Gordon Institute of Business Science
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The influence of dynamic capabilities on sustainable business model innovation

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Abstract

The global economy is transforming at an accelerated pace, where discontinuous change has become synonymous with being a new normal. This has serious implications for organisations, as if they do not have the capabilities to embrace such change and innovate to remain sustainable, they may be susceptible to obsolescence.

In light of the above, this study was centred around the relationship between the phenomena of dynamic capabilities (DC) and business model innovation (BMI), which have gained much momentum within academia, in recent years, as avenues to enhance an organisation's performance and sustainability. However, organisational design (ORGDESIGN) adds complexity to the relationship between those concepts. Therefore, this research sought to unpack and evaluate the relationships and interconnectedness between the three variables.

A model was developed to assess the relationships, where a quantitative study was conducted on a final sample of 112 survey responses. The respective hypotheses were evaluated which revealed statistically significant relationships between DC and BMI, DC and ORGDESIGN, and ORGDESIGN and BMI, respectively. A test for mediation revealed a complementary partial mediation of ORGDESIGN on the DC-BMI relationship. The results provide empirical insight to the theoretical relationships between these three variables.

Keywords

Dynamic capabilities, business model innovation, organisational design

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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Chapter 1: Introduction to the Research Problem

1.1 Background to the research problem

The global economy is transforming at an accelerated pace, where the third industrial revolution advanced toward the fourth, within just a matter of two decades, with technological advancements at the forefront of this radical shift (Felin & Powell, 2016). As a result, many organisations which employ traditionally rigid methods and business models, to respond to the uncertainty and volatility in the business environment, may struggle to adapt to the impending changes required to sustain its success and competitive edge, and may subsequently succumb to obsolescence (Felin & Powell, 2016; Schoemaker, Heaton & Teece, 2018). Black swan events, such as the global coronavirus pandemic which took the world by surprise in early 2020, have the ability to rapidly and, in some cases, permanently disrupt the business environment, causing a radical shift in the way organisations need to operate in order to remain relevant and to render them sustainable. The volatility in the business environment and the uncertainty regarding the future drives the need for organisations to possess certain competencies to enable them to adapt to and become more resilient to change, in order to preserve its sustainability within the business landscape. Business model innovation and dynamic capabilities provide a means for organisations to effectively leverage and rapidly respond to change (Foss & Saebi, 2017; Loon, Otaye-Ebede & Stewart, 2020; Teece, 2018).

Business model innovation has, of late, become a subject of increased interest and importance within the innovation and strategic management fields and the business environment (Evans, Vladimirova, Holgado, Van Fossen, Yang, Silva & Barlow, 2017; Foss & Saebi, 2017; Loon et al., 2020; Teece, 2018; Wang, Senaratne & Rafiq, 2015). As defined by Loon et al. (2020), business model innovation involves the creation of a new, or an enhancement of an existing organisational business model, which gives organisations the ability to effectively address the uncertainty, volatility and radical shifts in the business environment, which is a much-needed competence that gives organisations a competitive advantage in the market, while enhancing performance. Further to this, Evans et al. (2017) and Teece (2018) purport that, in order for firms to ensure its long-term success, business model innovation has become an important factor in facilitating the sustainability of an organisation, highlighting the need for sustainable business model innovation. However, although

there were studies performed around business model innovation, Foss and Saebi (2017) have found, based on their consolidation effort of fifteen years of theoretical and empirical studies in the field, that information within this field does not have a firm theoretical grounding, and is limited, scattered and not well understood. Evans et al. (2017) and Loon et al. (2020) are congruent with this view.

Teece (2018) adapted the dynamic capabilities framework (Teece, 2014) to integrate business models into the framework and to illustrate the interactions between business models and the sensing, seizing and transforming clusters of dynamic capabilities, which shows how it influences the dynamic capabilities-strategy relationship, from a theoretical viewpoint. He then proposed that the model needed to be tested from a practical application perspective, by performing empirical studies in order to assess and validate it. In his research, Teece (2018) explains that dynamic capabilities are fundamentally important to the design and enablement of business models, which in turn influences strategy. Foss and Saebi (2017) are in alignment with this view, as they have proposed a model for future research, based on extensive research that they have conducted, with the aim of consolidating the efforts of multiple researchers which, in essence, indicates that dynamic capabilities are an antecedent to business model innovation. Further to this, organisational design was highlighted as a major factor that moderates the relationship between dynamic capabilities and business model innovation (Foss & Saebi, 2017; Teece, 2018).

Based on prior research, dynamic capabilities and (sustainable) business model innovation are quintessential competencies that organisations need to adopt and leverage in order to render themselves sustainable in the long run, which ultimately gives them the ability to differentiate themselves from their competitors, provide them with a competitive advantage and enhance their organisational performance. However, studies on the relationship between dynamic capabilities and sustainable business model innovation are sparse, which necessitates the need to conduct further research within this field, to provide further insight on their relationship (Foss & Saebi, 2017; Teece, 2018). Therefore, the purpose of this study is to develop a proposed model and to empirically test it, to gain an in-depth understanding of the relationship between the constructs of dynamic capabilities and sustainable business model innovation, with the aim of generalising the findings for future research, so that

it can be applied and analysed, across different contexts, to provide further insights on the subject.

1.2 Significance of the research

Based on prior research, it was established that dynamic capabilities and business model innovation have attracted a growing interest as avenues of providing organisations with the ability and proclivity to rapidly respond to and adapt to volatility, uncertainty and change in the business environment, giving organisations a competitive edge in the market, while facilitating organisational performance.

From a theoretical standpoint, this research attempts to fill a void that was created, due to the lack of a firm and coherent understanding of the concept of business model innovation, which is apparent in existing literature. Furthermore, based on research conducted by Foss and Saebi (2017), Loon et al. (2020) and Teece (2018) on the relationship between dynamic capabilities and business model innovation, both of their findings were congruent from a theoretical perspective, which provided a basis to further ground their theory, by means of conducting an empirical analysis of the constructs and relationships that they proposed, to validate their findings. Additionally, they have proposed avenues for further research, which included the aforementioned proposal. Therefore, from a theoretical viewpoint, this research aims to develop and test a model to provide insights that will strengthen the body of knowledge regarding business model innovation and its relationship with dynamic capabilities.

From a business perspective, this study aims to provide insights on the practical application and importance of leveraging dynamic capabilities and sustainable business model innovation, to dynamically respond to change in the business environment, thus providing organisations with a means of fostering differentiation, obtaining a competitive advantage in the market, enhancing organisational performance and facilitating sustainability of the organisation.

1.3 Scope of the research

The scope of this research is confined within the boundaries of the following constructs and its respective definitions:

1.3.1 Dynamic capabilities

This construct pertains to the higher-order, distinct and inimitable organisational capabilities, that allow an organisation to respond to change swiftly and competitively, which are categorised within the three clusters of sensing, seizing and transforming (Fainshmidt, Pezeshkan, Frazier, Nair & Markowski, 2016; Felin & Powell, 2016; Teece, 2018).

1.3.2 Sensing

The ability of an organisation to identify and discern exploitable opportunities within the business environment (Teece, 2014, 2018).

1.3.3 Seizing

The coordination of actions, resources and configurations used to extract value from the identified opportunities (Teece, 2014, 2018).

1.3.4 Transforming

The ability of organisations to employ higher-order dynamic capabilities to modify or transform its business model, to effectively respond to change (Fainshmidt et al. 2016; Teece, 2014, 2018).

1.3.5 Sustainable business model innovation

An organisation's competency to rapidly and effectively adapt its business model to respond to change, sustaining its competitive edge (Foss & Saebi, 2017; Geissdoerfer, Vladimirova & Evans, 2018).

1.3.6 Organisational design

A construct that influences the strength of the relationship between dynamic capabilities and business model innovation (Foss & Saebi, 2017; Teece, 2018).

1.4 Purpose of the research

The purpose of the proposed study is to further solidify and ground existing theory, regarding the correlation between the constructs of dynamic capabilities and (sustainable) business model innovation, in order to validate the hypotheses that

stemmed from studies performed by Foss and Saebi (2017) and Teece (2018), with the aim of aiding in closing the gap that was identified by the aforementioned researchers and to add further insight, regarding the subject, to the current body of knowledge. This will be accomplished by leveraging the adapted dynamic capabilities framework (Teece, 2018), in order to incorporate sustainable business model innovation as a key construct, which was warranted by, and is commensurate with the findings of extensive research performed by Foss and Saebi (2017) and Teece (2018). The amended model will therefore be developed and tested within the business environment, in order to obtain empirical evidence to validate the claims made by Foss and Saebi (2017) and Teece (2018), regarding the relationship between dynamic capabilities and business model innovation.

Chapter 2: Literature Review

2.1 Introduction

As described in Chapter 1, the primary objective of this study was to unpack, understand and empirically evaluate the entanglement and interconnectedness between the phenomena of dynamic capabilities and business model innovation, which included obtaining an understanding of the role that organisational design plays on that relationship.

From the early 2000's, the phenomenon of business model innovation has gained much interest and momentum in theoretical research and is viewed as a new avenue of obtaining a sustainable competitive advantage (Foss & Saebi, 2017). Although there have been numerous attempts at defining what business model innovation is and how it fits into the overall business landscape, the definitions and findings were disparate and did not provide a systematic view on how it should be perceived (Foss & Saebi, 2017). Therefore, through their consolidation effort of fifteen years of research within the domain, Foss and Saebi (2017) have proposed a systematic view of the construct, which formed a theoretical basis for future research to leverage and build upon.

Dynamic capabilities, which are the higher order capabilities that organisations possess, allow them to optimally sense opportunities that arise, provide them with the ability to seize those opportunities and to aid in providing insight to transform the organisation (Teece, 2014, 2018). These are viewed as those capabilities that are unique, and if leveraged effectively, can also give organisations a sustained competitive advantage (Teece, 2014, 2018). This phenomenon has also gained increased attention in recent years in academic literature and the business environment.

The way in which an organisation is designed has major implications on how effective an organisation is at achieving its goals. It can either facilitate or inhibit an organisation's ability to remain sustainable or achieve superior organisational performance.

Based on the abovementioned, Foss and Saebi (2017) and Teece (2018) have attempted to provide theoretical models that illustrate the interconnectedness of

these three constructs, with the aim of creating a foundation upon which future studies regarding the relationship between these constructs can be based. Therefore, the purpose of the following literature review is to provide a systematic view of the theoretical positions on the definition of each of these constructs, explain their relationship based on current academic literature and to derive a proposed model that will form the basis of this study, in order to empirically evaluate the relationships, with the objective of adding quantitative insights on the relationships to the current body of knowledge.

2.2 A capability view of organisations

The way in which an organisation is configured and coordinated in order to execute and realise its desired strategy, is supported and enabled by the organisation's capabilities (Teece, 2018). Capabilities are the archetypical functions and routines an organisation employs and performs in order to render them relevant, competitive and profitable in deriving and delivering value within their economic ecosystem (Felin & Powell, 2016; Teece, 2014; Teece & Leih, 2016). From a theoretical and business standpoint, there are two distinct echelons of capabilities within an organisational context, which are ordinary and dynamic capabilities (Teece, 2014, 2018).

2.2.1 Ordinary capabilities

Ordinary capabilities are the first level of organisational capabilities, which are those "zero-order", foundational competencies that allow an organisation to accomplish its daily routine activities and operations, in order to remain relevant and to generate value within its respective business context (Fainshmidt et al., 2016; Kump, Engelmann, Kessler & Schweiger, 2019; Teece, 2014, 2018; Teece & Leih, 2016; Wilden, Gudergan, Nielsen & Lings, 2013). These capabilities generally involve an organisation's staff (permanent or contractors), machinery or equipment, organisational procedures, experience and protocol, and administration functions (Teece, 2014; Wang et al., 2015). The measurement criteria for evaluating ordinary capabilities are common across all industries that possess similar capabilities, which measures aspects such as operational efficiency and effectiveness of the utilisation of these capabilities (Teece, 2014), which can be easily copied and implemented across competitors and industries.

According to Teece (2014), the extent to which ordinary capabilities facilitate an organisation's competitiveness and performance is finite, as these capabilities and practices are not unique to any particular organisation and can therefore be easily replicated within and across industries. The ideology of "best practice" has become synonymous with many organisations (Schoemaker et al., 2018), resulting in them having less grounds for differentiation, due to their efforts in converging toward the industry norm, rendering an organisation less unique and competitive, in terms of their product or service offering. In addition, ordinary capabilities are available in abundance, where organisations can readily purchase the required equipment, contract the relevant resources or upskill their existing employees (Schoemaker et al., 2018; Teece, 2014). Ordinary capabilities can, if used optimally, give an organisation a competitive edge, however, it will be short-lived and not sustainable over the long term, if organisations cannot adapt effectively to leverage and capitalise on changes in the business environment (Schoemaker et al., 2018; Teece, 2014). Over time, the more routine orientated an organisation becomes, the more rigid and inflexible their organisational structures, hierarchies and culture will be (Schoemaker et al., 2018). This implies that ordinary capabilities are the basic building blocks required for an organisation to be operational, however, Felin and Powell (2016) argue that an organisation's reliance on its ordinary capabilities alone, or the improvement of these capabilities thereof, is not sufficient to ensure that it remains competitive and sustainable in a fast-changing business environment.

2.2.2 Dynamic capabilities

In contrast to ordinary capabilities, dynamic capabilities are the second, higher-order level of organisational capabilities, pertaining to those distinctive and inimitable organisational and leadership competencies that enable organisations to expeditiously integrate, adapt to or facilitate change, as a means of responding to uncertainty and volatility in the external environment, rendering an organisation competitive and sustainable in the long run (Fainshmidt et al., 2016; Felin & Powell, 2016; Teece, 2018; Wang et al., 2015).

Based on the aforementioned definition, dynamic capabilities have a significantly stronger positive influence on firm performance than ordinary capabilities do, more so where technological competencies are incorporated as a part of its capability suite (Fainshmidt et al., 2016; Wang et al., 2015; Wilden et al., 2013). Felin and Powell

(2016), further stipulate that the business environment is continuously evolving due to advancements in technology and innovation, as well as the increased uncertainty and volatility in the industry. What this means for organisations, is that if they do not opportunistically embrace and respond to these changes in the market dynamics, they lose the ability to remain competitive and may face the dire consequence of becoming obsolete (Felin & Powell, 2016). This highlights the need for dynamic capabilities, which enables organisations to swiftly respond to change and to find differentiated ways of exploring or exploiting opportunities that may arise in the business environment, thus amplifying the performance and success of organisations (Wang et al., 2015). However, organisations must take precaution against becoming a slave to the "success trap", which usually occurs when organisations reach that state of euphoria from their success, that they fall into the trap of focusing their efforts on routinising that success, thus adding an element of inflexibility and rigidity into the organisation, making it difficult to stay abreast of and capitalise on other opportunities that may arise (Makkonen, Pohjola, Olkkonen & Koponen, 2014; Wang et al., 2015). Therefore, having dynamic capabilities is one thing, but if it is not being optimally employed to continuously unlock value within the context of the organisation and its environment, organisations may forego the ability of achieving superior performance and obtaining a sustainable competitive edge in the market (Makkonen et al., 2014; Wilden et al., 2013).

The proficiency with which an organisation can effectively leverage its dynamic capabilities to transform its business model to sustain its competitiveness and profitability, depends on the strength and maturity of the capabilities, the organisation's ability to improve, realign or reconfigure its existing ordinary capabilities and (or) the ability to develop new ones, in order to explore or exploit new business opportunities that may arise (Fainshmidt et al. 2016; Kump et al., 2019; Teece, 2018; Wang et al., 2015). In order to ensure that this is optimally done, an organisation can employ the dynamic capability framework (Felin & Powell, 2016; Teece, 2014, 2018) to sense business opportunities, determine the business model and configuration that will be required in order to seize the opportunities and what the organisation needs to do to transform or realign its capabilities, in order to effectively execute its strategy or facilitate a shift in the strategy. The three higher order clusters of sensing, seizing and transforming, which are inherent to the

dynamic capability framework, are classified as the highest order capabilities (Teece, 2018), which will be explained in more detail below.

2.2.2.1 Sensing

The sensing cluster is the first part of the framework which pertains to an organisation's ability to identify trends and changes in the business environment and to subsequently provide insights in order to discern and signal potential opportunities that exist, which are aligned to its strategy, that it would opt to explore and (or) exploit in the future (Salvato & Vassolo, 2018; Teece, 2014, 2018; Wilden et al., 2013). Fainshmidt et al. (2016) and Teece (2014, 2018) indicate that organisations which possess dynamic capabilities are primed to sense these changes and opportunities in particularly highly volatile markets, and can therefore, innovatively respond to them respectively. In contrast to employing traditional approaches to identify opportunities or threats, such as human intuition and management experience, sensing is a more sophisticated and efficient approach which cognitively scans and assesses the environment (Teece & Leih, 2016). The speed and accuracy with which an organisation can sense opportunities or threats, gives organisations a head start in potentially seizing those opportunities or to effectively prepare to mitigate the risks associated with the threats (Schoemaker et al., 2018).

2.2.2.2 Seizing

The seizing cluster is the second part of the framework which encompasses an organisation's ability to focus its efforts on strategically selecting and extracting value from opportunities that were identified in the sensing phase or to prepare for and mitigate the impact of any potential threat that may impact the organisation and (or) its customers (Kump et al., 2019; Teece, 2014). However, seizing the identified opportunities is dependent on the governance frameworks of an organisation or country and the respective coordination of actions, resources and configurations that are undertaken and employed to extract the value (Teece, 2014). To further support this notion, an organisation needs to adapt its business model and operations to maintain its competitive edge, where dynamic capabilities give organisations the advantage of being innovative in the application of their resources (Fainshmidt et al., 2016; Teece, 2018). Therefore, the efficacy at which an organisation can optimally

seize opportunities depends on their ability to organise resources and their innovative capacity (Schoemaker et al., 2018).

2.2.2.3Transforming

Transforming is the third cluster of the dynamic capabilities framework, which provides a means of shifting the way the business operates or extracts value (Teece, 2014). Higher-order dynamic capabilities give organisations the increased ability to transform its business model through “recombining and modifying existing resources” and by using the strength and flexibility of its organisational culture to alter or change the way in which the organisation operates, or responds to change, when opportunities arise (Fainshmidt et al. 2016; Teece, 2014, 2018). This characteristic therefore gives an organisation the ability to exercise radical business model innovation. Similar to the seizing, the transforming cluster is heavily reliant on and subject to policies and governance (Teece, 2014). Teece and Leih (2016) assert that the strength of an organisation’s seizing and transforming capabilities, determine how effective an organisation is at being flexible to respond to volatility in the business environment.

2.3 A new approach to capturing, creating and delivering value

2.3.1 Business models

The primary aim of an organisation is to unlock value, by creating products and services to fulfil a customer need, with the objective of making a profit. Though there are a plethora of definitions that exist, the essence of a business model is that it serves as a blueprint which encapsulates the means and activities with which organisations capitalise on the value they wish to pursue (Foss & Saebi, 2017; Heider, Gerken, Dinther & Hulsbeck, 2021; Teece, 2018). In other words, it is an overview of the activities that are performed by the organisation and is a link between strategy and operations, and the internal and external environment of the business (Inigo, Albareda & Ritala, 2017).

The efficacy with which organisations can extract value is dependent on how the business is structured and coordinated, as well as how appropriate and mature their technological and organisational capabilities and competencies are (Berends, Smits, Reymen & Podoynitsyna, 2016; Teece, 2018). A rigid business model can inhibit an

organisation's ability to enable a change in strategy which may be warranted by changes in the economic environment (Schoemaker et al., 2018). To circumvent this, business models need to be flexible where there needs to be a strong alignment between the different components within an organisation's business model as it is a source of obtaining a competitive edge (Heider et al., 2021; Teece, 2018). As highlighted by Teece (2018), there are three broad components of a business model, namely the "value proposition", "revenue model" and "cost model". The first component deals with how an organisation creates a product or service to meet customers' needs, which they would want to pay for, the second component relates to how the organisation generates revenue, from that product or service, in order to settle all costs and still make a profit, and the third component deals with the cost structure that is involved in creating and delivering that product or service to the customer (Heider et al., 2021). In order to have a successful business model in place, all of the abovementioned components need to be synchronised in their efforts, where one component cannot operate on its own, as the different components complement each other to provide a service offering to customers, while achieving the goals of the organisation (Heider et al., 2021).

2.3.2 Business model innovation

Business model innovation, a relatively new and less understood concept, as compared to business models, has become an area of growing interest within the academic and business contexts, however, published literature within this domain is sparse and the findings, scattered (Berends et al., 2016; Foss & Saebi, 2017; Wirtz & Daiser, 2017). Therefore, Foss and Saebi (2017) opted to conduct a study to consolidate the findings of fifteen years of research within this field. To add to this, Berends et al. (2016) and Foss and Saebi (2017) have asserted that business model innovation has a positive impact on an organisation's performance and competitiveness, hence the increased interest in this field. Based on their research, Foss and Saebi (2017) have established that business model innovation is increasingly becoming the new competency that will give organisations a competitive edge in the market, superseding the traditional approaches of focusing on products and services that were previously undertaken by organisations, however, studies related to the construct are limited.

Business model innovation is a means of incorporating a sustainability element into organisations (Evans et al. 2017), where an organisation can create new business models to capture new opportunities or adapt their existing business model to add incremental value or respond to a change in the business environment. Many large organisations attempt to create a hybrid business model approach, where they integrate new and existing business models, however, over time, this could inhibit the organisation from achieving further growth, as the existing business model may inhibit the potential and flexibility of the new one (Berends et al., 2016). In order for business model innovation to be effective on an existing business model, a multitude of changes will need to be made (Berends et al., 2016). This is due to the interconnectedness and interdependencies between the various components of a business model, where a change in only one component may disrupt the synchronisation across the value chain. Therefore, there needs to be coordinated efforts and synergies across multiple components in order to optimally effect change (Teece & Linden, 2017).

In times of high economic uncertainty and volatility, business model innovation is a means of enabling an organisation to adapt to the change in conditions, in order to render the organisation sustainable (Wirtz & Daiser, 2017). In addition, technology has been a key enabler of organisations' ability to adapt their business models to change their mode of capturing existing value or to enable them to capture new avenues of value (Wirtz & Daiser, 2017). In support of this view, Teece (2018) postulates that business model innovation is spurred by changes or advancements in the capabilities that support business models, for example, advancements in technology provide access to data, from which an organisation can discern certain trends and characteristics that may be a fundamental antecedent that informs the need for business model innovation. Teece (2018) further accentuates that an organisation's ability to innovate its business model depends largely on the strength of its dynamic capabilities.

There are generally four types of business model innovation, which are: (1) to create a new one – applicable to a new organisation; (2) adapting or transforming a current one; (3) create an additional new one; or (4) procure one, where the last three apply to existing organisations (Geissdoerfer et al., 2018).

2.3.3 Sustainable business model innovation

With the dynamics of the business environment and customer needs increasingly shifting at unprecedented proportions, organisations need to swiftly respond to these changes to remain relevant to their customers and to give them a competitive edge in the market. This implies that organisations need to employ a business model innovation approach that is sustainable. Sustainable business model innovation increases an organisation's ability to be agile in responding to change, remain resilient, unlock and exploit opportunities and optimally manage its risk, aiding in sustaining its competitive advantage (Geissdoerfer et al., 2018). It entails finding value that will be sustainable over the long term, deciding whether to create, adapt or acquire a new business model, addressing environmental and (or) social aspects, or a combination of the abovementioned (Geissdoerfer et al., 2018). In addition, Teece (2018) affirms that dynamic capabilities give organisations the ability to have a sustainable competitive edge, which allows an organisation to constantly sense and discern new opportunities that may arise, thus giving organisations an opportunity to be first to market, be flexible enough to reconfigure their resources to seize such opportunities, where a flexible and innovative business model and management structure can harness those opportunities, and have the ability to transform the way in which the organisation operates, by rearranging their structures and respective capabilities.

2.4 Organisational design

An organisation's design is critical to the success of any organisation. It encapsulates organisational capabilities and competencies such as structures and hierarchies, organisational culture, communication and coordination within and across boundaries, remuneration systems and flexibility (Foss & Saebi, 2017; Yan, Li and Chang, 2020). The way in which an organisation is designed, structured and coordinated needs to be in alignment with leveraging its organisational capabilities in order to facilitate its strategy. There is an abundance of studies that have shown the positive effect of an organisation's design and structure on performance (Wilden et al., 2013). Conversely, as suggested by Yan et al. (2020), organisational design has the ability to "erode" the effects of the optimal utilisation and deployment of organisational resources, which may ultimately limit their efficacy at seizing new

opportunities that may emerge or at mitigating the effects and risks of potential challenges.

In line with traditional management styles, many successful organisations have fairly rigid organisational structures and hierarchies, which over time, may lead to “organisational inertia” (Teece, 2018). This has major implications for business, especially in times where economic uncertainty and volatility are high. Therefore, in order for an organisation to rapidly respond to change or seize opportunities that may arise, the organisation needs to be designed on the premise of innovation and adaptability (Teece, 2018). An organisation that has an effective delegation of authority, a flexible workforce, open communication and an optimal remuneration system is conducive to the requirements for innovation and adaptation (Teece, 2018).

2.5 The entanglement between dynamic capabilities, business model innovation and organisational design

According to Teece (2014), the higher order capabilities, which are fundamental components of the dynamic capability framework, have a strong correlation with an organisation’s strategy. Figure 1 below shows an illustration of the abovementioned phenomenon, which is an adaptation of the dynamic capabilities framework (Teece, 2018).

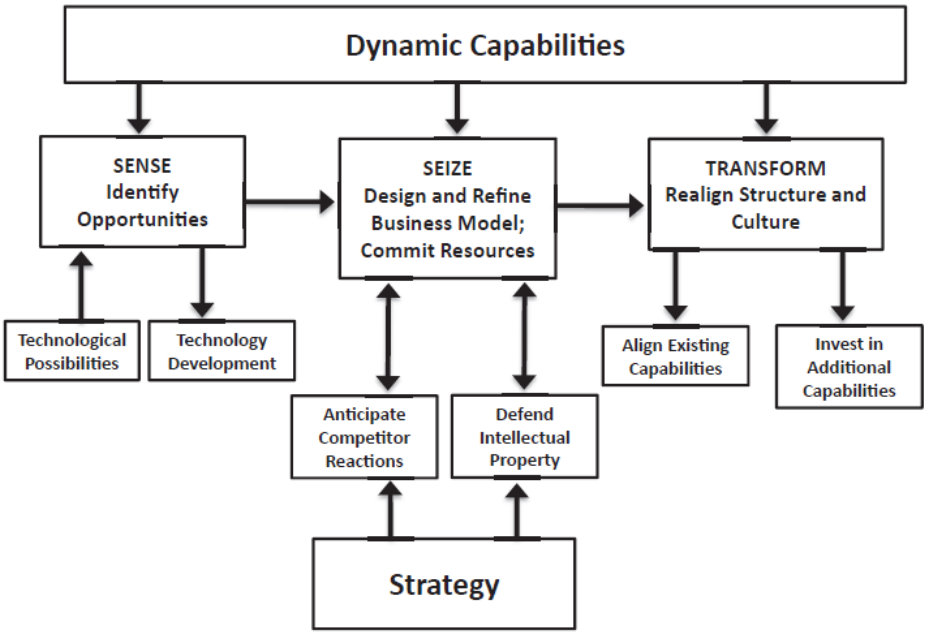


Figure 1: Adapted Dynamic Capabilities Framework
(Adapted from: Teece, 2018, p. 44)

As shown in Figure 1, the adapted framework shows the interconnectedness between dynamic capabilities, business models and strategy (Teece, 2018), where dynamic capabilities are synonymous with business models, implying that there is a significant relationship between the two constructs. In addition, the framework illustrates that the seizing component of dynamic capabilities has the strongest interrelationship with business models (Teece, 2018). Teece (2018) further postulates that dynamic capabilities enable business models and organisational design influences and is a necessary part of enabling the relationship between dynamic capabilities and business model innovation (Teece, 2018), where all three components of dynamic capabilities play a role, showing the interconnectedness between the variables. This suggests that there is a potential mediating effect of organisational design on the relationship between dynamic capabilities and business model innovation.

Congruent with the above view, Foss and Saebi (2017) also indicate that there is a strong relationship between business models and strategy, where a change in strategy necessitates a change in an organisation's business model, the effectiveness of which is pivoted through business model innovation. In addition,

dynamic capabilities have a significant influence on and are an antecedent to business model innovation (Foss and Saebi, 2017; Loon et al., 2020). Figure 2 below illustrates the abovementioned phenomena.

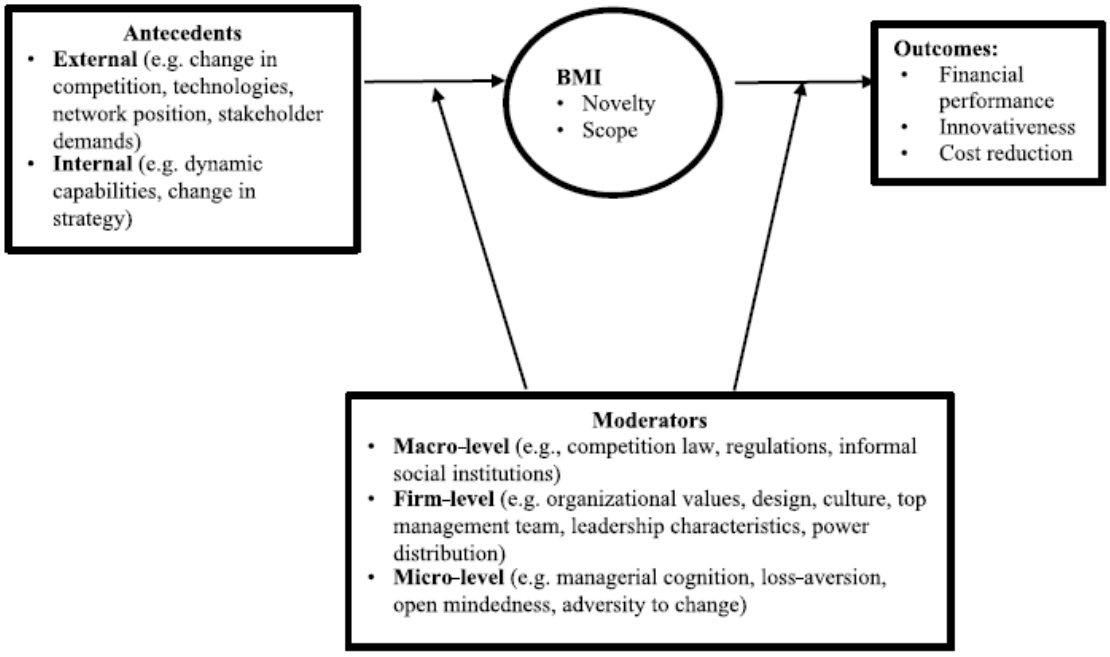


Figure 2: Business Model Innovation Research Model
(Adapted from: Foss & Saebi, 2017, p. 215)

As shown in Figure 2, dynamic capabilities are an antecedent to business model innovation, implying that it is an imperative variable. However, in contrast to the proposal made by Teece (2018), in this model organisational design plays a moderating role on the relationship between dynamic capabilities and business model innovation.

Superimposing the two models, as proposed in Figures 1 and 2, shows that an emergent theme is that both models suggest that there is a significant relationship between dynamic capabilities and business model innovation.

2.6 Conclusion

The objective of the literature review was to provide an overview of each of the constructs within this study, in order to provide a basis from which this study emanated. As highlighted within the literature review, much interest and momentum has been gained in academia, with respect to understanding the respective phenomena and their relationships, however, it was found that the findings of such studies were inconclusive and disparate. Therefore, the researcher opted to provide more insight into the entanglement between dynamic capabilities, business model innovation and organisational design, with the objective of validating some of the hypothesised relationships, by empirically evaluating the hypotheses, in order to add further insight into the interconnectedness between the constructs and to add to the current body of knowledge.

Drawing from the research models proposed Foss and Saebi (2017) and Teece (2018), the researcher superimposed the two models, to highlight the major similarities and differences, in order to derive a research model that would form the basis of this study.

Figure 3 illustrates the research model that was developed by the researcher as a foundation for this study, indicating the direction of the relationships that was highlighted, as well as an indication of the relationship that each hypothesis tested, as explained in Chapter 3.

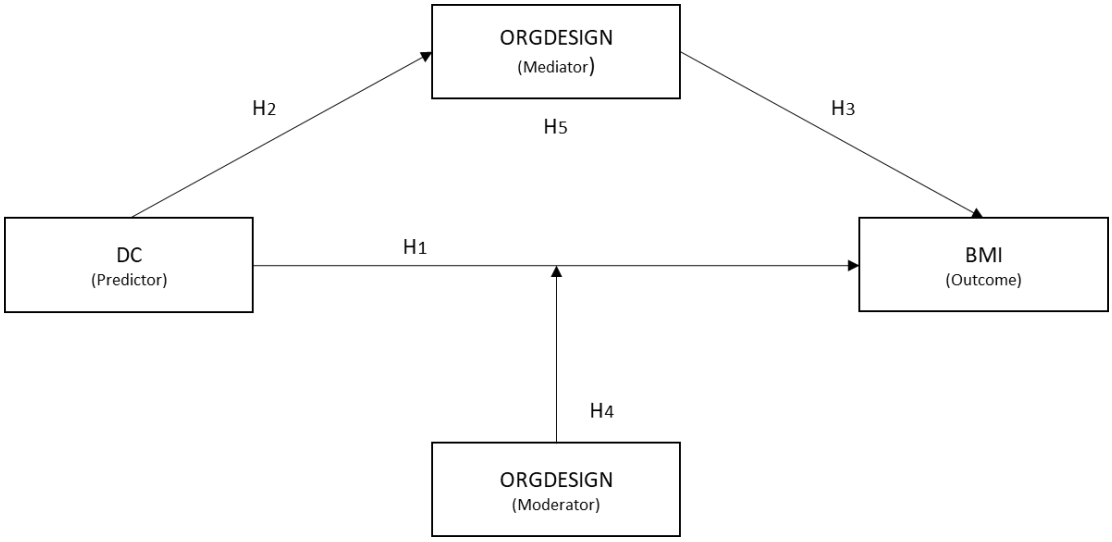


Figure 3: Proposed research model for the study

Chapter 3: Research Questions

3.1 Introduction

The primary objective of this study sought to understand the relationship between dynamic capabilities and business model innovation, as well as to understand whether organisational design moderates and (or) mediates the relationship. These phenomena have attracted increased interest in the academic domain in recent years, with numerous requests from researchers to empirically evaluate and validate their proposed models and hypotheses. Therefore, the researcher sought to fill that void by performing an empirical study between the three constructs.

Chapter 1 introduced the research problem, as well as an understanding of the significance and purpose of this study. Chapter 2 then provided a literature review regarding each of the three constructs and their entanglement, as well as an illustration of the model that the researcher developed for this study (Figure 3). The objective of this chapter is to provide a description of the research questions and respective hypothesis that was used to test the relationships depicted in the research model.

3.2 Research questions

Based on the five hypotheses illustrated in Figure 2, the researcher sought to evaluate each hypothesis, as per the five research questions below.

3.2.1 Research question one

Is there a significant positive relationship between dynamic capabilities and business model innovation?

The objective of research question 1 was to gain an understanding of the relationship between the primary constructs of this study, that is dynamic capabilities and business model innovation. As per the literature review conducted in Chapter 2, there were implications that there is a positive relationship between these two constructs (Foss & Saebi, 2017; Teece, 2018). This relationship was also important to ascertain as it had implications for research questions four and five. Therefore, the hypothesis that was tested within research question one was:

H_1: There is a significant positive relationship between dynamic capabilities and business model innovation.

3.2.2 Research question two

Is there a significant positive relationship between dynamic capabilities and organisational design?

The objective of this research question was to understand the second part of the entanglement between the three constructs, which was to obtain the relationship between dynamic capabilities and organisational design, which was also a precursor to the test conducted in research question five (Foss & Saebi, 2017; Teece, 2018). The hypothesis for research question two was as follows:

H_2: There is a significant positive relationship between dynamic capabilities and organisational design.

3.2.3 Research question three

Is there a significant positive relationship between organisational design and business model innovation?

This research question pertained to the third part of the entanglement of the constructs, which was to assess the relationship between organisational design and business model innovation, which was also a requirement to validate the assumptions upon which research question five was based (Foss & Saebi, 2017; Teece, 2018). Therefore, the hypothesis that was tested in research question three was:

H_3: There is a significant positive relationship between organisational design and business model innovation.

3.2.4 Research question four

Is there a significant positive moderating effect of organisational design on the relationship between dynamic capabilities and business model innovation?

Research question four was based on evaluating the moderating effect that organisational design had on the relationship between dynamic capabilities and

business model innovation. This research question was based on the premise of the study performed by Foss and Saebi (2017), where it was suggested that organisational design plays a moderating role on the aforementioned relationship between the primary constructs. The hypothesis for research question four was therefore:

H_4: There is a significant positive moderating effect of organisational design on the relationship between dynamic capabilities and business model innovation.

3.2.5 Research question five

Is there a significant positive mediating effect of organisational design on the relationship between dynamic capabilities and business model innovation?

This research question emanated from the research conducted by Teece (2018), where it was postulated that organisational design mediates the relationship between dynamic capabilities and business model innovation. Therefore, based on this notion, the hypothesis for research question five was:

H_5: There is a significant positive mediating effect of organisational design on the relationship between dynamic capabilities and business model innovation.

Chapter 4: Research Methodology

4.1 Introduction

As explained in Chapter 1, the purpose of this research was to determine the influence of dynamic capabilities on sustainable business model innovation, as well as to determine the moderating and mediating effect of organisational design on the relationship. Chapter 2 then provided a theoretical overview of each of the constructs identified in Chapter 1, highlighting that there is a growing interest in the fields of dynamic capabilities and business model innovation. Based on the premise of Chapters 1 and 2, the researcher developed a model that formed a basis for this research and explained the respective hypotheses that were tested, as part of this study, within Chapter 3.

Therefore, based on the aforementioned, the objective of this chapter is to provide a description of the research methodology that was employed to test each of the hypotheses.

4.2 Research design

The quality of the research is dependent on a thorough understanding and consideration of the research design options that are available, in order to determine the optimal approach to be employed (Saunders & Lewis, 2018). Furthermore, Köhler, Landis and Cortina (2017) emphasise that the research design must be aligned to the purpose of the study, in order to provide a higher level of confidence on the findings, which must be based on a rigid research design. Since the purpose of this research was to conduct an evaluation of the relationship between dynamic capabilities, which consists of the three components of sensing, seizing and transforming, and sustainable business model innovation, with organisational design being a moderating variable, an explanatory research design was adopted, which would aid in empirically determining and explaining the relationship and extent of interaction between the constructs being evaluated within this study (Foss & Saebi, 2017; Köhler et al., 2017; Podsakoff & Podsakoff, 2019; Saunders & Lewis, 2018; Teece, 2014; Teece, 2018).

Based on the abovementioned, the research was approached from a positivist philosophy, as the intention of this research was to objectively derive and test the

hypotheses that were already established in existing literature, in order to measure and predict the relationship between dynamic capabilities and sustainable business model innovation, which is a frequently used philosophy in quantitative research design and analysis (Köhler et al., 2017; Saunders & Lewis, 2018; Wamba et al., 2017). A positivist philosophy also allows for the results and findings to be generalised across the population concerned with this study, provided the sample size being analysed is representative of the population (Zikmund, Babin, Carr & Griffen, 2013). In addition, this philosophy is congruent with the researcher's own research philosophy, yielding credibility to the analysis conducted and findings substantiated within this study.

A deductive approach aims to describe the relationship and interaction between the variables under study, where data is collected to test the hypotheses that were developed (Saunders & Lewis, 2018). Therefore, based on this notion, a deductive approach was employed, with the aim of adopting and testing hypotheses that were derived from existing theoretical studies and literature (Edmondson & McManus, 2007) on the relationship between dynamic capabilities and sustainable business model innovation, where organisational design is hypothesized as a moderating variable. In addition to this, the researcher opted for this approach, as an objective of the study was to either prove or disprove the claims made within existing theoretical studies, on the relationship between the constructs, or to provide a basis for its modification (Saunders & Lewis, 2018).

A survey strategy was deemed to be the most appropriate method to collect data for this study, as it has become the prevalent method for the collection of large volumes of data (Chidlow, Ghauri, Yeniyurt & Cavusgil, 2015) for quantitative studies, within a short time period. To further validate this, Heider et al. (2021), Wamba et al. (2017) and Wang et al., (2015) used a survey technique to collect data for similar types of studies. A mono method approach was undertaken, which means that only one measurement instrument was to be used (Saunders & Lewis, 2018), which, for the purpose of this study, was the use of a survey questionnaire. The questionnaire was sent electronically to the respondents, which had a consistent, structured set of questions, with the intention of allowing the respondents to self-administer the questionnaire, voluntarily and anonymously, on behalf of the organisation.

A cross-sectional time horizon is deemed suitable, where the constructs under study are effectively identified and understood (Edmondson & McManus, 2007). Therefore, data was collected, measured and analysed within a cross-sectional time horizon, which provided a view, at a point in time, for the constructs under study (Saunders & Lewis, 2018).

4.3 Population

With the radical shift from the third industrial revolution to the fourth, many organisations have rapidly adjusted or have developed new business models, or are in the process of doing so, through the adoption and usage of new or enhanced technological capabilities, such as artificial intelligence, big data, machine learning, robotics and mobile technology, to name a few (Felin & Powell, 2016). Thus, the exact or approximate size of the population which leverage dynamic capabilities and exercise business model innovation is not known and will be a costly and time-consuming exercise to ascertain. Furthermore, Foss and Saebi (2017) and Teece (2018) have indicated that sufficient empirical studies have not yet been conducted within this field. Therefore, for the purpose of this study, the researcher targeted organisations which possess dynamic capabilities and have the ability to exercise business model innovation, through the use of screening questions within the survey, with the objective of generalising the analysis done and results obtained, from the sample, across the population.

Characteristics such as the organisation's size, age, location and industry, to name a few, were not regarded as limiting factors to the target population, as these were deemed additional attributes with which the data could be segmented, characterised and analysed, to provide further insights. Therefore, due to not imposing restrictions to the sample, a larger sample size could be achieved, where the results could be generalised across the entire population which leverage dynamic capabilities and business model innovation, rather than limiting its applicability to a single industry or a subset of industries.

4.4 Unit of analysis

According to Zikmund et al. (2013), the unit of analysis is determined by the entity which produces the data and the level at which the data is required for the study, which may then be generalisable at the same level. Within the context of this study,

data was required at an organisational level, therefore the unit of analysis was an organisation which leverages dynamic capabilities (sensing, seizing and transforming), where they have the option of exercising business model innovation, so that their ability and extent to which they use dynamic capabilities to support and facilitate their business model innovation could be evaluated. In order to obtain data regarding the characteristics of the organisation, around which the constructs are based, a representative of each organisation, irrespective of their role level and industry, but who were familiar with, and understood and worked with or on items related to the constructs within this study, were required to complete the survey, on behalf of their organisation.

4.5 Sampling method

When evaluating a sampling method to be employed for a study, the researcher must take cognisance of any restrictions or factors that may pose a hinderance during the data collection phase and to assess those elements within the context of the study being undertaken. According to Saunders and Lewis (2018), probability sampling is ideal in instances where the entire population is known and the researcher can randomly select respondents as part of the sample, where the results can be generalised at a higher confidence level. However, within this study, a non-probability sampling method was employed, as the researcher could not obtain a complete list of the total population of organisations which leverage their dynamic capabilities to facilitate business model innovation, as this population was not known (Saunders & Lewis, 2018).

A purposive sampling technique was adopted, as it is commonly used within the non-probability sampling method (Saunders & Lewis, 2018; Zikmund et al., 2013). As a part of the purposive sampling technique, the researcher used convenience sampling, which makes it easier to obtain samples, as the initial selection of organisations was based on the researcher's professional network, thus minimising the cost of obtaining samples (Saunders & Lewis, 2018; Zikmund et al., 2013). This approach was followed, as the researcher understood the objective of the study and the characteristics of organisations that were required, which facilitated the selection of candidate organisations. Further to this, a snowball technique was employed to obtain additional samples, as the researcher requested the initial respondents to further distribute the survey to organisations within their professional networks, such

as colleagues, suppliers, customers, partners and peers, to name a few, who also possess dynamic capabilities and who exercise business model innovation, propagating the desired snowball effect of the study (Saunders & Lewis, 2018).

Due to the study being conducted within a cross-sectional time horizon and with the researcher's requirement of conducting the research in a cost-effective manner, the non-probability purposive, convenience and snowball sampling techniques were deemed appropriate for this study (Saunders & Lewis, 2018; Zikmund et al., 2013).

4.6 Sample size

In terms of the sample size required for the research, there were numerous statistical methods that could be used to determine the sample size required for a quantitative study, however, due to the limitation of the researcher not being able to obtain the total size of the population of organisations containing dynamic capabilities and practicing business model innovation, alternative means needed to be considered (Toepoel, 2016).

Researchers should have a high level of confidence that the sample selected will provide sufficient information to appropriately address the research questions (Köhler et al., 2017), however, the sample needs to be large enough to reduce errors and to allow for an increase in the confidence levels of the results (Zikmund et al., 2013).

Since the population size was not known, the researcher approximated a sample based on previous research that was done on constructs that were comparable to those that were being investigated as part of this study. Heider et al. (2021), Wamba et al. (2017), Wang et al. (2015) and Wilden et al. (2013) had samples with sizes of 285, 297, 113 and 91 respectively. Although Wilden et al. (2013) initially aimed for a sample size of 2747, which was based on database data they have obtained for the entire population that was in scope for their study, they have only managed to obtain a final sample of 91. Therefore, for the purpose of this study, the researcher opted for a target sample of approximately 200 respondents, which was based on the average of the samples of the abovementioned studies.

4.7 Measurement instrument

The objective of the study was to derive and test already established constructs from existing theoretical studies that have been conducted, which were in line with the researcher's positivist research philosophy (Saunders & Lewis, 2018). The core constructs of the study were based on the premise of the research conducted by Foss and Saebi (2017) and Teece (2018). Based on those specified constructs of dynamic capabilities (sensing, seizing and transforming), business model innovation and the moderating variable of organisational design, which the researcher sought to assess, the research questions for the constructs were adapted from existing published theoretical studies, in order to ensure objectivity in the results obtained. The research questions were obtained from studies performed by Dubey, Gunasekaran and Childe (2018), Spieth and Schneider (2016), Wamba et al. (2017) and Wilden et al. (2013).

The measurement instrument that was used for this research, in order to collect the relevant data required, was a survey in the form of a questionnaire, which is the most widely favoured method of collecting quantitative data (Chidlow et al., 2015; Saunders & Lewis, 2018). The survey consisted of questions which was aimed at obtaining rich information in order to test the proposed hypotheses outlined is Chapter 3, which was derived from existing literature and studies regarding dynamic capabilities, business model innovation and organisational design, with the objective of obtaining data and insights to evaluate the relationships between the variables being investigated within this study. This approach was employed in order to test the reproducibility of results and to provide a basis on which comparisons can be made. The questionnaire was structured, confidential, anonymous in nature and self-administered, in order to alleviate any reservations that the respondents may have had when participating in the survey and answering the survey questions, with the aim providing credibility to the feedback obtained.

The questionnaire consisted of six sections which were aimed at collecting data for the different elements required for the research (Appendix A). Section one (Background of the Organisation and Participant) consisted of 10 questions, where eight questions sought to obtain demographic information of the respondents and their organisations and two questions served as screening questions, which were included in order to identify whether the required unit of analysis was obtained. The

demographic information was required in order to provide descriptive statistics of the sample, where the researcher could identify whether the responses were diversified or whether there were any biases to the sample obtained.

The remaining five sections of the survey, Sections two to six, contained questions relating to each of the five constructs under study. Three of the constructs, that is, sensing, seizing and transforming, with each having their own set of questions, were related to obtaining data related to dynamic capabilities. The other two constructs contained questions regarding business model innovation and organisational design respectively. In order to collect data for Sections two to six of the survey, the researcher used a five-point Likert Scale, ranging from “strongly disagree” to “strongly agree”. Sections two to six had a combined total of 49 questions.

The survey consisted of a total of 59 questions, which were all deemed necessary to provide the relevant data required for this research. The questionnaire was then designed and developed on Google Forms, which was a survey tool that was cost effective, easy to use and easily accessible by the respondents, where the data could be downloaded into multiple output files, such as XLS and CSV files. Before the researcher could start with the data collection phase of the research, ethical clearance was required to be conducted by the researcher’s academic institution.

4.8 Pilot testing

Once the ethical clearance stage of the research was completed (Appendix B) and prior to administering the survey to obtain the desired sample size of 200 respondents, the researcher opted to conduct a pilot test of the survey, in order to ascertain its appropriateness for the study. A pilot test was required in order to test the pilot group’s understanding of the purpose of the research, which was outlined in the “covering letter” of the questionnaire, ascertain whether there were any issues experienced through the completion of the questionnaire, understand whether any questions were ambiguous, obtain an indication of whether there were any grammatical errors or duplication of questions and to verify whether the responses could be extracted, from the survey tool, with no issues (Saunders & Lewis, 2018; Zikmund et al., 2013).

There are various methods of obtaining a pilot sample size. For example, Hill (1998) suggests that a pilot test sample size should be between 10 - 30 and Hunt, Sparkman

and Wilcox (1982) suggest a sample size of between 12 - 30. Therefore, based on the aforementioned, the researcher aimed to obtain a pilot test sample of 12.

The pilot test sample was selected from the researcher's professional network. The researcher then requested some of the test sample respondents to administer the questionnaire via their computers and others via their mobile phones, in order to ascertain a consistency in the user experience. The test sample was then requested to send their feedback via email to the researcher. Frequent comments that were received included that the survey was lengthy, some of the terms used were ambiguous and could be misinterpreted and other terms were not understandable and seemed very complex. Based on this feedback, the researcher updated the questionnaire by resolving the ambiguity issue and providing an explanation of certain terms used, where applicable. Regarding the length of the questionnaire, unfortunately the researcher could not delete any questions, as all were deemed pertinent to the research.

4.9 Data gathering process

As mentioned in Section 4.7 the questionnaire was designed and developed on the Google Forms survey platform, as it was a platform that was widely used and understood, which many of the respondents would be familiar with. Once the survey was developed, ethical clearance was received from the researcher's academic institution and the pilot test stage was completed, the researcher shared the questionnaire by providing website and social media links to the respondents, via numerous channels, such as email, LinkedIn and WhatsApp. This allowed the researcher to have a greater reach in terms of respondents and allowed them to use their channel of choice.

As mentioned in Section 4.5, a non-probability, purposive, snowball approach was used to collect data, as the initial respondents were within the researcher's professional network, which also included peers from the researcher's academic institution, and successive respondents were based on their networks, facilitating the snowball technique. Since this was a cross-sectional study, the data collection process was conducted over a period of approximately one and a half months (20 August 2021 to 09 October 2021). In order to increase the probability of achieving a high response rate, the researcher sent follow up reminders every two weeks, during

the survey period, emphasizing the importance of the respondents' feedback (Chidlow et al., 2015). A total of 168 responses were received during this period, which was then exported into a Microsoft Excel file, in order to analyse the data.

4.10 Analysis approach

Once the survey was closed, the researcher extracted the raw data from the survey platform, into a Microsoft Excel spreadsheet, in order to proceed with an analysis of the data. The raw data was not in an appropriate format to be analysed further, therefore, the researcher was required to process the data further. A four-step data analysis approach was employed in order to analyse the data, which consisted of editing, coding, file preparation and analysis of the data (Zikmund et al., 2013).

4.10.1 Data coding

The raw data that was collected was in a character format and was thus required to be converted into a numeric format, so that the relevant statistical analyses could be performed (Zikmund et al., 2013). In addition, the construct names were abbreviated to facilitate the analysis. Table 1 shows the abbreviated construct names.

Table 1: Coding of Constructs and Questions

Construct Name	Construct Code
Sensing	SENSING
Seizing	SEIZING
Transforming	TRANSFORMING
Business Model Innovation	BMI
Organisational Design	ORGDESIGN

Based on the coding of the constructs shown in Table 1, the survey questions were coded accordingly. For example, the first question in the SENSING construct was coded as SENSING1, the second, SENSING2, up until the last question number of the construct. The subsequent constructs and questions followed the same pattern.

Table 2 shows the coding applied to the questions containing Likert Scale responses.

Table 2: Coding of Likert Scale responses

Likert Scale Response Option	Code (Numeric Value)
Strongly disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly agree	5

4.10.2 Data editing

According to Newman (2014), survey responses may contain missing or incomplete data, which poses a problem when statistical analysis is being performed. However, within this study, responses for all of the survey questions were received. Based on the dataset being fully complete, the researcher then verified that the correct unit of analysis was to be analysed. This was done by applying a filter on the screening questions shown in Table 3 below.

Table 3: Qualifying screening questions

Screening question 1	Does your organisation have the capabilities/competencies to effectively enable Business Model Innovation (the ability to adapt or change the way in which it creates and delivers value) to respond to changes in the market?
Screening question 2	Do you currently work with/on Business Model Innovation Initiatives i.e. initiatives that involve adapting or changing the way in which the organisation creates and delivers value to customers?

Based on a filtering of the dataset, where respondents answered 'Yes' for both screening questions, data received from 56 respondents, which constituted 33% of the total sample obtained, was excluded from further analysis, where the respondents answered 'No' for at least one of the two questions. This resulted in the final sample size reducing from 168 to 112.

4.10.3 Statistical analysis of the data

A survey technique was employed to collect quantitative data from the sample in order to conduct descriptive and inferential statistics of the sample. Section one of the survey collected data of a categorical nominal nature, which was used to provide descriptive statistics of the sample (Saunders & Lewis, 2018). The remaining sections, sections two to six, were used to provide data for inferential statistics of the sample, where categorical ordinal data (Saunders & Lewis, 2018) was collected through the use of a five-point Likert scale, which was then converted into continuous data, as illustrated in Table 2, Section 4.10.1. Based on the abovementioned, and the data coding and editing described in Sections 4.10.1 and 4.10.2, the researcher prepared an XLS file, using Microsoft Excel, which was then imported into the IBM SPSS Statistics 26 and AMOS application software, in order for the statistical analysis to be conducted.

4.10.3.1 Descriptive Statistics of the sample

Descriptive statistics is the first part of the analysis that is done on the sample, which aims to provide a description of the characteristics and profile of the sample population, in order to obtain a basic understanding of the context and nature of the sample under study (Zikmund et al., 2013). As explained in Section 4.10.2, there were no missing or incomplete data in the sample obtained, however, the final sample that was analysed, reduced from 168 to 112 responses, due to the application of the two screening questions, which were used as qualifying criteria to identify the subset of the sample that corresponded with the correct unit of analysis under study.

For the revised sample set, descriptive statistics were performed on Section one of the survey (Appendix A), where the data was of a categorical nominal nature, which allowed the researcher to obtain the frequency of the different categories (Saunders & Lewis, 2018), for each descriptive question, which is summarised and presented, in table format, in Section 5.2 of the document. Demographic descriptors, such as the respondents' age, gender, educational background, industry, work experience, job profile and size of the organisation are presented in this section.

4.10.3.2 Test for Reliability

As shown in Appendix A, each of Sections two to six of the survey represents data that was collected for each of the constructs under study, that is, dynamic capabilities (sensing, seizing and transforming), business model innovation and organisational design. Furthermore, each of the constructs had a specific set of questions aimed at gathering data specifically related to each construct. Although the survey questions were adopted from previous studies that were performed with respect to the constructs, the researcher needed to ensure that each set of questions was reliable in terms of measuring each of the constructs within this study.

Research is deemed reliable if the data collection and analysis methods employed yield consistent results, when performed repeatedly and (or) on different occasions, where the results obtained are not skewed due to errors and biases, on the part of the researcher and (or) respondents, which may ultimately impact the findings of the research (Saunders & Lewis, 2018; Zikmund et al., 2013). Therefore, it is of paramount importance that enough attention and rigour is given to the data collection

and analysis process, as a lack of thoroughness may compromise reliability of the data (Chidlow et al., 2015). According to Takavol and Dennick (2011), reliability is critical to the assessment of the measurement instrument used, where in this study, a survey was employed as the measurement instrument. Due to there being multiple questions measuring a construct, there is a possibility that some of the questions may not be reliable in accurately measuring that construct (Hair, Black, Babin & Anderson, 2010).

Cronbach's alpha is a common reliability measure used in research studies; however, it is not well understood (Takavol & Dennick, 2011). With a value between zero and one, Cronbach's alpha is "a measure of the internal consistency of a test or scale" (Takavol & Dennick, 2011), with the objective of evaluating whether all of the variables within a construct are in fact reliable in measuring that construct (Hair et al., 2010). Hair et al. (2010) suggest that the lower limit for an acceptable Cronbach's alpha falls between 0.60 and 0.70, and Takavol and Dennick (2011) recommend that the Cronbach's alpha should be between 0.70 and 0.95. Therefore, for the purpose of this study, a minimum value of 0.70 will be used to determine whether the internal reliability of a construct is acceptable.

In addition to determining the Cronbach's alpha of each construct, the researcher opted to analyse the correlation between variables within a construct. Inter-item correlations measure the relationship of a particular item's score on the scores of other items within a construct (Piedmont, 2014). If the correlation values between an item and all the other items in the construct are below 0.20, Piedmont (2014) suggests that the item in question is not representative of the construct.

Based on the abovementioned, the researcher determined the internal reliability of each construct, where questions resulting in a Cronbach's alpha value below 0.70 were deleted in an iterative approach, until the alpha value for the construct was greater than 0.70. In addition, where the alpha value was above 0.70, the researcher examined the inter-item correlations, to ensure that each item was representative of the construct. The results from the reliability tests performed on each construct are presented in the following sections.

4.10.3.2.1 Sensing

Section two of the survey contained 12 questions pertaining to the Sensing construct (refer to Appendix A for the details regarding the questions). Using the IBM SPSS Statistics 26 application, a test for reliability was run across the constituents of the construct, resulting in an alpha value of 0.89 after the first iteration, as shown in Table 4 below, which is above the minimum threshold of 0.70. In addition, the researcher reviewed the Inter-Item Correlation Matrix table (Appendix B), where all of the correlations were above the minimum value of 0.20. Both of these tests show that all 12 questions within the Sensing construct are reliable as a measurement of the construct.

Table 4: Reliability test - Sensing

Description	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
Iteration 1 (with all 12 questions)	0,887	0,887	12

4.10.3.2.2 Seizing

As shown in Appendix A, Section three of the survey had 11 questions within the Seizing construct. Running a test for reliability on the responses of the 11 questions resulted in an alpha value of 0.89. An inter-item correlation analysis revealed that all the correlations between the construct variables were high, that is, above a value of 0.20 (Appendix B). Therefore, all 11 questions were deemed reliable and remained within the construct. Table 5 shows the reliability test results obtained for Seizing.

Table 5: Reliability test - Seizing

Description	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
Iteration 1 (with all 11 questions)	0,893	0,895	11

4.10.3.2.3 Transforming

Section four of the survey contained nine questions which represented the Transforming construct (Appendix A). By running an internal reliability test on the questions, a Cronbach’s alpha value of 0.865 was obtained, which is well above the

minimum value of 0.70. In addition, all the inter-item correlations of the questions resulted in values above 0.20, as shown in the inter-item correlation matrix (Appendix B). Therefore, all nine questions were accepted as reliable variables within the construct. Table 6 shows the results obtained for reliability test.

Table 6: Reliability test - Transforming

Description	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
Iteration 1 (with all 9 questions)	0,865	0,868	9

4.10.3.2.4 Business Model Innovation

Section five of the survey contained nine items pertaining to the Business Model Innovation (BMI) construct (Appendix A). A reliability test performed across the variables within the construct resulted in an alpha value of 0.938, which was the highest Cronbach's alpha value obtained across all the constructs, which was an acceptable value, as it was above the minimum threshold of 0.70. Table 7 shows the results obtained from the reliability test. The inter-item correlations were all above the minimum value of 0.20 (Appendix B). Based on the results obtained from both the tests, all the questions were considered reliable.

Table 7: Reliability test - BMI

Description	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
Iteration 1 (with all 9 questions)	0,938	0,938	9

4.10.3.2.5 Organisational Design

Section six, the last section of the survey, consisted of eight items, which were related to the Organisational Design construct (Appendix A). Based on a reliability test performed on the responses of the questions within the construct, a Cronbach's alpha value of 0.767 was obtained, which was above the minimum required value of 0.70. Based on this result, it may have seemed that all the questions were reliable in terms of its representation of the construct, however, as shown in Table 8, an analysis of the inter-item correlation matrix for this construct reveals that the last

question within the construct, ORGDESIGN8, did not have at least one correlation, with any of the other items, above a value of 0.20.

Table 8: Inter-Item Correlation Matrix - Organisational Design

	ORGDESIGN1	ORGDESIGN2	ORGDESIGN3	ORGDESIGN4	ORGDESIGN5	ORGDESIGN6	ORGDESIGN7	ORGDESIGN8
ORGDESIGN1	1,000	0,629	0,628	0,606	0,309	0,135	0,337	0,096
ORGDESIGN2	0,629	1,000	0,664	0,494	0,143	0,113	0,338	0,085
ORGDESIGN3	0,628	0,664	1,000	0,366	0,348	0,304	0,398	0,139
ORGDESIGN4	0,606	0,494	0,366	1,000	0,177	0,185	0,398	0,128
ORGDESIGN5	0,309	0,143	0,348	0,177	1,000	0,349	0,292	0,007
ORGDESIGN6	0,135	0,113	0,304	0,185	0,349	1,000	0,655	-0,025
ORGDESIGN7	0,337	0,338	0,398	0,398	0,292	0,655	1,000	0,021
ORGDESIGN8	**0,096**	**0,085**	**0,139**	**0,128**	**0,007**	**-0,025**	**0,021**	**1,000**

Table 9 therefore shows a revised Cronbach's alpha value of 0.803 that was calculated after the ORGDESIGN8 item was removed from the construct, leaving seven questions remaining within the construct.

Table 9: Reliability Test - Organisational Design

Description	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
Iteration 1 (with all 8 questions)	0,767	0,772	8
Iteration 2 (Removed question 8 from the construct) Question removed: ORGDESIGN8 - There is a strong emphasis on getting line and staff personnel to adhere closely to formal job descriptions	0,803	0,803	7

4.10.3.3 Test for Validity

According to Saunders and Lewis (2018), research is deemed valid if the results are commensurate with what the research intends achieve, which is a critical element to consider, when during the research design phase. Therefore, it is of paramount importance that any factors or reservations that the researcher has, with respect to compromising the quality and validity of the research, be removed from the study

(Saunders & Lewis, 2018). In addition, Saunders and Lewis (2018) state that sample and construct validity are important in determining whether the research results can be generalisable across the population. In order to ensure that the survey questions are valid, within the context of a study, the researcher must validate that the questions are in fact designed to test the hypotheses, that they are within the context of the constructs and whether they are aligned to the purpose of the study (Köhler et al., 2017).

Construct validity is dependent on whether the variables within the construct accurately and reliably measure the construct in question (Saunders & Lewis, 2018; Zikmund et al., 2013). Zikmund et al. (2013) further stipulate that convergent and discriminant validity tests can be used to determine the validity of a construct, which are means of establishing the uniqueness of variables. Convergent validity aims to determine whether there is a strong correlation between variables within a construct and to validate that they are indeed measures of that specific construct (Zikmund et al., 2013). In other words, on average, the correlation loadings between intra-construct variables must be higher than the loadings on inter-construct variables for convergent validity to hold true. Discriminant validity is a means of determining whether the variables within a construct are independent of variables within another construct (Zikmund et al., 2013). In order to pass the discriminant validity test, the cross-loading between variables of different constructs must not exceed a correlation value of 0.75; if it does, then there is an implication of a discriminant validity problem (Zikmund et al., 2013).

Therefore, based on a Pearson Correlation test being performed to determine the correlations between variables within and across constructs, on average, variables loaded higher on other variables within the same construct, than on variables within another construct, confirming convergent validity. In addition, loadings on variables across constructs did not exceed a correlation value greater than 0.75, which confirmed discriminant validity.

4.10.3.4 Model Fit – Factor Analysis

Multivariate data analysis is conducted when research has more than two variables, where and explanation of the variables and the relationships between the variables can be assessed and analysed (Hair, Black, Babin & Anderson, 2019; Zikmund et

al., 2013). Since this research had multiple variables, 49 variables in total, multivariate statistical analysis techniques were employed to analyse the constructs and their associated variables, in order to determine a model fit. Factor analysis is a prominent multivariate analysis technique that is used in order to analyse the interdependence between variables, with the aim of explaining the relationships through a reduced number of factors (Hair et al., 2019; Zikmund et al., 2013). According to Hair et al. (2019), in order to measure the interdependence between variables, confirmatory and exploratory factor analyses are two ways in which the factors can be analysed. It is important to note that the number of variables that served as an input to the factor analysis, was the final number of 48 variables obtained from the completion of the reliability test, as outlined in Section 4.10.3.2.

4.10.3.4.1 Confirmatory Factor Analysis

A confirmatory factor analysis seeks to confirm the researcher's prior and already established understanding of the literature and expectations regarding the structural components of the factors (Zikmund et al., 2013). In addition, conducting a confirmatory factor analysis, on a construct, serves as a means of determining the construct validity and is a means of establishing a fit between the researcher's understanding of the subject and the data obtained (Hair et al., 2019; Zikmund et al., 2013). Through the use of the AMOS statistical software, each construct was tested individually to determine model fit and to confirm the reliability of the constructs, as described in Section 4.10.3.2. According to Hair et al. (2019), the Standardised Root Mean Residual (SRMR) and the Root Mean Square Error of Approximation (RMSEA) values, for each factor (construct), should be below a value of 0.08, in order to provide an indication of a good model fit. Based on the results of the assessment (Section 5.5.1), business model innovation was the only construct that met the minimum criteria for SRMR, with a value of 0.03, whereas dynamic capabilities and organisation design had values above the minimum requirement for a good model fit, with values of 0.08 and 0.12 respectively. In terms of RMSEA, all three constructs did not meet the minimum requirement, where business model innovation, dynamic capabilities and organisational design had values of 0.09, 0.09 and 0.23, respectively. Furthermore, the relatively low adjusted sample size of 112 posed a limitation to performing a robust confirmatory factor analysis, therefore, a good model fit was not achieved, which warranted an exploratory factor analysis to be conducted.

4.10.3.4.2 Exploratory Factor Analysis

An exploratory factor analysis seeks to obtain a model fit where the researcher is uncertain of the number of factors that exist, based on a grouping of variables (Zikmund et al., 2013). The results of an exploratory factor analysis are twofold; one being the number of factors that exist and the other, the loading of the variables on the factors, indicating the correlation between the variable and the factor (Hair et al., 2019; Zikmund et al., 2013). In contrast to confirmatory factor analysis, where the researcher deduces and tests factors from theory, exploratory factor analysis determines the factors through a statistical analysis of the data (Hair et al., 2019). According to Hair et al. (2019), a prerequisite for exploratory factor analysis to be performed is the assumption that there are no cross-loadings of variables on other factors, which the researcher had validated, as outlined in Section 4.10.3.3, where the variables loaded higher within its own construct, than with other constructs.

Based on the abovementioned, the researcher performed an exploratory factor analysis on each of the constructs, based on the revised sample that was obtained from the reliability test that was performed (Section 4.10.3.2). A Principal Component Analysis (PCA) was employed, as it takes the total variance of all the variables into account, thus providing a holistic understanding of the interrelationships between variables (Hair et al., 2019). This analysis was done by employing the use of the IBM SPSS Statistics 26 software, with the eigenvalue, a measure of the variance of the factors, being set to a value of 1.0 (Zikmund et al., 2013). One part of the test pertains to the Bartlett test of sphericity, which tests for correlations and the statistical significance of the correlations within the constructs (Hair et al., 2019), where a p-value < 0.05 indicates that the correlation is significant, at a 95% confidence level. Another part to the test, deals with evaluating the measure of the sampling adequacy of each variable, which is conducted via a Kaiser-Meyer-Olkin (KMO) analysis. According to Hair et al. (2019), the KMO value must be above 0.50 in order for the variable to be included in the factor analysis. The aim of the exploratory factor analysis is to aid in data reduction, by determining a composite variable where each variable within the construct has a factor loading that contributes to the factor score, where variables with an insignificant factor loading are extracted (Hair et al., 2019). The results of the exploratory factor analysis are presented in (Section 5.5.2).

4.10.3.5 Descriptive and inferential statistics

4.10.3.5.1 Construct descriptive statistics

Descriptive statistics were conducted on data collected for Sections two to six of the survey (Appendix A), where each section collected data for each of the constructs under study, respectively. The data was then converted from a categorical ordinal nature to a continuous data format, in order to conduct a statistical analysis of the descriptive characteristics of each construct, which is summarised and presented in Section 5.6 of the document.

In addition to providing the basic descriptive statistics such as the mean, standard deviation, skewness and kurtosis of the constructs, a Shapiro-Wilk test for normality was done in order to determine the distribution of the data within each construct. A test for normality is fundamental to determining the appropriate statistical tests and analyses to be performed on a dataset, as many statistical techniques have been built on an underlying assumption of the distribution of data (Shapiro & Wilk, 1965). In addition, this test was run to confirm the researcher's assumption of a normal distribution of the data within each construct (null hypothesis). On an assessment of the results of the test for normality, if $p<0.05$, then the data is not normally distributed, and the researcher must then reject the null hypothesis. If $p>0.05$, then the researcher must fail to reject the null hypothesis, which then implies that the data is normally distributed. The IBM SPSS Statistics 26 software was employed to produce the descriptive statistics and a test for normality of the constructs.

4.10.3.5.2 Correlation analysis

A correlation analysis is the most widely used technique that is employed when the researcher's objective is to ascertain the relationship between variables, where the correlation coefficient indicates the strength or covariation of the relationship between the variables (Zikmund et al., 2013). A bivariate analysis is conducted when the relationship between two variables needs to be established, where one variable is the independent variable (X) and the other is the dependent variable (Y) (Zikmund et al., 2013). The Pearson product-moment correlation (Pearson Correlation) is a parametric correlation, which is means of establishing the relationship between two variables, which is based on the assumptions of the data being continuous and normally distributed (Zikmund et al., 2013). If the data does not meet these

requirements, then a non-parametric correlation test, such as the Spearman's Correlation, is conducted. If the correlation coefficient is positive, then a positive relationship is implied; the converse applies if the coefficient value is negative and if the coefficient value is zero, then there is no correlation between the variables (Zikmund et al., 2013).

Within this study, the data was collected by means of employing a Likert Scale, which was then converted to continuous data, as explained in Section 4.10.1. As shown in Section 5.6, a Shapiro-Wilk test for normality revealed that the distribution of the data was normal. Based on the abovementioned, a Pearson Correlation technique was deemed appropriate to test bivariate correlations within this research. Therefore, the researcher conducted Pearson Correlations to test the hypotheses within research questions one, two and three, the results of which are presented in Sections 5.7.1 to 5.7.3.

4.10.3.5.3 Moderation Analysis

Foss and Saebi (2017) postulate that, although a relationship exists between dynamic capabilities and business model innovation, organisational design has a moderating effect on the relationship. Based on this premise, the researcher sought to test this hypothesis and to determine the strength of the moderation, which was the objective of research question four, as outlined in Chapter 3.

A moderator variable is one which alters or influences the primary relationship between the independent variable, also known as the predictor, and the dependent variable, also known as the outcome variable (Baron & Kenny, 1986; Frazier, Tix & Baron, 2004; Hair et al., 2019; Zikmund et al., 2013). Therefore, a test for moderation seeks to determine the extent to which a moderator variable (third variable) influences the relationship between two variables. A moderator could have a positive or negative effect on the strength of the relationship between the variables; it even has a potential of reversing the direction of the main effect, where the main effect is the original relationship between the predictor and outcome variables, in the absence of the third, moderating variable (Hair et al., 2019). Since there are three variables associated with a moderation analysis, a multivariate statistical analysis technique is employed (Hair et al., 2019). Figure 4 shows a schematic representation of the variables and paths concerned with the moderation model.

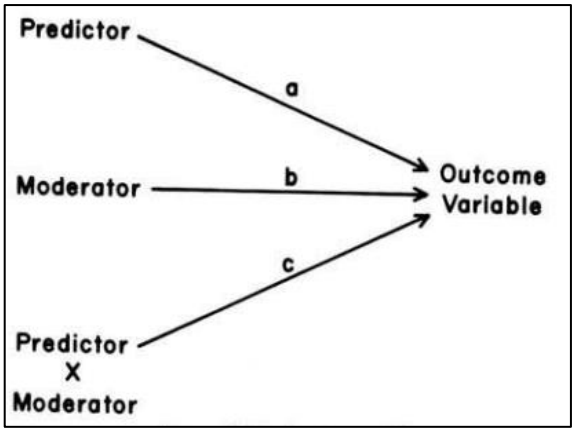


Figure 4: Moderation model
(Adapted from: Baron & Kenny, 1986)

As shown in Figure 4, in the moderation model, Path A represents the impact of the predictor (independent variable) on the outcome (dependent variable), Path B represents the impact of the moderator (third variable) on the outcome and Path C pertains to the interaction between the predictor and moderator (Baron & Kenny, 1986). Should the interaction of Path C be statistically significant, moderation of the interaction between the predictor and outcome variables is confirmed (Baron & Kenny, 1986; Hair et al., 2019), irrespective of the significance of Paths A and B (Baron & Kenny, 1986). In order to test the hypothesis of research question four of this study (Chapter 3), dynamic capabilities, business model innovation and organisational design represented the predictor, outcome variable and moderator variables, respectively. The test for moderation was conducted in the IBM SPSS Statistics application, using the Hayes Process Model One template, the results of which are presented in Section 5.7.4.1.

4.10.3.5.4 Mediation Analysis

In contrast to the notion that organisational design plays a moderating role on the relationship between dynamic capabilities and business model innovation (Foss & Saebi, 2017), Teece (2018) suggests that organisational design mediates the relationship. Therefore, based on this view, the researcher opted to test the hypothesis, which was the objective of research question five, as described in Chapter 3.

In order for mediation to exist, there needs to be some causal relationship between the predictor (independent) variable (*X*) and the outcome (dependent) variable (*Y*),

that is, the direct or main effect of the predictor on the outcome, in the absence of a mediator (*M*) (Demming, Jahn & Boztug, 2017; Hair et al., 2019). A mediator (third variable) is one which aims to explain "why" a relationship exists between the predictor and outcome variables and is therefore an alternative means of explaining the relationship (indirect effect), which is the primary reason of conducting a mediation analysis (Demming et al., 2017; Hair et al., 2019). Similar to moderation, a mediation analysis is concerned with three or more variables being present, which requires a multivariate statistical analysis technique to be employed (Hair et al., 2019). Figure 5 shows a diagrammatic representation of the variables and paths concerned with the mediation model.

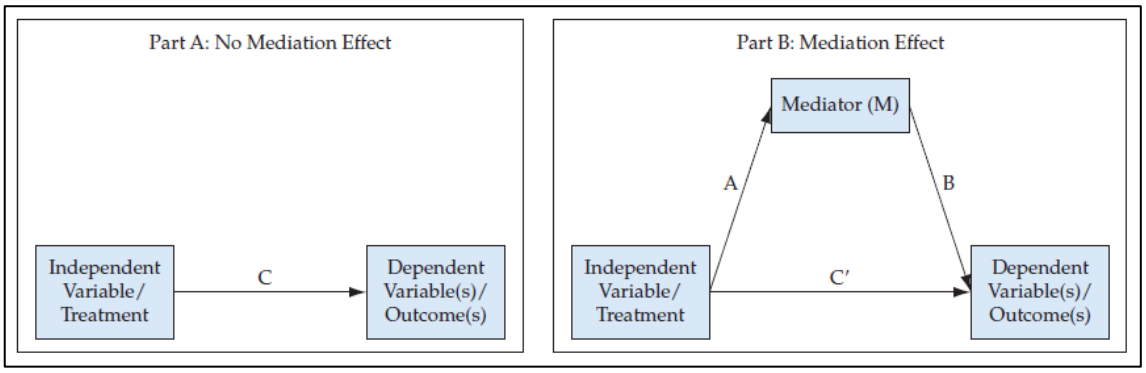


Figure 5: Mediation model
(Adapted from: Hair et al., 2019)

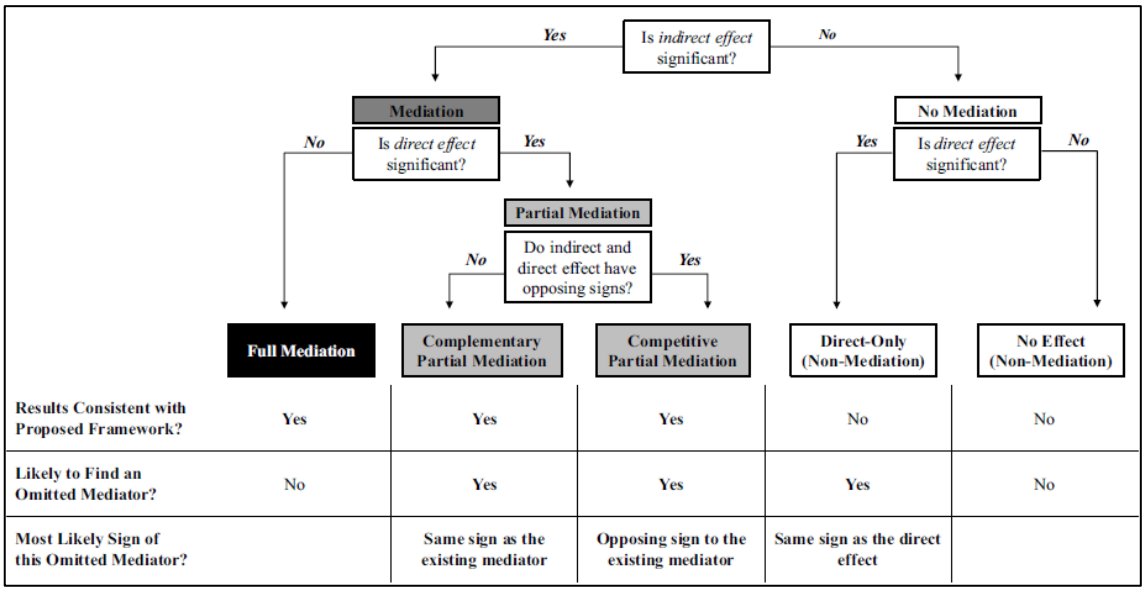
As shown in Figure 5, in the mediation model, Path C, in "Part A: No Mediation Effect", represents the main effect of the relationship between the predictor and the outcome variables, without the intervention of the mediator variable (Demming et al., 2017; Hair et al., 2019). In "Part B: Mediation Effect", Path A represents the relationship between the predictor and the mediator, Path B represents the relationship between the mediator and the outcome, and Path C' represents the relationship between the predictor and the outcome, in the presence of a mediator (Hair et al., 2019). Paths C and C' are not equal, as Path C' is impacted by the mediator. According to Hair et al. (2019), Paths C and C' are related by the following equation:

$$C = C' + A * B$$

Equation 1: Decomposition of main effect

As shown in Equation 1, the main effect (C) is equal to the sum of the mediated effect between the predictor and the outcome, (C'), and the indirect effect created by the mediator, (A*B) (Hair et al., 2019). In addition, Hair et al. (2019) mention that in order to establish the mediating effect on a relationship between two variables, the relationships along Paths C (predictor and outcome), A (predictor and mediator) and B (mediator and outcome) need to be significant.

Once all of the variables are established, as per Equation 1, the researcher then needs to determine the type of mediation that exists, which will aid in explaining the type of effect that a mediator has on the relationship between the predictor and outcome variables (Demming et al., 2017). Figure 6 shows the different types of mediation and their connotations (Demming et al., 2017).



	Full Mediation	Complementary Partial Mediation	Competitive Partial Mediation	Direct-Only (Non-Mediation)	No Effect (Non-Mediation)
Results Consistent with Proposed Framework?	Yes	Yes	Yes	No	No
Likely to Find an Omitted Mediator?	No	Yes	Yes	Yes	No
Most Likely Sign of this Omitted Mediator?		Same sign as the existing mediator	Opposing sign to the existing mediator	Same sign as the direct effect	

Figure 6: Types of mediation and their connotations
(Adapted from: Demming et al., 2017)

As shown in Figure 6, for mediation to exist, the indirect effects of Paths A and B need to be significant. If the resultant effect (Path C') between the predictor and outcome variables, in the presence of a mediator, is significant, then partial mediation exists, otherwise full mediation will exist (Demming et al., 2017). Partial mediation occurs when the mediator accounts for only a proportion of the total effect of the predictor on the outcome, implying that other mediators may exist, whereas complete mediation occurs when the mediator accounts for the total effect of the predictor on the outcome (Hair et al., 2019).

Based on the abovementioned, the test for mediation was conducted in the IBM SPSS Statistics application, using the Hayes Process Model Four template, the results of which are presented in Section 5.7.4.2.

4.10.3.6 Limitations

One of the main limitations of the research methodology employed within this study was the use of non-probability purposive, convenience and snowball sampling techniques to collect data (Saunders & Lewis, 2018), as the total population for this study was not known. In the case of the study performed by Wilden et al. (2013), the population size was known, as the data was obtained from a database. Based on this premise and the fact that the researcher used online and social media platforms such as e-mail, LinkedIn and Whatsapp to distribute the survey, there was no control over the distribution of the survey beyond the researcher's own professional network, which is inherent to utilising a snowball sampling technique. This method increases the probability of obtaining a sample bias, thus having negative implications on the generalisability of the findings.

In addition, since dynamic capabilities and business model innovation are fairly new and complex phenomena in academia and the business environment (Foss & Saebi, 2017), the results obtained may not be very reliable, as many of the respondents may not be aware of or understand such concepts.

Since a cross-sectional time horizon was utilised within this study, the results and findings were based on a 'point in time' analysis. An organisation's dynamic capabilities and business model innovation approach may change over time, due to external and internal environmental factors, therefore, in order to establish whether an organisation has sustainable business model innovation over the long term, the research may need to be done over a longer period of time, utilising a longitudinal time horizon (Köhler et al., 2017).

Chapter 5: Results

5.1 Introduction

The objective of this chapter is to provide a description of the analysis of the results obtained from the survey questionnaire. The first section of this chapter provides an overview of the descriptive characteristics of the sample, which aims to provide context to the sample and ultimately, the study being undertaken. This is then followed by a presentation of the results obtained from the statistical analysis conducted within and across the constructs, as per the research questions highlighted in Chapter 3 and the methodology outlined in Chapter 4.

5.2 Descriptive characteristics of the sample

5.2.1 Description of sample obtained

As highlighted in Chapter 4, the researcher aimed to obtain a sample of 200 responses, which was based on empirical studies performed by Heider et al. (2021), Wamba et al. (2017), Wilden et al. (2013) and Wang et al. (2015). Throughout the data collection period of six weeks, a total sample of 168 responses was received, which did not meet the envisaged minimum requirement of 200 responses, resulting in an 84% success rate. From the survey sample obtained, there were no instances of missing or incomplete data, therefore, no responses were imputed or excluded for those reasons. During the data editing phase, two screening questions were applied to the sample, in order to determine the correct unit of analysis and to ensure that the quality of the analysis and results was not compromised. This resulted in 56 responses being excluded, with a final sample size of 112, which was approximately 67% of the survey sample obtained and 56% of the minimum sample required. Table 10 shows an overview of the final sample obtained.

Table 10: Summary of sample obtained

Description	No.	% of final survey sample	% of initial sample required
Initial sample required	200		
Total survey respondents	168		84%
Respondents excluded due to missing/incomplete data	0	0%	0%
Respondents that did not qualify (based on screening questions, Section 4.10.2)	56	33%	28%
Final sample size	112	67%	56%

5.2.2 Descriptive statistics of the sample

Section one of the survey (Background of the Organisation and Participant) consisted of a total of 10 descriptive questions, eight of which were aimed at obtaining demographic information of the respondents (Wamba et al., 2017), which would aid in determining the descriptive characteristics of the sample, and two were screening questions which aided in qualifying each respondent as a unit of analysis (Appendix A). As explained in Section 5.2.1, after the screening questions were applied to the survey sample of 168 respondents, 112 respondents (67% of the survey sample) qualified as the final sample for analysis.

The first descriptive question pertained to the age of the respondents, where each respondent indicated their age within a specific range that they correspond to, as shown in Table 11 below. For ethical purposes, only adults over the age of 18 were considered for this study.

Table 11: Descriptive Question 1 - Respondent Age

Respondent Age	No. of Respondents	% of sample
18–25 years old	1	0,9%
26–33 years old	24	21,4%
34–41 years old	54	48,2%
42–49 years old	23	20,5%
50 years old or older	10	8,9%
Total	**112**	**100,0%**

As shown in Table 11, almost half of the respondents (48.2%) fell within the 34-40 years old age group, followed by the 26-33 years old and 42-49 years old categories, with an almost equal weighting of 21.4% and 20.5%, respectively. The remaining age categories of 50 years old or older and 18-25 years old, were attributed to below 10% of the respondents, with 8.9% and 0.9% respectively.

The objective of the second descriptive question was to obtain the gender of the respondents, as shown in Table 12.

Table 12: Descriptive Question 2 - Respondent Gender

Respondent Gender	No. of Respondents	% of sample
Female	49	43,8%
Male	63	56,3%
Total	**112**	**100,0%**

As shown in Table 12, of the qualified sample of 112 respondents, the proportion of female and male respondents were 43.8% and 56.3% respectively, which shows that the results are slightly skewed toward the male demographic.

Table 13 shows the breakdown of the respondents, based on their educational background. Over half of the sample (53.6%) had a postgraduate degree, followed by 26.8% containing an undergraduate degree, which shows that over 80% of the sample possessed at least one degree. Less than 20% of the respondents were attributed to the college qualification and secondary school qualification categories, with 17.9% and 1.8% respectively.

Table 13: Descriptive Question 3 - Respondent Educational Background

Respondent Educational Background	No. of Respondents	% of sample
Postgraduate degree (Honours/Master/Ph.D./etc.)	60	53,6%
Undergraduate degree	30	26,8%
College qualification (diploma/certificate)	20	17,9%
Secondary school qualification	2	1,8%
Total	**112**	**100,0%**

Table 14 shows a breakdown of the respondents, based on their industry. As depicted in Table 14, almost half of the respondents (48.2%) were within the financial and insurance activities industry, followed by the information and communication and manufacturing industries, with 12.5% and 11.6% respectively. The remaining 10 industry categories had well below 10% of the respondents in each category.

Table 14: Descriptive Question 4 - Respondent Industry

Respondent Industry	No. of Respondents	% of sample
Administrative and support service activities	1	0,9%
Construction	1	0,9%
Education	3	2,7%
Energy	1	0,9%
Financial and insurance activities	54	48,2%
Health and social work activities	2	1,8%
Information and communication	14	12,5%
Manufacturing	13	11,6%
Mining and quarrying	3	2,7%
Other service activities	7	6,3%
Professional, scientific and technical activities	3	2,7%
Public administration and defence	3	2,7%
Wholesale and retail trade	7	6,3%
Total	**112**	**100,0%**

As shown in Table 15, almost a third of the respondents (33%) have a work experience of between 11-15 years. Approximately 51% of the respondents fell within the 16-20 years and greater than 20 years work experience categories, with an almost equal weighting of 25.9% and 25% respectively. The 5-10 years and less than 5 years work experience categories had the lowest number of respondents, with weightings of 12.5% and 3.6% respectively.

Table 15: Descriptive Question 5 - Respondent Work Experience

Respondent Work experience	No. of Respondents	% of sample
Less than 5 years	4	3,6%
5 - 10 years	14	12,5%
11 - 15 years	37	33,0%
16 - 20 years	29	25,9%
Greater than 20 years	28	25,0%
Total	**112**	**100,0%**

Table 16 shows the breakdown of respondents by job profile. The head of function/department category had the highest number of respondents, at 38.4%, followed by the team manager/leader and employee categories, with 27.7% and 24.1% respectively. Less than 10% of the respondents fell within the CEO/owner and executive categories, with 5.4% and 4.5% respectively.

Table 16: Descriptive Question 6 - Respondent Job Profile

Respondent Job Profile	No. of Respondents	% of sample
CEO/Owner	6	5,4%
Executive	5	4,5%
Head of Function/Department	43	38,4%
Team Manager/Leader	31	27,7%
Employee	27	24,1%
Total	**112**	**100,0%**

Table 17 shows the proportion of respondents by the size of their organisation.

Table 17: Descriptive Question 7 - Size of Respondent's Organisation

Size of Respondent's Organisation	No. of Respondents	% of sample
Large	74	66,1%
Medium	29	25,9%
Small	9	8,0%
Total	**112**	**100,0%**

As shown in Table 17, Approximately two-thirds of the respondents (66.1%) were at large organisations, whereas 25.9% and 8% of the respondents were at medium and small sized organisations, respectively.

Table 18 shows the proportion of respondents, based on their organisations' time frame to respond to change. Half of the sample (50%) indicated that their organisations respond to change within 1-3 years, followed by 33% of the respondents providing an indication of 0-1 year. The remaining respondents of 11.6% and 5.4% of the sample, indicated that their organisations respond to change within 3-5 years and greater than 5 years, respectively.

Table 18: Descriptive Question 8 - Time for Respondent's Organisation to respond to change

Time for Respondent's Organisation to respond to change	No. of Respondents	% of sample
0 - 1 Year	37	33,0%
1 - 3 Years	56	50,0%
3 - 5 Years	13	11,6%
Greater than 5 years	6	5,4%
Total	**112**	**100,0%**

5.3 Test for Reliability

The questions within each of the constructs were derived from previous studies performed by Dubey, Gunasekaran and Childe (2018), Spieth and Schneider (2016), Wamba et al. (2017) and Wilden et al. (2013), where each set of questions was designed to measure a specific construct. In order to test for reliability within the context of this study, the researcher employed the Cronbach's alpha technique, as well as an analysis of the inter-item correlations, to identify whether a question was significant in measuring the construct. In order to deem the results reliable, the Cronbach's alpha needed to be above 0.70 (Hair et al., 2010; Takavol & Dennick, 2011) and the inter-item correlations needed to be above 0.20. The results of the test are summarised in Table 19 below. A more detailed explanation of the reliability test can be found in Section 4.10.3.2.

Table 19: Test for reliability - summary of results

Construct	Cronbach's Alpha	Items before test	Items after test
Sensing	0,89	12	12
Seizing	0,89	11	11
Transforming	0,87	9	9
BMI	0,94	9	9
Organisational design	0.80	8	7

As shown in Table 19, Sensing, Seizing, Transforming and business model innovation (BMI) all had a Cronbach's alpha value above 0.70, and all of the inter-item correlations were above 0.20. In the case of Organisational Design, although the construct had an overall Cronbach's alpha of 0.77, which is above the minimum threshold of 0.70, an assessment of the inter-item correlations revealed that the last question within the construct, ORGDESIGN8, did not have at least one inter-item correlation above 0.20. Therefore, ORGDESIGN8 was deleted from the construct, resulting in a final Cronbach's alpha value of 0.80. This resulted in a reduction of the total variable count, from 49 to 48 variables, which was then used for successive analysis.

5.4 Test for Validity

A test for validity was done in order to assess whether the questions within each construct were actually measuring the construct it was related to (Saunders & Lewis, 2018; Zikmund et al., 2013). In order to assess validity of the constructs, the researcher ran a Pearson Correlation test and subsequently analysed the Pearson Correlation matrix, which showed the correlation loading on all of the questions, across all the constructs. This was done in order to assess whether a question, on average, had a higher correlation loading with questions within its own construct, instead of questions within other constructs, in order to deem the question valid. On an analysis of the Pearson Correlation matrix, all of the questions loaded higher on questions within its own construct, confirming convergent validity, and cross-loadings of variables, across variables within other constructs, did not exceed a correlation value of 0.75, thus confirming discriminant validity.

5.5 Model fit – factor analysis

In order to determine model fit, multivariate data analysis techniques, such as confirmatory factor analysis (CFA) and exploratory factor analysis (EFA), were conducted. It is important to note that the original number of variables (49 variables), were reduced to 48 variables, through the reliability test that was performed, which served as an input to the factor analysis process.

5.5.1 Confirmatory Factor Analysis (CFA)

CFA was conducted through the deployment of the AMOS statistical software, with the aim of confirming the reliability of the constructs and ascertaining the overall model fit. Table 20 shows a summary of the results obtained for CFA. A detailed view of the regression weights can be found in Appendix D.

Table 20: CFA Results

Variable	SRMR (<0.08)	RMSEA (<0.08)	CFI (>0.9)	Chi-square probability (>0.05)
Dynamic capabilities	0,08	0,09	0,78	0.000
BMI	0,03	0.09	0.97	0,004
Organisational design	0.12	0.23	0.72	0.000

As shown in Table 20, each construct represents a CFA model. In terms of the Standardised Root Mean Residual (SRMR) a good model fit is indicated by the SRMR value being less than 0.08. Only business model innovation (BMI) satisfied the criteria for a good model fit, with a value of 0.03 within this category. In terms of Root Mean Square Error of Approximation (RMSEA) a good model fit, for each factor, is achieved with values below 0.08. In this case, none of the factors met the criteria values, for each factor (construct), should be below a value of 0.08, in order to provide an indication of a good model fit. For the comparative fit index (CFI), a good model fit is indicated with a value greater than 0.90. Only BMI met the criteria for a god model fit, with a value of 0.97. For the last measurement of Chi-square probability, a good model fit is indicated when the value is above 0.05. For this criterion, none of the factors met the requirement, which shows that the factors were not significant in achieving a good model fit. Overall, based on the abovementioned, CFA did not indicate a good model fit. Furthermore, the small sample size that was

obtained could be a limiting factor in achieving good model fit. Therefore, an exploratory factor analysis was warranted.

5.5.2 Exploratory Factor Analysis (EFA)

A pre-requisite for EFA is the assumption that there are no cross-loadings of variables, which the researcher validated, by checking that a variable loaded higher on other variables within the same construct. As outlined in Section 4.10.3.4.2, a Principal Component Analysis (PCA) was employed as an extraction method to establish a model fit, using the IBM SPSS Statistics software. Part of the analysis was to establish whether an EFA could be used to determine model fit, where a Bartlett test of sphericity and a Kaiser-Meyer-Olkin (KMO) analysis was conducted. Table 21 below shows a summary of the results obtained, where a detailed view of the results, per construct, is presented in Appendix E.

Table 21: EFA - Principal Component Analysis Summary

Construct	KMO (>0.5)	Bartlett's test for sphericity (<0.05)	Number of components extracted	% variance extracted
Sensing	0,85	0.00	3	65,3
Seizing	0,9	0.00	2	60,98
Transforming	0,85	0.00	2	62,35
BMI	0,93	0.00	1	67,22
Organisational Design	0,74	0.00	2	66,68

As shown in Table 21, all the constructs exhibited KMO values greater than 0.5, which implies a good sampling adequacy for each construct, therefore, each variable was included in the factor analysis. For the Bartlett's test of sphericity, all values were less than 0.05, which indicates that the correlations within the constructs were statistically significant, at a 95% confidence level. Both of these tests confirmed that an EFA could be done.

From the results obtained from a PCA, only BMI extracted one theme, which was deemed acceptable, however, Sensing, Seizing, Transforming and Organisational Design all extracted more than one component (theme), requiring further reduction of the variables. Based on this premise, the researcher further divided the constructs into the recommended number of components, as shown in Table 21, based on the

themes that arose from an analysis of the questions. This was required in order for the following analyses to be performed.

5.6 Construct descriptive statistics

Post the factor analysis that was described in Section 5.5, the researcher sought to obtain the descriptive characteristics for each construct. Table 22 below, shows a summary of the descriptive statistics of the constructs. A detailed view of the descriptive statistics across all the variables within each construct is presented in Appendix F.

Table 22: Construct Descriptive Statistics

	N	Min.	Max.	Mean	Std. Dev.	Skewness		Kurtosis	
						Statistic	Std. Error	Statistic	Std. Error
Sensing	112	2,25	5,00	3,6979	0,61167	-0,144	0,228	-0,297	0,453
Seizing	112	1,55	5,00	3,5503	0,66175	-0,302	0,228	0,523	0,453
Transforming	112	1,89	5,00	3,7173	0,63887	-0,101	0,228	0,000	0,453
Dynamic Capabilities	112	2,12	5,00	3,6552	0,58097	-0,183	0,228	-0,238	0,453
BMI	112	1,44	5,00	3,4206	0,88644	-0,247	0,228	-0,693	0,453
Organisational Design	112	1,57	5,00	3,2513	0,73752	0,179	0,228	-0,355	0,453
Valid N (listwise)	112								

On an analysis of the descriptive statistics, as shown in Table 22, on average, there is a slight negative skewness and kurtosis of the distribution of the data, across each of the constructs. However, in order to select the appropriate procedures to test the respective hypotheses, as set out in Chapter 3, the researcher needed to test for normality, in order to establish whether the distribution of the data is normal or not, as many of the statistical tests are built on an underlying assumption of the distribution of the data. As described in Section 4.10.3.5.1, a Shapiro-Wilk test for normality was employed, in order to establish the distribution of the data for each construct, the results of which can be found in Table 23 below.

Table 23: Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Sensing	0,055	112	.200*	0,987	112	0,329
Seizing	0,087	112	0,035	0,983	112	0,154
Transforming	0,088	112	0,033	0,982	112	0,139
Dynamic Capabilities	0,064	112	.200*	0,993	112	0,808
BMI	0,096	112	0,013	0,972	112	0,018
Organisational Design	0,080	112	0,076	0,983	112	0,161

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

As outlined in Section 4.10.3.5.1, based on the outcome of the Shapiro-Wilk test for normality, if the p-value (Sig.) is greater than zero, the data is normally distributed. On an analysis of the Shapiro-Wilk test results presented in Table 23 above, the p-values for all the constructs, except for business model innovation (BMI), are greater than zero. This reveals that the data for each of those constructs is normally distributed. The p-value obtained for BMI is less than zero, which implies that the data within that construct is not normally distributed. However, since the data for all of the other constructs are normally distributed, the researcher approximated a normal distribution of the data for BMI for the hypotheses to be tested.

5.7 Research Hypotheses

The objective of Sections 5.2 to 5.6 was to obtain a view of the descriptive characteristics of the data and to perform the relevant statistical tests to understand the statistical characteristics of the data and constructs. This therefore informed the researcher of the underlying characteristics of the constructs in order to further prepare the data and select the relevant statistical procedures to test the hypotheses as defined in Chapter 3.

Research questions one to three set out to test bivariate correlations, as described in Chapter 3, in order for statistical inferences to be made about their relationships. Research questions four and five aimed to test the hypotheses proposed by Foss and Saebi (2017) and Teece (2018), respectively, to test for the moderating and mediating effect of organisational design on the relationship between dynamic capabilities and business model innovation. The following sections provide the results obtained for each research question.

5.7.1 Research Question One

As a part of the study, the researcher aimed to understand the relationship between dynamic capabilities (DC) and business model innovation (BMI), which was based on the premise of the outcome of the studies conducted by Foss and Saebi (2017) and Teece (2018). Both studies assert that DC is an essential component which underpins an organisation's ability in terms of BMI, where they suggest that DC has a significant positive relationship with BMI. Therefore, research question one was based on the following hypothesis:

H_1: There is a significant positive relationship between dynamic capabilities and business model innovation.

In order to determine the relationship between the two constructs, a Pearson Correlation test was conducted, as outlined in Section 4.10.3.5.2. Further to conducting the test between the abovementioned constructs, the researcher was interested in understanding which component of DC had the highest impact (loading) on the relationship. Therefore, a Pearson Correlation assessment was done between DC, which included its individual components of sensing, seizing and transforming, and BMI. Table 24 shows the results obtained from the test.

Table 24: Correlation between DC and BMI

		Sensing	Seizing	Transforming	DC	BMI
Sensing	Pearson Correlation	1	.764**	.701**	.898**	.662**
	Sig. (2-tailed)		0,000	0,000	0,000	0,000
	N	112	112	112	112	112
Seizing	Pearson Correlation	.764**	1	.770**	.930**	.735**
	Sig. (2-tailed)	0,000		0,000	0,000	0,000
	N	112	112	112	112	112
Transforming	Pearson Correlation	.701**	.770**	1	.905**	.595**
	Sig. (2-tailed)	0,000	0,000		0,000	0,000
	N	112	112	112	112	112
DC	Pearson Correlation	.898**	.930**	.905**	1	.729**
	Sig. (2-tailed)	0,000	0,000	0,000		0,000
	N	112	112	112	112	112
BMI	Pearson Correlation	.662**	.735**	.595**	.729**	1
	Sig. (2-tailed)	0,000	0,000	0,000	0,000	
	N	112	112	112	112	112

**. Correlation is significant at the 0.01 level (2-tailed).

As shown in Table 24, the results of the Pearson Correlation test show that all the variables (sensing, seizing, transforming and DC) have a positive relationship with BMI, which is significant at a 99% level of confidence. All of the values are > 0.50, which reveals that there is a strong degree of correlation between the variables. Therefore, based on the results obtained, the Pearson Correlation test confirms hypothesis H_1, that there is a significant positive relationship between DC and all of its individual components of sensing, seizing and transforming, on BMI. Furthermore, it is important to note that, of the three components of DC, seizing had the highest correlation with BMI, followed by sensing and then transforming, all of which are positive and significant.

5.7.2 Research Question Two

Based on the notion that organisational design (ORGDESIGN) has a moderating and (or) mediating effect on the relationship between DC and BMI (Foss & Saebi, 2017; Teece, 2018), and as a precursor to analysing the aforementioned, the researcher sought to establish whether there is a significant positive correlation between DC and ORGDESIGN. Therefore, research question two was based on the following hypothesis:

H_2: There is a significant positive relationship between dynamic capabilities and organisational design.

In order to determine the relationship between the two constructs, a Pearson Correlation test was conducted, as outlined in Section 4.10.3.5.2. Similar to the approach followed in research question one, the researcher was interested in understanding which component of DC had the highest impact (loading) on the relationship. Therefore, a Pearson Correlation assessment was done between DC, sensing, seizing and transforming, and ORGDESIGN. Table 25 shows the results obtained from the test.

Table 25: Correlation between DC and ORGDESIGN

		Sensing	Seizing	Transforming	DC	ORGDESIGN
Sensing	Pearson Correlation	1	.764**	.701**	.898**	.541**
	Sig. (2-tailed)		0,000	0,000	0,000	0,000
	N	112	112	112	112	112
Seizing	Pearson Correlation	.764**	1	.770**	.930**	.539**
	Sig. (2-tailed)	0,000		0,000	0,000	0,000
	N	112	112	112	112	112
Transforming	Pearson Correlation	.701**	.770**	1	.905**	.366**
	Sig. (2-tailed)	0,000	0,000		0,000	0,000
	N	112	112	112	112	112
DC	Pearson Correlation	.898**	.930**	.905**	1	.529**
	Sig. (2-tailed)	0,000	0,000	0,000		0,000
	N	112	112	112	112	112
ORGDESIGN	Pearson Correlation	.541**	.539**	.366**	.529**	1
	Sig. (2-tailed)	0,000	0,000	0,000	0,000	
	N	112	112	112	112	112

**. Correlation is significant at the 0.01 level (2-tailed).

As shown in Table 25, the results of the Pearson Correlation test show that all of the variables have a positive relationship with ORGDESIGN, which is significant at a 99% confidence level. DC, sensing and seizing have correlation values > 0.50, which shows that these three variables have a strong correlation with ORGDESIGN. Transforming had a correlation coefficient value of 0.366, which shows that it has a moderate correlation with ORGDESIGN, as it falls within the moderate degree of correlation range of 0.30 and 0.49. Therefore, based on the results obtained, a Pearson Correlation test confirms hypothesis H_2, that there is a significant positive relationship between DC (sensing, seizing and transforming) and ORGDESIGN. In addition to confirming this hypothesis, it is important to note that, out of the three components of DC, sensing had the highest correlation with ORGDESIGN, followed by seizing and then transforming.

5.7.3 Research Question Three

Similar to the objective of research question two, which was driven on the premise that ORGDESIGN has a moderating and (or) mediating effect on the relationship between DC and BMI (Foss & Saebi, 2017; Teece, 2018), the researcher opted to determine whether there is a significant positive relationship between ORGDESIGN and BMI. Therefore, the hypothesis for research question three, as outlined in Chapter 3, is as follows:

H_3: There is a significant positive relationship between organisational design and business model innovation.

A Pearson Correlation test was performed between ORGDESIGN and BMI, in order to determine the relationship and the significance of the relationship, as described in Section 4.10.3.5.2. Table 26 shows the results that were obtained from the correlation test.

Table 26: Correlation between ORGDESIGN and BMI

		ORGDESIGN	BMI
ORGDESIGN	Pearson Correlation	1	.719**
	Sig. (2-tailed)		0,000
	N	112	112
BMI	Pearson Correlation	.719**	1
	Sig. (2-tailed)	0,000	
	N	112	112

**. Correlation is significant at the 0.01 level (2-tailed).

As shown in Table 26, the results of the Pearson Correlation test show that ORGDESIGN has a positive relationship with BMI, which is significant at a 99% confidence level. Since the coefficient value is > 0.50, it implies that ORGDESIGN has a strong correlation with BMI. Therefore, based on the results obtained, a Pearson Correlation test confirms hypothesis H_3, that there is a significant positive relationship between ORGDESIGN and BMI.

5.7.4 Test for moderation and mediation

The aim of research questions one, two and three was to understand the bivariate correlations between the three constructs of DC, BMI and ORGDESIGN, which was done by employing the Pearson Correlation test, as described in Section 4.10.3.5.2. The outcome of the test showed that there were significant positive relationships between DC and BMI, DC and ORGDESIGN, and ORGDESIGN and BMI, which confirmed the respective hypotheses for the first three research questions. This then provided context regarding the relationships between the constructs, as a precursor to the moderation and mediation tests that were performed based on research questions four and five.

5.7.4.1 Research Question Four

This research question was based on testing part of the model provided by Foss and Saebi (2017), as illustrated in Chapter 2, where it is suggested that ORGDESIGN (potential moderator variable), has a moderating effect on the relationship between DC (predictor/independent variable) and BMI (outcome/dependent variable). Therefore, based on the abovementioned, the hypothesis for research question four was as follows:

H_4: There is a significant positive moderating effect of organisational design on the relationship between dynamic capabilities and business model innovation.

To test the hypothesis, a test for moderation was conducted, using the Hayes Process Model One template, which was performed in the IBM SPSS Statistics software to produce results at a 95% confidence level, as described in Section 4.10.3.5.3. Table 27 shows the selected model and a description of the variables.

Table 27: Moderation model type and definition of variables

Model Selected	
Model	1

Definition of variables		
Y	BMI	Outcome variable
X	DC	Predictor variable
W	ORGDESIGN	Moderator variable

Sample	
Sample size:	112

Based on the definitions in Table 27 above, a test for moderation was run, the results of which are presented in Table 28 below.

Table 28: Results from moderation test

Model Summary

	R	R-sq	MSE	F	dF1	dF2	p
	.83	.69	.25	78.65	3.00	108.00	.00

Model

	coeff	se	t	p	LLCI	ULCI
constant	3.42	.05	66.14	.00	3.32	3.52
DC (X) – Path A	.74	.10	7.59	.00	.55	.93
ORGDESIGN (W) – Path B	.56	.08	7.27	.00	.40	.71
DC × ORGDESIGN (X × W) – Path C	.00	.09	-.05	.96	-.18	.17

As depicted in Section 4.10.3.5.3, in order for moderation to be confirmed, the relationship of the interaction between the predictor and moderator on the outcome variable, Path C, needs to be statistically significant (Baron & Kenny, 1986; Hair et al., 2019), irrespective of the significance of Paths A and B (Baron & Kenny, 1986), which pertain to the interaction between the predictor and outcome variable and the moderator and outcome variable, respectively. This means that the p-value of Path C needs to be less than 0.05 in order for moderation to exist. Based on an analysis of the results presented in Table 28, the p-value obtained for Path C was 0.96, which indicates that the interaction is not statistically significant. Therefore, the researcher rejected hypothesis H_4 in favour of the null hypothesis, as the p-value was greater than 0.05, which means that there is not a significant positive moderating effect of ORGDESIGN on the relationship between DC and BMI. This implies that moderation does not exist between the three variables.

5.7.4.2 Research Question Five

Research question five was focused on testing the theory proposed by Teece (2018), where it is suggested that ORGDESIGN (potential mediator variable), has a mediating effect on the relationship between DC (predictor/independent variable) and BMI (outcome/dependent variable). Therefore, based on the abovementioned, the hypothesis for research question five was as follows:

H_5: There is a significant positive mediating effect of organisational design on the relationship between dynamic capabilities and business model innovation.

In order to test this hypothesis, a test for mediation was conducted, using the Hayes Process Model Four template, where the test was performed in the IBM SPSS Statistics software to produce results at a 95% confidence level, as described in Section 4.10.3.5.4. Table 29 shows the model that was selected and a description of the variables.

Table 29: Mediation model type and definition of variables

Model Selected	
Model	4

Definition of variables		
Y	BMI	Outcome variable
X	DC	Predictor variable
M	ORGDESIGN	Mediator variable

Sample	
Sample size:	112

Based on the definitions in Table 29 above, a test for mediation was conducted, which produced the following results for Path A of the model, as presented in Table 30 below.

Table 30: Test for Mediation - Path A results

Path:	A

Outcome Variable
ORGDESIGN

Model Summary

R	**R-sq**	**MSE**	**F**	**df1**	**dF2**	**p**
.53	.28	.40	42.64	1.00	110.00	.00

Model

	coeff	**se**	**t**	**p**	**LLCI**	**ULCI**
constant	.80	.38	2.10	.04	.05	1.55
DC	.67	.10	6.53	.00	.47	.87

Covariance matrix of regression parameter estimates:

	constant	**DC**
constant	.14	-.04
DC	-.04	.01

As shown in Table 30, the coefficient of the relationship between DC and ORGDESIGN is 0.67 and $p<0.05$, at a 95% confidence level. Since the p-value is

less than 0.05, this implies that there is a significant relationship between the variables associated with Path A. In addition, since the coefficient value is > 0.50, there is a strong relationship between the variables on Path A of the model. Therefore, there is a strong significant relationship between DC and ORGDESIGN, which is aligned to the requirements, as set out by Hair et al. (2019), in order to establish the mediation effect (Section 4.10.3.5.4). Table 31 below shows the results obtained along Path B, which is the relationship between ORGDESIGN and BMI.

Table 31: Test for Mediation - Path B results

Path:	B

Outcome Variable
BMI

Model Summary

R	R-sq	MSE	F	df1	dF2	p
.83	.69	.25	119.06	2.00	109.00	.00

Model

	coeff	se	t	p	LLCI	ULCI
constant	-1.09	.31	-3.53	.00	-1.70	-.48
DC	.74	.10	7.67	.00	.55	.93
ORGDESIGN	.56	.08	7.31	.00	.40	.71

Covariance matrix of regression parameter estimates:

	constant	DC	ORGDESIGN
constant	.10	-.02	.00
DC	-.02	.01	.00
ORGDESIGN	.00	.00	.01

As shown in Table 31, the coefficient obtained for the relationship between ORGDESIGN and BMI is 0.56, where $p<0.05$, at a 95% confidence level. The low p-value indicates that the relationship is significant along Path B. The coefficient value of 0.56 indicates that there is a strong relationship between the variables along Path B, since it is greater than 0.50. Therefore, based on the above, there is a strong significant relationship between ORGDESIGN and BMI, which satisfies the requirements for estimating mediation effects, as outlined in Section 4.10.3.5.4.

Table 32 below shows the results obtained along Path C, which is the original relationship (main effect) between DC and BMI.

Table 32: Test for Mediation - Path C results (main effect)

Path:	C

Outcome Variable
BMI

Model Summary

R	R-sq	MSE	F	df1	dF2	p
.73	.53	.37	125.09	1.00	110.00	.00

Model

	coeff	se	t	p	LLCI	ULCI
constant	-.65	.37	-1.76	.08	-1.38	-.08
DC	1.11	.10	11.18	.00	.92	1.31

Covariance matrix of regression parameter estimates:

	constant	DC
constant	.14	-.04
DC	-.04	.01

As shown in Table 32, the coefficient obtained for the total (main) effect of the relationship between DC and BMI is 1.11, where $p<0.05$, at a 95% confidence level. The low p-value indicates that the relationship is significant along Path C. The coefficient value of 1.11 indicates that there is a strong relationship between the variables along Path C, since it is greater than 0.50. Therefore, there is a strong significant relationship between DC and BMI, which is aligned to the requirements for estimating mediation effects, as outlined in Section 4.10.3.5.4.

Based on the results obtained, all paths satisfy the requirements for a mediation assessment and the establishment of a mediation model. Table 33 below shows a summary of the results obtained for the total, direct and indirect effects of DC on BMI.

Table 33: Test for Mediation - Total, direct and indirect effects of DC on BMI

Total effect of DC on BMI: C

Effect	se	t	p	LLCI	ULCI	c_ps
1.11	.10	11.18	.00	.92	1.31	1.26

Direct effect of DC on BMI: C'

Effect	se	t	p	LLCI	ULCI	c'_ps	c'_cs
.74	.10	7.67	.00	.55	.93	.84	.49

Indirect effect(s) of DC on BMI: A×B

	Effect	BootSE	BootLLCI	BootULCI
ORGDESIGN	.37	.09	.22	.55

As outlined in Section 4.10.3.5.4, the total effect of DC on BMI (C) is equal to the sum of the direct effect of DC on BMI (C') and the indirect effect of DC on BMI (A×B), which is the case of the results of the mediation model presented in Table 33, where 1.11 (C) is equal to the sum of 0.74 (C') and 0.37 (A×B).

In addition, the researcher needed to establish the type of mediation that occurs, that is, whether there is a complete or partial mediation between the variables. With reference to Figure 6 (Section 4.10.3.5.4), the indirect effect (A×B) is significant, which shows that mediation does exist, and the direct effect (C') is significant, as shown in Table 33, where $p<0.05$, therefore, partial mediation exists. Since the direct and indirect effects have the same signs, this is an indication of complementary partial mediation.

Therefore, based on the results obtained, a test for mediation confirms hypothesis H_5, that there is a significant positive mediating effect of ORGDESIGN on the relationship between DC and BMI.

Chapter 6: Discussion of Results

6.1 Introduction

Topics such as dynamic capabilities and business model innovation have attracted much attention in recent times and have thus become subjects of growing interest in academia and the business environment. Foss and Saebi (2017) and Teece (2018) have done extensive research on the abovementioned constructs and have subsequently proposed theoretical models which provide an indication of the relationship between these constructs, as illustrated and described in Chapter 2, which would serve as a foundation for future theoretical studies, as well as for empirical studies to be performed in order to quantify and evaluate the relationship. As a part of the proposed models, Foss and Saebi (2017) and Teece (2018) suggested that organisational design serves as a conduit to either moderate or mediate the aforementioned relationship, respectively. Therefore, based on this premise, the purpose of this study was to further solidify and ground existing theory, regarding the correlation between dynamic capabilities and business model innovation, in order to validate the hypotheses that stemmed from the research conducted by Foss and Saebi (2017) and Teece (2018).

For the purpose of this study, the researcher derived a model, which underscored the essence of the models proposed by Foss and Saebi (2017) and Teece (2018), by conducting an extensive literature review on the constructs and then elevating the commonalities and major differences between the two, which was then used as the model upon which this study was based, as explained in Chapter 2. Based on the outcome of the literature review and the revised model, five research questions with its respective hypotheses were defined, in order to test the model and to address the theories proposed by Foss and Saebi (2017) and Teece (2018), which were outlined in Chapter 3.

The researcher then collected data by employing a survey questionnaire as the measurement instrument, since this was a quantitative study and the researcher aimed to evaluate the extent of the relationship between the constructs, as depicted in Chapter 4, which provided a view of the methodology the researcher employed in order to collect and analyse the data. Chapter 5 then presented the results obtained from the various descriptive and statistical tests that were performed, as outlined in

Chapter 4, in order to evaluate the hypotheses, as set out in Chapter 3. Therefore, based on the above context, the objective of this chapter is to provide a comprehensive discussion on the findings presented in Chapter 5.

6.2 Descriptive characteristics of the sample

At the onset of the data collection phase, the researcher approximated a required sample size of 200 respondents, which was informed by previous studies conducted across the constructs, as the population size for this study was not known (Heider et al., 2021; Wamba et al., 2017; Wilden et al., 2013; Wang et al., 2015). After approximately six weeks of collecting data, the researcher was only able to obtain a total sample of 168 respondents, which represented 84% of the total sample required, after which the researcher closed the survey in order to proceed with the data analysis phase. This could be attributable to the survey distribution approach employed by the researcher, where a snowball approach was used to leverage the researcher's network and their respective networks, reaching a saturation point during the six-week period. After applying the screening questions to the sample, as outlined in Section 5.2.1, a final qualified sample size of 112 respondents was obtained, which was 56% of the required sample size.

On an analysis of the data, approximately half of the sample (48.2%) was between the ages of 34 and 41 years old. The second highest result was that of the 26 to 33 years old group, which was at 21.4%. This implies that the responses obtained may be predominantly biased toward the 34 to 41 years old demographic. Approximately 53.6% of the sample respondents had a postgraduate qualification, followed by the undergraduate degree demographic of 26.8%, and the predominant industry of the respondents was the finance and insurance sector, followed by the information and communication industry, with 12.5%. Furthermore, almost two-thirds (66.1%) of the respondents represented large organisations. Therefore, in addition to the age demographic, this shows that the sample responses were also biased toward respondents with a postgraduate degree, within the financial and insurance sector and within large organisations. Once again, the sample biases could be attributable to the survey technique adopted, that is, the snowball approach, which leveraged the researcher's network.

6.3 Research Question One

Research question one pertained to an evaluation and understanding of the relationship between dynamic capabilities (DC) and business model innovation (BMI), which was based on the following hypothesis:

H_1: There is a significant positive relationship between dynamic capabilities and business model innovation.

This hypothesis was critical to evaluate and prove, as it formed the fundamental constructs and basis upon which the research of Foss and Saebi (2017) and Teece (2018) were based. Although Foss and Saebi (2017) and Teece (2018) imply that there is a positive relationship between DC and BMI, this study and specifically research question one sought to confirm that view and to ensure that it was reproducible, as the study was performed within a certain context and one of the researcher's objectives was to confirm that notion as being a generalisable one, based on the dynamics of the sample obtained. In addition, this test was important to evaluate, as the outcome of research question one served as an essential input into validating the assumptions upon which research questions four and five were based, regarding the characteristics of the relationship between DC and BMI.

In addition to the above, and to further support the case for the hypothesis, studies performed by Wamba et al. (2017) and Wilden et al. (2013) have demonstrated that DC has a positive relationship with firm performance. Furthermore, through their extensive research on BMI and through the literature review conducted within this research, as described in Chapter 2, Foss and Saebi (2017) have developed a model (Figure 2) which implies that BMI is a conduit through which DC affects firm performance. Therefore, based on the above, from a theoretical standpoint, it is implied that DC has a positive relationship with BMI.

With regard to obtaining information regarding the DC and BMI constructs, the researcher specifically leveraged and adapted survey questions, from existing research that has been conducted on the different constructs, as they have been tried and tested, which also forms a basis for comparative analysis. As shown in Appendix A, sections two, three and four of the survey were packaged to obtain data regarding the three components of DC, that is, sensing, seizing and transforming, respectively, so that the researcher could obtain a more granular view of the

relationship between DC and BMI. The questions related to BMI, were provided in section five of the survey (Appendix A).

Based on the data obtained for the two constructs of DC and BMI, the researcher conducted a Pearson Correlation test between the constructs, as the characteristics of the data satisfied the requirements and assumptions for this test to be performed, as explained in Section 4.10.3.5.2., the results of which were presented in Section 5.7.1. The results of the test have shown that DC and its respective components of sensing, seizing and transforming, all had a significant positive relationship with BMI, at a 99% confidence level. Furthermore, of the three components of DC, seizing had the highest correlation with BMI, which is synonymous with the view of Teece (2018), followed by sensing and then transforming, which shows that seizing has the highest impact on the relationship between DC and BMI. Therefore, based on the results obtained, hypothesis H_1 was accepted, as it was empirically confirmed, through this study, that there is a significant positive relationship between DC and BMI. In addition to this, it also provided input into the underlying assumptions upon which research questions four and five are based.

6.4 Research Question Two

This research question sought to understand the relationship between dynamic capabilities (DC) and organisational design (ORGDESIGN), which was based on the following hypothesis:

H_2: There is a significant positive relationship between dynamic capabilities and organisational design.

When analysing the potential enablers of organisational performance, it is suggested that dynamic capabilities cannot, on its own, facilitate that performance, without considering the context within which the organisation operates (Wilden et al., 2013). In order to enhance organisational performance, there needs to be a synchronisation of the efforts of the different components of the organisation, where in addition to dynamic capabilities, coordination of the internal and external elements of the organisation also need to be considered (Wilden et al., 2013). To that end, internal components of the organisation, such as its organisational structure or design needs to be configured in such a way, that it can optimally leverage its dynamic capabilities to sense, seize and transform the organisation, to optimally explore or exploit

external opportunities that may exist, thus enhancing organisational performance. According to Foss and Saebi (2017), business model innovation, to which dynamic capabilities are an antecedent, leads to enhanced organisational performance. Therefore, organisational design is also critical to the relationship between DC and BMI, where it either serves as a moderator (Foss & Saebi, 2017) or mediator (Teece, 2018).

Therefore, based on the abovementioned, the importance of evaluating the relationship hypothesized in research question two, served as a preamble to evaluating the moderating and (or) mediating effect of ORGDESIGN on the relationship between DC and BMI, as set out in research questions four and five, where research question two sought to analyse the relationship between DC and ORGDESIGN, in order to confirm the assumptions upon which moderation and mediation are based.

Within this research, from a DC perspective, the researcher utilised the same construct-question composition as depicted in the discussion of research question one, that is, questions specifically grouped to obtain information regarding the sensing, seizing and transforming components of DC, as shown in section two, three and four of the survey (Appendix A), as the researcher opted to further assess which component of DC had the highest correlation with ORGDESIGN. For the ORGDESIGN construct, the researcher adapted questions from studies performed by Dubey et al. (2018), Wamba et al. (2017) and Wilden et al. (2013), within the context of this study, as shown in section six of the survey (Appendix A).

From the data obtained from the sample, regarding DC and ORGDESIGN, the researcher opted to conduct a Pearson Correlation test between these two constructs, as the requirements for this test were satisfied, as outlined in Section 4.10.3.5.2. The results of the test were presented in Section 5.7.2. Based on the results obtained, DC, and its components of sensing and seizing, had a significant positive relationship with ORGDESIGN, whereas transforming had a moderate positive relationship with ORGDESIGN, at a 99% confidence level. On a deeper analysis of the results, the sensing component of DC had the highest correlation with ORGDESIGN, closely followed by seizing and then transforming. This is in contrast to the result obtained for the relationship between DC and BMI, where seizing had

the highest correlation with BMI, as per the discussion on research question one (Section 6.3).

Therefore, based on the results obtained, hypothesis H_2 was accepted, as it was empirically confirmed, through this study, that there is a significant positive relationship between DC and ORGDESIGN. This also provided insight into the characteristics of the relationship between these two constructs, as input into research questions four and five.

6.5 Research Question Three

Based on the entanglement view of dynamic capabilities (DC), business model innovation (BMI) and organisational design (ORGDESIGN), provided in Chapter 2, it was suggested that ORGDESIGN has a positive influence on the relationship between DC and BMI, as it serves as a conduit through which DC affects BMI (Foss and Saebi, 2017; Teece, 2018). Since research question one sought to establish the primary effect of DC on BMI, and research question two aimed to understand the relationship between DC and ORGDESIGN, the objective of research question three was to determine the relationship between the constructs associated with the third part of the entanglement, that is, between ORGDESIGN and BMI. Therefore, the hypothesis for research question three was as follows:

H_3: There is a significant positive relationship between organisational design and business model innovation.

The propensity of an organisation to capture opportunities that arise in the external environment depends on how flexible it is, in terms of reconfiguring its resources, thus creating flexibility in its business model (Dubey et al., 2018; Foss & Saebi, 2017; Teece, 2018). The use of DC provides a means of signalling what organisational changes need to be made (Dubey et al., 2018), which in turn affects how the organisation captures the identified opportunities (Foss & Saebi, 2017; Teece, 2018). In addition, to the abovementioned, the way in which an organisation is structured or designed provides a means with which DC has an impact on BMI and performance (Foss & Saebi, 2017; Teece, 2018; Wilden et al., 2013). This provides an indication of the extent of entanglement between the three constructs.

Once again, as was done in the cases of research questions one and two, a Pearson Correlation test was conducted between ORGDESIGN and BMI, as all of the assumptions for the test were met, as well as to provide consistency in the approach for determining the bivariate relationships between the three constructs, as outlined in Section 4.10.3.5.2. The results of this test were provided in Section 5.7.3. From the results obtained it was found that ORGDESIGN had a significant positive relationship with BMI. In addition, it was found that ORGDESIGN had a strong correlation with BMI, based on the high coefficient value of 0.719. This empirically confirmed hypothesis H_3, resulting in the hypothesis being accepted, which provided context into the underlying assumptions upon which research questions four and five were based.

6.6 Research Question Four

After obtaining an understanding of the bivariate correlations that exist between the three constructs, that is, between DC and BMI, DC and ORGDESIGN, and ORGDESIGN and BMI, as discussed in Sections 6.3 to 6.5, the next step of the study was to evaluate the hypotheses set out by Foss and Saebi (2017) and Teece (2018). Therefore, the aim of research question four was to evaluate whether ORGDESIGN has a moderating effect on the relationship between DC and BMI (Foss & Saebi, 2017). The hypothesis for research question four was as follows:

H_4: There is a significant positive moderating effect of organisational design on the relationship between dynamic capabilities and business model innovation.

BMI, a phenomenon that has received increased interest from the early 2000's, has become a focal point in recent business and academic studies (Foss & Saebi, 2017). BMI refers to large scale changes to an organisation's business model in order to find new and innovative ways of creating, delivering and capturing value, with the objective of enhancing organisational performance (Foss & Saebi, 2017, Teece, 2018). Theoretical studies that have been performed with respect to the BMI construct are sparse, the findings of which are disparate and inconclusive (Foss & Saebi, 2017). Foss and Saebi (2017) have thus reviewed and consolidated the research that has been done over the past fifteen years, with the intention of highlighting common themes from prior research, with the objective of providing a systematic view of the construct, including its relationship with other constructs.

Through empirical studies that have been performed, it has been demonstrated that DC is an antecedent to organisational performance, however, the relationship is dependent on the environment within which the organisation exists (Wamba et al., 2017; Wilden et al., 2013). Wilden et al. (2013) further explain that the internal and external environment of the organisation impacts the relationship between DC and performance, where an internal organisational component that facilitates the relationship is the ORGDESIGN. Through their theoretical studies, Foss and Saebi (2017) and Teece (2018) have suggested that BMI serves as an intermediary between DC and performance and that ORGDESIGN plays a major role on the relationship between DC and BMI, and BMI and organisational performance respectively, as shown in Figure 2 (Chapter 2). Furthermore, Wilden et al. (2013) have demonstrated that ORGDESIGN has a positive moderating effect on organisational performance, and Foss and Saebi (2017) have suggested that ORGDESIGN has a moderating effect on the relationship between DC and BMI and BMI and organisational performance, which provides a link between DC and performance. Since the objective of this study was to investigate the first part of the DC-performance relationship, that is, the relationship between DC and BMI, research question four was based on the hypothesis presented by Foss and Saebi (2017), where it is suggested that ORGDESIGN has a moderating effect on the relationship between DC and BMI.

In order to test hypothesis H_4, the researcher conducted the test within the IBM SPSS Statistics software, at a 95% confidence level, using the Hayes Process Model One template, where DC was defined as the predictor variable (*X*), BMI defined as the outcome variable (*Y*) and ORGDESIGN as the moderator variable (*W*), as described in Section 4.10.3.5.3. The results of the test were presented in Section 5.7.4.1.

The results of the test have shown, from the sample data obtained, that the relationships between DC and BMI (Path A), and ORGDESIGN and BMI (Path B) were significant, as the p-values obtained for both interactions were less than 0.05. However, in order for moderation to be confirmed, the relationship of the interaction between DC and ORGDESIGN on BMI (Path C), needed to be statistically significant, irrespective of the significance of the relationship between Paths A and B (Baron & Kenny, 1986; Hair et al., 2019). Based on the results obtained along Path C, the p-value obtained was 0.96, which shows that the relationship along Path C was not

statistically significant, at a 95% confidence level, inferring that moderation does not exist. This implies that ORGDESIGN does not have a moderating effect on the relationship between DC and BMI. Hypothesis H_4 was then rejected in favour of the null hypothesis, which meant that there is no significant moderating effect of ORGDESIGN on the relationship between DC and BMI. The result obtained within this study has shed some light into the relationship between DC, BMI and ORGDESIGN, which contrasted with the assertions made by Foss and Saebi (2017).

6.7 Research Question Five

As discussed in Section 6.6, where the researcher investigated the moderating effect of ORGDESIGN on the relationship between DC and BMI, it was found that ORGDESIGN does not have a significant moderating effect on the relationship. Further to the abovementioned, the researcher opted to conduct an investigation on the mediating effect of ORGDESIGN on the relationship between DC and BMI. Therefore, the objective of research question five was to test the following hypothesis:

H_5: There is a significant positive mediating effect of organisational design on the relationship between dynamic capabilities and business model innovation.

In support of testing this hypothesis, Teece (2018) implied that ORGDESIGN may have a mediating effect on the interaction between DC and BMI. Flexible management practices and effective delegation of decision-making authority are imperatives for a flexible ORGDESIGN (Teece, 2018). Teece (2018) further explains that ORGDESIGN is critical to, and affects the efficacy of both DC and BMI, suggesting that ORGDESIGN cannot be left out of the equation. This provides an indication of the entanglement between these three constructs, which warranted further research to be conducted within this sphere (Teece, 2018). In support of the above, Wilden et al. (2013) have also recommended that future studies be focused on investigating the mediating effect of ORGDESIGN on the relationship between DC and organisational performance, to which BMI serves as a conduit (Foss & Saebi, 2017; Teece, 2018). Therefore, in order to fill that void, and to add to the existing body of knowledge regarding the relationship between DC and BMI, the researcher opted to empirically evaluate the aforementioned hypothesis.

In order to test hypothesis H_5, the researcher conducted the test within the IBM SPSS Statistics software, at a 95% confidence level, using the Hayes Process Model Four template, where DC and BMI represented the predictor (*X*) and outcome (*Y*) variables, respectively, and ORGDESIGN represented the mediating variable (*M*), as described in Section 4.10.3.5.4. The results of the test were presented in Section 5.7.4.2.

Based on an analysis of the results obtained from the test, it was found that the coefficient of the relationship between DC and ORGDESIGN, Path A, was 0.67 and the p-value was less than 0.05, which implied that there was a strong significant relationship between the variables, subsequently validating the assumption of a significant relationship along Path A, which was a requirement for mediation to occur, as outlined in Section 4.10.3.5.4. For Path B, the relationship between ORGDESIGN and BMI, as illustrated in Section 4.10.3.5.4, a coefficient value of 0.56 was obtained, with a p,0.05, also indicating that there was a strong significant relationship between ORGDESIGN and BMI, which validated the assumption that a significant relationship must exist along Path B, in order for mediation to occur, as described in Section 4.10.3.5.4. Path C represented the original relationship (main effect) between DC and BMI, where the test revealed a coefficient value of 1.11 and $p<0.05$, indicating a strong significant relationship between DC and BMI, also validating the assumption of a significant relationship along Path C, for a mediation test to be successful. Therefore, all three paths satisfied the requirements for mediation to occur. In addition, as per Equation 1 (Section 4.10.3.5.4), the total effect (C), must be equal to the sum of the direct effect (C') and the indirect effect of the mediating variable, where 1.11 (C) was equal to the sum of 0.74 (C') and 0.37 (A×B).

Further to confirming that ORGDESIGN has a mediating effect on the relationship between DC and BMI, the researcher opted to understand the type of mediating effect that ORGDESIGN had, that is, whether it was a partial or complete mediation of the relationship. On an analysis of the results, it was established that the direct effect (C') was significant, implying that a partial mediation exists, and since the direct and indirect effects were both positive, ORGDESIGN had a complementary partial mediation on the relationship. This confirmed the hypothesis set out for research question five, that there is a significant positive mediating effect of ORDESIGN on the relationship between DC and BMI.

6.8 Conclusion

This research set out to unravel the entanglement between the constructs of dynamic capabilities, business model innovation and organisational design, in order to gain a deeper understanding of the interconnectedness between these phenomena. The hypotheses that were assessed within this research were deeply grounded within studies performed by Foss and Saebi (2017) and Teece (2018), where extensive research regarding the theoretical relationships between these constructs have been conducted. The themes which arose from those studies indicated that dynamic capabilities are an antecedent to business model innovation and that organisational design either plays a moderating or mediating role on that relationship, however, there have not been many studies that have empirically evaluated the respective hypotheses. Therefore, this study aimed to fill that void, by statistically evaluating the relationships, as defined in Chapter 3. The results of the tests performed to evaluate the extent of the relationships, were presented in Chapter, which were then discussed within this chapter. Of the five hypotheses that were evaluated, four were deemed statistically significant, which validated those hypotheses (H_1 to H_3 and H_5), confirming that ORGDESIGN plays a mediating role on the relationship between DC and BMI. Hypothesis H_4 was rejected, as this study did not find a significant moderating effect of ORGDESIGN on the relationship between DC and BMI. The findings of this study provide insight into the relationships between the constructs, which therefore adds to the current body of knowledge regarding DC and BMI. The implications of this research are presented in Chapter 7.

Chapter 7: Conclusion and Recommendations

7.1 Introduction

The objective of this study was to obtain an in-depth understanding of the interconnectedness and entanglement between the constructs of dynamic capabilities (DC) and business model innovation (BMI), which included an investigation of the role that organisational design (ORGDESIGN) plays on that relationship.

The aim of Chapter 1 was to provide an overview of the research problem, as well as to provide a justification of the need for this research. As depicted in Chapter 1, the rate of discontinuous change in the business environment has forced many organisations to either adapt to and embrace the change or face the risk of becoming obsolete (Felin & Powell, 2016; Schoemaker et al., 2018), which is synonymous with the “eat or be eaten” philosophy. With technological advancements occurring at an accelerated pace, so too has the world moved from the third industrial revolution to the fourth, where many organisations have adopted the use of technology to sustain its competitive advantage (Felin & Powell, 2016). In order to be flexible enough to effectively respond to change, organisations need to possess the relevant capabilities and competencies. BMI and DC are phenomena that have attracted a growing interest in recent years, within academia and the business environment, as means of facilitating organisational adaptability and sustainability, however, ORGDESIGN plays a major role on how effective an organisation can be in terms of optimally leveraging BMI and DC (Foss & Saebi, 2017; Loon et al., 2020; Teece, 2018). Therefore, this research set out to obtain further insight into the entanglement between these three constructs, which was grounded in the theories purported by Foss and Saebi (2017) and Teece (2018), where they have suggested that further research needed to be performed to empirically evaluate the interconnectedness between these constructs, thus validating and verifying their theories, and complementing the current body of knowledge on the subject.

Chapter 2 provided a detailed literature review on each of the three constructs, based on the existing academic body of knowledge. Further to this, a view of the interaction and relationship between the three constructs were provided, which was deeply grounded in the theories and models proposed by Foss and Saebi (2017) and Teece

(2018). By superimposing these models, the researcher then highlighted the similarities and differences between the two, which aided in the development of the model that formed the basis of this study, as illustrated in Figure 3. Thereafter, the research questions and respective hypotheses, that would aid in evaluating the relationships highlighted in the model, were derived from the studies performed by Foss and Saebi (2017) and Teece (2018), which were presented in Chapter 3.

The research design and methodology that was adopted by this study defined the approach that was undertaken during the data collection and analysis phases of the research, so that the relevant information would be obtained to evaluate the respective hypotheses, as outlined in Chapter 4. The abovementioned approach was guided by similar types of studies that have been conducted by Wamba et al. (2017) and Wilden et al. (2013). A survey questionnaire was employed as the measurement instrument to collect data, which attracted a total sample size of 168 respondents, after which, through the use of screening questions to identify the correct unit of analysis for this study, a final qualified sample of 112 respondents was obtained, which was agnostic of any particular industry, so that the results and findings could be generalised on a broader scale. The results of the descriptive characteristics and statistical analysis of the data obtained were then presented in Chapter 5 after which a discussion on the findings was presented in Chapter 6.

Therefore, the objective of this chapter is to summarise the findings and insights obtained from the research, as well as to provide a description of the implications for business, the limitations of this study and suggestions for future research.

7.2 Principal findings

This study sought to understand the relationship between DC, BMI and ORGDESIGN, with the objective of complementing the theoretical studies performed by Foss and Saebi (2017) and Teece (2018), with an empirical evaluation and validation of their proposed models. In addition, this study contributes toward the current body of knowledge regarding these constructs, in the fields of innovation and strategic management (Evans et al., 2017; Foss & Saebi, 2017; Loon et al., 2020; Teece, 2018; Wang et al., 2015). The foundation of this research encompassed determining the significance of the relationships between the three constructs, as well as to verify whether ORGDESIGN had a moderating or mediating effect on the

relationship between DC and BMI, or both. The entanglement of the constructs allowed the researcher to integrate the models proposed by Foss and Saebi (2017) and Teece (2018), thus facilitating the development of the model proposed in this study (Figure 3).

Based on the proposed model, and as highlighted in Chapter 3, research question one sought to understand the bivariate relationship between the primary constructs of DC and BMI, where it was hypothesised that there is a significant positive relationship between DC and BMI. All the assumptions were met for a Pearson Correlation test to be performed, after which the results obtained from the test proved that there is a strong significant positive relationship between DC and BMI, which was found to be synonymous with the views presented in the key literature (Foss & Saebi, 2017; Teece, 2018). This proved that DC is indeed an antecedent to BMI (Foss & Saebi, 2017), and the strong positive correlation indicated that DC is an essential component in enabling an organisation to exercise BMI successfully and optimally. This adds further insight into the relationship between the two constructs, which validates the assertions made in existing theory (Foss & Saebi, 2017; Teece, 2018) and contributes toward empirical evidence of the extent of the relationship. In addition, this finding was critical to the research, as it served as an input into research question five, where a requirement for mediation to occur, was that a significant relationship needed to exist between the predictor (DC) and outcome (BMI) variables (Path C).

The objective of research question two was to obtain a deeper understanding of the bivariate relationship between the constructs of DC and ORGDESIGN. Since ORGDESIGN was seen as fundamental to the relationship between DC and BMI (Foss & Saebi, 2017; Teece, 2018), it was critical to understand its relationship with each of the two primary constructs. To evaluate the hypothesis of research question two, which indicated that there is a significant positive relationship between DC and ORGDESIGN, a Pearson Correlation test was performed. The results of the test validated the hypothesis, as it confirmed that there is a strong significant positive relationship between DC and ORGDESIGN. This provided further insight into the relationship between DC and ORGDESIGN, demonstrating that DC positively influences and is essential to obtaining an optimal ORGDESIGN. Conversely, having a flexible and optimal ORGDESIGN allows an organisation to effectively leverage its

dynamic capabilities. The test provided further insight into the relationship between the two constructs, by providing empirical evidence of the extent and direction of the relationship, that is, a strong and significantly positive relationship. This validated the views of Foss and Saebi (2017) and Teece (2018), regarding the relationship between the two constructs. In addition to the abovementioned, the result of this test was an imperative in evaluating the mediating effect of ORGDESIGN on the relationship between DC and BMI (research question five), as a second condition for mediation to occur was that the relationship along Path A, the predictor (DC) and mediating (ORGDESIGN) variables, needed to be significant.

The third finding of the study was with respect to research question three, where it was hypothesised that a significant positive relationship exists between ORGDESIGN and BMI (Foss & Saebi, 2017; Teece, 2018). A Pearson Correlation test between the two constructs revealed that there is a strong significant positive relationship between ORGDESIGN and BMI, validating hypothesis H_3. This shows that an optimal ORGDESIGN is essential to and strongly correlated with an organisations ability to exercise effective BMI. Therefore, the findings of research question three provided empirical evidence to support the views implied by Foss and Saebi (2017) and Teece (2018), regarding the relationship between the constructs. Furthermore, this test was critical for a test for mediation as well, as the relationship along Path B, the mediator (ORGDESIGN) and outcome (BMI) variables, needed to be significant.

The fourth principal finding of the research pertained to research question four, where the hypothesis stemmed from the research conducted by Foss and Saebi (2017), where they have postulated that ORGDESIGN plays a significant positive moderating role on the relationship between DC and BMI. Therefore, the hypothesis was based on the notion that ORGDESIGN has a significant positive moderating effect on the relationship between DC and BMI. A test for moderation between the three variables was conducted, as discussed in Section 4.10.3.5.3, where the results have indicated that ORGDESIGN does not moderate the relationship between DC and BMI, as the coefficient value along Path C was zero, as illustrated in Figure 7, below. In order for moderation to occur, the relationship along Path C needed to be significant, irrespective of the significance of the relationships along the other two paths, as discussed in Section 4.10.3.5.3. Furthermore, at a 95% level of confidence,

the p-value obtained was 0.96, which shows that the hypothesis does not hold true and was therefore rejected.

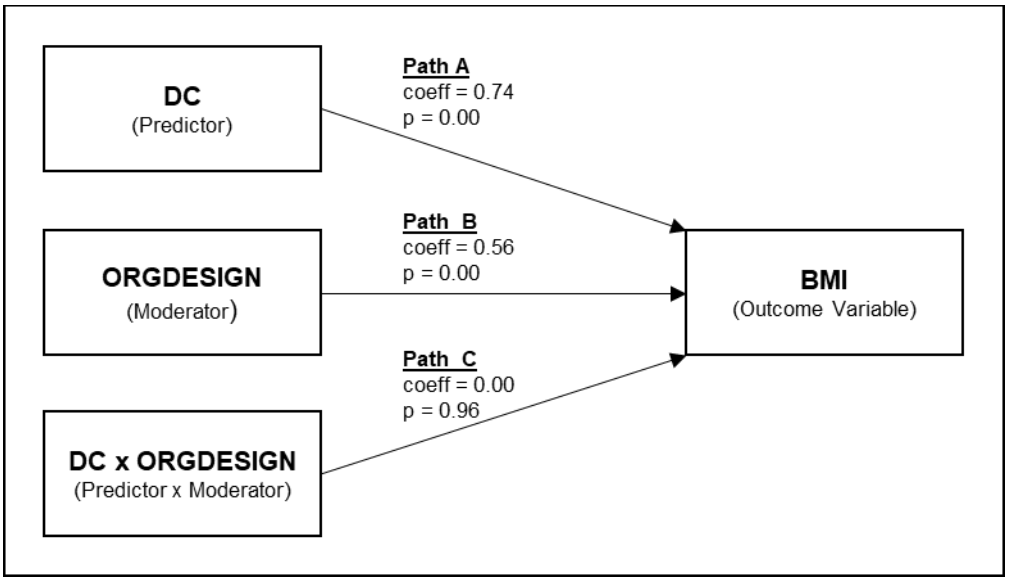


Figure 7: Test for Moderation Result

The fifth research question stemmed from the research conducted by Teece (2018), where it was implied that ORGDESIGN mediates the relationship between DC and BMI. The hypothesis for this question was that ORGDESIGN plays a significant positive mediating effect on the relationship between DC and BMI. Since it was established that the relationships are significant along Paths A, B and C, as per the findings of research questions one, two and three, a test for mediation between the three constructs was possible. A test for mediation had shown that a complementary partial mediation exists between the constructs, as the relationship along Path C' was statistically significant, where ORGDESIGN explains 37% of the relationship between DC and BMI, as explained in Section 5.7.4.2. This implied that there are other potential mediators that explain the remaining proportion of the relationship. Based on the result obtained, it was shown that ORGDESIGN has a positive mediating effect on the relationship between DC and BMI, at a 95% level of confidence. Figure 8 below, shows an illustration of the mediation relationship between the three constructs.

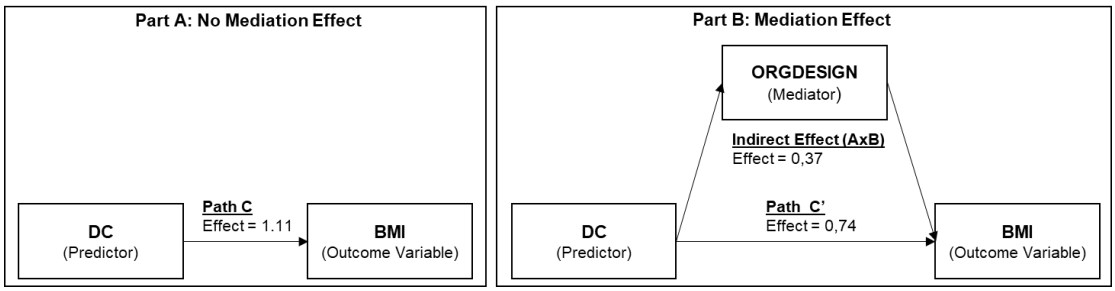


Figure 8: Test for Mediation Result

In summary, the principal findings of the research are as follows:

1. DC has a significant positive relationship with BMI,
2. DC has a significant positive relationship with ORGDESIGN,
3. ORGDESIGN has a significant positive relationship with BMI,
4. ORGDESIGN has no moderating effect on the relationship between DC and BMI,
5. ORGDESIGN has a significant positive mediating effect on the relationship between DC and BMI,
6. ORGDESIGN is a complementary partial mediator of the relationship between DC and BMI.

7.3 Implications for business

In addition to contributing findings and insights to the existing theoretical body of knowledge, this research also highlights considerations and implications for business and management.

Firstly, dynamic capabilities are higher order capabilities which gives organisations the increased ability to sense opportunities in the business environment, provide a means of effectively seizing those opportunities, and allow the organisation to optimally transform or reconfigure their business capabilities and modus operandi, in order to synchronise their efforts to remain relevant and to sustain their competitive edge (Teece, 2014, 2018). It is therefore an imperative for management to ensure that they have the appropriate capabilities that will unlock value within the context of

their business and its environment. Furthermore, from the insights obtained within this research, the strength of an organisation's dynamic capabilities has the ability to positively influence business model innovation, provided the organisational design allows for the organisation to effectively leverage and capitalise on the use of its dynamic capabilities.

Secondly, management should not underestimate or ignore the role that organisational design plays on their ability to sense, seize and transform the organisation, as well as on their ability to adapt their existing business model or adopt new business models to enhance their performance. Operating in organisational silos or rigid structures, and having hierarchical management structures and decision-making authority, are not conducive to the conditions required for the effective use of its dynamic capabilities and to exercise effective business model innovation. Therefore, a flexible organisational design and delegation of decision-making authority is necessary for and can increase an organisation's ability to optimally leverage its DC and enhance its capacity for BMI (Teece, 2018), as a finding of this study has highlighted that ORGDESIGN plays a role in partially mediating the relationship between DC and BMI.

Thirdly, BMI has become a phenomenon that has attracted much interest in the academic and business environments in recent years, as it is a means of rapidly embracing and responding to change, where organisations can unlock further value in its existing offering or extract value from new markets and opportunities that may arise. In addition, it is also a means of rendering a business sustainable, especially in times of increased uncertainty and volatility, giving organisations a competitive edge in the market. Therefore, while BMI is in its infancy in academia and business (Foss & Saebi, 2017), management should divert their attention within this domain, which will allow them to be first movers and early adopters of the concept of BMI, allowing them to capture a sizeable share of new or existing markets, before their competitors can, thus increasing their performance.

Lastly, the entanglement of the three constructs shows that business cannot focus on enhancing one component in order to increase performance, but to rather focus on the synchronisation and coordination of all three components to ensure that their performance is sustainable. Furthermore, management should employ systems thinking principles in order to ensure alignment between the three constructs, as well

as to ensure that it is effectively deployed, within the internal and external context of the organisation.

7.4 Research limitations

BMI is a fairly new phenomenon in academic literature and the business environment, which had started gaining momentum from the early 2000's, however, the numerous attempts at defining and understanding the construct are disparate, largely due to the discontinuous change and complexity that has now become synonymous with and inherent to the modern business environment (Foss & Saebi, 2017). Due to their consolidation effort of fifteen years of research in the field, Foss and Saebi (2017) have developed a proposed model regarding the relationships and interconnectedness between the BMI construct and other variables, which was fundamental in forming a basis for this study. Therefore, this research was bound by the limitations of that study and the notion that BMI is still in its infancy in academia and business.

Another limitation to the research was the sampling technique used to collect data and the final sample size obtained. In the case of the research performed by Wilden et al. (2013), the size of the population for the study was known and the sample was obtained from a database. However, in the case of this research, the population was not known, which required the researcher to approximate a sample size based on comparative studies that have been performed. The sampling method used in this study was that of a non-probability purposive, convenience and snowball sampling techniques; therefore, this increases the potential for a sampling bias, as the survey was extended to the researcher's network. The target sample size was 200 respondents, however, due to the sampling technique used, the data collection phase reached a saturation point at 168 responses, after which the qualified sample obtained was 112 respondents, based on qualifying questions to identify the correct unit of analysis. Additionally, the study was performed through a cross-sectional time horizon, where a point in time analysis was done on the sample.

Since this study was among the first to empirically evaluate the relationships in the entanglement between DC, BMI and ORGDESIGN, the results may not be conclusive and may be context dependent. Additionally, the findings could be biased toward certain characteristics of the population. For example, 48.2% of the sample

respondents fell within the 34 to 41 years old age group, 53.6% had a postgraduate degree, 48.2% were within the financial and insurance activities industry and 66.1% were in large organisations. Furthermore, the study was conducted within a South African context and may be limited to the views and experiences of the South African demographic, thus impacting the generalisability of the findings. This implies that the maturity and understanding of the constructs within different settings may yield different results.

Another limitation identified was that ORGDESIGN does not completely explain the relationship between DC and BMI, as it was identified that ORGDESIGN is a partial mediator of the relationship, where it accounts for only 37% of the relationship. This means that there are potentially other mediators which account for the remainder of the relationship, which was not within the ambit of this research.

7.5 Suggestions for future research

Due to the complexity inherent in BMI and its entanglement with DC and ORGDESIGN still being in its infancy (Foss & Saebi, 2017), it is recommended that further theoretical and empirical studies be performed in order to gain more insight into the relationship between the constructs and to validate findings which emanate from such studies. Below are suggestions for future research within this domain.

Since this study was conducted primarily within a South African context, it is recommended that a similar study be reproduced in other settings, as the dynamics regarding the maturity, use and understanding of the constructs may differ in other contexts, which may differ to the results and insights obtained within this particular study. In addition, the views of first compared to third world countries may be disparate, and it is suggested that the study be performed across a range of different countries. Furthermore, a replication study is warranted to verify and validate the findings obtained within a South African context.

Other elements, such as the legislative and regulatory practices within different contexts, may have an impact on the findings that may be obtained. It is therefore recommended that these elements be considered when obtaining data with respect to the different constructs, which may provide an insight into how the economic practices affect the relationship between DC, BMI and ORGDESIGN.

Since this study was performed within a cross-sectional time horizon, the findings present a snapshot of a point in time assessment of the constructs, which does not provide insight into the sustainability of the relationship. Therefore, it is recommended that the research should be performed across a longitudinal time horizon, so that the sustainability of the entanglement of the constructs can be measured and assessed.

Since this study was limited to assessing ORGDESIGN as having a mediating effect on the relationship between DC and BMI, it was found that complementary partial mediation existed, where ORGDESIGN explained 37% of the relationship. It is therefore recommended that other potential mediators be assessed as well, in order to obtain a more comprehensive understanding of the relationship between DC and BMI.

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Appendix A

Questionnaire

Section A: Agreement to partake in the survey

This section confirms that you understand the nature of the study and will proceed to undertake the questionnaire.

1. Do you consent to completing the survey?
    - Yes
    - No

Section B: Background of Organisation and Participant – Demographic information

Section 1

This section pertains to general demographic information about yourself and the organisation

2. What is your age?
    - 18–25 years old
    - 26–33 years old
    - 34–41 years old
    - 42–49 years old
    - 50 years old or older

3. What is your gender?
    - Male
    - Female
    - Prefer not to say

4. Educational Background
    - No formal qualification
    - Primary school qualification
    - Secondary school qualification
    - College qualification (diploma/certificate)
    - Undergraduate degree

- Postgraduate degree (Master/Ph.D.)

5. What type of industry is your organisation within?
    - Accommodation and food service activities
    - Administrative and support service activities
    - Agriculture, forestry and fishing
    - Arts, entertainment and recreation
    - Construction
    - Education
    - Energy
    - Financial and insurance activities
    - Health and social work activities
    - Information and communication
    - Manufacturing
    - Mining and quarrying
    - Professional, scientific and technical activities
    - Public administration and defence
    - Real estate
    - Transportation and storage
    - Wholesale and retail trade
    - Other service activities

6. Work Experience
    - Less than 5 years
    - 5 - 10 years
    - 11 - 15 years
    - 16 - 20 years
    - Greater than 20 years

7. What would you say is your job profile?
    - CEO/Owner
    - Executive
    - Head of Function/Department
    - Team Manager/Leader
    - Employee

- Other - Please specify

8. Size of organisation
    - Small
    - Medium
    - Large

9. Does your organisation have the capabilities/competencies to effectively practice Business Model Innovation to swiftly respond to changes in the market?
    - Yes
    - No
    - Not Sure

10. How long does it take the organisation to effectively shift its business model/operations to respond to change/opportunities?
    - 0 - 1 Year
    - 1 - 3 Years
    - 3 - 5 Years
    - Greater than 5 years

11. Do you currently work with/on Business Model Innovation Initiatives?
    - Yes
    - No
    - Not Sure

Section C: Background of Organisation and Participant – Demographic information

This section pertains to a more in-depth understanding around the organisation's capabilities and how it responds to change or new opportunities.

Section 2

<u>How the organisation identifies (senses) and analyses opportunities.</u>

12. We continuously examine the innovative opportunities for the strategic use of business capabilities

- Strongly Disagree
- Disagree
- Not sure
- Agree
- Strongly Agree

13. We enforce adequate plans for the introduction and utilization of business capabilities
    - Strongly Disagree
    - Disagree
    - Not sure
    - Agree
    - Strongly Agree

14. We perform business capabilities planning processes in systematic and formalized ways
    - Strongly Disagree
    - Disagree
    - Not sure
    - Agree
    - Strongly Agree

15. We frequently adjust business capabilities plans to better adapt to changing conditions
    - Strongly Disagree
    - Disagree
    - Not sure
    - Agree
    - Strongly Agree

16. In our organisation, business analysts and line people meet regularly to discuss important issues
    - Strongly Disagree
    - Disagree
    - Not sure

- Agree
- Strongly Agree

17. In our organisation, business analysts and line people from various departments regularly attend cross-functional meetings
    - Strongly Disagree
    - Disagree
    - Not sure
    - Agree
    - Strongly Agree

18. In our organization, business analysts and line people coordinate their efforts harmoniously
    - Strongly Disagree
    - Disagree
    - Not sure
    - Agree
    - Strongly Agree

19. In our organisation, information is widely shared between business analysts and line people so that those who make decisions or perform jobs have access to all available know-how
    - Strongly Disagree
    - Disagree
    - Not sure
    - Agree
    - Strongly Agree

20. Our personnel show superior understanding of technological trends
    - Strongly Disagree
    - Disagree
    - Not sure
    - Agree
    - Strongly Agree

21. Our personnel show superior ability to learn new technologies
    - Strongly Disagree
    - Disagree
    - Not sure
    - Agree
    - Strongly Agree

22. Our personnel are very knowledgeable about the critical factors for the success of our organization
    - Strongly Disagree
    - Disagree
    - Not sure
    - Agree
    - Strongly Agree

23. Our personnel are very knowledgeable about the role of dynamic (unique, higher order) capabilities as a means, not an end
    - Strongly Disagree
    - Disagree
    - Not sure
    - Agree
    - Strongly Agree

Section 3

<u>How the organisation seizes and explores the opportunities.</u>

24. In our organisation, the responsibility for business capability/innovation development is clear
    - Strongly Disagree
    - Disagree
    - Not sure
    - Agree
    - Strongly Agree

25. We are confident that business capability project proposals are properly appraised
    - Strongly Disagree
    - Disagree
    - Not sure
    - Agree
    - Strongly Agree

26. Our business capability development department is clear about its performance criteria
    - Strongly Disagree
    - Disagree
    - Not sure
    - Agree
    - Strongly Agree

27. Our company is better than competitors in connecting (e.g. communication and information sharing) parties within a business process
    - Strongly Disagree
    - Disagree
    - Not sure
    - Agree
    - Strongly Agree

28. Our company is better than competitors in reducing cost within a business process
    - Strongly Disagree
    - Disagree
    - Not sure
    - Agree
    - Strongly Agree

29. Our company is better than competitors in bringing complex analytical methods to bear on a business process
    - Strongly Disagree

- Disagree
- Not sure
- Agree
- Strongly Agree

30. Our company is better than competitors in bringing detailed information into a business process
    - Strongly Disagree
    - Disagree
    - Not sure
    - Agree
    - Strongly Agree

31. Our personnel understand our organization's policies and plans at a very high level
    - Strongly Disagree
    - Disagree
    - Not sure
    - Agree
    - Strongly Agree

32. Our personnel are very capable in interpreting business problems and developing appropriate solutions
    - Strongly Disagree
    - Disagree
    - Not sure
    - Agree
    - Strongly Agree

33. Our personnel are very knowledgeable about business functions
    - Strongly Disagree
    - Disagree
    - Not sure
    - Agree
    - Strongly Agree

34. Our personnel are very knowledgeable about the business environment
    - Strongly Disagree
    - Disagree
    - Not sure
    - Agree
    - Strongly Agree

Section 4

<u>How the organisation transforms to explore the opportunities.</u>

35. When we make business capability investment decisions, we think about and estimate the effect they will have on the productivity of the employees' work
    - Strongly Disagree
    - Disagree
    - Not sure
    - Agree
    - Strongly Agree

36. When we make business capability investment decisions, we project about how much these options will help end-users make quicker decisions
    - Strongly Disagree
    - Disagree
    - Not sure
    - Agree
    - Strongly Agree

37. When we make business capability investment decisions, we estimate whether they will consolidate or eliminate jobs
    - Strongly Disagree
    - Disagree
    - Not sure
    - Agree
    - Strongly Agree

38. When we make business capability investment decisions, we think about and estimate the cost of training that end-users will need
    - Strongly Disagree
    - Disagree
    - Not sure
    - Agree
    - Strongly Agree

39. When we make business capability investment decisions, we estimate the time managers will need to spend overseeing the change
    - Strongly Disagree
    - Disagree
    - Not sure
    - Agree
    - Strongly Agree

40. Our personnel are very capable in terms of managing projects
    - Strongly Disagree
    - Disagree
    - Not sure
    - Agree
    - Strongly Agree

41. Our personnel are very capable in terms of executing work in a collective environment
    - Strongly Disagree
    - Disagree
    - Not sure
    - Agree
    - Strongly Agree

42. Our personnel are very capable in terms of teaching others
    - Strongly Disagree
    - Disagree

- Not sure
- Agree
- Strongly Agree

43. Our business personnel work closely with customers and maintain productive user/client relationships
    - Strongly Disagree
    - Disagree
    - Not sure
    - Agree
    - Strongly Agree

Section 5

<u>How the organisation adapts its value offering, value architecture and revenue model</u>

44. The organisation is able to rapidly adapt to changes in target customers
    - Strongly Disagree
    - Disagree
    - Not sure
    - Agree
    - Strongly Agree

45. The organisation is able to rapidly change our product and service offering
    - Strongly Disagree
    - Disagree
    - Not sure
    - Agree
    - Strongly Agree

46. The organisation is able to rapidly change its positioning in the market
    - Strongly Disagree
    - Disagree
    - Not sure
    - Agree

- Strongly Agree

47. The organisation is able to rapidly change or re-align its core competencies and resources
    - Strongly Disagree
    - Disagree
    - Not sure
    - Agree
    - Strongly Agree

48. The organisation can rapidly change its internal value creation activities
    - Strongly Disagree
    - Disagree
    - Not sure
    - Agree
    - Strongly Agree

49. The organisation can rapidly change the role and involvement of partners into the value creation process
    - Strongly Disagree
    - Disagree
    - Not sure
    - Agree
    - Strongly Agree

50. The organisation is able to rapidly change the way in which products and services are distributed to customers
    - Strongly Disagree
    - Disagree
    - Not sure
    - Agree
    - Strongly Agree

51. The organisation can rapidly change its revenue generation mechanisms
    - Strongly Disagree

- Disagree
- Not sure
- Agree
- Strongly Agree

52. The organisation can rapidly change its cost structure mechanisms
    - Strongly Disagree
    - Disagree
    - Not sure
    - Agree
    - Strongly Agree

Section 6

<u>How the organisation is designed/structured.</u>

53. We can quickly change organisational structure/design to respond to demand and supply uncertainties
    - Strongly Disagree
    - Disagree
    - Not sure
    - Agree
    - Strongly Agree

54. Our organisation can cost effectively respond to sudden changes in the market
    - Strongly Disagree
    - Disagree
    - Not sure
    - Agree
    - Strongly Agree

55. Our organisation is more flexible than our competitors in changing our organisational structure/design
    - Strongly Disagree
    - Disagree

- Not sure
- Agree
- Strongly Agree

56. There are no identifiable communications bottlenecks within our organisation for sharing information and ideas
    - Strongly Disagree
    - Disagree
    - Not sure
    - Agree
    - Strongly Agree

57. There is a loose, informal control, with heavy dependence on informal relations and norm of co-operation for getting work done
    - Strongly Disagree
    - Disagree
    - Not sure
    - Agree
    - Strongly Agree

58. There is a strong emphasis on getting things done even if this means disregarding formal procedures
    - Strongly Disagree
    - Disagree
    - Not sure
    - Agree
    - Strongly Agree

59. There is a strong emphasis on adapting freely to changing circumstances without too much concern for past practice
    - Strongly Disagree
    - Disagree
    - Not sure
    - Agree
    - Strongly Agree

60. Strong emphasis on getting line and staff personnel to adhere closely to formal job descriptions
    - Strongly Disagree
    - Disagree
    - Not sure
    - Agree
    - Strongly Agree

Appendix B

Ethical Clearance Form

Ethical Clearance Approved External Inbox x

Masters Research <MastersResearch@gibs.co.za>
to me, Masters

Gordon Institute of Business Science
University of Pretoria

Ethical Clearance Approved

Dear Darran Chetty,

Please be advised that your application for Ethical Clearance has been approved.
You are therefore allowed to continue collecting your data.
We wish you everything of the best for the rest of the project.

Ethical Clearance Form

Kind Regards

This email has been sent from an unmonitored email account. If you have any comments or concerns, please contact the GIBS Research Admin team.

Masters Research

Gordon Institute of Business Science, University of Pretoria

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Appendix C

Summary of Reliability Test – Cronbach's alpha

Table 34: Test for Reliability Summary

Variable	Cronbach Alpha	Items before	Items after	Comments
Sensing	0,89	12	12	
Seizing	0,89	11	11	
Transforming	0,87	9	9	
BMI	0,94	9	9	
Organisational design	0.80	8	7	Removed Org design 8 as no correlations >0.3 with other factors

Inter-Item Correlation Matrix

	SENSING1	SENSING2	SENSING3	SENSING4	SENSING5	SENSING6	SENSING7	SENSING8	SENSING9	SENSING10	SENSING11	SENSING12
SENSING1	1,000	0,642	0,242	0,472	0,343	0,214	0,185	0,329	0,203	0,139	0,106	0,213
SENSING2	0,642	1,000	0,461	0,537	0,510	0,376	0,452	0,448	0,356	0,288	0,309	0,348
SENSING3	0,242	0,461	1,000	0,413	0,305	0,238	0,492	0,473	0,269	0,117	0,363	0,428
SENSING4	0,472	0,537	0,413	1,000	0,426	0,350	0,505	0,424	0,422	0,316	0,388	0,461
SENSING5	0,343	0,510	0,305	0,426	1,000	0,616	0,448	0,390	0,417	0,334	0,446	0,368
SENSING6	0,214	0,376	0,238	0,350	0,616	1,000	0,380	0,480	0,372	0,260	0,354	0,303
SENSING7	0,185	0,452	0,492	0,505	0,448	0,380	1,000	0,585	0,476	0,373	0,506	0,524
SENSING8	0,329	0,448	0,473	0,424	0,390	0,480	0,585	1,000	0,488	0,287	0,552	0,462
SENSING9	0,203	0,356	0,269	0,422	0,417	0,372	0,476	0,488	1,000	0,705	0,574	0,497
SENSING10	0,139	0,288	0,117	0,316	0,334	0,260	0,373	0,287	0,705	1,000	0,421	0,438
SENSING11	0,106	0,309	0,363	0,388	0,446	0,354	0,506	0,552	0,574	0,421	1,000	0,461
SENSING12	0,213	0,348	0,428	0,461	0,368	0,303	0,524	0,462	0,497	0,438	0,461	1,000

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
SENSING1	40,28	49,013	0,404	0,506	0,887
SENSING2	40,53	46,215	0,638	0,600	0,876
SENSING3	40,67	46,043	0,509	0,402	0,883
SENSING4	40,53	45,116	0,638	0,471	0,875
SENSING5	40,41	45,037	0,624	0,531	0,876
SENSING6	40,56	46,158	0,532	0,462	0,881
SENSING7	41,04	44,053	0,679	0,538	0,873
SENSING8	40,74	44,536	0,674	0,563	0,873
SENSING9	40,89	44,403	0,654	0,631	0,874
SENSING10	40,80	46,808	0,496	0,537	0,883
SENSING11	40,68	46,256	0,618	0,495	0,877
SENSING12	41,00	45,189	0,617	0,432	0,877

Inter-Item Correlation Matrix

	SEIZING1	SEIZING2	SEIZING3	SEIZING4	SEIZING5	SEIZING6	SEIZING7	SEIZING8	SEIZING9	SEIZING10	SEIZING11
SEIZING1	1,000	0,543	0,476	0,462	0,289	0,337	0,378	0,368	0,467	0,497	0,461
SEIZING2	0,543	1,000	0,604	0,492	0,342	0,399	0,446	0,360	0,530	0,562	0,567
SEIZING3	0,476	0,604	1,000	0,430	0,229	0,420	0,457	0,317	0,432	0,405	0,469
SEIZING4	0,462	0,492	0,430	1,000	0,567	0,558	0,642	0,262	0,448	0,405	0,338
SEIZING5	0,289	0,342	0,229	0,567	1,000	0,506	0,527	0,323	0,309	0,360	0,174
SEIZING6	0,337	0,399	0,420	0,558	0,506	1,000	0,581	0,383	0,433	0,402	0,314
SEIZING7	0,378	0,446	0,457	0,642	0,527	0,581	1,000	0,334	0,487	0,447	0,362
SEIZING8	0,368	0,360	0,317	0,262	0,323	0,383	0,334	1,000	0,420	0,495	0,496
SEIZING9	0,467	0,530	0,432	0,448	0,309	0,433	0,487	0,420	1,000	0,638	0,503
SEIZING10	0,497	0,562	0,405	0,405	0,360	0,402	0,447	0,495	0,638	1,000	0,626
SEIZING11	0,461	0,567	0,469	0,338	0,174	0,314	0,362	0,496	0,503	0,626	1,000

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
SEIZING1	35,41	44,713	0,605	0,416	0,885
SEIZING2	35,71	42,642	0,691	0,559	0,879
SEIZING3	35,47	44,089	0,601	0,461	0,885
SEIZING4	35,59	42,911	0,668	0,567	0,881
SEIZING5	35,71	44,494	0,515	0,446	0,891
SEIZING6	35,70	43,240	0,622	0,466	0,884
SEIZING7	35,54	44,089	0,677	0,543	0,881
SEIZING8	35,38	46,040	0,521	0,367	0,889
SEIZING9	35,34	44,316	0,661	0,503	0,882
SEIZING10	35,33	44,908	0,686	0,585	0,881
SEIZING11	35,36	45,403	0,601	0,529	0,885

Inter-Item Correlation Matrix

	TRANS FORMING1	TRANS FORMING2	TRANS FORMING3	TRANS FORMING4	TRANS FORMING5	TRANS FORMING6	TRANS FORMING7	TRANS FORMING8	TRANS FORMING9
TRANS FORMING1	1,000	0,499	0,570	0,290	0,420	0,312	0,317	0,316	0,366
TRANS FORMING2	0,499	1,000	0,500	0,481	0,469	0,441	0,482	0,428	0,399
TRANS FORMING3	0,570	0,500	1,000	0,268	0,401	0,237	0,295	0,238	0,209
TRANS FORMING4	0,290	0,481	0,268	1,000	0,606	0,447	0,440	0,398	0,412
TRANS FORMING5	0,420	0,469	0,401	0,606	1,000	0,441	0,353	0,432	0,458
TRANS FORMING6	0,312	0,441	0,237	0,447	0,441	1,000	0,640	0,517	0,443
TRANS FORMING7	0,317	0,482	0,295	0,440	0,353	0,640	1,000	0,658	0,458
TRANS FORMING8	0,316	0,428	0,238	0,398	0,432	0,517	0,658	1,000	0,562
TRANS FORMING9	0,366	0,399	0,209	0,412	0,458	0,443	0,458	0,562	1,000

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
TRANSFORMING1	29,77	26,396	0,548	0,426	0,856
TRANSFORMING2	29,62	26,095	0,664	0,473	0,845
TRANSFORMING3	29,71	27,759	0,484	0,415	0,861
TRANSFORMING4	29,70	26,808	0,599	0,457	0,851
TRANSFORMING5	30,24	24,491	0,643	0,505	0,848
TRANSFORMING6	29,72	27,337	0,614	0,482	0,850
TRANSFORMING7	29,60	27,143	0,641	0,589	0,848
TRANSFORMING8	29,76	26,329	0,625	0,535	0,848
TRANSFORMING9	29,54	26,701	0,587	0,413	0,852

Inter-Item Correlation Matrix

	BMI1	BMI2	BMI3	BMI4	BMI5	BMI6	BMI7	BMI8	BMI9
BMI1	1,000	0,687	0,693	0,699	0,707	0,546	0,707	0,644	0,607
BMI2	0,687	1,000	0,703	0,647	0,617	0,524	0,583	0,605	0,572
BMI3	0,693	0,703	1,000	0,805	0,628	0,544	0,688	0,743	0,693
BMI4	0,699	0,647	0,805	1,000	0,754	0,531	0,710	0,648	0,635
BMI5	0,707	0,617	0,628	0,754	1,000	0,507	0,678	0,530	0,542
BMI6	0,546	0,524	0,544	0,531	0,507	1,000	0,538	0,490	0,453
BMI7	0,707	0,583	0,688	0,710	0,678	0,538	1,000	0,666	0,597
BMI8	0,644	0,605	0,743	0,648	0,530	0,490	0,666	1,000	0,684
BMI9	0,607	0,572	0,693	0,635	0,542	0,453	0,597	0,684	1,000

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
BMI1	27,24	50,815	0,810	0,676	0,929
BMI2	27,36	50,358	0,750	0,593	0,932
BMI3	27,51	49,225	0,848	0,770	0,926
BMI4	27,32	49,445	0,834	0,759	0,927
BMI5	27,32	51,157	0,753	0,660	0,932
BMI6	27,18	53,283	0,616	0,387	0,939
BMI7	27,20	50,916	0,789	0,647	0,930
BMI8	27,62	49,968	0,763	0,644	0,931
BMI9	27,54	50,935	0,725	0,564	0,933

Inter-Item Correlation Matrix

	ORGDESIGN1	ORGDESIGN2	ORGDESIGN3	ORGDESIGN4	ORGDESIGN5	ORGDESIGN6	ORGDESIGN7	ORGDESIGN8
ORGDESIGN1	1,000	0,629	0,628	0,606	0,309	0,135	0,337	0,096
ORGDESIGN2	0,629	1,000	0,664	0,494	0,143	0,113	0,338	0,085
ORGDESIGN3	0,628	0,664	1,000	0,366	0,348	0,304	0,398	0,139
ORGDESIGN4	0,606	0,494	0,366	1,000	0,177	0,185	0,398	0,128
ORGDESIGN5	0,309	0,143	0,348	0,177	1,000	0,349	0,292	0,007
ORGDESIGN6	0,135	0,113	0,304	0,185	0,349	1,000	0,655	-0,025
ORGDESIGN7	0,337	0,338	0,398	0,398	0,292	0,655	1,000	0,021
ORGDESIGN8	0,096	0,085	0,139	0,128	0,007	-0,025	0,021	1,000

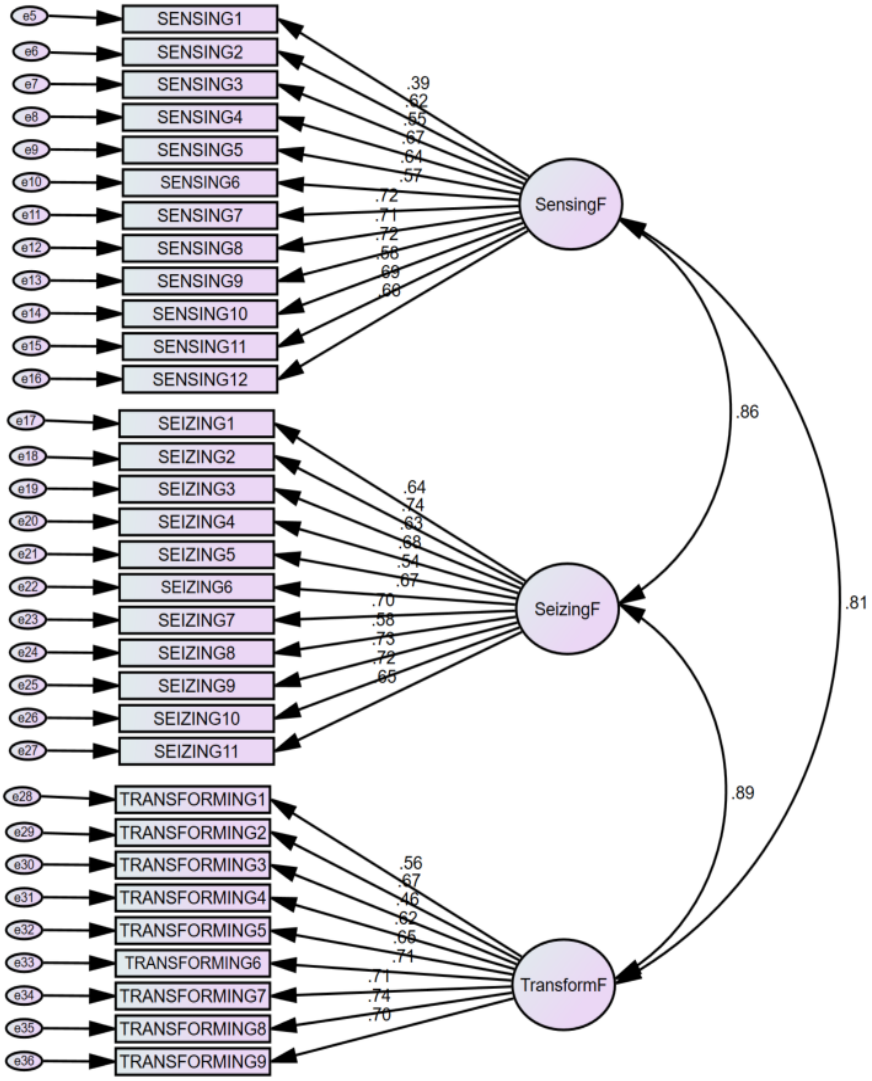
no correlations >0.3

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
ORGDESIGN1	22,68	21,265	0,629	0,600	0,712
ORGDESIGN2	22,46	22,882	0,563	0,566	0,728
ORGDESIGN3	22,63	21,390	0,662	0,592	0,708
ORGDESIGN4	22,90	22,071	0,534	0,447	0,730
ORGDESIGN5	22,60	23,756	0,366	0,226	0,759
ORGDESIGN6	22,95	22,916	0,385	0,496	0,758
ORGDESIGN7	22,84	21,920	0,576	0,533	0,723
ORGDESIGN8	22,76	26,653	0,092	0,038	0,803

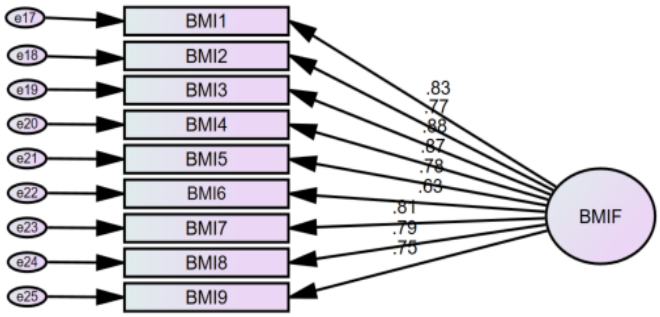
Appendix D

CFA Results



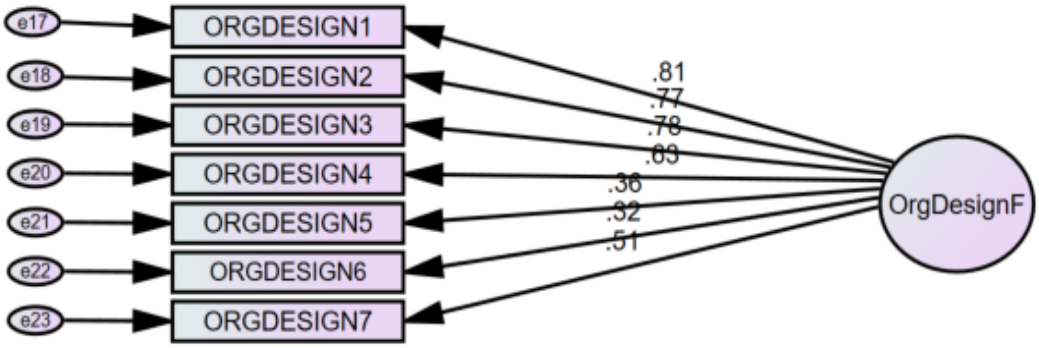
Standardized Regression Weights: (Group number 1 - Default model)

			Estimate
SENSING1	<---	SensingF	.393
SENSING2	<---	SensingF	.619
SENSING3	<---	SensingF	.554
SENSING4	<---	SensingF	.665
SENSING5	<---	SensingF	.641
SENSING6	<---	SensingF	.569
SENSING7	<---	SensingF	.722
SENSING8	<---	SensingF	.710
SENSING9	<---	SensingF	.725
SENSING10	<---	SensingF	.579
SENSING11	<---	SensingF	.692
SENSING12	<---	SensingF	.661
SEIZING1	<---	SeizingF	.638
SEIZING2	<---	SeizingF	.739
SEIZING3	<---	SeizingF	.632
SEIZING4	<---	SeizingF	.681
SEIZING5	<---	SeizingF	.537
SEIZING6	<---	SeizingF	.674
SEIZING7	<---	SeizingF	.695
SEIZING8	<---	SeizingF	.585
SEIZING9	<---	SeizingF	.729
SEIZING10	<---	SeizingF	.724
SEIZING11	<---	SeizingF	.652
TRANSFORMING1	<---	TransformF	.560
TRANSFORMING2	<---	TransformF	.670
TRANSFORMING3	<---	TransformF	.459
TRANSFORMING4	<---	TransformF	.616
TRANSFORMING5	<---	TransformF	.650
TRANSFORMING6	<---	TransformF	.709
TRANSFORMING7	<---	TransformF	.713
TRANSFORMING8	<---	TransformF	.737
TRANSFORMING9	<---	TransformF	.698



Standardized Regression Weights: (Group number 1 - Default model)

			Estimate
BMI1	<---	BMIF	.830
BMI2	<---	BMIF	.774
BMI3	<---	BMIF	.882
BMI4	<---	BMIF	.874
BMI5	<---	BMIF	.785
BMI6	<---	BMIF	.633
BMI7	<---	BMIF	.814
BMI8	<---	BMIF	.790
BMI9	<---	BMIF	.752



Standardized Regression Weights: (Group number 1 - Default model)

			Estimate
ORGDESIGN1	<---	OrgDesignF	.811
ORGDESIGN2	<---	OrgDesignF	.770
ORGDESIGN3	<---	OrgDesignF	.785
ORGDESIGN4	<---	OrgDesignF	.631
ORGDESIGN5	<---	OrgDesignF	.364
ORGDESIGN6	<---	OrgDesignF	.316
ORGDESIGN7	<---	OrgDesignF	.511

Appendix E

EFA Results

Sensing

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0,852
Bartlett's Test of Sphericity	Approx. Chi-Square	606,368
	df	66
	Sig.	0,000

Communalities

	Initial	Extraction
SENSING1	1,000	0,765
SENSING2	1,000	0,756
SENSING3	1,000	0,743
SENSING4	1,000	0,568
SENSING5	1,000	0,584
SENSING6	1,000	0,434
SENSING7	1,000	0,670
SENSING8	1,000	0,619
SENSING9	1,000	0,767
SENSING10	1,000	0,742
SENSING11	1,000	0,630
SENSING12	1,000	0,559

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5,411	45,091	45,091	5,411	45,091	45,091	2,753	22,942	22,942
2	1,408	11,735	56,826	1,408	11,735	56,826	2,610	21,751	44,692
3	1,018	8,484	65,310	1,018	8,484	65,310	2,474	20,618	65,310
4	0,934	7,786	73,096						
5	0,587	4,892	77,988						
6	0,509	4,239	82,227						
7	0,494	4,117	86,344						
8	0,464	3,865	90,209						
9	0,414	3,447	93,655						
10	0,287	2,392	96,048						
11	0,244	2,037	98,085						
12	0,230	1,915	100,000						

Extraction Method: Principal Component Analysis.

Rotated Component Matrix[a]

	Component		
	1	2	3
SENSING1			**0,873**
SENSING2			**0,794**
SENSING3	**0,823**		
SENSING4	0,436		**0,564**
SENSING5		0,467	**0,567**
SENSING6		0,441	**0,446**
SENSING7	**0,713**		
SENSING8	**0,662**		
SENSING9		**0,812**	
SENSING10		**0,853**	
SENSING11	**0,553**	0,567	
SENSING12	**0,594**	0,432	

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 6 iterations.

Seizing

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0,900
Bartlett's Test of Sphericity	Approx. Chi-Square	559,335
	df	55
	Sig.	0,000

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5,408	49,165	49,165	5,408	49,165	49,165	3,833	34,845	34,845
2	1,299	11,810	60,975	1,299	11,810	60,975	2,874	26,130	60,975
3	0,850	7,727	68,703						
4	0,613	5,569	74,271						
5	0,584	5,312	79,583						
6	0,487	4,432	84,015						
7	0,431	3,917	87,932						
8	0,402	3,655	91,587						
9	0,343	3,122	94,709						
10	0,305	2,775	97,485						
11	0,277	2,515	100,000						

Extraction Method: Principal Component Analysis.

Rotated Component Matrix[a]

	Component	
	1	2
SEIZING1	**0,665**	
SEIZING2	**0,730**	
SEIZING3	**0,629**	
SEIZING4		**0,783**
SEIZING5		**0,815**
SEIZING6		**0,737**
SEIZING7		**0,758**
SEIZING8	**0,611**	
SEIZING9	**0,690**	
SEIZING10	**0,773**	
SEIZING11	**0,839**	

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 3 iterations.

Transforming

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0,850
Bartlett's Test of Sphericity	Approx. Chi-Square	412,106
	df	36
	Sig.	0,000

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4,402	48,911	48,911	4,402	48,911	48,911	3,290	36,560	36,560
2	1,209	13,438	62,349	1,209	13,438	62,349	2,321	25,789	62,349
3	0,805	8,942	71,291						
4	0,653	7,260	78,550						
5	0,480	5,331	83,881						
6	0,454	5,039	88,921						
7	0,381	4,230	93,151						
8	0,361	4,015	97,166						
9	0,255	2,834	100,000						

Extraction Method: Principal Component Analysis.

Rotated Component Matrix[a]

	Component	
	1	2
TRANSFORMING1		**0,804**
TRANSFORMING2	0,458	**0,642**
TRANSFORMING3		**0,866**
TRANSFORMING4	**0,611**	
TRANSFORMING5	**0,521**	0,524
TRANSFORMING6	**0,773**	
TRANSFORMING7	**0,805**	
TRANSFORMING8	**0,810**	
TRANSFORMING9	**0,701**	

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 3 iterations.

BMI

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0,934
Bartlett's Test of Sphericity	Approx. Chi-Square	741,898
	df	36
	Sig.	0,000

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6,050	67,222	67,222	6,050	67,222	67,222
2	0,625	6,941	74,164			
3	0,554	6,156	80,320			
4	0,435	4,836	85,155			
5	0,358	3,976	89,131			
6	0,338	3,753	92,884			
7	0,253	2,807	95,691			
8	0,241	2,675	98,366			
9	0,147	1,634	100,000			

Extraction Method: Principal Component Analysis.

Org Design

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0,736
Bartlett's Test of Sphericity	Approx. Chi-Square	311,851
	df	21
	Sig.	0,000

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	3,315	47,350	47,350	3,315	47,350	47,350	2,697	38,535	38,535
2	1,353	19,330	66,681	1,353	19,330	66,681	1,970	28,146	66,681
3	0,822	11,738	78,419						
4	0,649	9,278	87,696						
5	0,323	4,612	92,308						
6	0,295	4,220	96,528						
7	0,243	3,472	100,000						

Extraction Method: Principal Component Analysis.

Rotated Component Matrix[a]

	Component	
	1	2
ORGDESIGN1	**0,870**	
ORGDESIGN2	**0,862**	
ORGDESIGN3	**0,748**	
ORGDESIGN4	**0,715**	
ORGDESIGN5		**0,589**
ORGDESIGN6		**0,909**
ORGDESIGN7		**0,795**

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 3 iterations.

Appendix F

Construct descriptive statistics

Descriptive Statistics

	N Statistic	Minimum Statistic	Maximum Statistic	Mean Statistic	Std. Deviation Statistic	Skewness Statistic	Skewness Std. Error	Kurtosis Statistic	Kurtosis Std. Error
SENSING1	112	1	5	4,10	0,759	-1,300	0,228	3,846	0,453
SENSING2	112	1	5	3,85	0,808	-1,073	0,228	2,089	0,453
SENSING3	112	1	5	3,71	0,992	-0,785	0,228	0,202	0,453
SENSING4	112	1	5	3,85	0,922	-0,814	0,228	0,303	0,453
SENSING5	112	1	5	3,96	0,948	-0,895	0,228	0,340	0,453
SENSING6	112	2	5	3,81	0,945	-0,593	0,228	-0,443	0,453
SENSING7	112	1	5	3,34	0,982	-0,381	0,228	-0,366	0,453
SENSING8	112	2	5	3,63	0,940	-0,397	0,228	-0,696	0,453
SENSING9	112	1	5	3,48	0,977	-0,392	0,228	-0,255	0,453
SENSING10	112	1	5	3,57	0,917	-0,393	0,228	-0,041	0,453
SENSING11	112	1	5	3,70	0,826	-0,846	0,228	0,684	0,453
SENSING12	112	1	5	3,38	0,941	-0,291	0,228	-0,794	0,453
SEIZING1	112	1	5	3,64	0,919	-0,644	0,228	-0,140	0,453
SEIZING2	112	1	5	3,35	1,029	-0,239	0,228	-0,538	0,453
SEIZING3	112	1	5	3,58	0,992	-0,706	0,228	0,135	0,453
SEIZING4	112	1	5	3,46	1,030	-0,330	0,228	-0,371	0,453
SEIZING5	112	1	5	3,34	1,070	-0,223	0,228	-0,421	0,453
SEIZING6	112	1	5	3,36	1,056	-0,481	0,228	-0,437	0,453
SEIZING7	112	1	5	3,52	0,900	-0,318	0,228	-0,019	0,453
SEIZING8	112	1	5	3,67	0,874	-0,783	0,228	0,649	0,453
SEIZING9	112	1	5	3,71	0,895	-0,554	0,228	0,009	0,453
SEIZING10	112	1	5	3,72	0,808	-0,705	0,228	0,720	0,453
SEIZING11	112	1	5	3,70	0,847	-0,819	0,228	0,517	0,453
TRANSFORMING 1	112	1	5	3,69	1,005	-0,583	0,228	-0,287	0,453
TRANSFORMING 2	112	1	5	3,84	0,906	-1,007	0,228	1,030	0,453
TRANSFORMING 3	112	1	5	3,75	0,885	-0,753	0,228	0,693	0,453
TRANSFORMING 4	112	1	5	3,76	0,883	-0,865	0,228	0,863	0,453
TRANSFORMING 5	112	1	5	3,21	1,142	-0,174	0,228	-0,927	0,453

TRANSFORMING 6	112	1	5	3,73	0,794	-0,690	0,228	0,818	0,453
TRANSFORMING 7	112	2	5	3,86	0,793	-0,733	0,228	0,501	0,453
TRANSFORMING 8	112	1	5	3,70	0,919	-0,847	0,228	0,767	0,453
TRANSFORMING 9	112	1	5	3,92	0,912	-0,783	0,228	0,338	0,453
BMI1	112	1	5	3,54	1,021	-0,278	0,228	-0,851	0,453
BMI2	112	1	5	3,43	1,129	-0,298	0,228	-0,913	0,453
BMI3	112	1	5	3,28	1,109	-0,045	0,228	-0,936	0,453
BMI4	112	1	5	3,46	1,106	-0,437	0,228	-0,780	0,453
BMI5	112	1	5	3,46	1,056	-0,558	0,228	-0,365	0,453
BMI6	112	1	5	3,61	1,034	-0,641	0,228	-0,107	0,453
BMI7	112	1	5	3,59	1,036	-0,540	0,228	-0,583	0,453
BMI8	112	1	5	3,17	1,146	-0,120	0,228	-0,871	0,453
BMI9	112	1	5	3,24	1,109	-0,251	0,228	-0,901	0,453
ORGDESIGN1	112	1	5	3,29	1,104	-0,283	0,228	-0,762	0,453
ORGDESIGN2	112	1	5	3,51	0,949	-0,541	0,228	-0,308	0,453
ORGDESIGN3	112	1	5	3,35	1,046	-0,502	0,228	-0,411	0,453
ORGDESIGN4	112	1	5	3,07	1,113	-0,143	0,228	-1,024	0,453
ORGDESIGN5	112	1	5	3,38	1,100	-0,337	0,228	-0,743	0,453
ORGDESIGN6	112	1	5	3,03	1,219	0,130	0,228	-1,250	0,453
ORGDESIGN7	112	1	5	3,13	1,078	-0,008	0,228	-1,071	0,453
ORGDESIGN8	112	1	5	3,21	1,094	-0,186	0,228	-0,827	0,453
Valid N (listwise)	112								