	96.647						
23	.218	.777	97.424						
24	.198	.707	98.131						
25	.158	.565	98.696						
26	.154	.548	99.244						
27	.111	.396	99.640						
28	.101	.360	100.000						

Extraction Method: Principal Component Analysis.

Appendix E - Scree plot



Appendix F – KMO, Barlett's test and total variance explained per construct

Figure 38 – KMO, Bartlett's test and total variance explained for value proposition construct

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.712
Bartlett's Test of Sphericity	Approx. Chi-Square	129.941
	df	10
	Sig.	.000

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.527	50.547	50.547	2.527	50.547	50.547
2	.919	18.384	68.931			
3	.732	14.630	83.562			
4	.446	8.918	92.479			
5	.376	7.521	100.000			

Extraction Method: Principal Component Analysis.

Figure 39 – KMO, Bartlett's test and total variance explained for target customer segment construct

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.803
Bartlett's Test of Sphericity	Approx. Chi-Square	140.537
	df	6
	Sig.	.000

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.602	65.048	65.048	2.602	65.048	65.048
2	.530	13.238	78.286			
3	.467	11.682	89.969			
4	.401	10.031	100.000			

Extraction Method: Principal Component Analysis.

Figure 40 - KMO, Bartlett's test and total variance explained for value network constructs

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.592
Bartlett's Test of Sphericity	Approx. Chi-Square	118.220
	df	6
	Sig.	.000

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.244	56.108	56.108	2.244	56.108	56.108
2	.928	23.200	79.309			
3	.546	13.651	92.959			
4	.282	7.041	100.000			

Extraction Method: Principal Component Analysis.

Figure 41 - KMO, Bartlett's test and total variance explained for revenue model construct

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.602
Bartlett's Test of Sphericity	Approx. Chi-Square	59.783
	df	10
	Sig.	.000

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.897	37.947	37.947	1.897	37.947	37.947	1.897	37.945	37.945
2	1.078	21.550	59.497	1.078	21.550	59.497	1.078	21.552	59.497
3	.840	16.795	76.292						
4	.749	14.977	91.269						
5	.437	8.731	100.000						

Extraction Method: Principal Component Analysis.

Figure 42 - KMO, Bartlett's test and total variance explained resources and competencies construct

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.865
Bartlett's Test of Sphericity	Approx. Chi-Square	259.278
	df	10
	Sig.	.000

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.384	67.681	67.681	3.384	67.681	67.681
2	.556	11.113	78.794			
3	.393	7.869	86.663			
4	.361	7.229	93.892			
5	.305	6.108	100.000			

Extraction Method: Principal Component Analysis.

Appendix G - Descriptive statistics for Value Proposition

Descriptives

			Statistic	Std. Error
Q1. Our organisation can meet customer needs through our digital solutions [Select from the following]	Mean		4.21	.090
	95% Confidence Interval for Mean	Lower Bound	4.03	
		Upper Bound	4.38	
	5% Trimmed Mean		4.32	
	Median		4.00	
	Variance		.863	
	Std. Deviation		.929	
	Minimum		1	
	Maximum		5	
	Range		4	
	Interquartile Range		1	
	Skewness		-1.503	.234
	Kurtosis		2.647	.463
Q2. Our organisation invests in research and development and embeds this innovation in its products [Select from the following]	Mean		3.80	.105
	95% Confidence Interval for Mean	Lower Bound	3.60	
		Upper Bound	4.01	
	5% Trimmed Mean		3.87	
	Median		4.00	
	Variance		1.178	
	Std. Deviation		1.085	
	Minimum		1	
	Maximum		5	
	Range		4	
	Interquartile Range		2	
	Skewness		-.682	.234
	Kurtosis		-.290	.463
Q3. Our organisation bundles complementary products and services into the main products [Select from the following]	Mean		3.96	.094
	95% Confidence Interval for Mean	Lower Bound	3.78	
		Upper Bound	4.15	
	5% Trimmed Mean		4.03	
	Median		4.00	
	Variance		.942	
	Std. Deviation		.971	
	Minimum		1	
	Maximum		5	
	Range		4	
	Interquartile Range		1	
	Skewness		-.934	.234
	Kurtosis		.580	.463
Q4. Our organisation has the flexibility to adjust prices when competitors adjust their prices [Select from the following]	Mean		3.67	.106
	95% Confidence Interval for Mean	Lower Bound	3.46	
		Upper Bound	3.88	
	5% Trimmed Mean		3.72	
	Median		4.00	
	Variance		1.203	
	Std. Deviation		1.097	
	Minimum		1	
	Maximum		5	
	Range		4	
	Interquartile Range		2	
	Skewness		-.540	.234
	Kurtosis		-.557	.463
Q5. Our organisation can hold imitators and competitors at bay [Select from the following]	Mean		3.25	.107
	95% Confidence Interval for Mean	Lower Bound	3.04	
		Upper Bound	3.46	
	5% Trimmed Mean		3.27	
	Median		3.00	
	Variance		1.228	
	Std. Deviation		1.108	
	Minimum		1	
	Maximum		5	
	Range		4	
	Interquartile Range		2	
	Skewness		-.094	.234
	Kurtosis		-.994	.463

Appendix H - Descriptive statistics for Target Customer Segment

Descriptives

			Statistic	Std. Error
Q1. The digital business model has improved the way we target customers [Select from the following]	Mean		4.02	.095
	95% Confidence Interval for Mean	Lower Bound	3.83	
		Upper Bound	4.21	
	5% Trimmed Mean		4.10	
	Median		4.00	
	Variance		.962	
	Std. Deviation		.981	
	Minimum		1	
	Maximum		5	
	Range		4	
	Interquartile Range		1	
	Skewness		-1.077	.234
	Kurtosis		.816	.463
Q2. Our organisation has increased its size of the market after implementing the digital strategy [Select from the following]	Mean		3.58	.101
	95% Confidence Interval for Mean	Lower Bound	3.38	
		Upper Bound	3.78	
	5% Trimmed Mean		3.63	
	Median		4.00	
	Variance		1.095	
	Std. Deviation		1.046	
	Minimum		1	
	Maximum		5	
	Range		4	
	Interquartile Range		1	
	Skewness		-.592	.234
	Kurtosis		-.208	.463
Q3. Our new digital product offering in the market is superior to the competition [Select from the following]	Mean		3.40	.108
	95% Confidence Interval for Mean	Lower Bound	3.19	
		Upper Bound	3.62	
	5% Trimmed Mean		3.42	
	Median		3.00	
	Variance		1.243	
	Std. Deviation		1.115	
	Minimum		1	
	Maximum		5	
	Range		4	
	Interquartile Range		1	
	Skewness		-.102	.234
	Kurtosis		-.951	.463
Q4. The digital business model has resulted in the ability of our organisation to expand into new markets and geographies [Select from the following]	Mean		3.81	.090
	95% Confidence Interval for Mean	Lower Bound	3.63	
		Upper Bound	3.99	
	5% Trimmed Mean		3.88	
	Median		4.00	
	Variance		.870	
	Std. Deviation		.933	
	Minimum		1	
	Maximum		5	
	Range		4	
	Interquartile Range		1	
	Skewness		-.966	.234
	Kurtosis		1.071	.463
Q5. The digital business model has enabled the appropriate channels to distribute and communicate with the right customer [Select from the following]	Mean		3.86	.090
	95% Confidence Interval for Mean	Lower Bound	3.68	
		Upper Bound	4.04	
	5% Trimmed Mean		3.92	
	Median		4.00	
	Variance		.858	
	Std. Deviation		.926	
	Minimum		1	
	Maximum		5	
	Range		4	
	Interquartile Range		0	
	Skewness		-1.023	.234
	Kurtosis		.971	.463

Appendix I - Descriptive statistics for Value Network

Descriptives

			Statistic	Std. Error
Q1. Our suppliers play a critical role that allows our organisation to deliver on the digital business strategy [Select from the following]	Mean		3.95	.092
	95% Confidence Interval for Mean	Lower Bound	3.77	
		Upper Bound	4.14	
	5% Trimmed Mean		4.05	
	Median		4.00	
	Variance		.913	
	Std. Deviation		.955	
	Minimum		1	
	Maximum		5	
	Range		4	
	Interquartile Range		1	
	Skewness		-1.228	.234
	Kurtosis		1.836	.463
Q2. Our partners play a critical role that allows our organisation to deliver on the digital business strategy [Select from the following]	Mean		4.14	.078
	95% Confidence Interval for Mean	Lower Bound	3.99	
		Upper Bound	4.29	
	5% Trimmed Mean		4.22	
	Median		4.00	
	Variance		.650	
	Std. Deviation		.806	
	Minimum		1	
	Maximum		5	
	Range		4	
	Interquartile Range		1	
	Skewness		-1.142	.234
	Kurtosis		2.059	.463
Q3. The digital business strategy enables our organisation to create new networks quickly [Select from the following]	Mean		3.88	.094
	95% Confidence Interval for Mean	Lower Bound	3.69	
		Upper Bound	4.06	
	5% Trimmed Mean		3.94	
	Median		4.00	
	Variance		.938	
	Std. Deviation		.968	
	Minimum		1	
	Maximum		5	
	Range		4	
	Interquartile Range		2	
	Skewness		-.832	.234
	Kurtosis		.386	.463
Q4. There has been a volume increase of products and services through our partners and alliances [Select from the following]	Mean		3.76	.085
	95% Confidence Interval for Mean	Lower Bound	3.59	
		Upper Bound	3.93	
	5% Trimmed Mean		3.80	
	Median		4.00	
	Variance		.771	
	Std. Deviation		.878	
	Minimum		1	
	Maximum		5	
	Range		4	
	Interquartile Range		1	
	Skewness		-.525	.234
	Kurtosis		.121	.463

Appendix J - Descriptive statistics for Revenue Model

Descriptives

			Statistic	Std. Error
Q1. Our organisation receives money upfront before the delivery of the digital product or service	Mean		1.77	.090
	95% Confidence Interval for Mean	Lower Bound	1.59	
		Upper Bound	1.94	
	5% Trimmed Mean		1.74	
	Median		1.00	
	Variance		.860	
	Std. Deviation		.927	
	Minimum		1	
	Maximum		3	
	Range		2	
	Interquartile Range		2	
	Skewness		.485	.234
	Kurtosis		-1.677	.463
Q2. Our organisation receives money during the delivery of the digital product or service	Mean		2.14	.093
	95% Confidence Interval for Mean	Lower Bound	1.96	
		Upper Bound	2.33	
	5% Trimmed Mean		2.16	
	Median		3.00	
	Variance		.933	
	Std. Deviation		.966	
	Minimum		1	
	Maximum		3	
	Range		2	
	Interquartile Range		2	
	Skewness		-.287	.234
	Kurtosis		-1.890	.463
Q3. Our organisation receives money after the delivery of the digital product or service	Mean		2.48	.082
	95% Confidence Interval for Mean	Lower Bound	2.31	
		Upper Bound	2.64	
	5% Trimmed Mean		2.53	
	Median		3.00	
	Variance		.724	
	Std. Deviation		.851	
	Minimum		1	
	Maximum		3	
	Range		2	
	Interquartile Range		1	
	Skewness		-1.097	.234
	Kurtosis		-.705	.463

Descriptives

			Statistic	Std. Error
Q4. The digital products and services have increased the revenue of our organisation [Select from the following]	Mean		4.10	.078
	95% Confidence Interval for Mean	Lower Bound	3.95	
		Upper Bound	4.26	
	5% Trimmed Mean		4.18	
	Median		4.00	
	Variance		.659	
	Std. Deviation		.812	
	Minimum		1	
	Maximum		5	
	Range		4	
	Interquartile Range		1	
	Skewness		-1.054	.234
	Kurtosis		1.754	.463
Q5. The digital products and services have reduced the cost structures our organisation [Select from the following]	Mean		3.52	.111
	95% Confidence Interval for Mean	Lower Bound	3.30	
		Upper Bound	3.74	
	5% Trimmed Mean		3.57	
	Median		4.00	
	Variance		1.327	
	Std. Deviation		1.152	
	Minimum		1	
	Maximum		5	
	Range		4	
	Interquartile Range		1	
	Skewness		-.379	.234
	Kurtosis		-.860	.463

Appendix K - Descriptive statistics for Resources and Competencies

Descriptives

			Statistic	Std. Error
Q1. Our organisation has required skills and knowledge to lead in the digital world [Select from the following]	Mean		3.67	.116
	95% Confidence Interval for Mean	Lower Bound	3.44	
		Upper Bound	3.90	
	5% Trimmed Mean		3.75	
	Median		4.00	
	Variance		1.449	
	Std. Deviation		1.204	
	Minimum		1	
	Maximum		5	
	Range		4	
	Interquartile Range		2	
	Skewness		-.698	.234
	Kurtosis		-.425	.463
Q2. Our organisation is structured in a way that combines activities to deliver value to our customers [Select from the following]	Mean		3.73	.103
	95% Confidence Interval for Mean	Lower Bound	3.52	
		Upper Bound	3.93	
	5% Trimmed Mean		3.79	
	Median		4.00	
	Variance		1.143	
	Std. Deviation		1.069	
	Minimum		1	
	Maximum		5	
	Range		4	
	Interquartile Range		1	
	Skewness		-.711	.234
	Kurtosis		-.235	.463
Q3. Our organisation can with speed learn and adapt new technologies [Select from the following]	Mean		3.59	.119
	95% Confidence Interval for Mean	Lower Bound	3.35	
		Upper Bound	3.82	
	5% Trimmed Mean		3.65	
	Median		4.00	
	Variance		1.509	
	Std. Deviation		1.228	
	Minimum		1	
	Maximum		5	
	Range		4	
	Interquartile Range		2	
	Skewness		-.598	.234
	Kurtosis		-.704	.463
Q4. Our organisation allocates sufficient funding to take advantage of the digital opportunities [Select from the following]	Mean		3.41	.113
	95% Confidence Interval for Mean	Lower Bound	3.19	
		Upper Bound	3.63	
	5% Trimmed Mean		3.46	
	Median		4.00	
	Variance		1.358	
	Std. Deviation		1.165	
	Minimum		1	
	Maximum		5	
	Range		4	
	Interquartile Range		1	
	Skewness		-.310	.234
	Kurtosis		-.808	.463
Q5. Our organisation has the tools and infrastructure to operate in the new digital world [Select from the following]	Mean		3.60	.116
	95% Confidence Interval for Mean	Lower Bound	3.37	
		Upper Bound	3.83	
	5% Trimmed Mean		3.66	
	Median		4.00	
	Variance		1.450	
	Std. Deviation		1.204	
	Minimum		1	
	Maximum		5	
	Range		4	
	Interquartile Range		2	
	Skewness		-.433	.234
	Kurtosis		-.862	.463

Appendix L - Descriptive statistics for Digital Business strategy

Descriptives

			Statistic	Std. Error
Q1. Through the digital business strategy, our organisation exploits the digitisation of products of services [Select from the following]	Mean		3.81	.096
	95% Confidence Interval for Mean	Lower Bound	3.62	
		Upper Bound	4.00	
	5% Trimmed Mean		3.88	
	Median		4.00	
	Variance		.984	
	Std. Deviation		.992	
	Minimum		1	
	Maximum		5	
	Range		4	
	Interquartile Range		1	
	Skewness		-.915	.234
	Kurtosis		.552	.463
Q2. Our organisation's digital business strategy has been effective in accelerating new product launches [Select from the following]	Mean		3.62	.103
	95% Confidence Interval for Mean	Lower Bound	3.41	
		Upper Bound	3.82	
	5% Trimmed Mean		3.67	
	Median		4.00	
	Variance		1.144	
	Std. Deviation		1.070	
	Minimum		1	
	Maximum		5	
	Range		4	
	Interquartile Range		1	
	Skewness		-.593	.234
	Kurtosis		-.280	.463
Q3. Our organisation's digital business strategy has been effective in increasing the number of revenue streams or increase in revenue itself [Select from the following]	Mean		3.90	.090
	95% Confidence Interval for Mean	Lower Bound	3.72	
		Upper Bound	4.08	
	5% Trimmed Mean		3.96	
	Median		4.00	
	Variance		.867	
	Std. Deviation		.931	
	Minimum		1	
	Maximum		5	
	Range		4	
	Interquartile Range		2	
	Skewness		-.864	.234
	Kurtosis		.705	.463
Q4. Our organisation has successfully aligned its IT strategy with its business strategy [Select from the following]	Mean		3.48	.116
	95% Confidence Interval for Mean	Lower Bound	3.25	
		Upper Bound	3.71	
	5% Trimmed Mean		3.53	
	Median		4.00	
	Variance		1.440	
	Std. Deviation		1.200	
	Minimum		1	
	Maximum		5	
	Range		4	
	Interquartile Range		2	
	Skewness		-.328	.234
	Kurtosis		-.991	.463
Q5. Our organisation has the tools and infrastructure to operate in the new digital world [Select from the following]	Mean		3.66	.113
	95% Confidence Interval for Mean	Lower Bound	3.44	
		Upper Bound	3.89	
	5% Trimmed Mean		3.73	
	Median		4.00	
	Variance		1.376	
	Std. Deviation		1.173	
	Minimum		1	
	Maximum		5	
	Range		4	
	Interquartile Range		2	
	Skewness		-.564	.234
	Kurtosis		-.609	.463

Appendix M – Rotated Factor Matrix

Figure 43 - Rotated Factor matrix (EFA)

Rotated Component Matrix[a]

	Component				
	1	2	3	4	5
Q5. Our organisation has the tools and infrastructure to operate in the new digital world [Select from the following]	.823				
Q5. Our organisation has the tools and infrastructure to operate in the new digital world [Select from the following]	.781	.365			
Q3. Our organisation can with speed learn and adapt new technologies [Select from the following]	.762				
Q4. Our organisation allocates sufficient funding to take advantage of the digital opportunities [Select from the following]	.752				
Q2. Our organisation is structured in a way that combines activities to deliver value to our customers [Select from the following]	.714				
Q1. Our organisation has required skills and knowledge to lead in the digital world [Select from the following]	.691	.323			
Q4. Our organisation has successfully aligned its IT strategy with its business strategy [Select from the following]	.660	.303			
Q1. Through the digital business strategy, our organisation exploits the digitisation of products or services [Select from the following]	.635	.354		.431	
Q2. Our organisation invests in research and development and embeds this innovation in its products [Select from the following]	.577	.307			
Q2. Our organisation's digital business strategy has been effective in accelerating new product launches [Select from the following]	.512	.497			.388
Q4. Our organisation has the flexibility to adjust prices when competitors adjust their prices [Select from the following]		.728			
Q5. The digital business model has enabled the appropriate channels to distribute and communicate with the right customer [Select from the following]		.676	.337		
Q4. The digital business model has resulted in the ability of our organisation to expand into new markets and geographies [Select from the following]		.623	.306		
Q1. The digital business model has improved the way we target customers [Select from the following]	.347	.620			
Q2. Our organisation has increased its size of the market after implementing the digital strategy [Select from the following]		.617			
Q3. Our new digital product offering in the market is superior to the competition [Select from the following]	.404	.610			
Q5. Our organisation can hold imitators and competitors at bay [Select from the following]	.359	.607			
Q4. The digital products and services have increased the revenue of our organisation [Select from the following]		.596		.354	.376
Q3. The digital business strategy enables our organisation to create new networks quickly [Select from the following]		.593			
Q3. Our organisation's digital business strategy has been effective in increasing the number of revenue streams or increase in revenue itself [Select from the following]	.348	.577			.370
Q3. Our organisation bundles complementary products and services into the main products [Select from the following]		.517			
Q5. The digital products and services have reduced the cost structures our organisation [Select from the following]	.309	.471		.374	
Q1. Our organisation can meet customer needs through our digital solutions [Select from the following]	.424	.434			
Q4. There has been a volume increase of products and services through our partners and alliances [Select from the following]		.422	.333		.376
Q2. Our partners play a critical role that allows our organisation to deliver on the digital business strategy [Select from the following]			.862		
Q1. Our suppliers play a critical role that allows our organisation to deliver on the digital business strategy [Select from the following]			.838		
Q3. Our organisation receives money after the delivery of the digital product or service				.729	
Q1. Our organisation receives money upfront before the delivery of the digital product or service				-.654	.330
Q2. Our organisation receives money during the delivery of the digital product or service					.745

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.[a]
a. Rotation converged in 10 iterations.

Appendix N - Coding of construct indicators for CFA measurement model

The value proposition construct had five indicators, labelled VP1 to VP5, represent the questions from the survey as per **Table 30** below:

Table 30 - Coding for value proposition indicators

Question	Code
Our organisation can meet customer needs through our digital solutions	VP1
Our organisation invests in research and development and embeds this innovation in its products	VP2
Our organisation bundles complementary products and services into the main products	VP3
Our organisation has the flexibility to adjust prices when competitors adjust their prices	VP4
Our organisation can hold imitators and competitors at bay	VP5

The customer target segment had four indicators, labelled CTS11 to CTS5, represent the questions from the questionnaire survey as per **Table 31** below. Question 5 from the original questionnaire was removed because of the outliers identified above.

Table 31 - Coding for customer target segment indicators

Question	Code
The digital business model has improved the way we target customers	CTS1
Our organisation has increased its size of the market after implementing the digital strategy	CTS2
Our new digital product offering in the market is superior to the competition	CTS3
The digital business model has resulted in the ability of our organisation to expand into new markets and geographies	CTS4

The value network had four indicators, labelled VN1 to VN4, represent the questions from the questionnaire survey as per **Table 32** below:

Table 32 - Coding for value network indicators

Question	Code
Our suppliers play a critical role that allows our organisation to deliver on the digital business strategy	VN1
Our partners play a critical role that allows our organisation to deliver on the digital business strategy	VN2
The digital business strategy enables our organisation to create new networks quickly	VN3
There has been a volume increase of products and services through our partners and alliances	VN4

The revenue model had three indicators, labelled RM3 to RM5, represent the questions from the questionnaire survey, as per **Table 33** below. Questions 1 and 2 for the revenue model from the original questionnaire were excluded because low Cronbach's alpha, as per Table 18 above.

Table 33 - Coding for revenue model indicators

Question	Code
Our organisation receives money after the delivery of the digital product or service	RM3
The digital products and services have increased the revenue of our organisation	RM4
The digital products and services have reduced the cost structures our organisation	RM5

The resources and competencies had five indicators, labelled RAC1 to RAC5, represent the questions from the questionnaire survey, as per **Table 34** below:

Table 34 - Coding for resources and competencies indicators

Question	Code
Our organisation has required skills and knowledge to lead in the digital world	RAC1
Our organisation is structured in a way that combines activities to deliver value to our customers	RAC2
Our organisation can with speed learn and adapt new technologies	RAC3
Our organisation allocates sufficient funding to take advantage of the digital opportunities	RAC4
Our organisation has the tools and infrastructure to operate in the new digital world	RAC5

The DigBus strategy had five indicators, labelled DBS1 to DBS5, represent the questions from the questionnaire survey, as per **Table 35** below:

Table 35 - Coding for digital business strategy indicators

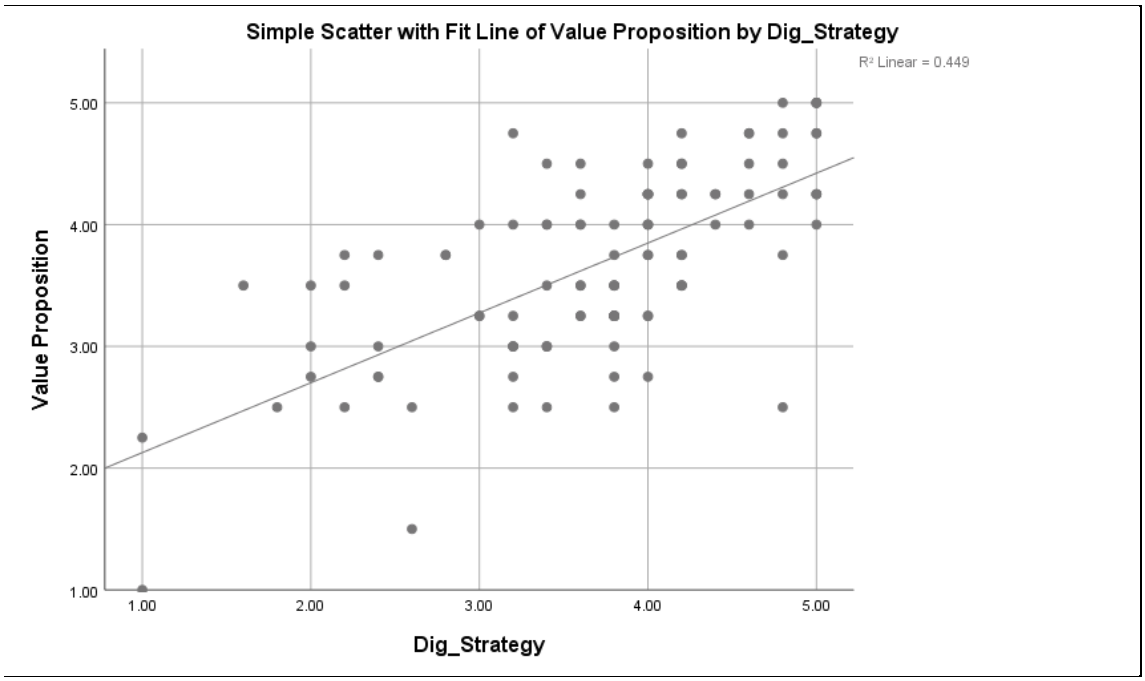
Question	Code
Through the digital business strategy, our organisation exploits the digitisation of products of services	DBS1
Our organisation's digital business strategy has been effective in accelerating new product launches	DBS2
Our organisation's digital business strategy has been effective in increasing the number of revenue streams or increase in revenue itself	DBS3
Our organisation has successfully aligned its IT strategy with its business strategy	DBS4
Our organisation has the tools and infrastructure to operate in the new digital world	DBS5

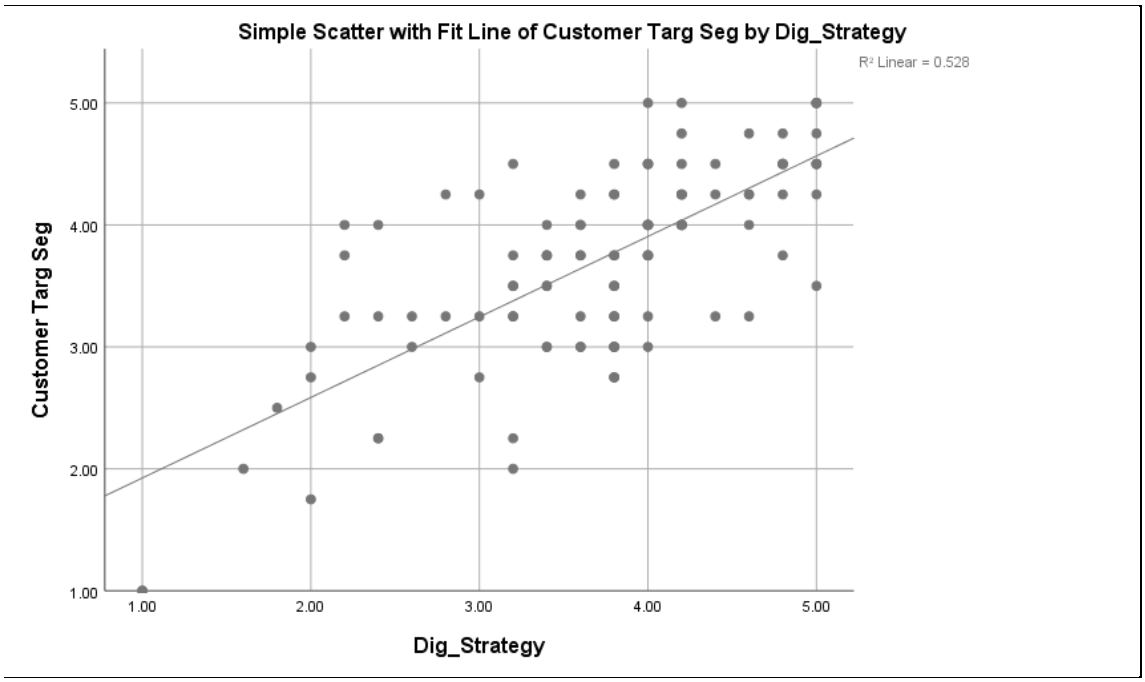
The codes used to convert the responses from the survey to numerical values are detailed below in **Table 36** below.

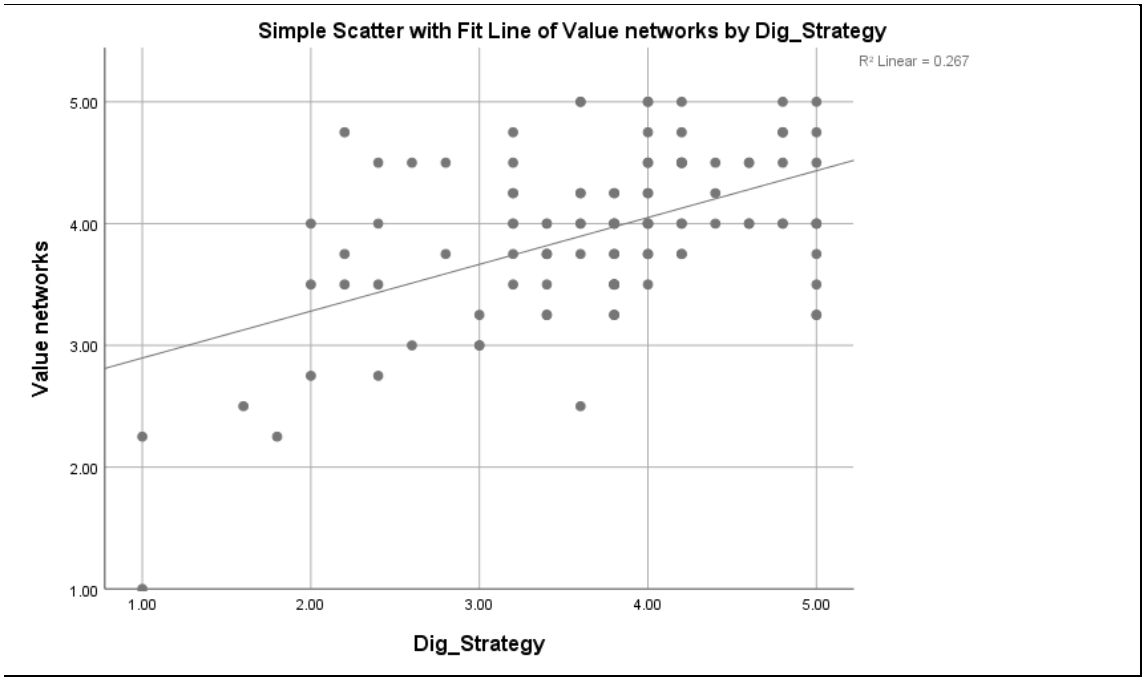
Table 36 - Code book

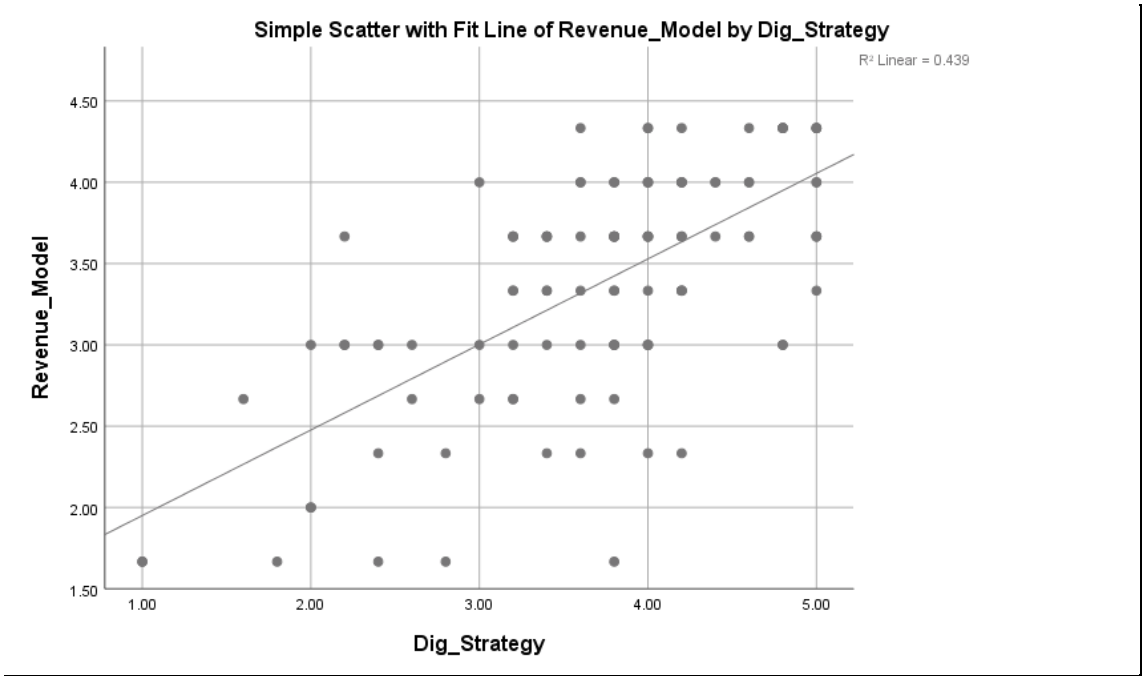
Element	Code
Yes	1
No	2
Maybe	3
20-30	1
31-40	2
41-50	3
51-60	4
60+	5
Junior management	1
Middle management	2
Senior management	3
Other	4
0-2	1
2-4	2
4-6	3
6-8	4
8+	5
0-50	1
51-200	2
201+	3

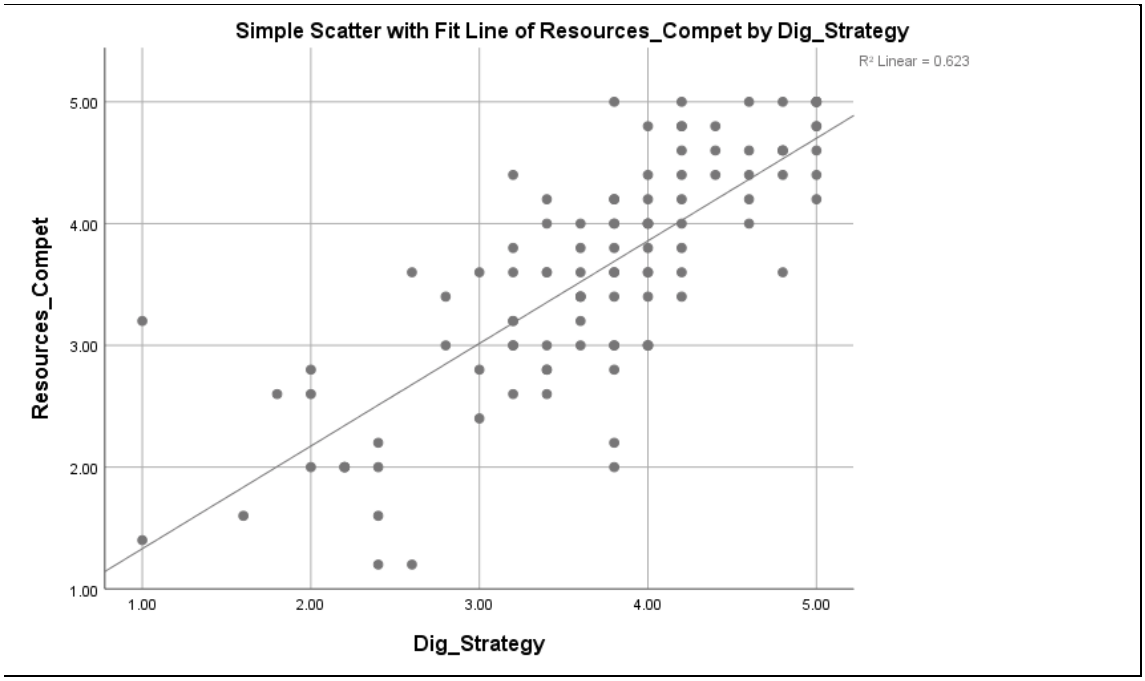
Appendix O – Scatter plot diagrams






Simple Scatter with Fit Line of Value networks by Dig_Strategy
R² Linear = 0.267
Value networks
5.00
4.00
3.00
2.00
1.00
1.00
2.00
3.00
4.00
5.00
Dig_Strategy


Simple Scatter with Fit Line of Revenue_Model by Dig_Strategy
R² Linear = 0.439
Revenue_Model
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
2.00
3.00
4.00
5.00
Dig_Strategy


Simple Scatter with Fit Line of Resources_Compet by Dig_Strategy
R² Linear = 0.623
Resources_Compet
5.00
4.00
3.00
2.00
1.00
1.00
2.00
3.00
4.00
5.00
Dig_Strategy

Appendix P - Ethical clearance

04 October 2018

Shaik Mahomed

Dear Mahomed

Please be advised that your application for Ethical Clearance has been approved.

You are therefore allowed to continue collecting your data.

Please note that approval is granted based on the methodology and research instruments provided in the application. If there is any deviation change or addition to the research method or tools, a supplementary application for approval must be obtained

We wish you everything of the best for the rest of the project.

Kind Regards

GIBS MBA Research Ethical Clearance Committee